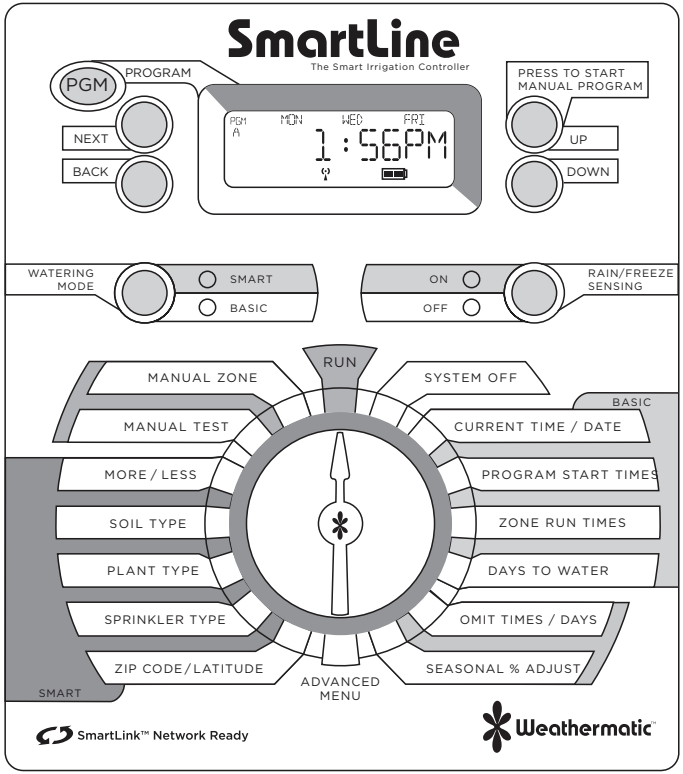
SmartLine®

The Smart Irrigation Controller

Controller Models version G5
SL800, SL1600,
SL1620, SL4800

Owner's Manual



Weathermatic®
Water with Purpose

Introduction

Congratulations on your purchase of the SmartLine® Controller! 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 Sensor, 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 THE SYSTEM OWNER.

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

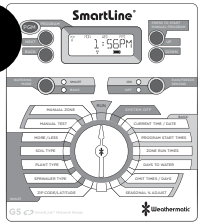
Telephone: 888-484-3776

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. Add an on-site Weather Sensor that not only reads rain/freeze data, but also automatically adjusts for the local temperature and conditions that may impact your landscape's need for water. Adding the SmartLink® Aircard gives you 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 usage 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. SmartLink® connectivity also allows you to view real-time water usage, constantly reporting the water savings from your SmartLine® Controller. Email alerts allow for the indication of any issue that will negatively impact water savings and landscape beauty.

1



Choose the SmartLine® controller that fits your project.

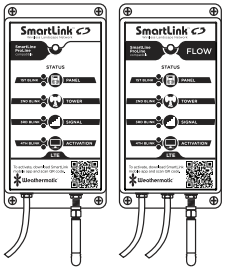
2

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

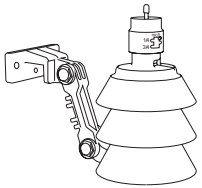
3

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

SmartLine® Accessories



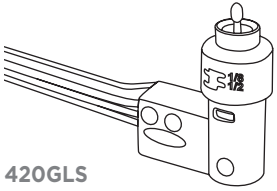
SL-AIRCARD, SL-AIRCARDFLOW
Web-based control from PC, tablet, smartphone. Flow management option



SLW1 Wired

SLW5 Wireless

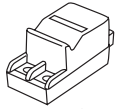
SLW Series On-Site Weather Sensors
SmartLine® Weather Sensors with rain and freeze sensing



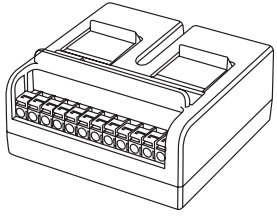
420GLS
Rain Sensor for All SmartLine® Models

RFS5
Wireless rain/ freeze sensor

SLM4
4-Zone Module for SL1600 only



SLM2
2-Zone Module for SL800 only



SLM12-1600
12-Zone Module for SL1600 only

SLM12-4800
12-Zone Module for SL4800 only

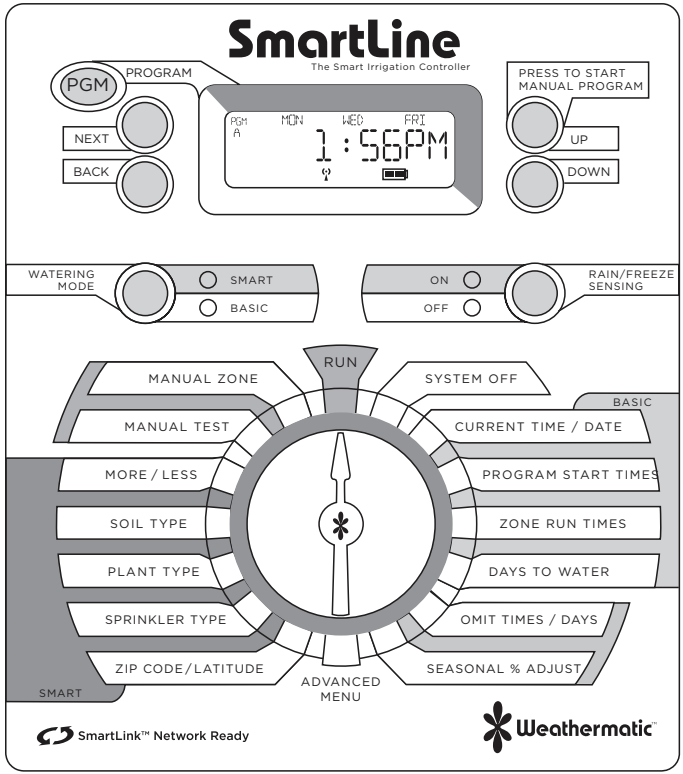
SmartLine® accessories are available through your professional Weathermatic installer. For the Weathermatic distributor directory, go to **www.weathermatic.com**.

Table of Contents

Table of Contents

1.0 Getting Acquainted With Your SmartLine® Controller

SmartLine® is the smart choice for water conservation and beautiful landscaping. The "get acquainted" information in this section will make programming your unit easier and faster.



1.1 Getting Acquainted With Your 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 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 the DOWN then 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.

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 of the 4 programs, allowing for complete flexibility of your irrigation schedule. Programs A, B, C, and D can be programmed to operate concurrently. The display will

1.0 Getting Acquainted With Your SmartLine® Controller

alternately show all programs while the concurrent schedules are 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.

Care must be taken when programming. In order to not exceed your irrigation system's hydraulic capacity, double check the strength of your piping and points of connection. Exceeding this capacity could lead to fault indications and interrupted irrigation schedules. The electrical capacity is limited, depending on your model. A pump start relay may require more mA than a solenoid. Keep aware of these boundaries when scheduling programs to initiate and operate simultaneously.

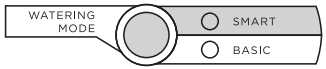
START MANUAL PROGRAM Button: Press to initiate a watering operation when the programming dial is set to the RUN position. The SmartLine® controller will run Program A. Or, you can push the PGM button before you push the START MANUAL PROGRAM button to select the program you want to run. You can use the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

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.

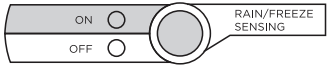
Display With Dial In SYSTEM OFF Position: When the SmartLine® controller dial is in the SYSTEM OFF position, the processor and clock continue to operate and all program values are retained in the non-volatile memory. In the SYSTEM OFF position no automatic watering will occur. The Mode Selection LED 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 1 hour, 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 again when the sensor/s are no longer pausing your system operation.

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 60 minutes.

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

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 Sensor 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.

1.2 Quick-View

With the dial in the RUN or OFF position, and FLOW is enabled, press the DOWN button to view the current FLOW rate.

Press DOWN again to view the system current in mA.

2.0 Programming the Controller

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 Sensor. Note: SMART requires the optional SLW Weather Sensor.

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 Sensor, Smart mode gives you the power to reduce water waste. Many water districts are offering rebates for Smart mode users. Check with your local district.

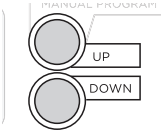
Both the BASIC mode and SMART mode operate based on the user's programmed start times, watering days, omit times/days, and several Advanced Menu features (rain delay, zone to zone delay, and master valve settings).

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.

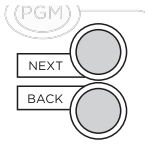
2.0 Programming the Controller

2.1 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.



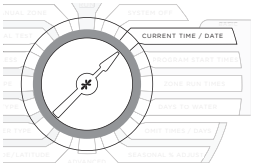
RAPID ADVANCE: While programming, holding down the UP or DOWN button will cause the flashing display value to rapidly advance. Rapid advance can also be used with the NEXT and BACK buttons to rapidly advance through zones.

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: Saves after 30sec of inactivity or dial position changed to RUN or OFF

2.2 Current Time/Date

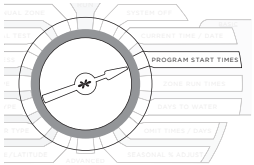
Use UP and DOWN buttons to change the flashing value for the hour. Scrolling past 12 will automatically change AM/PM. Remember holding down the UP or DOWN button will rapidly advance through the flashing menu.



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 to turn the feature on/off and change the DST schedule.

2.3 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 UP or DOWN button until you reach the OFF position located between 11:50 PM and Midnight.

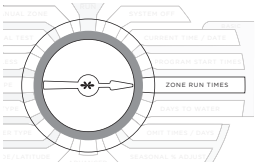
When setting program start times, check the program icon in the display to see whether you are working in A, B, C or D.

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.

Push PGM button to assign zone time in one or more programs. Care has to be taken when programming. You need to have awareness of the hydraulic capacity of the irrigation system piping and points of connection so that they are not exceeded. Further care should be taken so the electrical capacity of the controller is not exceeded. The electrical capacity is 750 mA or 3 irrigation solenoids. A pump start relay may require more mA than a solenoid. Keep aware of these boundaries when scheduling stations to initiate and operate simultaneously.

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.)

2.4 Zone Run Times



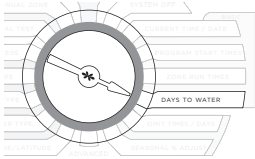
Your SmartLine® controller will display remaining hours, minutes and seconds when a zone is watering. However, in this position you are only required to set minutes (or hours and minutes) for each zone as desired for operation time. Seconds are not selectable.

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.

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.

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 9 section 4.2.3.

2.5 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.

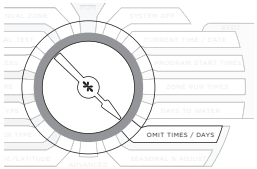
If you select an INTERVAL schedule, push NEXT button. The flashing number indicates the day interval for watering. SmartLine® controller will allow an interval of 1 (every day) to 30 (water once every 30 days). After you have selected the interval you want, push NEXT to set the day you want the interval

schedule to start on. Use UP and DOWN buttons to select start day at top of display. The controller will begin on the next upcoming start day.

Note: The display will only show the upcoming watering days for the current week.

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).

2.6 Omit Times/Days/Dates (Optional)



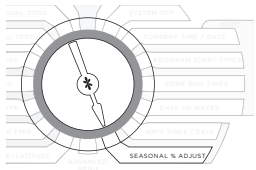
The omit settings are used to set a watering blackout period. For example, if you live in a municipality that restricts outdoor watering between 10:00 am and 6:00 pm, you can blackout that time period. If a watering program in progress is paused for a blackout period, the ORANGE LED will display during 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.

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.

2.7 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. A 0% setting will adjust zones to a zero second runtime.

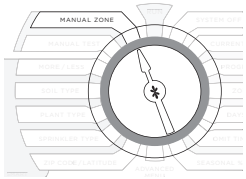
Note: When the SmartLine® controller is in SMART mode this feature is voided. SMART mode will change zone watering times daily.

PROGRAMMING IS COMPLETE FOR BASIC OPERATION. RETURN THE DIAL TO THE RUN POSITION.

3.0 Manual Start Functions

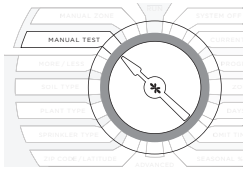
The SmartLine® controller has two dial positions for manual system starts:

3.1 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.

3.2 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.

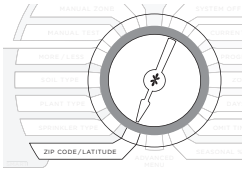
Manual Test will detect open circuits (less than 30 mA draw) on any used zone or a short on any output (master valve or zone). If the display indicates FAULT while running a Manual Test, refer to Advanced Menu to identify the FAULT.

4.0 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 Sensor. 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 Sensor 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.

4.1 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 World Latitudes in the Reference section on page 27.

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.

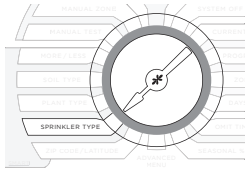
If you are outside the USA, you will enter LATITUDE. You can use the UP and DOWN buttons to choose any latitude between 60 degrees south and 60 degrees north. 0 degrees setting is marked as EQUATOR.

4.2 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.

4.2.1 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.

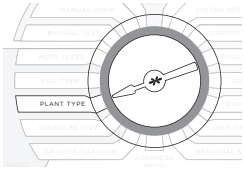


Precipitation rate can be entered two ways: by sprinkler type or by specific precipitation rate. If you do not know the specific precipitation rate for the zone, you can select the sprinkler type, or watering equipment used on that zone: Spray, Rotor, Drip, or Bubbler irrigation. The SmartLine® controller will apply a default precipitation rate for the sprinkler type selected. If you know the specific precipitation rate expected for the zone, as

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

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 precipitation 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 Sprinkler Type. Program features and operations are supported with STD zones, including Run/Soak, and STD zones may run within SMART programs or separately.

4.2.2 Plant Type for Zones

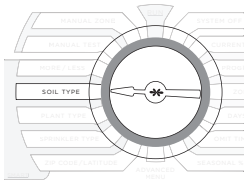


This position is used to specify the type of plant material to be watered by each zone as an important component of determining the watering needs for each zone. Use the UP and DOWN buttons to select plant type or percent for each zone. Press NEXT and BACK buttons to access each zone. Plant type selections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

4.2.3 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 made in Advanced Menu are not active when controller is in SMART

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

mode. Smart calculated run/soak schedules can be viewed by selecting Advanced Menu, Review and Run/Soak.

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

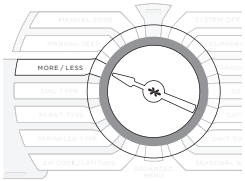
Use the UP and DOWN buttons to select Clay, Loam or Sandy soil type for each zone. After you have selected a soil type for a zone, push NEXT button to advance to the next zone. Slope for each zone can also be set in the Soil Type menu. From the Soil Type menu, use the UP and DOWN buttons to select Slope. Using the NEXT button select the degrees of slope (elevation change) for each zone. Set each zone for 0 to 25 degrees of slope based on the chart provided.

Use NEXT button to move between zones.

4.2.4 More/Less (optional)

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.

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%.



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

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

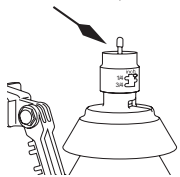
This feature can be useful to reduce run time adjustments for shady and partially shaded zones. The table provided may be used for general shade guidelines. Other factors may result in needing to use MORE/LESS for fine tune adjustments including sprinkler efficiency, zone efficiency, and wind. Sprinkler 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.

4.2.5 Activating the SLW Series On-Site Weather Sensor

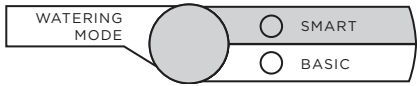
SLW5 wireless and SLW1 wired weather stations both communicate with the controller via an SLHUB transceiver. Install the SLHUB by inserting the pins of the HUB into the connector located at the top right of the controller cabinet. On the SLW Weather Sensor, press and hold down the Rain Sense test tab in the center of the rain sensor for 15 seconds.

SLW Weather Station
Rain Sense spindle



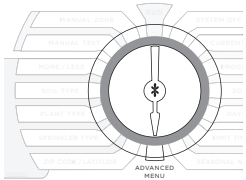
On the SmartLine® controller, verify that the antenna icon appears on the bottom line of the LED display. (Note: The icon will flash for 1 minute at the time of a communication. The icon will be static between communication events.) The antenna indicates communication has been established. The SLW Weather Sensor 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 Sensor 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. Controller operation will resume when the temperature is again above 37 degrees F (1.5 degrees Celsius). However, after a rain event, the SmartLine® controller will block watering for the amount of time set in SLW DLY.

4.2.6 MODE Button



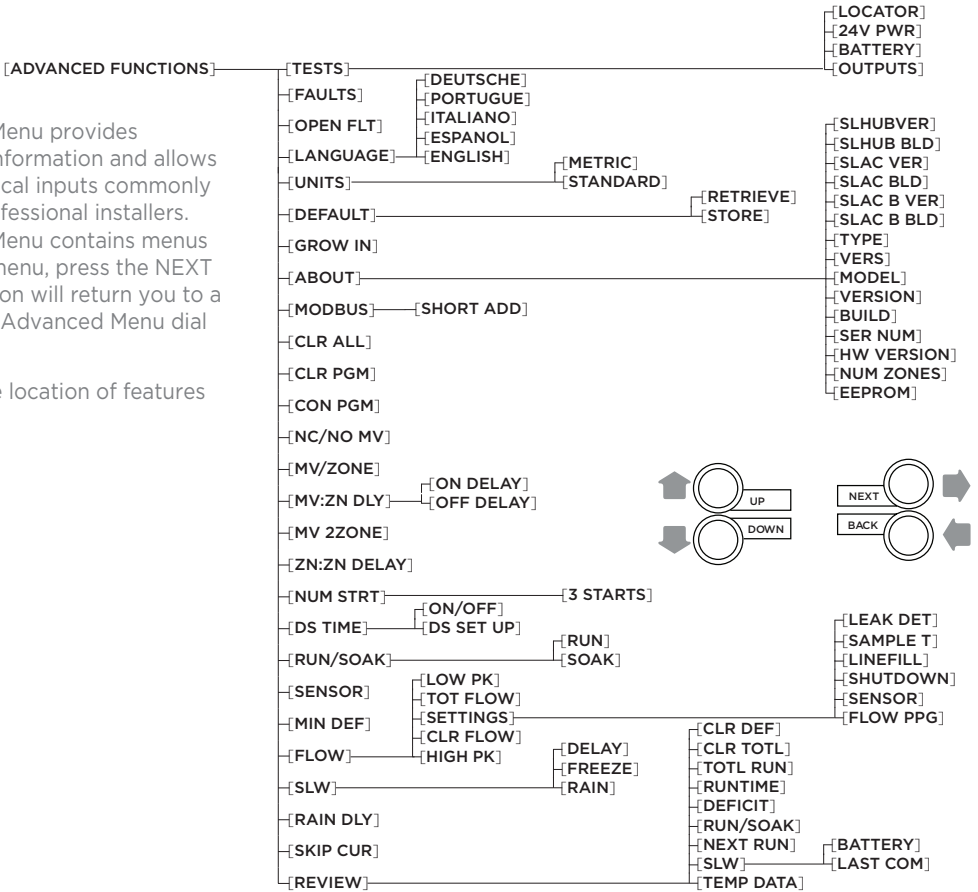
Press the MODE button on the control panel to place the SmartLine® controller in the SMART mode. A GREEN LED on the SMART position will confirm that you have communicated with the SLW Weather Sensor. If there is no SLW Weather Sensor installed or ZIP Code or Latitude or time/date setting and at least 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 the MODE button to see a scrolling message indicating the reason SMART mode is not available.

5.0 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.



5.1 TESTS

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

5.1.1 OUTPUTS

1 amp = 1,000 milliamps	
0.250 A	250 mA
0.500 A	500 mA
0.750 A	750 mA
1.000 A	1,000 mA

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 .15 to .35 Amps 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.

5.1.2 BATTERY

Use the UP button to select BATTERY (applies to SL1600, SL4800 & SL9600TW only), Push the Next button once to read battery voltage status. A minimum of 7.5V is required to operate the screen. SmartLine® controllers use a Real Time Calendar Clock instead of a backup battery to maintain correct time during a power outage. A battery is only necessary for viewing the screen and programming when the panel is removed from the housing.

Note: In order for the locator feature to work, you will need to turn off the system water pressure at the manual cut-off valve or water meter. Pressure must be off while attempting to “chatter” a valve. The SmartLine® controller will automatically sequence "chatter" to each valve including the master valve(s).

5.1.3 24V PWR

Use the UP button to select 24V PWR. Push Next button once to read output voltage for the transformer. Normal reading is 24 to 30 volts AC.

5.1.4 LOCATOR

This feature will create a “chatter” for a selected valve as a convenient method of locating buried valves. Use NEXT button to scroll to the valve you want to “chatter.”

5.2 FAULTS

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 the 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 the NEXT button on the fault description currently displayed and the screen will read CLEAR, press the NEXT button to CLEAR the fault and 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. If additional faults are present repeat the procedure to remove them from the panel. Once the faults have been cleared the screen will read, no faults present. 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 MV1 SHORT MV2 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.
ZONE XX OPEN MV1 OPEN MV2 OPEN	OUTPUT OPEN CIRCUIT: If a zone has a current draw less than 0.03 Amps a zone open fault is created, but operation continues normally. The fault can be manually cleared or will automatically clear if a load exceeding 25 mA is placed on the output and the output turns on successfully.
NO RECENT CONTACT WITH Weather Sensor	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 Sensor is dead, the communication fault is set. If up to 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 Sensor 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 Sensor 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 6.3 Replacing SLW Series Weather Sensor Battery.
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.

5.3 OPEN CIRCUIT FAULT

This is a user selectable feature that sends a fault message for zones that detect no electrical load. From the ADVANCED MENU dial position press the UP button until the "OPEN FLT" menu is displayed. Press the NEXT button to enter the menu and the UP or DOWN buttons to select on or off for the alert.

5.4 LANGUAGE

English, Espanol (Spanish), Italiano (Italian), Portuguese, or Francais (French) may be selected.

5.5 UNITS

This setting allows for you to choose either STANDARD (United States customary units) or METRIC. Press the BACK button when the display reads your desired selection.

5.6 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 the NEXT button and the screen will display CONFIRM, press the NEXT button once more and within a few seconds the display will read 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 CONFIRM, press the NEXT button once more and within a few seconds the display will read COMPLETE to confirm that you have successfully restored your program.

5.7 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 the NEXT button and the screen will display CONFIRM, press the NEXT button once more and within a few seconds the display will read 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 UP and DOWN 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.

5.8 ABOUT

Provides information on software version in the SmartLine® controller.

5.8.1 MODEL

Displays the model name of the controller.

5.8.2 VERSION

Displays current version of the controller's software.

5.8.3 BUILD

Displays current build version of the controller.

5.8.4 SER NUM

Displays the controller's serial number.

5.8.5 HW VERSION

Displays the hardware version of the controller.

5.8.6 NUM ZONES

Displays the maximum number of zones that can be created.

5.8.7 EEPROM

Displays the amount of EEPROM available in bytes.

5.8.8 SLHUB VER

Displays the version of the RFS weather sensor. NI is show if this is not installed.

5.8.9 SLHUB BLD

Displays the build version of the RFS weather sensor. NI is show if this is not installed.

5.8.10 SLAC B VER

Displays the version of the aircard. NI is show if this is not installed.

5.8.11 SLAC B BLD

Displays the build version of the aircard. NI is show if this is not installed.

5.8.12 Z96 TYPE

Displays the decoder manager type if SmartWire equipped.

5.8.13 Z96 VERS

The display reads Z96 VERS here.

5.9 MODBUS

5.9.1 SHORT ADD

This displays a static address along with a user programmable address to integrate with third party software.

5.10 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 and use the UP button to navigate to CLR ALL. Press the NEXT button and the screen will display CONFIRM. Press the NEXT button once more and the display will show CLEARING when finished to confirm that all programs have been cleared.

5.11 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.

Turn the dial to Advanced Menu and use the UP button to navigate to CLR PGM. Press the NEXT button and the display will read CONFIRM. Use the PGM button to select the program (A, B, C or D) to be cleared. Press the NEXT button and when the selected program has been cleared from the panel the display will read COMPLETE. Repeat these steps to clear each individual program to be reset.

5.12 CON PGM

Select the ability to run 1, 2, 3, or all 4 programs simultaneously. Default is two simultaneous programs. Programs will prioritize with the order of priority being: A, B, C, D.

5.13 NC/NO MV

Enter this menu to select between normally open or normally closed master valves for MV1 and MV2.

5.14 MV/ZONE

This feature allows you to select which master valve(s) to be assigned for each zone operation. The default is MV1. The other options are MV2, BOTH, OFF.

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.

5.15 MV/ZN DLY

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 UP and DOWN 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.

5.16 MV2 ZONE

A second master valve circuit can be enabled in this menu by designating a zone valve to be MV2

5.17 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.

5.18 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 1 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 1 to 8 start times to be visible on the dial. Return the dial to Run.

5.19 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.

5.19.1 DST ON/OFF

If you would like for your controller to automatically set the time of day on the occurrence of Daylight Saving Time, make sure it is turned on in this menu

5.19.2 DS SETUP

Your controller is programmed with the a default of starting Daylight Saving Time starting on the second Sunday in March and ending on the first Sunday in November. If you would like to adjust these settings, you may do so in this menu.

5.20 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.

Turn the dial to Advanced Menu and use the UP button to navigate to RUN/SOAK. Press the NEXT button and the screen will display RUN, now press the PGM button to select the program you wish to set the RUN feature. After the program has been selected, press the NEXT button and then using the UP or the DOWN button adjust the RUN value. **NOTE: the RUN time can be set from OFF to 30 minutes (SmartLine® controller default is OFF). Once completed, press the BACK button and the screen will again display RUN, now press the UP or the DOWN button and the screen will display SOAK. Press the NEXT button to enter the SOAK feature and then using the UP or the DOWN button adjust the SOAK value. **Note: the SOAK time can be set from OFF to 2 hours in one-minute increments. Repeat these steps for adjusting multiple programs within the panel.

5.21 SENSOR

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

5.22 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.

5.23 FLOW

The Flow menu must be accessed by first activating a SmartLink Flow Aircard connected to the controller.

5.23.1 HIGH PK

Shows the highest flow value for each individual zone, can scroll through each zone for a 7-day history.

5.23.2 CLR FLOW

Clears All flow data from the controller.

5.23.3 SETTINGS

Allows the user to set Flow parameters.

5.23.3.1 FLOW PPG

A settable value that lets the controller know how many pulses to expect per gallon.

5.23.3.2 SENSOR

Lets the user select a custom sensor or one of our preset flow sensor types.

5.23.3.3 SHUTDOWN

Allows the user to select if the controller should shut down operation per zone or by system.

5.23.3.4 LINEFILL

The time it takes for the system to completely fill the line.

5.23.3.5 SAMPLE T

How often the controller reads flow pulses from the Aircard.

5.23.3.6 LEAK DET

A settable value that determines when the controller will produce a Leak Detect fault.

5.23.3.7 LOW LMT

The lowest flow value the controller can sense without producing a fault.

5.23.3.8 HIGH LMT

The highest flow value the controller can sense without producing a fault.

5.23.4 TOT FLOW

Shows the daily total flow for each zone. Can scroll through each zone for a 7-day history.

5.23.5 LOW PK

Shows the lowest flow value for each individual zone, can scroll through each zone for a 7-day history.

5.24 SLW

5.24.1 RAIN

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

5.24.2 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.

5.24.3 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 Sensor. To eliminate the delay or to reduce or increase the factory default hours, turn the dial to Advanced Menu and use an UP and DOWN 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.

5.25 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.

5.26 SKIP CUR

You can increase the skip circuit threshold here. Some accessories, like pump start relays, In rush currents exceed the factory setting of 1.0 Amp for SL800 and 1.5A for all other controllers.

5.27 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.

5.27.1 TEMP/DATA

TEMP/DATA provides the daily high/low temperature readings in Fahrenheit (Celsius for 230V applications. Celsius is set using METRIC under UNITS menu) from the SLW Weather Sensor 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 7 days of temperature history.

5.27.2 SLW

5.27.2.1 LASTCOM

This feature records time elapsed since last successful communication between the weather station and control panel.

5.27.2.2 BATTERY

Check the battery status in your wireless weather station here.

5.27.3 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.

5.27.4 RUN/SOAK

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.

5.27.5 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 midnight based on data communicated to it by the SLW series Weather Sensor. 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 change 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.

5.27.6 RUNTIME

This is the computed runtime based on the deficit for the next scheduled run.

5.27.7 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.

5.27.8 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.

5.27.9 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.

6.0 Troubleshooting the Controller

6.1 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 arrow 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 arrow button.
- Once the display shows CLEARING, release the UP arrow 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 arrow 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.

6.2 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
Orange	Green	PAUSE	Waiting for MVP to turn on or off

6.3 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 15 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 Weather Sensor, 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.

6.0 Troubleshooting the Controller

6.4 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 Sensor	Install optional SLW Weather Sensor
	SLW Weather Sensor not initialized to controller	Initialize SLW Weather Sensor 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 Sensor is drained	Replace battery with AAA LiFeS2 DO NOT use alkaline battery. When inserting battery observe polarity.
	Communication cable or wireless communication problem	Check cable and connections at controller. Use SLW battery diagnostics to check for RF problems on wirelss SLW. See note below.
	Defective SLW Weather Sensor	Replace SLW Weather Sensor. If SmartLine® controller has no communication for 5 days, it will revert to BASIC program settings
	Defective SLHUB communication hub	Replace SLHUB communication hub
	The SLW Weather Sensor and transceiver HUB have gotten off of the channel sequence.	Remove the SLHUB from the cabinet. Remove the batteries from the SLW Weather Sensor. Press the rain spindle on the top of the SLW Weather Sensor. Replace the SLHUB int othe cabinet and the batteries into the SLW Weather Sensor and resynchronize by pressing rain spindle.

Note: You can use the diagnostic LED on the SLW5 to determine the reason the controller will not let you enter SMART. To view the diagnostic LED, look through the vent hole on the bottom of the SLW5 unit. Hold the Rain Spindle on the SLW5 unit . See section 4.2.5. 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.

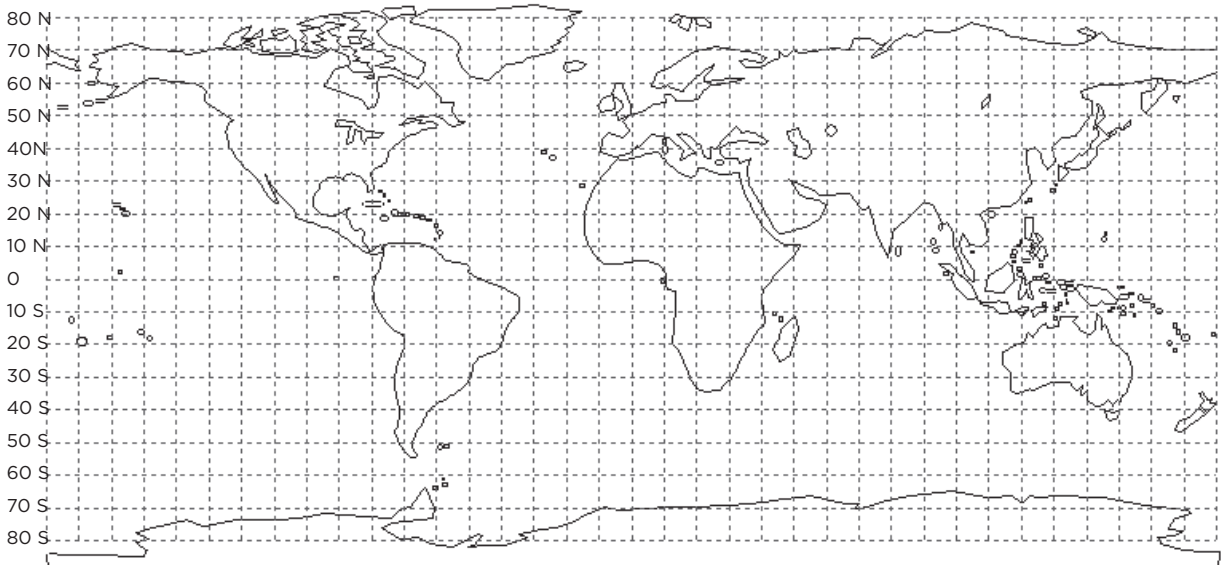
PROBLEM	CAUSES	SOLUTIONS
No Display	No power to controller	Check fuse on SL1600 with inline fuse holder. Check fuse holder on SL1600 or SL800. Replacement fuse is 1A slow blow for SL1600 and and 1.5A slow blow for SL4800.
	No 24V power from transformer	Replace transformer. Likely power surge damage.
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 5.2)
	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

6.0 Troubleshooting the Controller

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

World Latitudes

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



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

Omit Days/Date/Times

Days: _____ Dates: _____

Times: From > _____ To< _____

Basic Watering Schedule

Zone	Location	Program A Zone Run Time	Program B Zone Run Time	Program C Zone Run Time	Program D 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 Zone Run Time	Program B Zone Run Time	Program C Zone Run Time	Program D 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_revJ

Weathermatic®
Water with Purpose