SMART LINE®

Automated, on-site water management provided by the industry's leading controller technology... now within reach of everyone.

THE IRRIGATION ASSOCIATION
INTERNATIONAL
IRRIGATION SHOW
2004 Winner
EXHIBITOR
NEW PRODUCT CONTEST
TURF / LANDSCAPE

Weathermatic®

Smart Solutions for the Professional

SMARTLINE®

Established in 1945,
Weathermatic brings a legacy of innovation:

- Soil moisture-sensing controllers in the 1950's
- Rotary gear drive leader beginning in the early 1960's
- ASTM standards for pipe sizing
- 1st milled, matched precipitation rate nozzle
- 1st electric solenoid operated valve
- 1st rain-sensing shut-off device
- 1st solid-state irrigation controller
- 1st dial-based irrigation controller

A product line with a pedigree, SmartLine is a family full of firsts with an unmatched combination of features and benefits. SmartLine - it's about saving time, money, and water.

It's about FAMILY

SmartLine is a family of water management products. Weathermatic's patented innovations in controller technology are spawning new water conserving products in every product category as future members of the SmartLine family. As the first members of this family, today's SmartLine controllers and on-site weather stations represent a major leap forward in irrigation technology and convenience. Conventional controller lines require as many as 30 models to accomplish what SmartLine controllers can do with only 5 models. Best of all, professional contractors need only learn a single programming method for every job. From tract homes and gardens to 48-zone office campuses, SmartLine is the spec.

SMARTLINE®

Model	Description
SL800	4-8 Zones
SL1600	4-16 Zones
SL1620	20 Zones
SL1624	24 Zones
SL4800	12-48 Zones
SmartWire	2-Wire Decoder System – 48 Zones
SLW Series	On-Site Weather Station

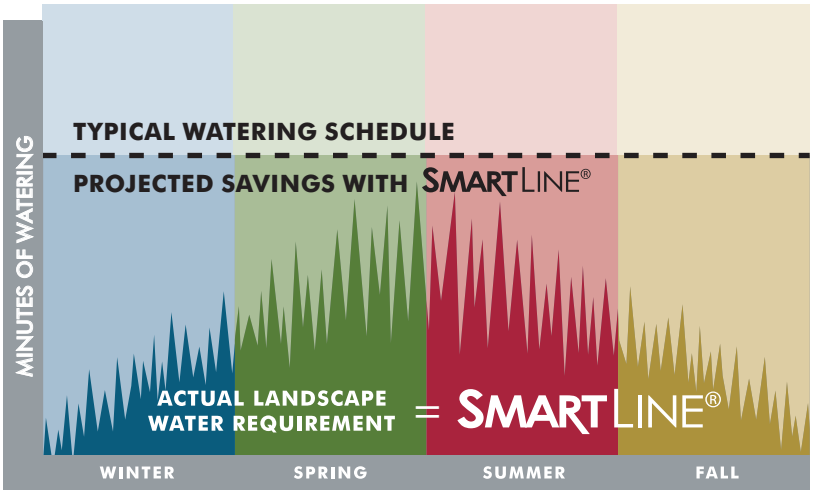
It's about FEATURES

- **Modular** 4 – 48 zones with only 5 models; slide-in 2-zone modules in the SL800, 4-zone modules in the SL1600, 12-zone modules in the SL4800 provide expandability for every job and changing landscapes
- **Indoor/Outdoor Rated** Commercial SL1600, SL1620, SL1624, SL4800 models keep inventories low with one model for indoor or outdoor use
- **Dial Programming** Professional contractors can set up any SmartLine controller in minutes; control panel is removable to allow "in the zone" programming
- **Backlit LCD** No flashlight required in dark basements and garages!*
- INDUSTRY 1ST **Built-in Valve Locator** Locate hidden valves by simply listening for the audible chatter of the solenoid created by a unique electrical current (patent pending)
- INDUSTRY 1ST **On-Board Multi-Meter** Displays the electrical current reading of each zone for quick troubleshooting and a proactive approach to maintenance
- **Master Valve/Pump Settings** Achieve hydraulic control with settings for zone to zone delays and master valve timing
- **Manual Test Settings in Seconds** Complete a walk-thru in a fraction of the normal time by running a manual test set to as little as 10 seconds/zone
- **Omit Times/Days/Dates** Automatically comply with local water restrictions; eliminate irrigated water lost to evaporation in the heat of the day; stop irrigation on lawn maintenance days; never water on the date of an annual event (ex: July 4th)
- **Run/Soak Settings** Eliminate run off by setting the maximum allowable run time and required soak time for each program
- **Nonvolatile memory and real time clock/calendar** Circuit to retain programs as well as correct date and time – with no battery required
- **Backtrack Stored Program™** Feature allows contractor to easily store a default program and retrieve the saved program in the event a customer improperly reprograms the controller
- **Seasonal % Adjust by Month** A monthly watering budget % can be set up by program to automatically adjust zone run times for seasonal changes
- INDUSTRY 1ST **Weather Based Watering with Optional On-Site Weather Station** SmartLine controllers are really 2 controllers in 1; operate in standard mode or switch to Auto Adjust mode by simply adding an SLW Series On-Site Weather Station for weather based watering schedules

* Feature not available on SL800

SmartLine controllers each represent the richest feature set in their respective class. By adding an SLW Series On-Site Weather Station, a SmartLine controller enters a class of its own. It has been said, "You buy the product only once, but you buy the water every month." This fact alone is a great reason to invest in SmartLine. With no service provider dependence, no recurring maintenance, and no user fees, SmartLine pays dividends on your one-time investment every single month.

SmartLine controllers and SLW Series On-Site Weather Stations deliver an excellent ROI (Return On Investment) to system owners by incorporating the fundamental elements of water management through a patented water saving process (U.S. Patent No. 6,314,340) best defined as ROI:



Benefits of Water Management with SMARTLINE®

R EAL TIME

O N-SITE

I NPUTS BY ZONE

Real Time. SmartLine calculates evapotranspiration (ET) in real time based on actual weather readings monitored 24 hours a day. It has been said, "If you don't like the weather, just wait a day because it will change." This reality is ignored in satellite-dependent control systems with weather data transmission delays. SmartLine controllers are constantly in real time communication with the SLW Series On-Site Weather Station for immediate notification of a rain event and up-to-the-second temperature updates including freezing conditions.

On-Site. On-site is on target. No one would want their thermostat located in their neighbor's house – much less across town. Likewise, the weather can vary significantly in any community, especially considering the vast array of microclimates in many areas. That's why SmartLine SLW Series On-Site Weather Stations are located on the property being irrigated by a SmartLine controller. Another benefit to on-site control is being on-time. SmartLine controllers operate on the days and times input by the user. User-set watering days and times are always honored to combine weather based watering and compliance with the law.

Inputs by Zone. Conventional irrigation controllers accept a time based setting for each zone. While in some cases the traditional 20 or 30 minutes per zone may have some correlation with the watering needs of a property's diverse plant life, this input can often result in over or under watering and be unhealthy for the landscape. Even more concerning, the time based input is static, so it cannot change with the varying needs of the plant life that are driven by changes in weather and seasonality. SmartLine controllers equipped with the SLW Series On-Site Weather Station can operate in Auto Adjust mode, which serves to replace time based watering schedules with weather based watering schedules. The weather based watering schedules are calculated for each zone using SmartLine's simple Audit Based Control (ABC) inputs combined with input from the SLW Series On-Site Weather Station. Audit Based Control incorporates the following key inputs by zone to calculate zone run times:

Sprinkler Type – User inputs the type of sprinkler (SPRAY, ROTOR, DRIP, BUBBLER) or enters the precipitation rate of the zone (.2" – 3.0"/hr).

Plant Type – User inputs the type of plant (WARM TURF, COOL TURF, SHRUBS, ANNUALS, TREES, NATIVE) or enters a crop factor for the zone (10 – 300%).

Soil Type – User inputs the soil type (CLAY, SAND, LOAM) and slope (1 – 25°) for the purpose of automatically establishing run/soak period to virtually eliminate runoff.

More/Less – User inputs a fine tune adjust for the zone (-50% to +25%) to accommodate unique zone elements like shade, wind, and sprinkler inefficiencies.

Using **ROI,** SMARTLINE® helps you:

Save water. Protect the landscape. Prevent runoff. Relax from water worries!

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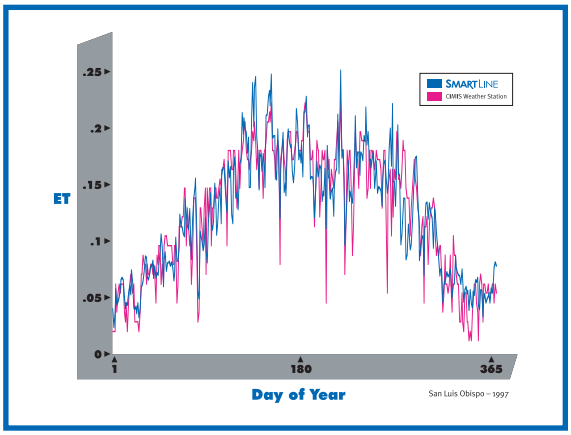
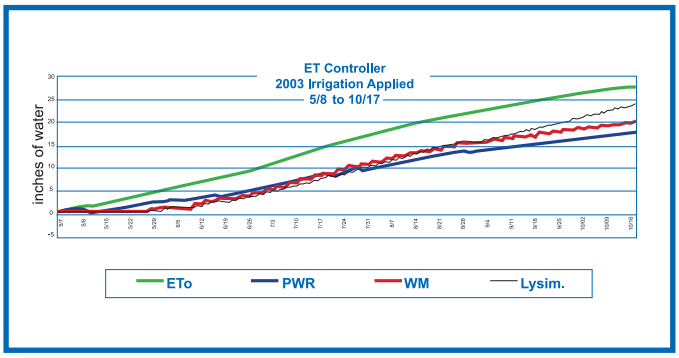
It's about WATER

Saving water while maintaining a healthy landscape is the goal of SmartLine. The results are in. SmartLine works. Water savings can range from 20% to over 50% while runoff is virtually eliminated. SmartLine controller and on-site weather station testing began in the 90's to culminate in the 1998 patent application (U.S. Patent No. 6,314,340). Since that time, testing has been conducted around the world in countries like the United States, Italy, Portugal, the Netherlands, Hungary, and South Africa. Results of independent tests validate SmartLine's effectiveness.

CIMIS vs. SMARTLINE®

CIMIS is the leading weather station network in California. A published study compares the ET calculations of CIMIS weather stations to the ET calculations of SmartLine.* Results were analyzed for 10 geographically diverse sites over a 7-year period to produce 70 years of combined data. **The result: SmartLine ET calculations highly correlate to the CIMIS ET calculations, generally within 5%.** Since installing CIMIS weather stations at every irrigation site would not be economically feasible, SmartLine controllers and SLW Series On-Site Weather Stations are the practical choice for saving water and money.





Since 2001, SmartLine has been included in a study of ET controller effectiveness by one of the nation's leaders in water conservation efforts and testing water conserving devices. This study calculates ET (including true Lysimeter measurements), estimates plant water requirements (PWR line shown in the graph), and measures actual SmartLine water output (WM line shown in the graph).* **The result: SmartLine water output tracks consistently with plant water requirements.** Meeting plant watering needs while saving water is the beauty of SmartLine.

*U.S. Department of Interior, Bureau of Reclamation, RECLAMATION: Managing Water in the West - Weather Based Technologies for Residential Irrigation Scheduling, May 2004, pp. 10-14.

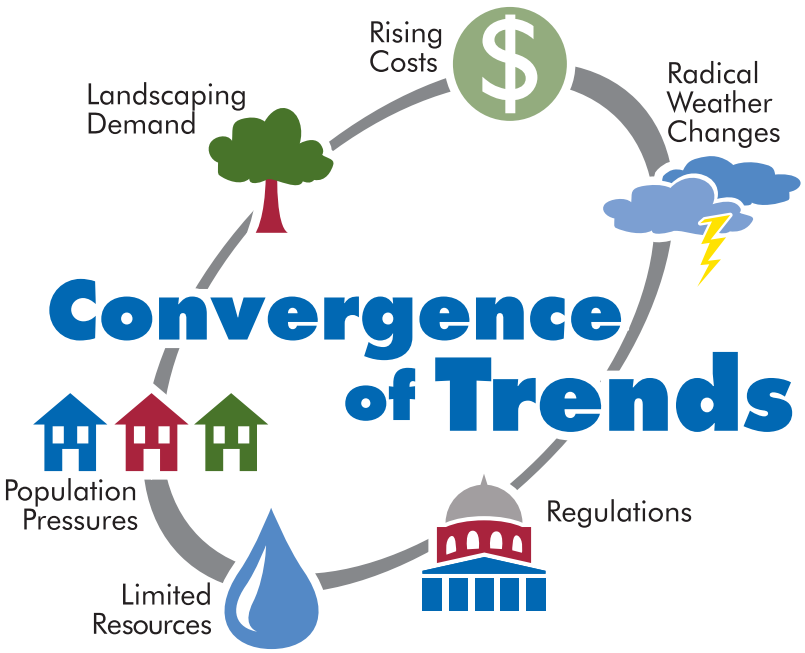
Marin Municipal Water District

Marin Municipal Water District (MMWD) is a conservation-driven water district north of San Francisco, CA. In preparation for broad-based implementation of weather based controllers, MMWD placed SmartLine and a competitor's satellite-dependent controller at various sites to analyze changes in water usage (versus 2001 base year). **The result: Even with 6.8% and 8.8% increases in ET, SmartLine still saved 28% and 24% and outperformed the competition by 23% and 26% in consecutive years.**

WeatherTRAK Controllers	2001 Summer Water Usage* in CCFs	2002 Summer Water Usage* in CCFs	2002 Comparative Summer Water Usage to 2001 in CCFs	2002 Comparative Summer Water Usage to 2001 in Acre-Feet	% Water Savings in 2002
TOTALS	2,776	2,634	-142	-0.33	5% Savings
SmartLine Controllers					
TOTALS	8,089	5,863	-2,226	-5.11	28% Savings

	2001 Summer Water Usage in CCFs	2003 Summer Water Usage* in CCFs	2003 Comparative Summer Water Usage to 2001 in CCFs	2003 Comparative Summer Water Usage to 2001 in AF	% Water Savings in 2003
WeatherTrak Controllers					
TOTALS	2,569	2,616	+47	+.10 AF	2% Increase
SmartLine Controllers					
TOTALS	3,805	2,888	-917	-2.10 AF	24% Savings

It's about TIME



Timing is everything!

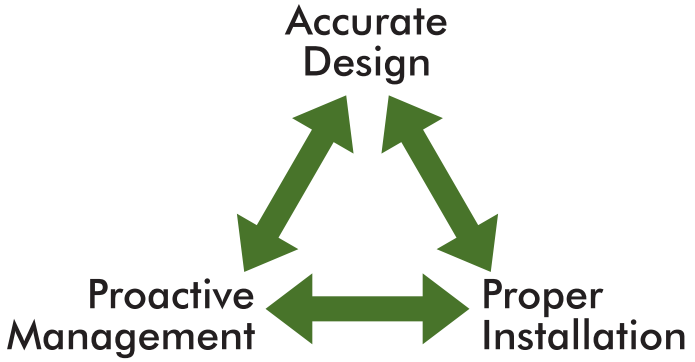
A convergence of trends is driving a critical need for more efficient and effective water management. The time is now for the irrigation industry to move beyond conventional "timers" and "clocks" and into a smarter era powered by Weathermatic's breakthrough in water management technology:

SMARTLINE®

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

SMARTLINE® makes it possible for the fundamentals of water management to work in harmony. Wise stewardship of precious water resources is not only possible, but simple, affordable, and truly automated. Now is the time for you to choose SmartLine and start saving time, water, and money.

Triangle of Irrigation Efficiency



SL1600 Controller

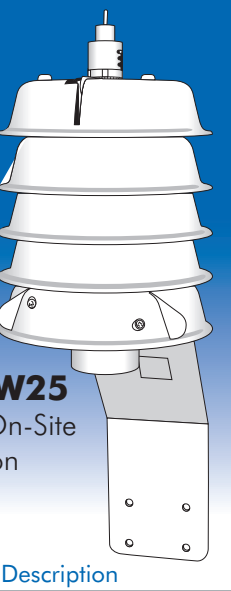
Models	Description
SL800	4-zone base model, Expandable to 8 zones (Indoor only)
SL1600	4-zone base model, Expandable to 16 zones (Indoor/Outdoor rated)
SL1620	20-zone model (Indoor/Outdoor rated)
SL1624	24-zone model (Indoor/Outdoor rated)
SL4800	12-zone base model, Expandable to 48 zones (Indoor/Outdoor rated)
SLM2	2-zone module for use in the SL800
SLM4	4-zone module for use in the SL1600
SLM12	12-zone module for use in the SL4800
SMARTWIRE™ **SLM48DM**	2-wire module for use in the SL1600

Features

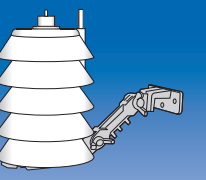
- Indoor/Outdoor rated (SL800 Indoor only) with mounting bracket included
- Hot swappable modules can be added/removed without resetting or unplugging the controller
- Backlit LCD and door latch on SL1600, SL1620, SL1624, SL4800
- 2 run modes: Standard mode runs user input zone run times; Auto Adjust mode requires SLW Series On-Site Weather Station to calculate weather based run times in replacement of user input zone run times
- Rain/Freeze sensor bypass/active button located on face panel displays sensor status with tri-color LEDs (red indicates sensor is prohibiting irrigation; orange indicates a 48-hour extended rain delay after weather station rain sensor permits irrigation; green indicates normal operation)
- 4 programs: A, B, C; program D can operate concurrently
- 8 start times per program
- Nonvolatile memory and real time clock/calendar circuit to retain programs as well as correct date and time – with no battery required
- Zone run times settable from 1 minute to 9 hours 55 minutes with operation count down displayed in hours, minutes, and seconds (zone run times replaced with weather based calculated values in Auto Adjust mode)
- Watering day selections of custom days of the week, odd/even, or interval days
- Omit settings of omit times of the day, omitted days of the week, and up to 7 omitted calendar dates
- Seasonal % adjust by program, by month for simple year round water budgeting (monthly percentages not used in Auto Adjust mode)

Advanced Functions

- Master valve/pump start programmable On/Off by zone
- Clear program function to delete all program settings
- Review menu displays accumulated ET deficits by zone (displayed in inches) and corresponding zone run times for the next available run time
- Review menu provides the ability to clear deficits for all zones
- Review menu displays temperature readings (daily high/low) for the previous 5 days



SLW20/SLW25
Commercial On-Site
Weather Station



SLW10/SLW15
On-Site
Weather Station

Models	Description
SLW10	On-Site Weather Station
SLW15	Wireless On-Site Weather Station
SLW20	Commercial On-Site Weather Station
SLW25	Wireless Commercial On-Site Weather Station

Features

- Microprocessor records and processes weather data for use in establishing Auto Adjust run times
- On-site measurement of ambient air temperature for use in ET calculation and prevention of watering in freezing conditions
- On-site rain sensing device prevents watering in the rain and decrements accumulated ET deficits
- Extended rain delay feature automatically adds 48 hours to rain events before deficits begin to accumulate so watering does not begin too quickly after a rain event (orange sensor LED indicates 48-hour delay period)
- Protective disks allow nominal air flow while limiting water entry
- Durable solar shield serves to prevent inaccurate temperature readings and allows mounting in direct sunlight

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- Review menu accumulates total run times by zone from the last reset date
- Backtrack Stored Program™ feature allows contractor to easily store a default program and retrieve the saved program in the event a customer improperly reprograms the controller

Auto Adjust Features

- ZIP Code input (5 digit) or Latitude input (+/-60° from EQUATOR) establish location of site for solar radiation calculation
- Sprinkler type input allows selection for zone sprinkler type (SPRAY, ROTOR, DRIP, BUBBLER) with preset precipitation rate or specific input of the zone precipitation rate (.2" to 3.0" in. per hr.)
- Plant type input allows selection for zone plant type (COOL TURF, WARM TURF, SHRUBS, ANNUALS, TREES, NATIVE) with preset crop factors or specific input of the zone crop factor (10 – 300%)
- Soil type input allows selection for the soil type (CLAY, SAND, LOAM) and slope (1 – 25°) for the purpose of automatically calculating a run/soak period to virtually eliminate run off
- More/Less is settable by zone (-50% to +25%) for the purpose of fine tuning Auto Adjust run times to accommodate factors like shade, wind, and sprinkler inefficiencies

Manual Operation

- Manual test runs each zone with zone run times from 10 sec. up to 10 min.
- Manual zone operation of a single zone (1 min. to 9 hrs. 55 min.)
- Push button manual start of a program from control panel