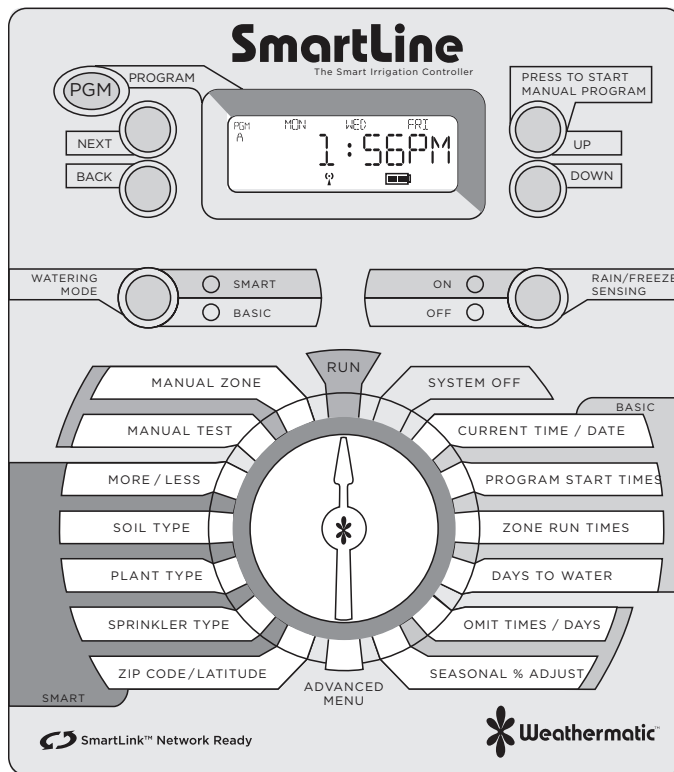


SmartLine

The Smart Irrigation Controller

Controller Models
SL800, SL1600, SL1620,
SL1624, SL4800

Owner's Manual



Introduction

Congratulations! Your SmartLine® irrigation controller is designed to maintain the health and quality of your landscape while conserving water to minimize your operation costs. The SmartLine® controller can perform BASIC timed watering schedules or, with the addition of the optional SLW Series On-Site Weather Station, the controller's Smart mode will analyze "on site" weather data to automatically set optimum watering times for each zone, based on Weathermatic's patented methodology. Smart mode will also save water by automatically setting run and soak cycles to minimize runoff.

ATTENTION INSTALLER:

PLEASE READ BEFORE INSTALLING AND SAVE THIS MANUAL FOR SYSTEM OWNER. INSTALLATION INSTRUCTIONS FOR EACH MODEL IS INCLUDED SEPARATELY.

This controller is not intended for use by young children or the infirm without supervision. Young children should be supervised to insure they do not play with this appliance.

If the supply cord is damaged it must be replaced by the manufacturer, an authorized service agent or a similarly qualified person in order to avoid a hazard.

U.S. Patent No. 6,314,340

TRADEMARKS:

Weathermatic®

SmartLine®

Smart Solutions for the Professional®

Help Desk

Online: support.weathermatic.com

Email: support@weathermatic.com

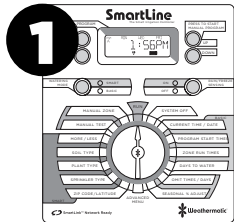
Telephone: 888-484-3776



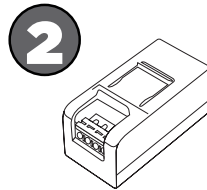
Scan with smartphone to
go to web-based help.

Build Your SmartLink Network

You can now expand your SmartLine controller to maximize water savings, improve efficiency and improve landscape beauty. After ensuring you have the modules to accommodate all your zones, add an on-site weather station that takes into account rain and freeze, but also adjusts for temperature and other conditions that impact the need for supplemental watering. Adding the SmartLink aircard gives you reliable cellular connectivity and access to the SmartLink web application so you can program your controller and manage it from your computer, tablet or smartphone. This capability also includes water use reporting so you get real-time visibility to the dramatic water savings from Smart irrigation and email alerts for indications of any issues that will impact water savings and landscape beauty.



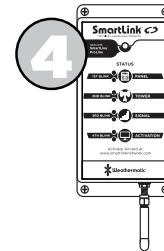
Choose the SmartLine or ProLine controller that fits your project.



Select the Station Expansion Modules to increase station count.



Choose the appropriate Weather Station or Rain Sensor for your controller.

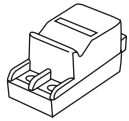


Connect the SmartLink Aircard to your controller for web-based access.

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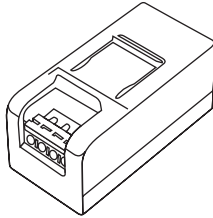
1.0 SmartLine Accessories

1



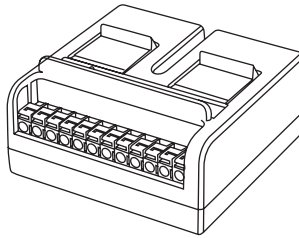
SLM2

2-Zone Module for
SL800 only



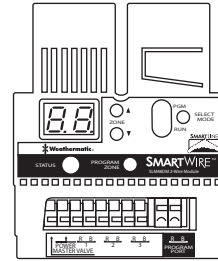
SLM4

4-Zone Module for
SL1600 only



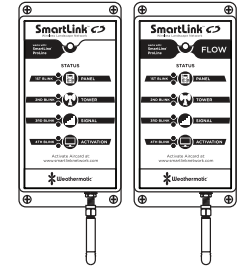
SLM12

12-Zone Module
for SL4800 only



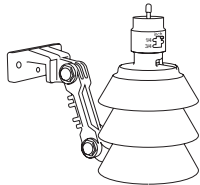
SLM16DM, SLM24DM, SLM48DM

SmartWire Decoder
Modules for SL1600 only



SL-AIRCARD, SL-AIRCARDFLOW

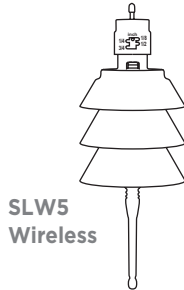
Web-based control from
PC, tablet, smartphone.
Flow management option



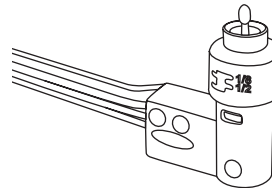
SLW1 Wired

SLW Series On-Site Weather Stations

SmartLine® weather stations with rain
and freeze sensing



SLW5 Wireless



420GLS

Rain Sensor for All
SmartLine® Models



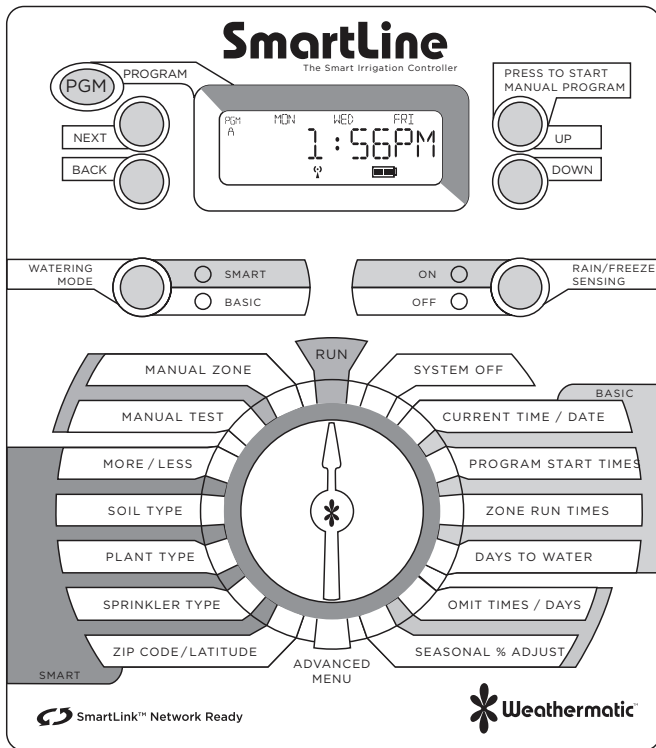
RFS5

Wireless rain/
freeze sensor

SmartLine® accessories available through your professional Weathermatic installer. For the Weathermatic distributor directory, go to www.weathermatic.com.

2.0 Getting Acquainted With Your SmartLine® Controller

Congratulations! SmartLine is the smart choice for water conservation and beautiful landscape. The “get acquainted” information in 2.0 will make programming your unit easier and faster.



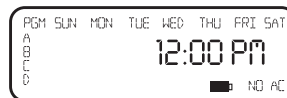
2.1 Getting Acquainted With Your SmartLine® Control Panel

The SmartLine® Controller LCD Display provides the following information when the controller is set to RUN, SYSTEM OFF, or when there is no active watering operation underway (display with program in IDLE mode):

Time of Day

Battery Strength: SmartLine® Controllers use a Real Time Clock/Calendar instead of a backup battery to maintain

correct time during a power outage. For the SL1600 and SL4800, the display will show a blank battery icon in the display until/unless a battery is installed in the controller. Battery usage is only necessary for programming when the control panel is open or removed.



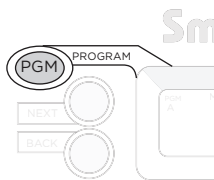
Next Watering Day or Days: The display will show the watering days in the current week for Program A. To view watering days for Program B, C or D just press the PGM button.

Fault Indicator: Appears ONLY when a fault is detected. Turn dial to Advanced Menu and press NEXT button to view faults. Once you turn the dial to Advanced Menu the fault indicator will stop flashing but will continue to appear on the screen until the fault is removed or user clears fault in Advanced Menu. If fault is cleared in Advanced Menu, it will appear again the next time the program runs if the problem is not corrected.

No AC: Appears when there is no AC supply to the controller. The NO AC icon will appear when the panel is open or removed from the housing if you have a 9V battery in the housing. The battery operates the panel for programming but cannot operate the valves.

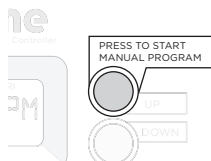
2.0 Getting acquainted with your SmartLine® Controller

PGM Button: The SmartLine® controller has 4 watering programs (A, B, C, and D). This is like having 4 controllers in one. You can assign zones to any program you like or more than one program except that zones assigned to Program D cannot be given a run time in A, B, or C. Program D will operate concurrently with A, B, or C. Display will alternately show both programs while the concurrent schedule is running. Program D is normally used for micro irrigation with low flow and long run times. Sprinkler zones should be assigned to A, B, or C.



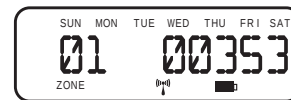
Programs A, B, and C will stack operations. This means that if your run time for Program A overlaps B or C, then B will not start until A is completed and so on. If you want exact start times for all programs, make sure your total run time for each program can complete before the next program run is scheduled to start.

START MANUAL PROGRAM Button: Press to initiate a watering operation when the programming dial is set to the RUN position. The SmartLine® controller will run Program A. Or, you can push the PGM button before you push the START MANUAL PROGRAM button to select the program you want to run. You can use the NEXT button to advance to other zones in a program that you have started. Start Manual Program will override any omits or delays.



Special Feature: You can also use the START MANUAL PROGRAM button to start a continuous run operation. If you press and hold the START MANUAL PROGRAM button for 15 seconds, the selected program will operate in a continuous loop. In other words, it will keep running the program continuously until the dial is switched to SYSTEM OFF.

Display With Program Running: When a program is running, the screen will display: program that is operating; zone number that is operating; and run time remaining. An ORANGE LED indicates program is in PAUSE mode waiting for a programmed delay in the controller to expire (run/soak, master valve delay, zone to zone delay, omit time). The display will show the reason for the pause.



Display With Dial In SYSTEM OFF Position: When the SmartLine® controller dial is in the SYSTEM OFF position, the processor and clock continue to operate and all program values are retained in the non-volatile memory. In the SYSTEM OFF position no automatic watering will occur. The

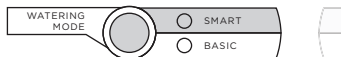


Note: No watering will take place when the RAIN/FREEZE SENSING LED is RED. This indicates a Rain, Freeze or other type sensor has tripped, and programs are prevented from running. An ORANGE MODE LED means watering is paused temporarily due to: run/soak, master valve delay, zone to zone delay, or omit time. A program in operation will also pause if you turn the dial to any position other than RUN or SYSTEM OFF. The program in operation will resume when you return the dial to RUN or if there is no programming activity for 30 minutes.

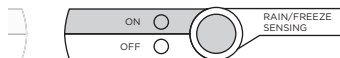
Mode Selection LED will display red when controller is turned to SYSTEM OFF.

If you move the dial to any position other than RUN or SYSTEM OFF, and there is no control panel activity for 30 minutes, the controller will return to the RUN mode, and the display screen will show the idle default screen or will return to a program in progress that was interrupted.

Watering Mode Button: Used to select SMART or BASIC watering. During normal operation the MODE LED will display GREEN. It will change to ORANGE during a pause in operation and will display RED when SmartLine® controller dial is turned to SYSTEM OFF.



Rain/Freeze Sensing Button: Used to activate or bypass optional sensors for rain, freeze, or wind. If these sensors are connected to your SmartLine® controller, they will override watering operations if the ON LED is selected. If your sensor/s have paused your system operation, the ON LED will be RED until the sensors allow watering to resume. In the event of a "rain" pause, the LED will change from RED to ORANGE for an additional pause time before the LED displays GREEN and system operation resumes. Smart Watering deficits will decrement to 0 at the rate of 1" per hour. The sensor LED will display GREEN



Note: The RAIN/FREEZE SENSING button can be used to bypass rain and freeze sensors.

again when the sensor/s are no longer pausing your system operation.

Note: The SLW Delay dryout period is factory set for 48 hours. To change the delay period, see SLW in Advanced Menu.

If you wish to deactivate the sensors, use the RAIN/FREEZE SENSING button to light the green OFF LED. Example: You wish to water after fertilizing and your rain sensor is still pausing the watering program. As long as the OFF LED is on, the sensors will not pause your system operation.

Note: You may have zones you want to omit from rain/freeze shutdown. Example: Potted plants under cover. If you are using an SLW weather station or the RFS5 rain/freeze sensor communicating with your controller through an SLHUB, see SLW in Advanced Menu for instructions. If you are using a rain/freeze sensor connected to your controller at the SEN terminals, see SENSOR in Advanced Menu for instructions.

3.0 Programming

Your SmartLine® controller has two operating modes: BASIC mode or Weathermatic's patented SMART mode. The BASIC mode uses user assigned zone run times. The SMART mode overrides user assigned zone run times and calculates zone run times based on the location of the site, inputs by zone, and weather readings from the SLW weather station. Note: SMART requires the optional SLW weather station.

Smart watering calculates ET (evapotranspiration), the landscape's daily water loss, and schedules the correct amount of irrigation to replace the loss. When combined with a Weathermatic SLW weather station, Smart mode gives you the power to reduce water waste. Many water districts are offering

3.0 Programming

rebates for Smart mode users. Check with your local district.

Both the BASIC mode and SMART mode use the user program start times, watering days, omit times/days, and several Advanced Menu (rain delay, zone to zone delay, and master valve settings).

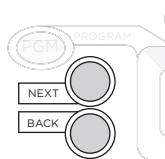
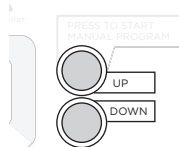
Important Note: Zone run times must be entered for every zone in use for the controller to recognize the zone in either BASIC or SMART modes.

3.1 Using the Programming Buttons

A **FLASHING DISPLAY** indicates that user choices are available. The **UP** and **DOWN** Adjust Value buttons are used to scroll through numeric values or to make a choice of menu options.

NEXT and BACK Buttons: When watering zones are being programmed, the left side of the display will indicate the zone number. The **NEXT** and **BACK** buttons are used to scroll through the zones. If the flashing display indicates a menu selection rather than a numeric value, the NEXT button will open the menu for further programming. The BACK button will exit the menu and cause the chosen value to be saved in memory.

RAPID ADVANCE: While programming, holding down the UP or DOWN button will cause the flashing display value to rapidly advance. Rapid advance can also be used with the NEXT and BACK buttons to rapidly advance through zones.



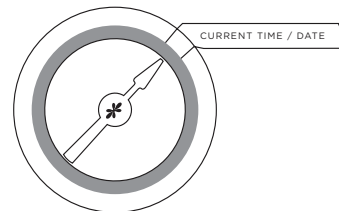
MENUS WITHIN MENUS: In cases where there are menus within menus, each press of the BACK button will return to the next higher menu until the top level menu of the dial position is reached.

A **VALUE CHANGE** will be entered in memory any time you (1) move to a different menu or (2) move the programming dial to a different position.

3.2 Current Time/Date

Use UP and DOWN buttons to change the flashing value for the hour. Scrolling past 12 will automatically change AM/PM. Remember holding down the UP or DOWN button will rapidly advance through the flashing menu.

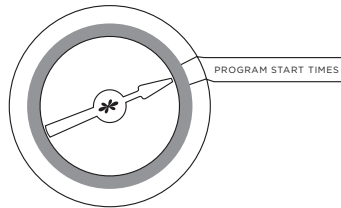
(Note: For international users, if controller is powered by 230VAC, 50 Hz AC, the display will read in international hours rather than AM/PM.)



Use NEXT button to flash minutes. Use UP and DOWN buttons to set minutes. Push NEXT to access calendar setting. Use UP and DOWN buttons to set month/day/year. (Note: For international users, the display will read day/month/year.) Your SmartLine® controller has a 100-year calendar, so when you have entered the correct date, the SmartLine® controller will automatically display the correct day of the week. Your SmartLine® controller will automatically adjust for leap years and USA daylight savings time. See DS TIME, in Advanced Menu to turn the feature on/off and change the DST schedule.

3.3 Program Start Times

Set Start Time for each program to be used (A, B, C and D). If more than three program start times are desired, refer to NUM STRT, in Advanced Menu. The program will start at the time you designate and will water all zones with set Zone Run Times for that program.



For most watering programs set only Start Time #1. The #1 Time will water all zones with Zone Run Times set in that program in consecutive order. Extra start times will re-run all zones. Extra start times may be used for new planting grow-in or other special local conditions. Unused start times must be set in the OFF position. To set a start time at OFF, press on either arrow button until you reach the OFF position located at midnight.

When setting program start times, check the program icon in the display to see whether you are working in A, B, C or D. Use PGM button to move between programs. Use NEXT and BACK buttons to move between start times. Use UP and DOWN buttons to set each start time desired. Start times are selectable in 10-minute increments.

Note: Be sure you select the AM/PM time as desired by scrolling past 12. (For international users, the display will show international hours instead of AM/PM.)

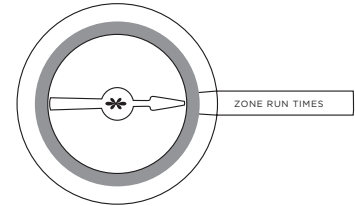
If a run time overlaps the next program start time, the SmartLine® controller will stack the start times within each program and between programs, beginning those operations

at the time the previous operation is completed, beginning with start time 1 in Program A. If a concurrent program in D is running at the same time as a program in A, B or C, the display will alternately show the icon for both programs in the display.

3.4 Zone Run Times

Your SmartLine® controller will display remaining hours, minutes and seconds when a zone is watering. However, in this position you are only required to set minutes (or hours and minutes) for each zone as desired for operation time. Seconds are not selectable.

Use NEXT and BACK buttons to select zone for run time setting. All zones are selectable from 1 minute to 9 hours and 55 minutes. Run times of OFF to 59 minutes are selectable in one minute increments. Run times of 1 hour to 9 hours 55 minutes are selectable in 5-minute increments. Use UP or DOWN buttons to set flashing time values for each zone. If a zone is not to be used, set it to OFF.



Note: Run/Soak feature can reduce the need to set multiple start times for the purpose of preventing runoff. Using the combination of multiple start times and Run/Soak cycles can lead to extended watering windows since Run/Soak cycles are applied to each start time. See Soil Type, Page 11.

3.0 Programming

Push PGM button to assign zone time in one or more programs. Note: Program D is for concurrent operation for micro irrigation zones. Zones assigned to Program D cannot be assigned to Program A, B, or C. Display will say USED if attempt is made to enter time in A, B, or C for a zone already assigned run time in D.

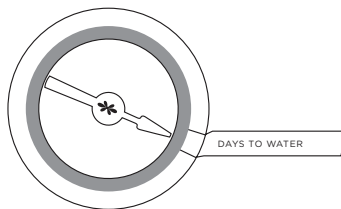


Note: If display shows "0 ZONES," this indicates no SLM4 modules are currently installed or have ever been installed under AC power with the control panel firmly closed.

Caution: If an unused zone is turned on and activates a pump start relay, the pump may overheat or cause a pipe to burst. To prevent operating a pump with no flow (dead heading), make sure all unused zones are set to OFF.

3.5 Days to Water

In this dial position you can select a DAYS, INTERVAL, or ODD/EVEN schedule. Use UP and DOWN buttons to select which type of schedule you want in your SmartLine® controller. Remember to check the Program (PGM) selection showing in the display. You can select a different watering schedule for each program if you wish.



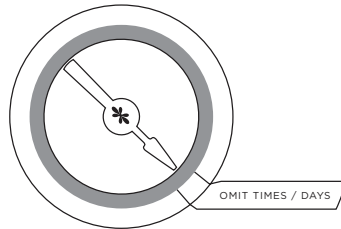
If you select DAYS, then use the NEXT button to step through each day of the week and the UP and DOWN buttons to select ON or OFF status for each day. Days selected to water will be displayed at the top of the display.

If you select an INTERVAL schedule, push NEXT button. The flashing number indicates the day interval for watering. SmartLine® controller will allow an interval of 1 (every day) to 30 (water once every 30 days). After you have selected the interval you want, push NEXT to set the day you want the interval schedule to start on. Use UP and DOWN buttons to select start day at top of display.

If you select ODD/EVEN day scheduling, push NEXT button and then use UP and DOWN buttons to select watering on ODD or EVEN days. If ODD is flashing on the display when you turn the dial to another position, you have selected ODD. The same is true for EVEN. When you return the dial to RUN, you can view the next day that your schedule will run. The SmartLine® Controller will run ODD or EVEN programming at the next available start time, even if it is on the same day that you set up the schedule. If you are using an ODD schedule, the SmartLine® controller will not water on the 31st day of a month and February 29th of a leap year to prevent two consecutive watering days (31st and 1st or 29th and 1st).

3.6 Omit Times/Days/Dates (Optional)

The omit settings are used to set a watering blackout period. For example, if you live in a municipality that restricts outdoor watering between 10:00 am and 6:00 pm, you can blackout that time period. If a watering program in progress is paused for a blackout period, the ORANGE LED will display during the pause. The watering cycle will automatically resume at the end of the blackout period. Use the UP and DOWN buttons to select OMIT:TIME, OMIT:DAYS, and OMIT:DATES. You may choose any or all of these omit options.



If you want a watering blackout for the same period each day, select OMIT:TIME. Then push NEXT. A forward (>) arrow indicates the beginning time for the blackout. Use UP and DOWN buttons to set beginning time. Then push NEXT. A reverse arrow (<) indicates the end time for the blackout. Use UP and DOWN buttons to set ending time. The OMIT:TIME function will pause any active watering program until the blackout period has expired. Scrolling the beginning time (forward arrow) between 12:00 am and 11:50 pm causes NONE SET to appear and clears the omit time.

If you want to omit a specific day or days each week from watering schedules, select OMIT:DAYS with the UP and DOWN buttons. Then push NEXT. Display will show a day of the week with Omit or Allow flashing. Use UP and DOWN buttons to select Omit or Allow. Use NEXT or BACK to scroll between days of the week. Omitted days will be visible at the top of the

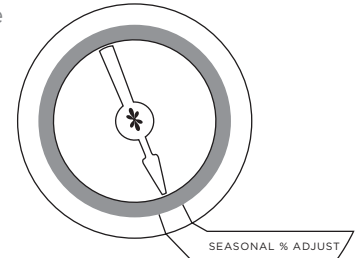
display. Any running user program will be stopped at midnight in order to honor omit days or dates. Programs scheduled to start on an omit day will be skipped.

If you want to omit specific dates during the year, select OMIT:DATES. Then push NEXT. Enter the month and date. Push NEXT to enter up to 15 dates. Scrolling the month value between 12 and 1 causes mm/dd to appear and clears the omitted date/s. Any running user program will be stopped at midnight in order to honor omit days or dates.

3.7 Seasonal % Adjust (Optional)

The Seasonal % Adjust feature allows the user to modify zone run times by program for each month to easily adjust watering for seasonal climate changes. The time programmed for each zone in ZONE RUN TIMES is always the value for the 100% setting in Seasonal % Adjust. When you use the Seasonal % Adjust, you are increasing or decreasing the 100% time value.

% settings in this mode are 0 to 300% in 5% increments. Use UP and DOWN buttons to select % desired. Press PGM to choose program.



PROGRAMMING IS COMPLETE. RETURN THE DIAL TO THE RUN POSITION.



Note: When the SmartLine® controller is in SMART mode this feature is voided. SMART mode will change zone watering times daily.

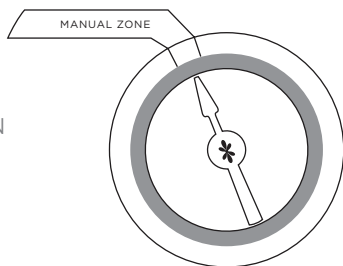
4.0 Manual Start Functions

4.0 Manual Start Functions

The SmartLine® controller has two dial positions for manual system starts:

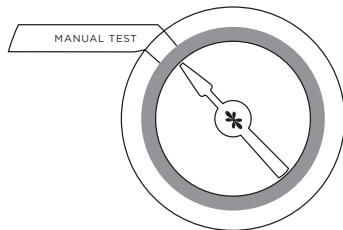
4.1 Manual Zone

Manual Zone allows user to water a single zone for specified period of time. Use NEXT and BACK buttons to select zone. Use UP and DOWN to select run time for the zone. A zone can be operated with the Manual Zone function regardless of whether the zone has an assigned run time. You must return dial to RUN for Manual Zone operation to begin. All manual watering operations will override watering day settings, omit settings, and rain/freeze events.



4.2 Manual Test

The Manual Test can be used to set a test run time for all zones which have an assigned zone run time in any program. Any zone without an assigned zone run time will NOT run in the Manual Test. Use UP and DOWN buttons to set Manual Test run time. The Manual Test can be set to run a minimum of 10 seconds or a maximum of 10 minutes. You must return dial to RUN for Manual Test operation to begin.



Manual Test will detect open circuits (less than 30 mA draw) on any used zone or a short on any output (master valve or zone). If the display indicates FAULT while running a Manual Test, refer to Advanced Menu to identify the FAULT.

5.0 Programming for Smart Watering Mode

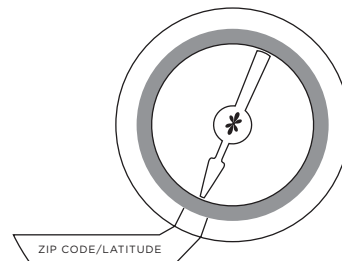
Weathermatic's patented SMART mode overrides user assigned zone run times and calculates zone run times based on the location of the site, inputs by zone, and weather readings from the SLW Series On-Site Weather Station. SMART mode is designed to help you protect your landscaping, reduce wasteful run off, and minimize your water costs.



Warning: Smart mode positions on the dial can only be selected when an optional SLW Series On-Site Weather Station accessory is installed. Additionally, Basic Program Function must be set up completely before setting up SMART mode. SMART Mode replaces the Zone Run Times with a calculated value using the SMART settings.

5.1 Set ZIP Code or Latitude

SMART operation first requires that the SmartLine® Controller know "where in the world" it is located. Users in the USA can set location by ZIP Code. Users outside of the USA can set location by latitude. Use UP and DOWN buttons to



select ZIP Code (USA) or LATITUDE. To find your latitude, see chart of World Latitudes on page 28.

If you are setting a ZIP Code, push NEXT. Display will show 5 numerical positions for ZIP Code settings. Use UP and DOWN buttons to set the flashing number. Then push NEXT to flash the next number. Use UP and DOWN buttons to set second number. Continue process until all 5 numbers of your ZIP Code are set.

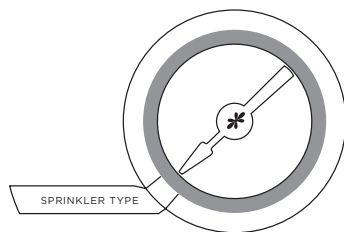
If you are outside the USA, you will enter LATITUDE. You can use the UP and DOWN buttons to choose any latitude between 60 degrees south and 60 degrees north. 0 degrees setting is marked as EQUATOR.

5.2 Enter Smart Data for Zones

Enter SMART data for zones: Sprinkler Type, Plant Type, Soil Type, and MORE/LESS. The SmartLine® controller cannot calculate run times without SMART data for each zone and without Zone Run Times assigned to each operational zone, which serve to back up SMART mode.

5.2.1 Sprinkler Type:

In order to calculate run time, the controller must know the expected precipitation rate for each zone. Use NEXT and BACK buttons to move between zones. Use UP and DOWN buttons to set zone to OFF or to specify the precipitation rate.



Precipitation rate can be entered two ways: by sprinkler type or by specific precipitation rate. If you do not know the specific precipitation rate for the zone, you can select the

SPRINKLER TYPE	DEFAULT PRECIPITATION RATE
SPRAY	1.5 inch per hour
ROTOR	0.5 inch per hour
DRIP	1.1 inches per hour
BUBBLER	2.3 inches per hour

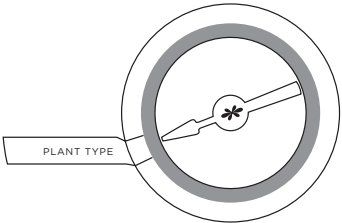
sprinkler type, or watering equipment used on that zone: Spray, Rotor, Drip, or Bubbler irrigation. The SmartLine® controller will apply a default precipitation rate for the sprinkler type selected. If you know the specific precipitation rate expected for the zone, as stated by the sprinkler manufacturer, you can use the UP and DOWN buttons to scroll past the sprinkler types and select that number. For USA users, inches per hour will be displayed (.2 to 3.0 inches per hour). Numeric precip rate resolution is 0.01 in/hr below the 2.0 in/hr setting. For international users, the controller will display precipitation numbers in centimeters per hour. As a rule in SMART mode, the lower the precipitation rate entered, the longer the zone run time will be to achieve required plant life needs. For zones selected to use set Zone Run Times rather than SMART run times, select STD setting st Sprinkler Type. Program features and operations are supported with STD zones, including Run/Soak, and STD zones may run within SMART programs or separately.

5.0 Programming for Smart Watering Mode

5.2.2 Plant Type for Zones

This position is used to specify the type of plant material to be watered by each zone as an important component of determining the watering needs for each zone. Use the UP and DOWN buttons to select plant type or percent for each zone.

Press NEXT and BACK buttons to access each zone. Plant type selections are: CTurf (cool turf like bluegrass); WTurf (warm turf like St. Augustine); Shrubs; Annuals (floral beds); Trees; and Native plants. The SmartLine® controller formula uses cool turf mowed at 4 to 6 inches tall as the base watering number (100%) or crop factor. The cool turf default is 80% considering average mowing heights of 2 to 3 inches, which result in less transpiration and lower water requirements. If you prefer more specific input, you can scroll past the plant types and use % designations of 10 to 300%. For example, a Native plant zone might be assigned 30% rather the default of 25%. As a rule in SMART mode, the higher the plant type percentage entered, the longer the zone run time will be to achieve required plant life needs.

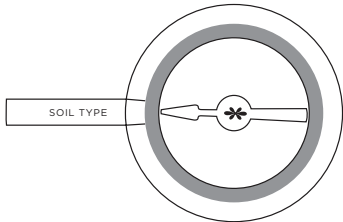


PLANT TYPE	DEFAULT %
CTURF	80%
WTURF	60%
SHRUBS	60%
ANNUALS	100%
TREES	80%
NATIVE	25%

For maximum water savings, it is recommended that your sprinkler system be zoned with a separate valve for each type of plant material. If you have mixed types of plants in a single zone, you will need to select which type of plant to use in the determination of water requirements.

5.2.3 Soil Type for Zones

Soil settings for soil type and degree of slope are used to enable your SmartLine® controller to automatically calculate the maximum length of a zone run time before pausing watering for a calculated period to allow the water to soak into the soil. These Run/Soak (also called Cycle/Soak) periods based on industry BASIC formulas reduce wasteful runoff caused by watering more than the soil can absorb. The Run/Soak feature included in Advanced Menu can be manually entered for use with the BASIC mode. However, in the SMART mode, the SmartLine® controller will automatically calculate Run/Soak times with soil inputs made at the soil type position on the dial. Run/Soak settings



Note: Factory default settings are clay soil and zero slope.

SLOPE/ GRADE	DEGREE OF SLOPE
SLIGHT	1-5
MILD	6-10
MODERATE	11-15
STEEP	16-20
EXTREME	21-25

made in Advanced Menu are not active when controller is in SMART mode. Smart calculated run/soak schedules can be viewed by selecting Advanced Menu, Review and Run/Soak.

Use the UP and DOWN buttons to select Clay, Loam or Sand soil type for each zone. After you have selected a soil type for a zone, push NEXT button. You can now use the UP and DOWN buttons to select degrees of slope (elevation change) for each zone. Set each zone for 0 to 25 degrees of slope based on the chart provided. Push NEXT again after making the slope entry to advance to the next zone.

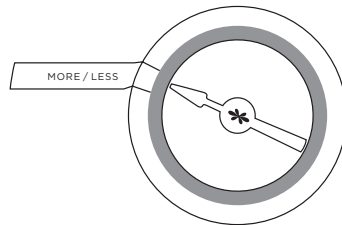
Use NEXT and BACK buttons to move between zones.

5.2.4 More/Less (optional)

When your SmartLine® controller is set in SMART mode, the Seasonal % Adjust in the BASIC mode is inactivated since the automatic adjustments are made daily rather than monthly. You can use MORE/LESS to fine tune the run time calculation by zone in the SmartLine® controller by -50 to +25%.



Note: Run/Soak period can reduce the need to set multiple start times for purpose of preventing runoff. Using the combination of multiple start times and Run/Soak cycles can lead to extended watering windows since Run/Soak cycles are applied to each start time.



Use UP and DOWN buttons to select % adjustment. Use NEXT and BACK buttons to move between zones.

This feature can be useful to reduce run time adjustments for shady and partially shaded zones. The table provided may be used for general shade guidelines.

Other factors may result in needing to use MORE/LESS for fine tune adjustments including sprinkler

efficiency, zone efficiency, and wind. Sprinkler efficiency varies between types of sprinklers and the manufacturer's design. Zone efficiency varies based on the design layout of sprinklers in a zone, sometimes overlapping or sometimes not. High winds can serve to dry out plant and soil to increase the need for water. For optimum results considering the many unique variables in each zone, users should periodically monitor plant life health and water usage, especially after initial controller setup, so proper adjustments can be made.

THIS COMPLETES PROGRAMMING FOR SMART WATERING. RETURN THE DIAL TO THE RUN POSITION.

SHADE LEVEL	MORE/LESS %
TOTAL SHADE	-50%
FILTERED SHADE	-20%
MORNING SHADE	-10%
AFTERNOON SHADE	-30%

5.0 Programming for Smart Watering Mode

5.2.5 Activating the SLW Series On-Site Weather Station:

Verify the time and date are set and the ZIP Code or Latitude is set on the SmartLine® Controller before proceeding with SLW weather station activation.

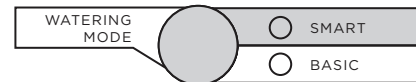
On the SLW weather station, press and hold down the Rain Sense test tab in the center of the rain sensor for 5 seconds.



On the SmartLine® controller, verify that the antenna icon appears on the bottom line of the LED display. (Note: The icon will flash for 5 minutes at the time of a communication. The icon will be static between communication events.) The antenna indicates communication has been established. The SLW weather station provides rain and freeze pause functions to prevent watering during periods of rain and freezing weather. The rain override will pause watering after a minimum of 1/8th inch of rainfall is received (the factory setting of 1/8th inch can be changed incrementally up to 3/4 inch by sliding the rain sensor into the desired position). The SLW weather station will also pause watering when the outside temperature drops to 37 degrees Fahrenheit (1.5 degrees Celsius). The Sensor LED will display RED during these rain or freeze periods. 24VAC power to the valves is reconnected when the temperature is again above 37 degrees F (1.5 degrees Celsius). However, after a rain event, the SmartLine® controller will continue to pause watering after the rain sensor has disengaged, in order to prevent over-watering.

5.2.6 MODE Button:

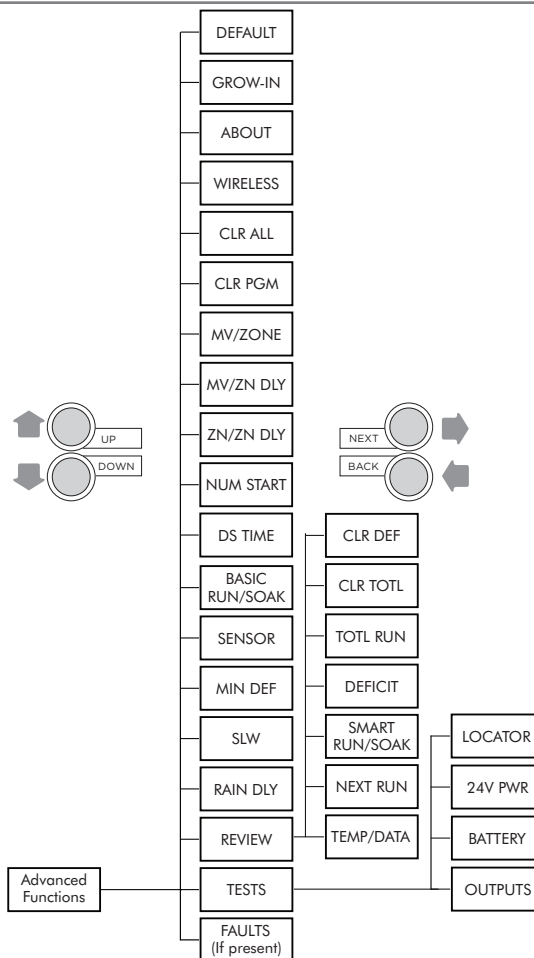
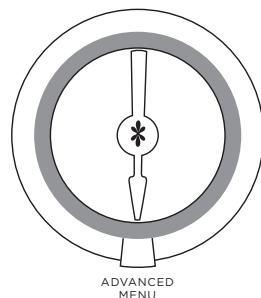
Press the MODE button on the control panel to place the SmartLine® controller in the SMART mode. A GREEN LED on the SMART position will confirm that you have communicated with the SLW weather station. If there is no SLW weather station installed or ZIP Code or Latitude or time/date setting and at least one zone with a sprinkler type set, pressing the MODE button will flash the SMART LED to RED and then return to the BASIC mode. When this occurs, you can press and hold the MODE button to see a scrolling message indicating the reason SMART mode is not available.



6.0 Advanced Menu

Advanced Menu provides additional information and allows more technical inputs commonly used by professional installers. Advanced Menu contains menus within menus. To advance to a sub-menu, press the NEXT button. Each press of the BACK button will return you to a higher level until the top level of the Advanced Menu dial position is reached.

Refer to the chart to the right for the location of features within the menus.



6.1 FAULT

This feature is used to identify problems that may require attention or repair to insure proper operation of the system. Use NEXT button to view the type of fault. If more than one fault exists, you can use the UP and DOWN buttons to search for additional faults. Use NEXT button one more time and it will flash KEEP. If you want to clear the fault, use the UP and it will flash CLEAR. If you turn the dial out of the Advanced Menu positions while CLEAR is flashing, the fault icon on the display will disappear. However, if the cause of the fault is not corrected, the controller will continue to skip watering a zone with a fault and will resume the flashing FAULT icon on the display each time that zone is operated.

SCROLLING FAULT MESSAGE	FAULT DESCRIPTION
ZONE XX SHORT	OUTPUT SHORT CIRCUIT: A load placed on any output that results in a current draw exceeding the skip current setting will result in a fault after the output is turned on. The output will be skipped until the next watering program attempts to use it. If the MV/P output is shorted, all zones using it will effectively be skipped. The fault indication can be manually cleared or will be automatically cleared if the short condition goes away and the output turns on successfully.

SCROLLING FAULT MESSAGE	FAULT DESCRIPTION
ZONE XX OPEN	OUTPUT OPEN CIRCUIT: If a zone has a current draw less than 30 mA a zone open fault is created, but operation continues normally. The fault can be manually cleared or will automatically clear if a load exceeding 30 mA is placed on the output and the output turns on successfully.
NO RECENT CONTACT WITH WEATHER STATION	COMMUNICATIONS FAILURE: If the SmartLine® controller is in SMART mode and the daily high/low temperature has not been received by midnight, this communication fault is set. Also, if the battery in the SLW weather station is dead, the communication fault is set. If 5 days pass without communication, the controller will revert to the BASIC mode Zone Run Times. The fault indication can be manually cleared or will clear automatically once communication is received.
REMOTE BATTERY FAILURE	If the SmartLine® controller receives communication from the SLW weather station that indicates the remote battery is low, the fault is set. The fault indication can be manually cleared or will clear automatically if the SLW weather station sends another message that indicates a good battery. The fault will also clear if no communication is received for a full day (i.e. communication failure). See Section 7.3 Replacing SLW Series Weather Station Battery.

SCROLLING FAULT MESSAGE	FAULT DESCRIPTION
ZONE XX INSUFFICIENT WATERING OPPORTUNITY	INSUFFICIENT WATERING OPPORTUNITY: If the SmartLine® controller is in SMART mode, and a daily deficit is calculated that results in a zone watering deficit in excess of the 1.5" maximum, the deficit is capped to the maximum and the fault is set. The fault will clear automatically if the deficit drops below 1.5 or can be cleared manually.

6.2 TESTS

Your SmartLine® controller can assist you with several diagnostic functions by pressing NEXT when TESTS appears.

6.2.1 Outputs

Use the UP to select OUTPUTS function. Then use NEXT and BACK buttons to scroll through MV and Zone Valves to view AC Amp reading for each valve. Scroll BACK to OUTPUTS display to move to next diagnostic function. Typical range is 150 to 350 mA per valve with a valve connected. An OPEN or SHORT message indicates a problem with a zone. Note: If you have more than one valve on a zone, the SmartLine® controller will measure total current for the combined valves.

6.2.2 Battery

To read SmartLine battery voltage, turn the dial to Advanced Menu. Push NEXT button to access Outputs, push the UP button to access Battery and then push NEXT button to read remaining voltage in the backup battery on the SL1600 Series or SL4800 controller. (Note: SL800 controller does not use a backup battery.) All SmartLine controllers use a Real Time Clock/Calendar instead of a backup battery to maintain correct time/date during a power outage. SmartLine non-volatile memory also maintains programming during power outages. Battery usage is only necessary for viewing the control panel when it is "open" or removed from the housing. The battery compartment is located in the back of the control panel.

6.2.3 24V Pwr

This function displays output voltage at the transformer. Normal reading is 24 to 30 volts AC.

6.2.4 Locator

This feature will create a "chatter" for a selected valve as a convenient method of locating buried valves. Use NEXT and BACK buttons to scroll to the valve you want to "chatter."



Note: If you are not utilizing a master valve, you must turn off the system water pressure at the manual cut-off valve or water meter for the locator feature to work. Pressure must be off while attempting to "chatter" a valve. The SmartLine® controller will automatically turn off MV output when a "chatter" test is initiated.

6.0 Advanced Menu

6.3 Review

Turn dial to Advanced Menu. Push NEXT button to access review functions. Use UP/DOWN buttons to select review functions you wish to view.

6.3.1 Temp Data

TEMPDATA provides the daily high/low temperature readings in Fahrenheit (Celsius for 230V applications) from the SLW weather station for the past 5 days. Press NEXT to view daily high and low readings for the prior day. Continue pressing NEXT to view up to 5 days of temperature history.

6.3.2 Next Run

NEXT RUN is the total amount of run time SMART has calculated for each zone based on ET deficits and SMART system audit information entered on the SMART side of the dial. NEXT RUN is calculated and revised each night at midnight 365 days per year. The cumulative run time will carry forward until the next scheduled watering cycle. NEXT RUN times will return to zero after each watering cycle. To review NEXT RUN, turn the dial to Advanced Menu. Use the UP arrow button to access Review and then use the NEXT and BACK buttons to scroll through the zones.

6.3.3 Smart Watering Run/Soak Review

This feature allows the user to review expected Run/Soak schedules that will occur when the controller is in the SMART mode. Turn the dial to Advanced Menu. Use the UP button to go to REVIEW and press the NEXT button. Use the UP button to advance to RUN/SOAK. Press the NEXT button and zone 01 will show in the display. Press NEXT again and RUN with a time will show. This is the maximum RUN time the controller can do in SMART before going to SOAK. Press NEXT again and SOAK will show in the display with a time. This is the minimum time the zone must soak before it is ready to run again. SMART Run/Soak times can be changed by adjusting the soil and slope settings at SOIL TYPE on the programming dial. The times are also affected by adjusting the SPRINKLER TYPE setting on the dial for precipitation rate.

6.3.4 Deficit

Deficit is the amount of water (displayed in inches) that needs to be replaced for your plant material due to water loss through evapotranspiration – evaporation from soil and transpiration from plants. Your SmartLine® controller will calculate the water deficit each day at 11:50 pm based on data communicated to it by the SLW series weather station. The water deficit will continue to accumulate until the next scheduled watering cycle and will return to a zero reading when watering is finished. The SmartLine controller uses an internationally recognized formula called the Hargreaves formula for calculating evapotranspiration.

During a rain event, deficits will decrease to zero. SmartLine will not begin calculating deficits and run times again until the ACTIVE LED goes back to green after the SLW DLY.

If you wish to reduce the deficit numbers, press and hold down either the UP or DOWN button for 5 seconds. This allows you to use the DOWN button to reduce the latest deficit for the zone to as low as 0 inches.

Deficit is only available for review when you are using SMART mode.

6.3.5 Totl Run

TOTL RUN is the total run time for each zone since the date shown (default date in the SmartLine® controller is January 1, 2000 shown as 01/01/00). You can review TOTL RUN for either the BASIC or SMART modes. After you select TOTL RUN with the UP button, use NEXT to view the date when TOTL RUN accumulation began. Use NEXT again to view the total run times for each zone.

You can use the NEXT and BACK buttons to move through the zones. After you go through all the zone positions, use the NEXT button one more time to take you back to the TOTL RUN screen.

6.3.6 Clr Totl

CLR TOTL is used to clear and reset the total run time for each zone shown in the TOTL RUN menu.

From the CLR TOTL menu, press NEXT and the display will show KEEP. If you want to clear the TOTL RUN time and reset the accumulation date, press either the UP or DOWN button to display CLEAR. With CLEAR showing in the display, either press NEXT or BACK or turn the dial to complete the clearing and resetting. This feature will stop accumulations on a zone after 255 hours of cumulative zone run time.

6.3.7 Clr Def

To clear deficits, press NEXT. Use UP or DOWN buttons to select KEEP or CLEAR. Press NEXT or BACK to exit CLEAR DEFICITS.

6.4 Rain Dly

The rain delay feature allows user to globally suspend watering operations for all programs for a selected number of days in either the BASIC or SMART watering modes.

Use UP or DOWN buttons to select 1 to 14 days for watering suspension. The watering blackout will automatically be cleared from the SmartLine® controller after the assigned days have expired and watering will resume at the next available start time. SMART watering deficits will reset at zero and will not resume accumulation until the delay has ended.

6.5 Slw

SLW incorporates 3 features:

DELAY: This feature allows the user to adjust the factory set 48 hour watering delay that will occur after a rain event shutdown if you are using an SLW Weather Station for SMART Watering. To eliminate the delay or to reduce or increase the factory default hours, turn the dial to Advanced Menu and use an arrow button to select SLW DLY. Press the NEXT button and 48 hours will show in the display. Use the UP and DOWN buttons to eliminate the delay or to select a different number of hours (0-99 hours). Note: The SLW DLY begins after the SLW rain sensor has reset following a rain event. Accumulation of new water deficits will not begin until after the SLW DLY has cleared.

6.0 Advanced Menu

RAIN: The rain selection is on/off toggle to override the SLW sensor feature for selected zones. Factory default is ON for all zones.

FREEZE: The freeze selection is on/off toggle to override the SLW freeze sensor feature for selected zones. Factory default is ON for all zones.

6.6 Min Def

This feature allows a Minimum Deficit to be set. The feature requires that a zone deficit be greater than the MIN DEF setting in order to run during a scheduled program. The setting is global for all zones in SMART. The range for the global setting is 0.00 to 0.50 inches. The factory default is 0.15 inches.

6.7 Sensor

Sensor is an ON/OFF toggle to override the SEN terminals rain/freeze functions on selected zones. Factory default is ON.

6.8 Set Manual Run/Soak

The purpose of Run/Soak is to break up long run times that often cause wasteful runoff. The Run/Soak is programmable for each program if you are using the BASIC watering mode. Note: If you are using SMART, these inputs are not used since the Run/Soak period is automatically calculated.

Use NEXT button to access RUN time allowed before the zone watering pauses for the specified soak time. Use PGM button to select program. Use UP and DOWN buttons to set RUN time from OFF to 30 minutes (SmartLine™ controller default is OFF).

Use NEXT button to access soak time required for water to infiltrate into soil before zone watering is continued. Use the UP and DOWN buttons to set soak time from 1 minute to 2 hours in one-minute increments.

6.9 Ds Time

Your SmartLine® controller can automatically adjust the time for daylight saving time (DST). The factory default setting is OFF and has been preset for the current USA schedule. To turn DST adjust ON, press the next button at DS TIME, the NEXT button at ON/OFF then select ON.

The DS Time feature can be customized to match any international DST schedule. Press the NEXT button at DS TIME in advanced functions. Select DS SETUP and press the NEXT button again. You will be prompted to enter the START schedule (time of day is moved ahead 1 hour per START schedule), and the STOP schedule (time of day is moved back 1 hour per STOP schedule). DST start and stop are formatted with the the Week (first, second, third, last), the Day (Sun-Sat) and the Month (Jan-Dec). All DS Time adjustments are made at 2 am. To return the DS Time schedule back to the USA factory default, use the US DEFLT option.

6.10 Num Start

This SmartLine® feature allows you to select the number of Watering Program Start Times that you want to appear at Program Start Times on the dial. The default number of start times shown is 3. To select 4 to 8 start times, go to Advanced Functions, NUM STRT. Press Next to view the default of 3 start times. Scroll the UP/DOWN buttons to select 4 to 8 start times to be visible on the dial. Return the dial to Run.

6.11 Zn:Zn Dly

This function allows user to set delay times between zone starts for use in systems with slow closing valves or pump systems that are operating near maximum flow or have slow well recovery. Use UP and DOWN buttons to change value. Adjustable in one-minute increments from 0 (the SmartLine® controller default setting) to 30 minutes; adjustable in 10 minute increments from 30 minutes to 3 hours.

6.12 Mv:Zn Dly

(Master Valve Advance Open and Delayed Close):

This function allows the user to set a delay time between the opening of the master valve and the opening of the first zone valve as well as a delay between the closing of the last zone valve and the closing of the master valve.

Use the NEXT button to enter menu. Select setting for the ON Delay or OFF Delay by pressing NEXT. Use UP and DOWN buttons to select delay time. Use arrow buttons to set ON Delay time from 0 seconds to 1 minute in 1 second increments. OFF Delay can be set from 0 seconds to 3 minutes in 1 second increments.



Note: The Master Valve/Pump Start circuit will operate during the first 5 seconds of any programmed delay to aid in closing of the valve and to avoid unnecessary cycling of the pump. The 5 second period is programmable in the MV:ZN DLY setting. (See Section 6.7)

6.13 Mv/Zone

This feature is used to indicate which zones will use the master valve/pump start output. Use NEXT button to set each zone ON or SYSTEM OFF (SmartLine® controller default is master valve ON for all zones). Use UP and DOWN buttons to select ON or OFF. Use NEXT button to select zone.

Caution: If an unused zone is turned on and activates a pump start relay, the pump may overheat or cause a pipe to burst. To prevent operating a pump with no flow (dead heading), make sure all unused zones are set to OFF.

6.0 Advanced Menu

6.14 Clr Pgm

This feature allows the user to clear all programmed values specific to a selected program. All zone run times and daily start times will be set to OFF; watering days will default to Days of the Week (all on); Season % will equal 100% for all months and Run/Soak will be OFF. Omit times/days are not reset when clearing a program.

From the CLR PGM menu, press NEXT and the display will show KEEP. Use PGM button to select program to be cleared. Then, press either the UP or DOWN button to display CLEAR. With CLEAR showing in the display, either press NEXT or BACK or turn the dial to complete the clearing of the selected program. Likewise, with KEEP showing in the display, either press NEXT or BACK or turn the dial to keep the selected program.

6.15 Clr All

This feature is similar to CLR PGM except that it clears all user programmed data for all four programs and returns most Advanced Menu changes to factory defaults. Turn the dial to Advanced Menu and use an arrow button to select CLR ALL. Press the NEXT button and KEEP will show in the display. Press the UP and DOWN button to select CLEAR. Press NEXT to clear all programs. The display will show CLEARING to confirm that all programs have been cleared. Note: This function is not the same as the Total Master Reset as described under 7.1 in your Owner's Manual.

6.16 Wireless

Used to set contractor code or Join function for the optional SLRC Wireless Handheld Remote Control. Note: This function only works with the SLW15/SLHUB-RF. It does not work with the SLW5. The SLRC remote is only operable with the SLW15 weather station.

6.17 About

Provides information on software version in the SmartLine® controller.

6.18 Grow In

Grow In allows you to set up a new landscape grow-in watering program that will automatically expire after a set number of days that you select. At the end of your selected grow-in period, the controller will automatically retrieve your long-term watering program to avoid the necessity of having to return to the controller.

Step 1: Set up your long-term SMART or BASIC watering program.

Step 2: Go to Advanced Menu and select DEFAULT. Press NEXT and STORE will appear on the display. Press NEXT again and wait several seconds. The display will show COMPLETE to confirm that you have successfully stored your program.

Step 3: Set up your temporary Grow-In program.

Step 4: Go to Advanced Menu and select GROW IN. Press NEXT once to view default days for grow in. Use Adjust Value buttons to select 1 to 99 days for the grow in period. At the end

of your grow in, the controller will automatically retrieve the long-term program stored in Step 2. Return dial to Run.

6.19 Default

This is an optional function that allows the user to store a program that can be retrieved later if it is inadvertently deleted or changed. Once the controller has been programmed, go to Advanced Menu and select DEFAULT. Press NEXT and STORE will appear on the display. Press NEXT one more time and wait several seconds. The display will show COMPLETE to confirm that you have successfully stored your program. If the controller has had the operating program changed and you want to return to the stored program, go to DEFAULT, press NEXT and one of the arrow buttons. The display will show RETRIEVE. Press NEXT and the display will show COMPLETE to confirm that the DEFAULT program has been restored as the operating program. To clear a stored DEFAULT program you must use the Total Reset procedure, Section 7.1.

7.0 Troubleshooting

7.1 Total Reset Procedure For The SmartLine® controller

A total reset will clear all programming data in the SmartLine® controller. All settings will return to factory defaults.

For all SmartLine® models except SL800:

- Turn dial to Advanced Menu.
- While pressing the UP button, use an open paper clip or ballpoint pen to push in the Reset switch located on the back of the operating panel. Release the reset button while continuing to press and hold the UP button.
- Once the display shows CLEARING, release the UP button.
- Reprogram SmartLine® controller.

For the SL800:

- Unplug the power supply on the side of the SL800.
- Turn dial to Advanced Menu.
- While continually holding down on the UP button, reapply the power connection to the SL800.
- The display will read "CLEARING" to verify that the Reset is complete. Re-enter your controller settings.



Troubleshooting 7.0

7.2 Watering Cycle Pause Functions

SmartLine® controllers will “pause” watering cycles in response to certain sensor readings or program settings in the controller. Pauses are a normal function of the controller. Watering pauses will be indicated on all SmartLine® controllers by the presence of a RED or ORANGE LED as shown in the table and the reason for the pause will be displayed.

MODE	SENSOR		
LED Color	LED Color	Display Message	Reason
Red			Controller dial is set to OFF
Green	Red	RAIN	Rain sensor disks are wet (SLW Only)
Green	Red	FREEZE	Temperature is 37 degrees F or colder (SLW Only)
Green	Red	SENS	Sensor tripped at the SEN terminals
Green	Orange	RAIN DLY	Irrigation cancelled for additional hours in SLW DLY (SLW Only)
Orange	Green	Omit-Time	Cycle paused for omit hours set
Orange	Green	SOAK	Zone waiting for soak time out
Orange	Green	ZONE DLY	Waiting for next zone valve to open

MODE	SENSOR		
Orange	Green	PAUSE	Waiting for MVP to turn on or off

7.3 Changing SLW or RFS5 Batteries

- Loosen bottom cover section on the SLW or RFS5 and rotate the cover in the keyholes and remove the cover.
- Replace the existing batteries with two (2) AAA lithium batteries.
- Reactivate the SLW or RFS5 by holding down the rain tab on the top of the unit for 5 seconds.
- Return to the controller. The antenna icon will be flashing in the display.
- Push mode and sensor buttons to verify a green LED at SMART and Active positions.

If you have an SLW5 or SLW15 weather station, you can verify the remaining voltage in the SLW battery at any time by turning the dial to Advanced Menu, Tests. Push Next to get Outputs, then push DOWN button to get SLW Battery. Push Next to read the remaining voltage. Note: The SLW Battery function is visible after you have established communication with the SLW.

If you have an SLW10 or SLW20 you can view the battery level by turning the dial to any Smart Watering position on the dial. With the dial in that position, the battery image you see at the bottom of the screen is the battery in the SLW device. Solid black is a full battery. Half of the image black means the battery is nearing replacement. An image outline means immediate replacement required.

7.4 Troubleshooting Guide

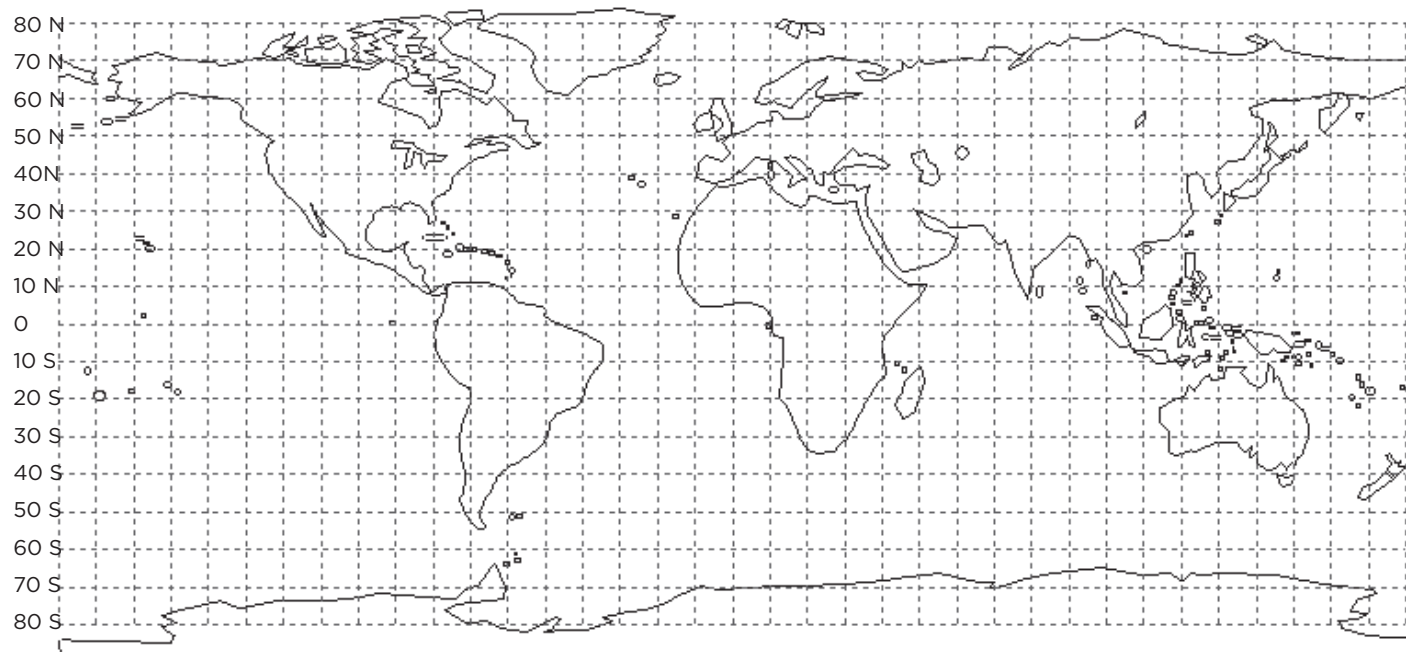
PROBLEM	CAUSES	SOLUTIONS
Controller won't allow entry to SMART and/or no antenna icon on display	System requires installation of SLW weather station	Install optional SLW weather station
	SLW weather station not initialized to controller	Initialize SLW weather station according to instructions in SMART section
	Missing required SMART settings	Push and hold down MODE button for a scrolling message indicating needed information. Enter needed information for time, date and ZIP Code or Latitude.
	Battery in SLW weather station is drained	Replace battery as shown in Section 7.3
	Communication cable or wireless communication problem	Check cable and connections at controller. Use SLW battery diagnostics to check for RF problems on wireless SLW. See note below.
	Defective SLW weather station	Replace SLW weather station. If SmartLine® controller has no communication for 5 days, it will revert to BASIC program settings
	Defective SLHUB communication hub	Replace SLHUB communication hub
Note: You can use the diagnostic panel on the SLW5, SLW10, SLW15, or SLW20 to determine the reason the controller will not let you enter SMART. Push the diagnostic button once. Observe the blinking LED. First Blink RED—The battery/s in the SLW should be replaced. Second or Third Blink RED—The SLW is defective and should be replaced. Fourth Blink Red—Communication problem is in the cable or SLHUB or RF signal problem on wireless units. If all SLW diagnostic blinks are GREEN, all SLW functions and communications between the SLW and SLHUB are working properly. Recheck data entry required into controller.		

PROBLEM	CAUSES	SOLUTIONS
No Display	No power to controller	Check fuse on SL1600 with inline fuse holder. Check fuse holder on SL800 or SL800. Replacement fuse is 1 amp slow blow for SL1600 and SL800 and 1.5 AMP slow blow for SL4800.
	No 24V power from transformer	Replace transformer. Likely power surge damage
FAULT icon on display	Shorted or open condition on a zone(s)	Check solenoid(s) and wiring (turn dial to Advanced Menu for fault information in Sec 6.1)
	Shorted MV/P	Check solenoid(s) and wiring
	Insufficient watering opportunity	Check programming watering days, verify omit settings are not excessive, and review accuracy of SMART settings for sprinkler and plant type.
Display shows zone is running but no sprinklers are operating	Water supply to system is shut OFF	Turn on water supply to system
	Valve failure	Verify valve operation
	Open or disconnected wire	Run MANUAL TEST as shown. Verify FAULT icon is shown display. Turn dial to Advanced Menu to determine location of fault
Controller keeps repeating a watering cycle	Extra start times are set at the Program Start Times position on the dial.	Turn dial to Program Start Times. Use NEXT button to view all start times. Hold down UP or DOWN button to change the start times or to advance to the OFF position. Each Program will start and run all zones assigned to that program in consecutive order. For most installations, only one start time is needed and the rest should be set to OFF. See Program Start Times for more information.
Display shows 0 ZONES	Defective or loose module	Replace module in zone 1-4 position

PROBLEM	CAUSES	SOLUTIONS
SmartLine® controller does not turn on zone when expected	Sensor jumper is removed and no sensor is connected (Sensor LED is red)	Install jumper wire between SEN terminals Select OFF mode if desired
	Sensor wires have been cut (Sensor LED is red)	Repair wires
	Zone comes on at unexpected time	Program daily start times not set properly or multiple start times set. Check Program Start Times
	Stacked program has commenced normal operation	Modify settings (such as program start times, zone run times) to prevent stacking if undesirable
	Time of day or date not set properly	Review/set time of day and date
	Watering days or omit days/dates not set properly	Review/set watering days or omit days/dates
	Run/Soak feature has extended watering window	Normal operation to allow water infiltration and prevent runoff
	Controller does not operate zone for expected run time	Pause for Run/Soak in progress. This is normal operation to allow water infiltration and prevent runoff Check seasonal % settings if BASIC mode is in use.
	Module not installed	Install module
	No initial AC power-up of controller	Connect AC power and close control panel

PROBLEM	CAUSES	SOLUTIONS
SmartLine® controller does not turn on zone when expected	Zone set to OFF Dial set to SYSTEM OFF No zone run time set; no daily start time set Omit times/days are activated Rain or freeze sensor has stopped watering (Sensor LED is red)	Set zone run time Position Turn dial to RUN Program zone run time and daily start time Verify omit times/days Replace sensor if faulty Select OFF mode if desired Reset start time to later in the day to avoid early morning freezing temperatures.

World Latitudes





Program A	
Watering Days	
Days of Week S M T W T F S	
☐ Odd ☐ Even	
Interval (Every ____ days)	
Program Start Times	
1	5
2	6
3	7
4	8

Program B	
Watering Days	
Days of Week S M T W T F S	
☐ Odd ☐ Even	
Interval (Every ____ days)	
Program Start Times	
1	5
2	6
3	7
4	8

Program C	
Watering Days	
Days of Week S M T W T F S	
☐ Odd ☐ Even	
Interval (Every ____ days)	
Program Start Times	
1	5
2	6
3	7
4	8

Program D	
Watering Days	
Days of Week S M T W T F S	
☐ Odd ☐ Even	
Interval (Every ____ days)	
Program Start Times	
1	5
2	6
3	7
4	8

Omit Days/Date/Times	
Days:	Dates: _____
Times: From > _____	To < _____



Basic Watering Schedule

Zone	Location	Program A	Program B	Program C	Program D
		Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Seasonal % Adjust

PGM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
A	%	%	%	%	%	%	%	%	%	%	%	%
B	%	%	%	%	%	%	%	%	%	%	%	%
C	%	%	%	%	%	%	%	%	%	%	%	%
D	%	%	%	%	%	%	%	%	%	%	%	%



Basic Watering Schedule

Zone	Location	Program A		Program B		Program C		Program D	
		Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time	Zone Run Time
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									



Smart Watering Schedule

Zone	Location	Sprinkler Type	Plant Type	Soil Type			More/Less
				Soil	Slope		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Smart Watering Schedule

Zone	Location		Sprinkler Type		Plant Type		Soil Type		More/Less
							Soil	Slope	
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									

SmartLine

The Smart Irrigation Controller

AD231 revF

