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Smart Water Application Technology™ (SWAT™) Performance Summary

Testing Agency: Center for Irrigation Technology **www.californiawater.org**

Product: Toro® TMC-424Ewith Irritrol® Climate Logic™ Kit

Product Type: Climatologically Based Controller

Product Description: Toro TMC 424E controller with Climate Logic Kit (CL-100 Wireless includes CL-M1 receiver module and CL-W1 Weather sensor/transmitter) to convert conventional controller to smart controller.

SWAT Protocol*: Turf and Landscape Equipment Climatologically Based Controllers 8th Draft Testing Protocol (Sept. 2008)

The concept of climatologically controlling irrigation systems has an extensive history of scientific study and documentation. The objective of this protocol is to evaluate how well current commercial technology has integrated the scientific data into a practical system that meets the agronomic needs of turf and landscape plants. The evaluation is accomplished by creating a virtual landscape subjected to a representative climate to evaluate the ability of individual controllers to adequately and efficiently irrigate that landscape. After initial programming and calibration the controller is expected to perform without further intervention during the test period. Performance results indicate to what degree the controller maintained root zone moistures within an acceptable range. If moisture levels are maintained without deficit, it can be assumed the crop growth and quality will be adequate. If moisture levels are maintained without excess it can be assumed that scheduling is efficient.

***All SWAT protocols may be viewed at www.irrigation.org**

Toro TMC 424E with Climate Logic Kit SWAT™ Performance Summary

Irrigation Adequacy	Irrigation Excess
Minimum of 6 test zones: 100% **Maximum of 6 test zones: 100%** **Mean/Average of 6 test zones: 100%** **Irrigation Adequacy** represents how well irrigation met the needs of the plant material. This reflects the percentage of required water for turf or plant material supplied by rainfall and controller-scheduled irrigations. Research suggests that if this value is between 80% and 100%, the acceptable quality of vegetation will be maintained.	**Minimum of 6 test zones: 0%** **Maximum of 6 test zones: 5.3%** **Mean/Average of 6 test zones: 1.6%** **Irrigation Excess** represents how much irrigation water was applied beyond the needs of the plant material. This reflects the percentage of water applied in excess of 100% of required water according to data from CIMIS station #80 Fresno State, Fresno County during the test period.

Product Detail Supplied by Manufacturer

Toro TMC-424E with Climate Logic Kit **www.toro.com**

Installation	Data Source	Data Link	Initial Purchase	Additional Hardware	Additional Fees
New or existing TMC-424E controllers.	Compact on-site sensors transmit daily weather information (solar and temperature) to receiver module.	Wireless communication up to 1000 feet line of sight signal range.	Climate Logic Kit includes receiver module, cable adapter, weather sensor with rain/freeze interruption.	Optional remote control.	none

Additional Features

Zones	Time of Day	Day of Week	Other	If Data Link is Discontinued
4-24 zones with 4 or 8 zone modules; indoor/outdoor models	Capability to independently restrict the time of day for watering in each of 4 programs.	Capability to independently set an day(s) of the week, 1-31 skip days or even/odd date for each of 4 programs	❑ 10-year historical weather database w/SD Card included ❑ Site specific customization with zip code or latitude/longitude. ❑ Automatic split-cycle for hot weather adjustments>100% ❑ Wireless weather sensor interfaces with multiple receivers. ❑ Adjustable irrigation delay (0-3 days) following a rain event. ❑ Run times in seconds or minutes	Visual alarm will display on receiver's LCD; 10-year, site specific historical average will be used until on-site weather data transmissions re-establish. Existing rain/cold weather interrupts remain in effect per Receiver Module settings.