IRROMETER®

***The WATERMARK Monitor is a Data Logger; a device that automatically records soil moisture readings. This reading history provides a vivid picture of the soil moisture profile your irrigation practices have created. The data can be evaluated to determine ways to improve irrigation scheduling for optimum results. Individual sensor readings display on the monitor and can be taken manually at any time. The in-field display allows you to make on-the-spot checks for scheduling purposes while periodic readings are automatically taken to record the performance history.***

***Features:***

- ***Automatically reads the following sensor types –***
  **WATERMARK** Soil Moisture Sensors, Soil Temperature Sensors, Switch Closures, Tipping Bucket Rain Gauges, Voltage Output **IRROMETER** Soil Moisture Indicators, Remote sensing unit **IRROMETER** Soil Moisture indicators, Voltage Input
- ***Eight Sensor capacity***
- ***User selectable reading frequency***
- ***In-field display of current readings and recent history***
- ***User creates unique names for identifying logger and sensors***
- ***Weatherproof enclosure with two strain relief fittings for wiring connections, predrilled mounting hole pattern***
- ***WaterGraph software included for graphic data display on a Windows® computer***
- ***Battery powered***
- ***USB and Serial download ports***

## WATERMARK Monitor — 900M

***Specifications –***

**COMPATIBILITY:** Reads WATERMARK Soil Moisture Sensors, Soil Temperature Sensors (F or C), switch closures, IRROMETER Soil Moisture Sensors with electronic outputs (options "RSU-V" & "RSU-C") and tipping bucket rain gauges. Directly interfaces with WaterGraph software for data transfer and display. Directly interfaces with Model 900DS Data Shuttle device. Serial and USB ports, SDI-12 data output available.

**POWER REQUIREMENTS:** Includes one 9 volt alkaline battery for approximately one year of service.

**MATERIALS:** Conformal coated electronic circuit board with aluminum faceplate mounted in weatherproof ABS plastic enclosure.

**DIMENSIONS:** **HEIGHT:** 9.75 in (24.8 cm) **WIDTH:** 7.9 in (20 cm)
**DEPTH:** 3.5 in (8.9 cm) **WEIGHT:** 2 lb (.9 kg) *(900M-O – monitor only, no sensors)*

***New Features –***

- Built-in switched power to support higher current draw sensors and telemetry devices
- Terminal Strip connections for: SDI-12 output, Ground, Control output and auxilliary power
- Broader temperature range

**SETTINGS AND CAPACITIES:**

| SELECTABLE READING INTERVALS: | STORAGE CAPACITY: | SELECTABLE READING INTERVALS: | STORAGE CAPACITY: |
|---|---|---|---|
| 1 minute | 2 days | 1 hour | 170 days |
| 5 minute | 14 days | 2 hours | 341 days |
| 10 minute | 28 days | 4 hours | 682 days |
| 15 minutes | 42 days | 8 hours | 1365 days |
| 30 minutes | 85 days | 12 hours | 2048 days |
| | | 24 hours | 4096 days |

Temperature compensation of WATERMARK Sensors can be done by programming default temperature value or by using one or more Soil Temperature Sensors to compensate individual, several or all attached WATERMARKS.

**WARRANTY:** One year

**OPERATING PRINCIPLE:** The WATERMARK Monitor is a battery powered automatic data collection device that reads, displays and stores data from up to eight user selectable sensor inputs. It is designed for outdoor installation with directly wired sensors and records data on a user selected interval that can be downloaded locally or remotely for graphic display on a computer screen. The graphic display allows for easier interpretation of the data, facilitating scheduling practices that enhance irrigation water use efficiency.

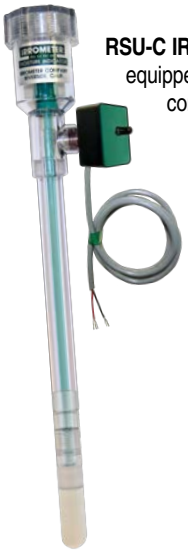
**SPECIFICATION INFORMATION:** The irrigation system will incorporate WATERMARK Monitor(s) for automatic on-site sensor data collection to continuously monitor soil moisture and other site characteristics. This data collection device shall be capable of directly reading WATERMARK brand soil moisture sensors, temperature sensors, switch closures and other devices on user selectable intervals. It shall display current status and provide a USB and serial connection for local or remote download of stored values for display on a computer screen. It shall be Model 900M as manufactured by the IRROMETER Co., Inc. of Riverside, CA.

**ORDERING INFORMATION:** Available as a data logger only (with no included sensors), or bundled with different sensor assortments:

| MODEL NUMBER: | INCLUDES: |
|---|---|
| 900M | 1 Soil Temperature Sensor, 7 WATERMARK Sensors |
| 900M-8 | 8 WATERMARK Sensors |
| 900M-1-6-PPS | 1 Soil Temperature Sensor, 6 WATERMARK Sensors, 1 5PSI Preset Pressure Switch |
| 900M-O | Monitor only, without sensors |

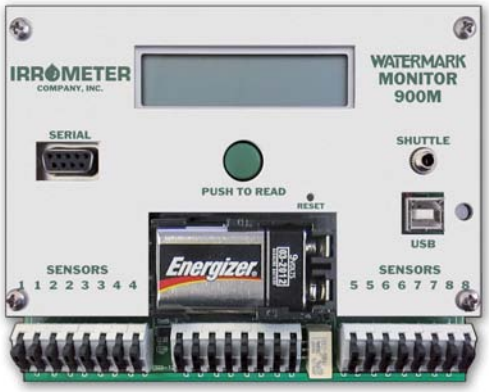
# WATERMARK MONITOR — 900M

## *Monitor Options & Accessories*



**RSU-C IRROMETER** – records IRROMETER Tensiometers equipped with a 4-20mA transducer. Requires adapter for connection to Monitor (up to 4 RSU-Cs per adapter).

**RSU-V IRROMETER** – records IRROMETER Tensiometers equipped with remote sensing unit. 05 - 4.5V, 2.5mA output voltage. Requires adapter board for connection to monitor (up to 8 RSU-Vs per adapter).



**PPS 5psi Preset Pressure Switch** – records irrigation events when used with 900M datalogger.

**900DS Data Shuttle –** allows download of data from multiple WATERMARK monitors onto an included multimedia card. Transfer downloaded data to a computer for display. The Data Shuttle will not display the data; it collects and transfers data only.

**200SS-15 WATERMARK Sensor** – with 15' (4.5 m) wire lead. Reads electrical resistance of soil moisture.

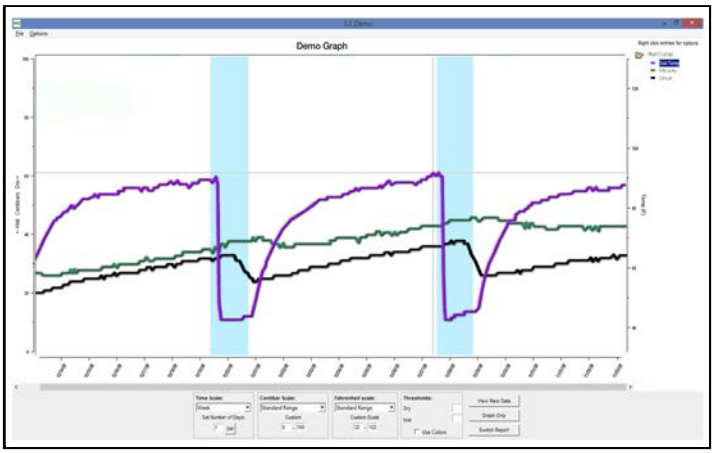
**200SS-15-S WATERMARK Sensor with Spigot End** – 5' (4.5 m) wire lead. Designed for stacking on PVC

**900RG Rain Gauge** – Tipping bucket style rain gauge with integral bird spikes and mounting base.

**200TS Temperature Sensor** – with 15' (4.5 m) wire lead. Measures soil temperature.

**900M-CG-BP – Cellular Gateway and Battery Pack –** mounts outdoors at the Monitor for dedicated cellular connection. Includes Gateway device, battery pack, 5 Watt solar powered recharging panel, ABS enclosure, aluminum mounting plate, 15 ft (4.5 m) cable.

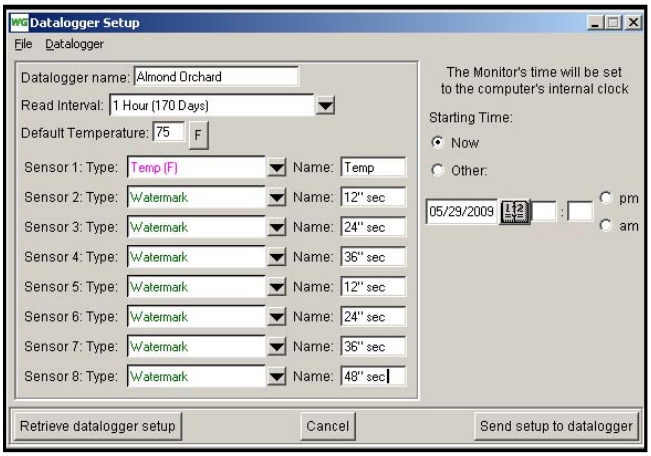
***The WATERMARK Monitor is user-programmed for the individual characteristics of the site being monitored using WaterGraph Software WG3 for 900 Series Monitors.***




## WG3 – 900 Series Features

- ***A unique location name***
- ***Automatically take readings from once a minute to once a day***
- ***A unique name for each sensor being read***
- ***The date and time you want readings to begin***
- ***Averaging features***
- ***The selection of sensor type for each input port:***
  - ***WATERMARK Soil Moisture Sensor***
  - ***Temperature Sensor (Fahrenheit or Centigrade)***
  - ***Switch position***
  - ***IRROMETER Model RSU-C (4-20mA transducer)****
  - ***IRROMETER Model RSU-V (.5-4.5V)****
  - ***Rain Gauge***
  - ***Off***

**Requires adapter*




## WaterGraph program features:

Stored readings are downloaded to a computer for display, as in the example above. Other display options are available.

The **WaterGraph** software, free with the WATERMARK Monitor, is used to set up your individual site profile, launch the data-logger, download recorded history and graphically display the results.

The data file created can also be opened by some spreadsheet or graphing programs, including Microsoft Excel®.

The graphs illustrate the trends of soil moisture at different depths in the root zone. This graphical representation makes it easier to interpret the site conditions as you schedule irrigations. Proper management of the soil moisture will produce better quality and higher yield crops, while often saving water and labor costs. Irrigation events can also be displayed as indicated by the background vertical bar graph.

Data from the WATERMARK Monitor can be downloaded directly to a laptop computer in the field, transferred by a Data Shuttle or retrieved remotely via telemetry. Cellular telemetry is available as an option that can be purchased with a monitor, or easily retrofitted to an existing monitor already installed.

Cellular Data Service is required for cellular telemetry and is available for an annual subscription fee.

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