ET-8 Series Manual

Wall Mount: 8, 16, 24, 32 Stations

Pedestal Ultimo: 8, 16, 24, 32, 40, 48 Stations

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1 ET-8 Series Quick Setup Guide

Setting the Date & Time

1. Turn the knob to ***Date & Time***.
2. Press ***Previous/Next*** to select month, day, year, hour or minute.
3. Press ***More/Less*** to set the value.

Setting the Watering Days

1. Turn the knob to ***Water Days***.
2. Press ***More/Less*** until the desired program is selected, then, press ***Next***.
3. Press ***More/Less*** until the desired schedule appears, one of: off, odd, even, weekly or skip days.
4. If selecting weekly (S.M.T.W.T.F.S), press ***Next*** to select a day and ***More/Less*** to enable/disable watering on that day.

Setting the Watering Times

1. Turn the knob to ***Water Times***.
2. Press ***More/Less*** until the desired program is selected.
3. Press ***Next*** until one of the four start times is selected.
4. Press ***More/Less*** to change the selected field (hour or minute).
5. To disable a start time, increment its start hour (past midnight) until --:-- appears.

Setting Station Run Times

1. Turn the knob to ***Station Run Times***.
2. Press ***More/Less*** until the desired station is selected.
3. Press ***Next*** until one of the four programs (A-D) is selected.
4. Press ***More/Less*** to set the desired running time.

Set the Controller for summer run times only!

Running a Two Minute Test

1. Ensure the dial is in ***Run*** position.
2. Press ***More***.
3. Press ***Next*** to start the test or ***Previous*** to cancel.
4. During the test, use ***Next/Previous*** to skip to the next or previous station.
5. To stop, turn the knob to **Off**.

Setting Rain Delay

1. Ensure the dial is in ***Run*** position.
2. Press ***Less***.
3. Press ***More/Less*** until the desired number of rain days is selected.
4. Press ***Next*** to save the value and return or ***Previous*** to cancel.

Determine Today's Run Time Adjustment

1. Ensure the dial is in ***Run*** position.
2. Press ***Previous*** and the display will show today's adjustment as a percentage of the set run times.
3. The display returns to normal after a short delay.

Viewing & Clearing Faults

1. Ensure the dial is in ***Run*** position.
2. Press ***Next*** and the display will show **BRK** (Main Line Break), **LFL** (Low Flow), **HFL** (High Flow), **CRNT** (Over Current), or all clear.
3. The display returns to normal after a short delay.

2 Installation

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Do not connect more than one controller to a shared pump, master valve, flow meter, rain sensor, or irrigation valve. Interconnecting controller transformers is a violation of National Electric Code.

This controller must be installed in compliance with local electrical codes.

Make sure all power is off during installation and wiring process.

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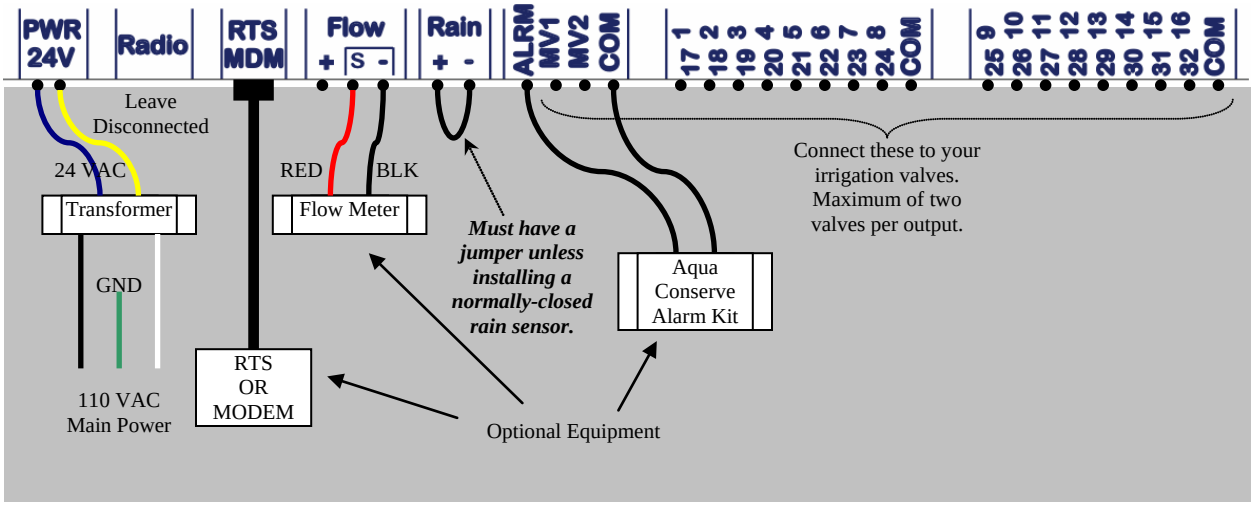
2.1 Wall Mount Mounting Instructions

- If you are replacing an existing controller, it is a good idea to attach a piece of label to each wire as you remove them from your existing controller. This will make the job of installing your new controller easier.
- If you are using the drywall anchors and the mounting template which is provided in your package, use a ¼" drill bit to drill the 3 holes. Then insert the drywall anchor until it is flush with the wall surface.
- Insert 2 screws into the top 2 drywall anchors leaving the screw heads about ¼' from being flush with the drywall. Hang the controller on the screws on top.
- Insert the third screw into the third hole and tighten until the screw head is flush with the controller.
- Seal around the box using silicone sealant.

2.2 Wiring Instructions

- Connect the common, stations, and master valve(s) wires.
- Connect the power line's black, white, and green (ground) wires to the transformer's black, white, and green wires. Tighten the wires together using the supplied wire nuts.
- Connect the Rain/Temperature Sensor and optional equipment as shown in the following figure.
- Apply main power.



2.3 Multiple Controller & Single Valve/Pump

The drawing below may be used when a master valve or pump start is installed with multiple controllers, without looping the common wire between the controllers. Interconnecting controller transformers is a violation of National Electric Code.

- Each controller is connected to its own dedicated relay. The controller's master valve circuit is used to energize the relay. When the relay's contacts are closed, it allows the voltage from the additional transformer to activate the pump start and/or master valve.

- One side of the transformer voltage is supplied directly to the pump start and/or master valve and is used as the common. The other side of the transformer voltage is connected to terminals 7 & 9 on the relay. When the relay is activated by the controller, the transformer voltage is fed to contacts 4 & 6 respectively. Using both sets of contacts allows the controllers to turn on the pump start, master valve or both.

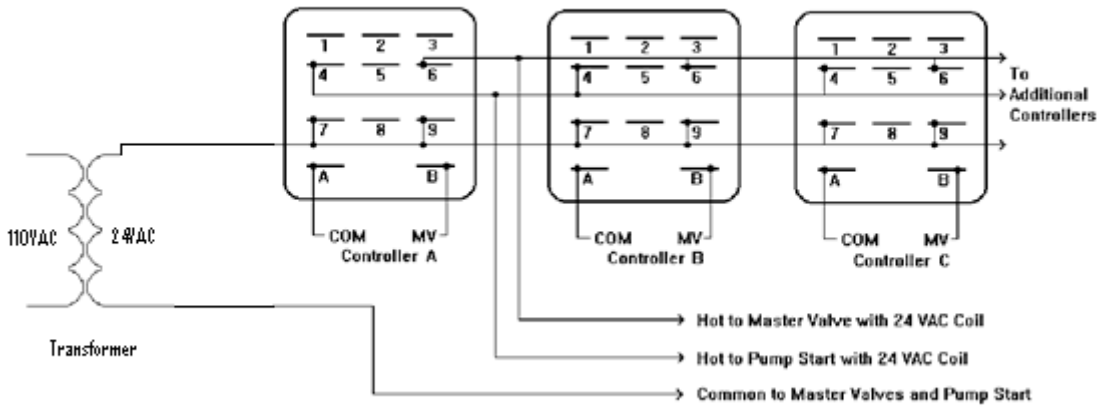
- Component: 1 x Relay per controller (24VAC/10Amp DPDT) -- Mfr. Part#: R10-11A10-24 or RR2BA-U-AC24

- Component: 1 x Socket per controller (11-Pin) -- Mfr. Part#: R95-105

- Component: 1 x Transformer (110 VAC/24VAC) -- Mfr. Part#: T40-24F1

- The ideal location for the transformer/relay is close to the controllers or inside one controller. Remember there must be a 117 VAC power source available. The relays and transformer should be installed in a NEMA approved enclosure. This will protect the components from weather damage and vandalism.

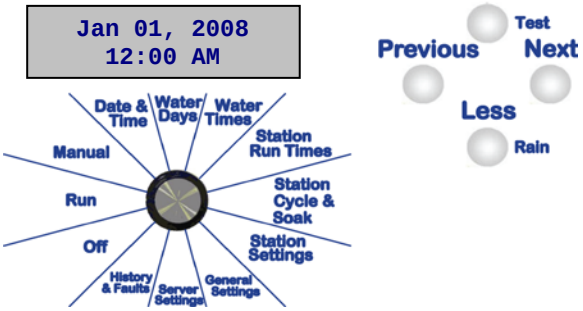
- For ease of installation, it is recommended that relay sockets are used. The sockets have tabs for mounting purposes, and allow easy replacement of a defective relay. The drawing below details the terminal screw positions for the specified sockets. This is the top view of the socket.



3 Basic Programming

3.1 Date & Time

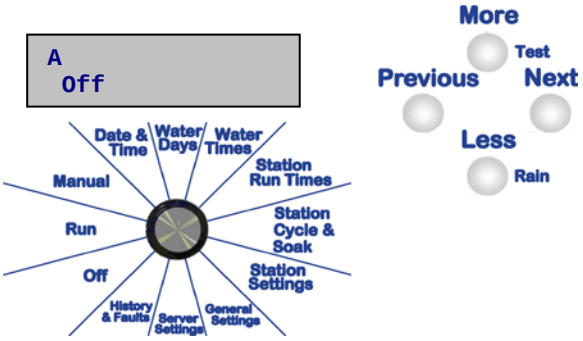
Turn the dial to the **Date & Time** position. The controller displays the current date and time.



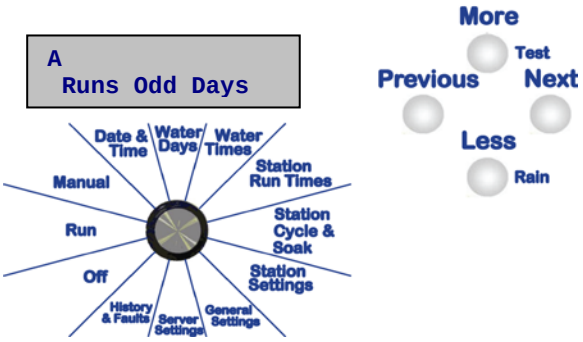
- ☞ Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.

3.2 Watering Days

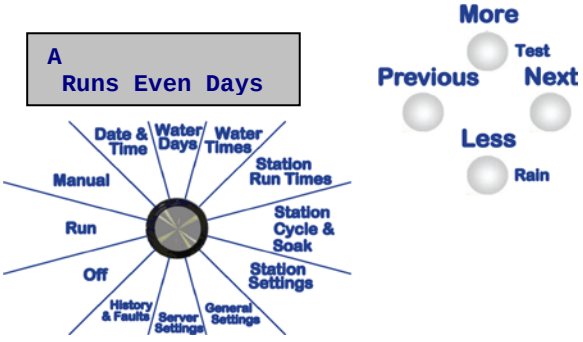
Turn the dial to the **Water Days** position. The controller displays a program (one of **A**, **B**, **C**, **D,** or **E**) and its watering schedule.



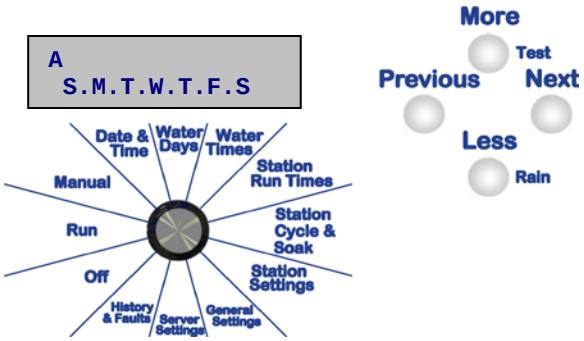
- ☞ Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.
- ☞ You may use any of the programs **A**, **B**, **C**, and **D** for irrigation scheduling. However, program **E** is dedicated for the **Establishment** feature.
- ☞ Set a program's watering days to **Off** to suspend all irrigation activities, or
- ☞ Set a program's watering days to **Odd** to irrigate only on odd days of the month, or,



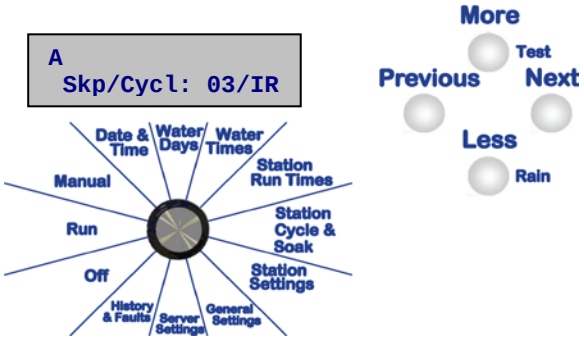
- ☞ Set a program's watering days to **Even** to irrigate only on even days of the month, or,



- Set a program's watering days by selecting the days of week that irrigation is to be suspended. To turn a day off, set its corresponding letter to "-", or,



- Set a program's watering days by specifying the number of skip (i.e., off) days and today's position in the cycle. For example, a skip value of 3 (as shown) specifies one watering day followed by 3 no-watering days. The cycle value specifies that today is an irrigation day (IR). You can change that to 1, 2, or 3, meaning, there 1, 2, or 3 more days of no-watering days remain. The cycle value is automatically decremented every midnight, repeating a pattern of 3, 2, 1, IR, 3, 2, 1, IR, etc.

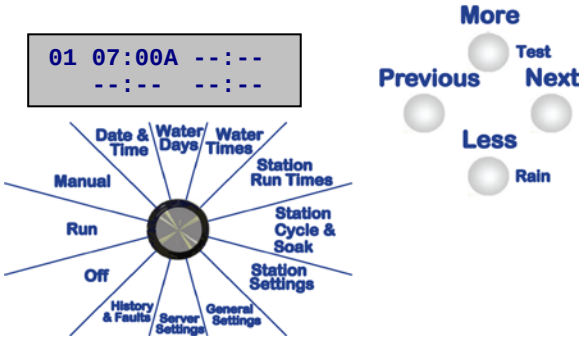


3.3 Watering Times

Turn the dial to the **Water Times** position. The controller displays a program (one of **A**, **B**, **C**, **D,** or **E**) and its four watering start times.

- Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.

- To turn a start time off, continuously increment its hour until --:-- is displayed.

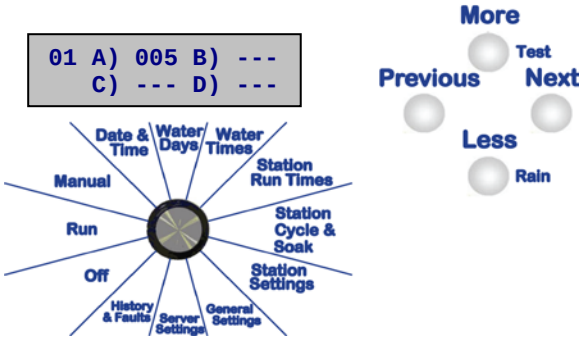


3.4 Station Run Times

Turn the dial to the **Station Run Times** position. The controller displays a station and its station run times, in minutes, on programs **A**, **B**, **C** and **D**.

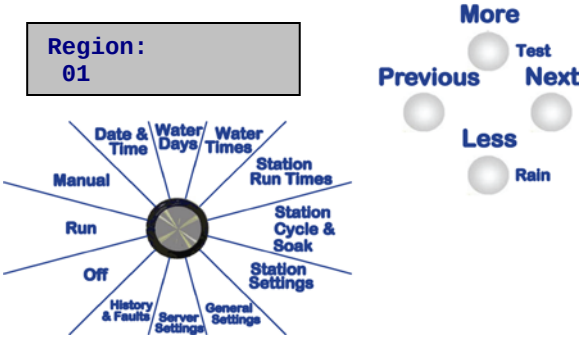
- Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.

- ***Set the station run times for the average summer high. The controller will make automatic seasonal and weather adjustments.***



3.5 Region

Turn the dial to the **General Settings** position. The controller will display **Region**. Use the **More** or **Less** buttons to set the appropriate region number:



01: Southern California Inland to Desert
02: California Low Desert
03: California Central Valley
04. Northern CA Inland to Central Valley
05. California High Desert
06: California Coastal
11: Phoenix Arizona
16: Reno Nevada
17: Las Vegas Nevada
21: Denver Colorado
22: Northern Colorado
26: Albuquerque New Mexico
27: Las Cruces New Mexico
31: Seattle Washington
41: Logan Utah
51: San Antonio Texas
52: Dallas / Fort Worth Texas

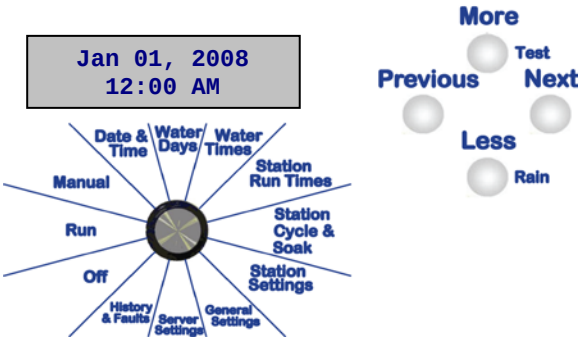
☞ For additional region information, go to: www.aquaconserve.com

4 Run Mode

4.1 Default Display

Leave the dial in the **Run** position for normal operation. In this mode, the controller displays the current date and time.

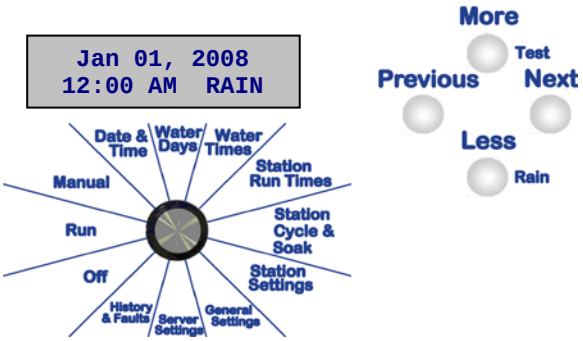
- For normal irrigation activities to take place, the dial must be in the **Run** position.
- When power is first applied to the controller, or after a power failure, the display will be flashing, indicating that the date and time should be set.



4.2 Rain Indicator

If a rain signal is received from an attached rain sensor, the controller will display **RAIN**. All irrigation activities are suspended while **RAIN** is displayed.

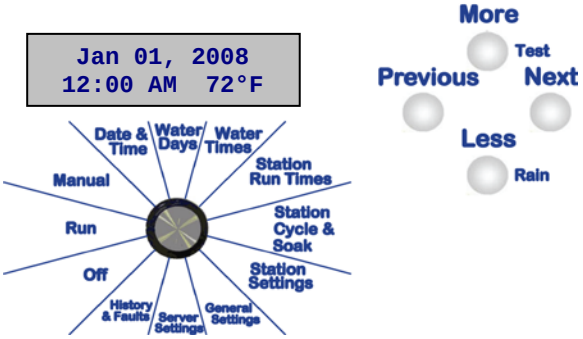
- The controller will revert back to normal operation 24 hours after the rain sensor has completely dried.
- The controller displays **RAIN** for the number of days a rain delay is entered by the user.



4.3 Temperature Indicator

If a temperature sensor is attached, the controller will display the current temperature reading.

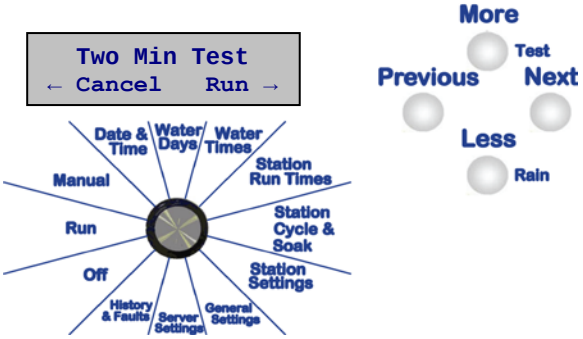
- Unless a more accurate source of weather information is available (e.g., via an attached modem), the controller will use the daily average temperature to adjust the watering run times. Please refer to the temperature sensor's manual for correct installation of the temperature sensor.



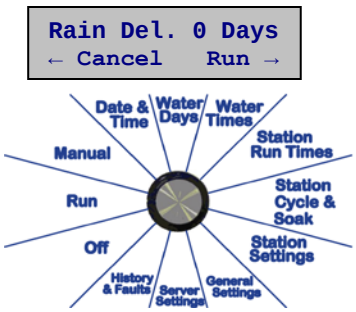
4.4 Two Minute Test

Press the **More** button to enter the **Two Min Test** screen. Then, press **Next** to start or **Previous** to cancel the test.

- Once the test is started, you may press the **Next** or **Previous** buttons to skip to the next or previous station. Turn the dial to the **Off** position to terminate the test.



4.5 Rain Delay

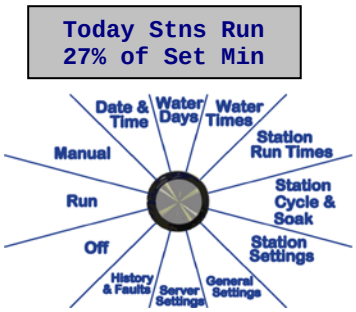


Rain delay is used to manually disable the controller, for up to 9 days, when rain is expected.

To manually enter the number of days of rain delay, press the **Less** button. Then, use the **More** or **Less** buttons to set the days. When done, press the **Next** button to store the value or press the **Previous** button to cancel.

- ☞ If a nonzero rain delay value is entered, the controller will display **RAIN** and suspend all irrigation activities.
- ☞ You will not be able to clear the rain delay value if an attached rain sensor is sending a rain signal.

4.6 Station Run Time Info



Press the **Previous** button to view the adjustment applicable to today's watering times.

- ☞ For example, and using the illustration to the right, a station that is programmed for 10 minutes will irrigate for 2.7 minutes today.

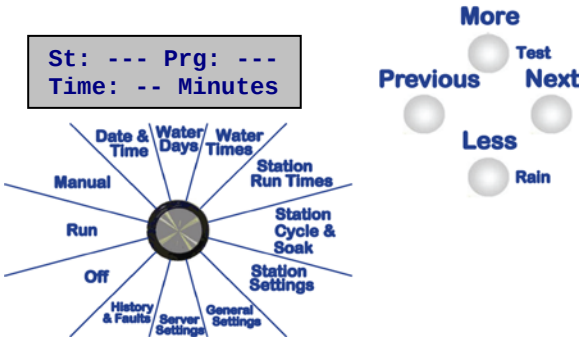
4.7 Flow & Electrical Faults

Press the **Next** button to view flow & electrical faults that may have been sets.

- ☞ When irrigating, the controller continuously checks for excessive electrical current draw and anomalies. If an over current condition is detected, the controller sets the **CRNT** fault.
- ☞ When irrigating, the controller can be programmed to monitor for excessive water flow and detect a line break condition. If a line break condition is detected, the controller sets the **BRK** fault.
- ☞ The controller can be programmed to monitor for low or high flow conditions on a per station basis. If a low or high flow condition is detected, the controller sets the **LFL** or **HFL** faults.
- ☞ If no faults are set, **ALL CLEAR**! is displayed.
- ☞ All faults are cleared once viewed on this screen.

5 Manual Irrigation

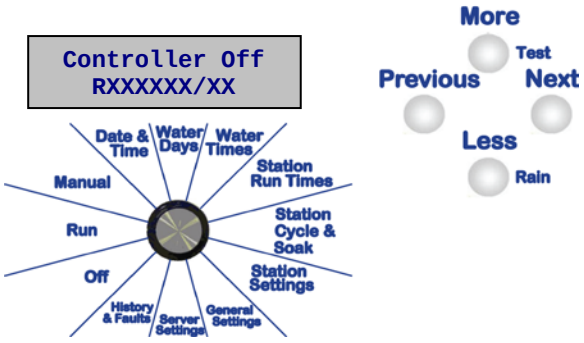
Turn the dial to the **Manual** position to setup a manual irrigation run. You have a number of choices for manual irrigation.



- **Single station**: set the value next to **St** to the desired station number and the value next to **Time** to the desired run time. Turn the dial to **Run** to begin.
- **All stations**: set the value next to **St** to **All** and the value next to **Time** to the desired run time. Turn the dial to **Run** to begin.
- **Single program**: set the value next to **Prg** to the desired program letter. Turn the dial to **Run** to begin. The controller will run this program for the set run times.
- **All programs**: set the value next to **Prg** to **All**. Turn the dial to **Run** to begin. The controller will run all programs for the set run times.

6 Off Mode

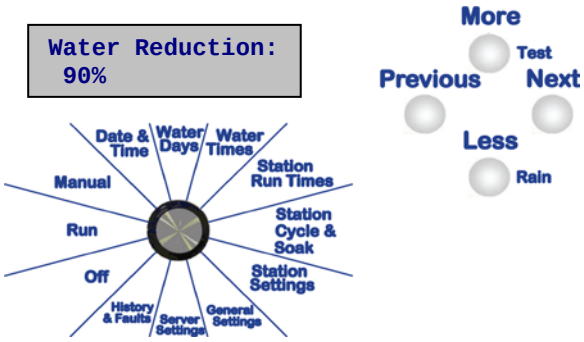
Turn the dial to the **Off** position to disable all irrigation activities.



- All controller features, including optional communications package functionality, are disabled in this mode.
- The second row of the display shows the firmware revision of the controller. Be prepared to provide this text when calling Aqua Conserve customer support.

7 Advanced Features

7.1 Water Reduction

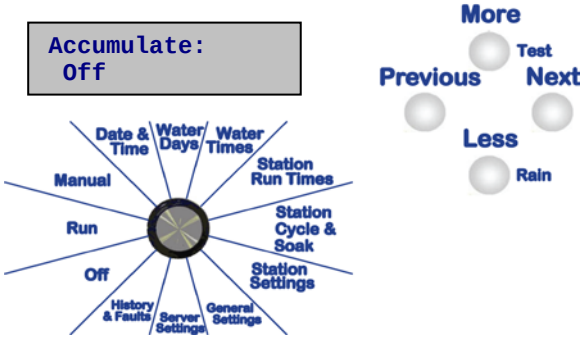


Water reduction is a global setting to reduce all station run times by a single factor. The value that is displayed shows the percentage of the station run times that the controller will use.

Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Water Reduction** is displayed. Use the **More** or **Less** buttons to set the water reduction percentage.

- ☞ You may set the percentage to 100% (no reduction) down to 75% (25% reduction).
- ☞ The factory default is 90%.

7.2 Accumulate

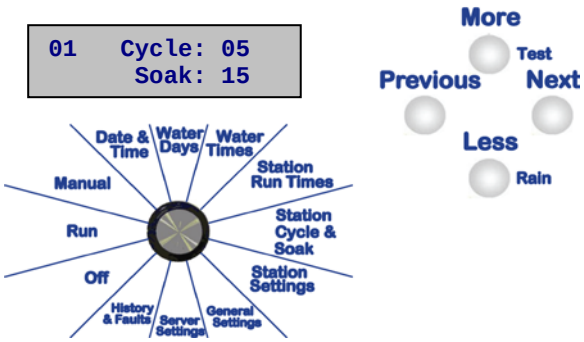


The accumulate feature is beneficial during the cooler fall or winter seasons, as it keeps the stations from irrigating frequently for just short periods of time.

Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Accumulate** is displayed. Use the **More** or **Less** buttons to turn the feature on or off.

- ☞ If accumulate is enabled, the controller will suspend a station's scheduled irrigation for as long as its seasonally and weather adjusted run time is less than ½ of the set run time. The un-irrigated run time is accumulated and accounted for during future scheduled irrigation cycles.

7.3 Cycle & Soak



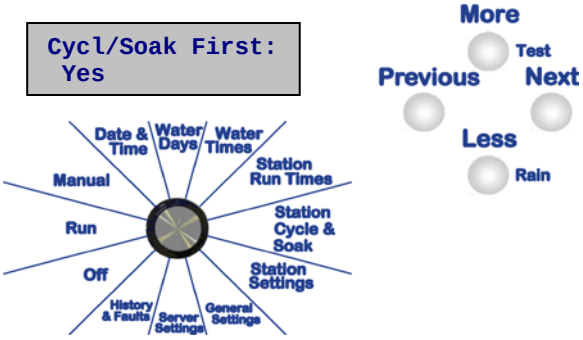
The cycle and soak method of watering allows water to absorb into the ground, thus eliminating water runoffs.

Turn the dial to the **Station Cycle & Soak** position. The controller displays a station and its cycle & soak times in minutes.

- ☞ Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.
- ☞ A station that has been programmed with cycle and soak times irrigates in an on/off pattern, as determined by the cycle/soak times.

- While a station is in its soak cycle, the controller skips to the next station in the sequence, returning to the earlier station when its soak time has been completed.

- When using cycle and soak, you can shorten the total irrigation window by forcing the stations that are set for cycle and soak to irrigate ahead of non cycle and soak stations. To do so, turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Cycl/Soak First** is displayed. Use the **More** or **Less** buttons to enable or disable this feature.



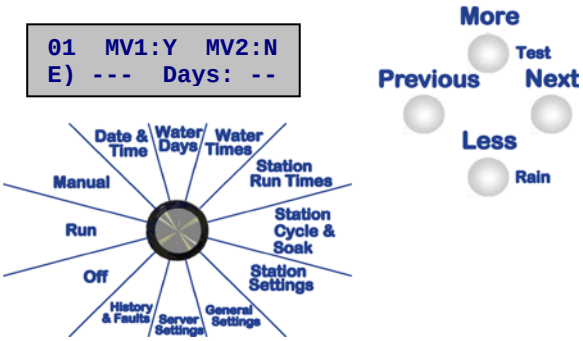
7.4 Master Valves

If enabled, the master valve outputs switch on when the station is irrigating.

Turn the dial to the **Station Settings** position. The controller displays a station and its associated master valve settings on the first line.

- Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.

- This controller has two dedicated master valve outputs. For each station, you may individually enable (**Y**) or disable (**N**) master valve 1 or master valve 2 outputs.

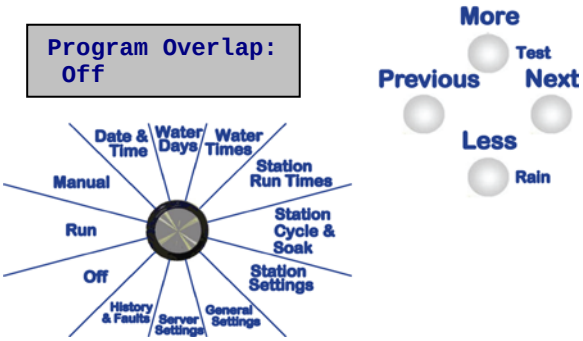


7.5 Program Overlap

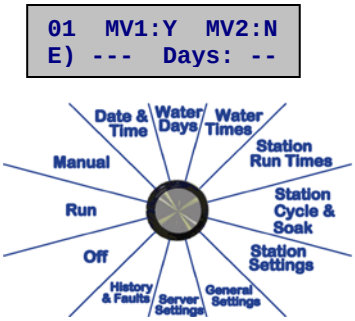
If program overlap is set to 2, 3, or 4, the controller will overlap the activation of 2, 3, or 4 programs. Specifically, the controller will simultaneously activate multiple stations (one from each overlapping program).

Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Program Overlap** is displayed. Use the **More** or **Less** buttons to turn the feature on or off.

- If this feature is turned off, the controller will stack the activation of overlapping programs. Specifically, the controller will activate overlapping programs according to the following ordering: **A**, **B**, **C**, then, **D**.



7.6 Establishment

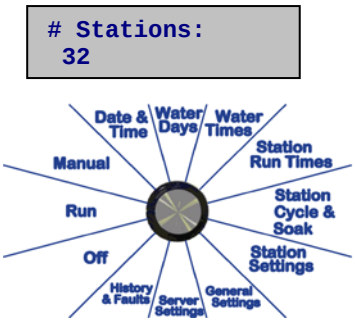


Use establishment to schedule a program that is not subject to automatic seasonal adjustments.

Turn the dial to the **Station Settings** position. The controller displays a station and its associated establishment settings on the second line.

- Adjust the flashing field using the **More** or **Less** buttons and move to another field using the **Previous** or **Next** buttons.
- Set the establishment run time, in minutes, on program **E**. Then, set the number of establishment days.
- Ensure that program **E** has watering days and watering times set to the desired values.
- The controller will irrigate this station according to its establishment settings and for the set number of establishment days. The number of establishment days will be decremented daily. Once the number reaches 00, the controller reverts back to normal program **A** through **D** operation and disables establishment mode.
- While in establishment mode, a station's irrigation activities, set on programs **A** through **D,** will be suspended.
- Remember that the establishment run times on program **E** are not subject to automatic seasonal and weather adjustments.

7.7 Number of Stations



Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **# Stations** is displayed. Use the **More** or **Less** buttons to set the number of stations.

- Your controller was manufactured as an 8 to 48 station irrigation controller. The number of stations setting should be set to reflect the physical number of stations available on the unit.
- This parameter is set at factory prior to shipping the unit.

8 Flow Monitoring

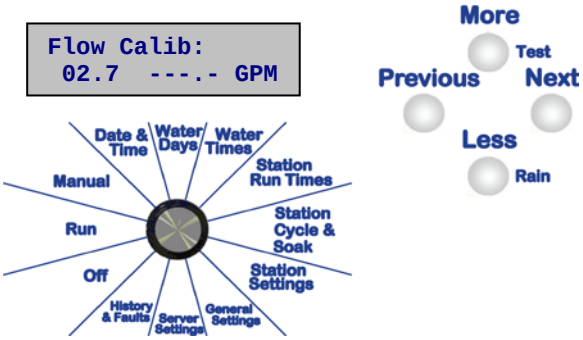
8.1 Flow Monitoring Basics

The goal in programming a controller for flow monitoring is to detect flow anomalies while avoiding false alarms. False alarms, especially station high flow and flow break monitoring, if programmed incorrectly, can prevent a station from irrigating. Here are some recommendations:

- Make certain the flow meter is properly installed and wired to the controller. Monitor the actual flow rate reading during irrigation activity and ensure that the flow rate indicated on the controller is reasonable.
- Make certain the flow stabilization parameter is set for a long enough duration to allow for the flow to reach a steady rate once a station is activated.
- You must set the flow rate of each station for low/high flow monitoring. You can accomplish this automatically or manually. Regardless of the method, ensure that these values are set properly.
- You should set the low/high flow percentage wide enough to avoid false alarms. A good strategy is to start with a large percentage and narrow the values down gradually. Narrow settings allow for higher accuracy, while wider settings avoid false alarms.
- Make sure to perform frequent and regular checks to ensure that the controller is functioning correctly.

8.2 Flow Calibration

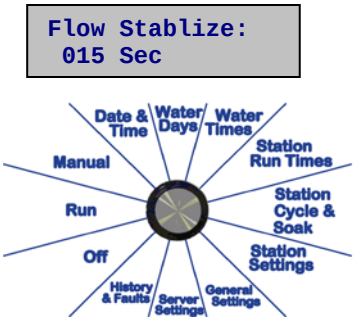
Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Flow Calib** is displayed. Use the **More** or **Less** buttons to set the appropriate flow calibration parameter.



- The flow calibration parameter is supplied by your flow-meter manufacturer.
- The **Flow Calib** screen also shows the current flow rate in gallons per minute (GPM).
- Common Data Industrial flow meter calibration parameter is given below:

Model	Pipe Size	Calib. Param.
228PV15	1.5”	01.7
228PV20	2.0”	02.9
228PV30	3.0”	08.3
228PV40	4.0”	13.7

8.3 Flow Stabilization

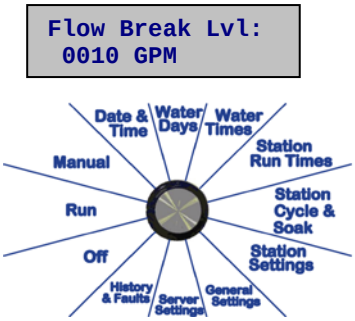


Flow stabilization delay is necessary to allow the irrigation system to reach a steady flow rate before monitoring begins.

Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Flow Stabilize** is displayed. Use the **More** or **Less** buttons to set the appropriate flow stabilization parameter.

- ☞ The flow stabilization parameter defines the duration of time after a station is first activated, when flow monitoring is started.

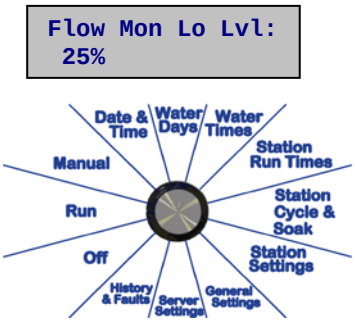
8.4 Flow Break Level



Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Flow Break Lvl** is displayed. Use the **More** or **Less** buttons to set the appropriate flow break level, or disable the feature.

- ☞ When set, the controller monitors the flow rate during irrigation. If the flow rate exceeds the flow break level, the controller stops all irrigation activities and sets the **BRK** flag.
- ☞ Subsequently scheduled programs will execute by the controller as scheduled. These subsequent irrigations will be subject to flow break monitoring and may be interrupted if the high flow condition persists.
- ☞ See Section 4.7 for checking and clearing faults.

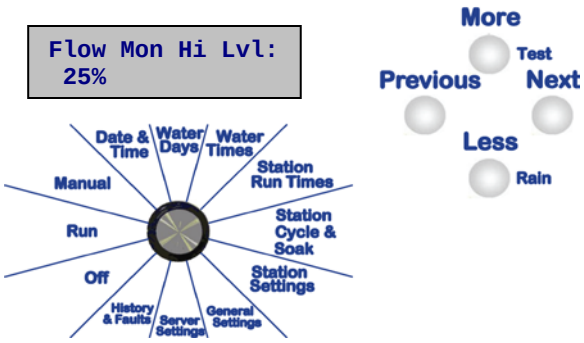
8.5 Station Low Flow Monitoring



Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Flow Mon Lo Lvl** is displayed. Use the **More** or **Less** buttons to set the appropriate station low flow monitoring percentage.

- ☞ When set, the controller compares the actual flow rate of the active station against the station's set flow rate. If the actual flow rate is lower than the set flow rate by the low flow percentage, the controller sets the **LFL** flag.
- ☞ See Section 4.7 for checking/clearing faults and Section 9.1 for viewing recorded flow rates.
- ☞ Settings this percentage too low can cause frequent false alarms, but irrigation activity is not suspended on a low flow fault.

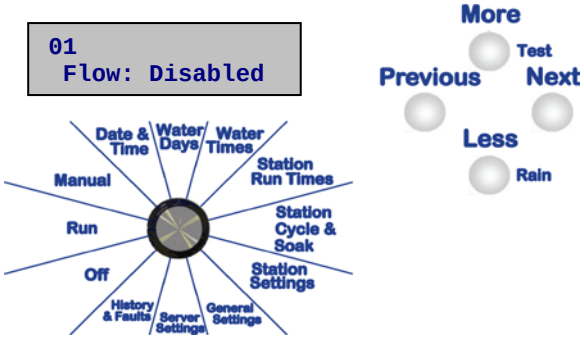
8.6 Station High Flow Monitoring



Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Flow Mon Hi Lvl** is displayed. Use the **More** or **Less** buttons to set the appropriate station high flow monitoring percentage.

- ☞ When set, the controller compares the actual flow rate of the active station against the station's set flow rate. If the actual flow rate is higher than the set flow rate by the high flow percentage, the controller disables the active station, sets the **HFL** flag, and skips to the next station.
- ☞ See Section 4.7 for checking/clearing faults and Section 9.1 for viewing recorded flow rates.
- ☞ Settings this percentage too low can cause frequent false alarms.

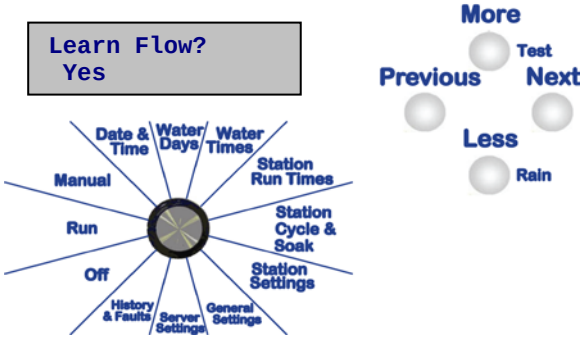
8.7 Station Flow Rates



Turn the dial to the **Station Settings** position. Then, continuously press the **Next** button until station set flow rate is displayed on the second row.

- ☞ Use the **More** or **Less** buttons to set the station's flow rate.
- ☞ Set a station's flow rate to **Disabled** to disable high flow and low flow monitoring on that station. To set **Disable**, decrement the station's flow rate to 00.0 GPM.
- ☞ Set a station's flow rate to **Learn** to force that station's flow rate to be learned during the next irrigation cycle. To set **Learn**, decrement the station's flow rate one past **Disabled**.

8.8 Learn Flow



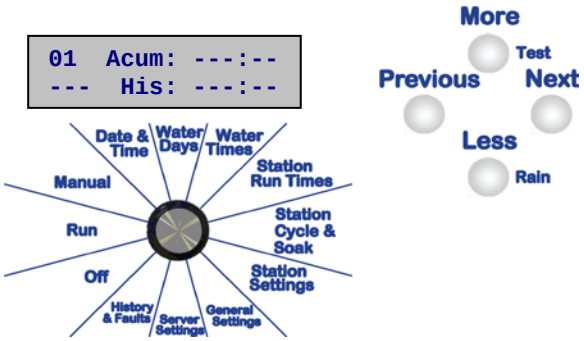
Turn the dial to the **General Settings** position. Then, continuously press the **Next** button until **Learn Flow?** is displayed. Use the **More** or **Less** buttons to activate this feature. If activated, the display will show **Yes**. Turn the dial to Run position. The controller, on its next irrigation cycle, will learn the flow of all stations.

- ☞ You may follow up with a Two Minute Test of all stations, to expedite the learning process.
- ☞ Once completed, each station's set flow rate will be recorded based on measure flow rate.
- ☞ See Section 8.7 for manually setting station flow rates or viewing learned values.

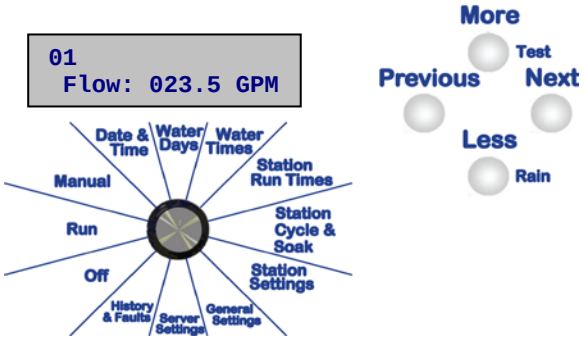
9 History & Faults

9.1 Basic History

Turn the dial to the **History & Faults** position to view station faults, historical run times, and flow rates.

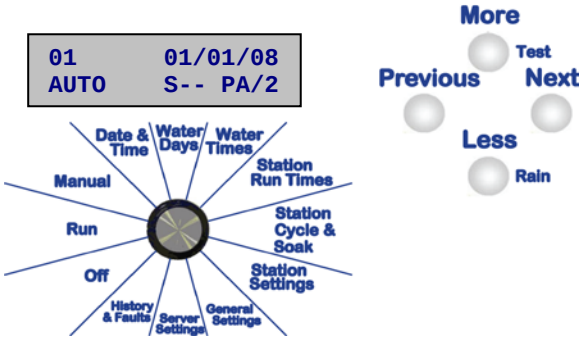


- ☞ Use the **More** or **Less** buttons to change the current station being displayed.
- ☞ The value next to **His** shows the total actual irrigation time, in minutes and seconds. This number gets cleared at midnight.
- ☞ The value next to **Acum** shows the accumulated irrigation time, in minutes and seconds. This field is applicable only if the **Accumulation** feature is enabled.
- ☞ The three dashes (---) may be set to one of 'L' (low flow), 'H' (high flow), or 'C' (over current), if those faults have actually occurred.
- ☞ Press the **Next** button until the station flow rate is displayed. Continue to press Next to return to the previous station. The flow displayed here is the measured flow rate at the time of the most recent irrigation activity.



9.2 Extended History

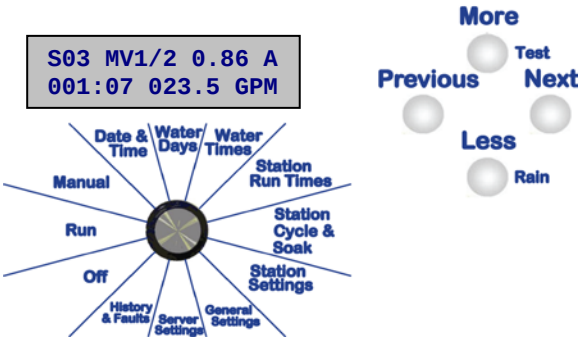
Turn the dial to the **Off** position, then, press the **Previous** button. The display will show a record such as the one shown to the right. To exit, press **Next**.



- ☞ Press **More** or **Less** buttons to cycle through the irrigation records in sequential order. The controller will record 85 of your recent irrigation activities. A record is one of: **2MINTST**, **REMOTE**, **SINGSTN** (manual single station run), **ALLSTN** (manual all station run), **SINGPRG** (manual single program run), **ALLPRG** (manual all programs run), **AUTO** (automatic scheduled run).
- ☞ The display will also provide additional info, such as the date of the record, and the program letter (**A** through **E**), start time number (1 through 4), or station number (1 through 48).

10 Irrigation Activity Monitor

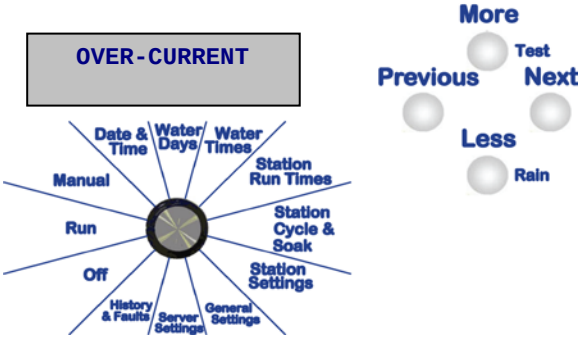
When an irrigation cycle is started (using a remote control device, scheduled activation, or manual run), the display will switch to the screen shown to the right.



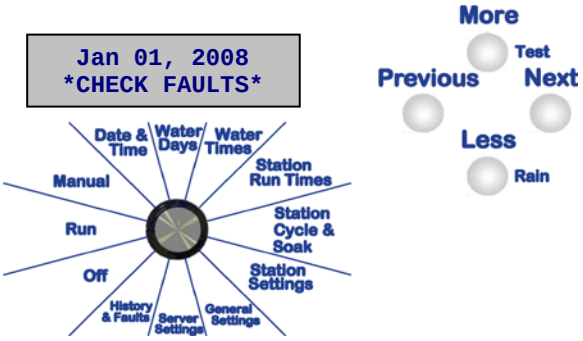
- On the display, you'll see the station that's currently active.
- The master valves that are active 1, 2, or both.
- The electrical current draw, in Amperes, of all active valves (including master valves).
- The amount of remaining time on the second row.
- The flow rate in gallons per minute (GPM).
- The current draw of a single good valve solenoid should be around 0.25 A. A number substantially less than this can indicate an open circuit. A number substantially above this can indicate an aging solenoid. Keep in mind that the displayed current is that of all active solenoids. For diagnostic purposes, you should ensure that a single solenoid is active prior to checking for electrical faults.

10.1 Electrical Over-Current Fault

When an irrigation cycles is in progress, an electrical fault will cause the controller to disable the current station.



- The display will show a message indicating that a fault just occurred. This message will remain on the display for a few seconds. The controller will then skip to the next station.

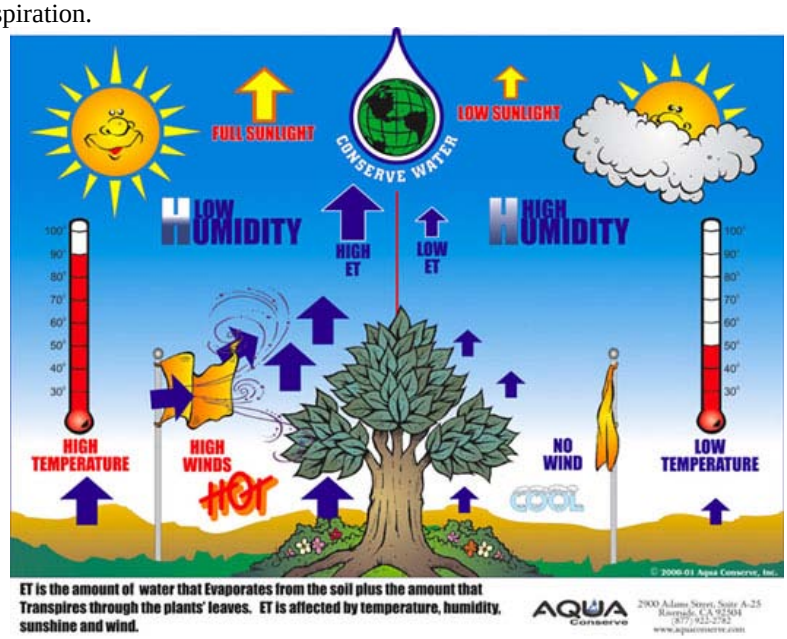


- Once the irrigation cycle completes and the controller returns to the main run display, a flashing message will indicate that a fault had occurred.
- Refer to Section 4.7 for details on checking and clearing faults. Refer to Section 9 for details on checking individual station fault history.

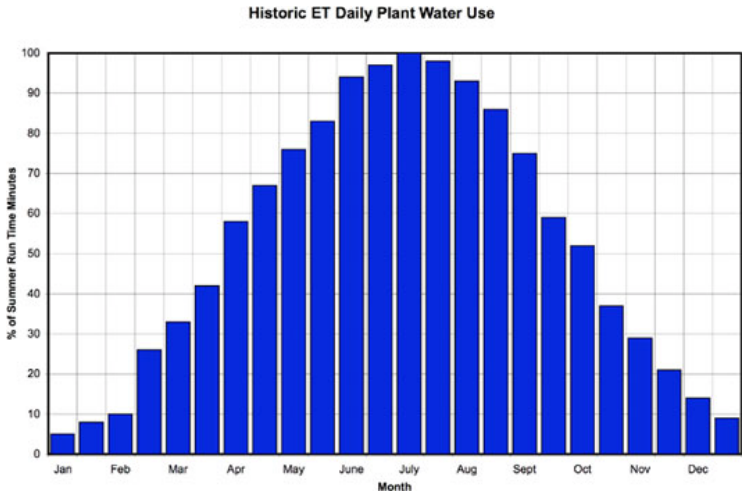
11 Smart Operation

11.1 Evapotranspiration (ET)

Your controller uses daily Evapotranspiration (ET) to make its adjustments to the run times. Evapotranspiration (ET) is the amount of moisture that evaporates from the soil and transpires from plants. Plant transpiration is the movement of moisture from the plant to the air through the tiny pores in the plant leaves. The ET value is the amount of water required to keep the plant healthy for that day. This water replaces the amounts lost due to evaporation and transpiration.



ET is affected by temperature, humidity, wind, and sunlight. The following chart displays the typical ET values over a 12-month period and is expressed as percent of summer run-time minutes.



Using the above chart as a guide, if you had entered 10 minutes as your summer run-time and it is the first week of February the controller will run for 1 minute. (10 minutes times 10%).

All of the controller calculations are based on the summer run-times you programmed into the controller. The controller assumes that the run-times are for the summer months and uses that information to calculate the actual daily run-times.

12 Technical Information

12.1 Troubleshooting Guide

Problem	Cause	Solution
Display is blank.	No AC Power.	Check supply circuit breaker. Check transformer. Check wiring.
Display is frozen, buttons and dial do not respond.	Power spike.	Turn power off and on to the controller.
Did not irrigate	Accumulation is on. Skipping Days. Controller is off. Rain Delay is set.	Normal operation, nothing is wrong. Normal operation when accumulation is on. Turn dial from to **Run** position. If display shows **RAIN**, controller will not irrigate. See Section 4.5.
Irrigated less then entered minutes.	Normal Operation.	The controller will only run the entered minutes during the warm summer days.
I turn the controller off, but the water does not turn off.	Valve problem.	Check irrigation valves.
The controller is running, but water does not turn on.	Valve problem, irrigation system, or electrical faults.	Check that water source is on. Check master valve. Check that valve is not manually turned off. Check electrical wirings.
Watering starts at wrong time.	Multiple programs running at the same time. Controller clock is wrong.	When Program Overlap (Section 7.5) is off, the controller will delay other active programs until the present cycle is completed. Check and adjust controller clock (Section 3.1).

12.2 Technical Specification

- Main Power: 110 VAC, 50/60 Hz.
- Maximum Load: 24 VAC, 50/60 Hz @ 1.6 A (4 typical valve solenoids).
- Maximum Load per Station: 24 VAC, 50/60 Hz @ 0.5 A (2 typical valve solenoids).
- Operating Temperature: 20°F – 140°F.
- User Settings: stored internally to flash (maintained during extended power failures).
- Third-Party Rain Sensor: compatible with common normally-closed rain sensors.
- Rain/Temperature Sensor: compatible with Aqua Conserve Wired/Wireless RTS units.
- Flow Meter: compatible with Two- or Three-terminal flow meters.
- Communication: compatible with Aqua Conserve Communications Package.
- Master Valve: two fully programmable outputs.
- Alarm: one dedicated alarm output (energized when a flow or electrical fault is set).

12.3 Warranty Information

All Aqua Conserve products are warranted for a period of three years from the date of first purchase. If a defect is discovered during the warranty period, Aqua Conserve will repair or replace, at its option, the product or the defective part.

This warranty does not extend to repairs or replacements required as a result of an act of God, misuse, negligence, modification, or improper installation/maintenance of the product. This commitment to repair or replace is our sole and total warranty. We will not, under any circumstances, be liable for incidental or consequential damages, no matter how they occur.

To initiate a warranty claim, first note the serial number of the product then call our Customer Service department at 951-352-3891.

Notes