

*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 (ADAPTER REQ'D), Electronic Output IRROMETER Soil Moisture Indicators (ADAPTER REQ'D), Remote sensing unit IRROMETER Soil Moisture indicators (ADAPTER REQ'D), Voltage Inputs
- **Eight Sensor capacity**
- **User selectable reading frequency**
- **In-field display of current readings**
- **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**

**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 “E” & “RSU”) with adapters and tipping bucket rain gauges with adapters. Directly interfaces with WaterGraph software for data transfer and display. Directly interfaces with Model 900DS Data Shuttle device.

**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)

**SETTINGS AND CAPACITIES:**

SELECTABLE READING INTERVALS:	STORAGE CAPACITY:
1 minute .....	2 days
5 minute .....	14 days
10 minute .....	28 days
15 minutes .....	42 days
30 minutes .....	85 days
1 hour .....	170 days
2 hours .....	341 days
4 hours .....	682 days
8 hours .....	1365 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 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-PSI 60 ..	1 Soil Temperature Sensor, 6 WATERMARK Sensors, 1 60 PSI Switching Pressure Gauge
900M-O .....	Monitor only, without sensors

**WATERMARK**

# WATERMARK MONITOR — 900M

## Monitor Options & Accessories



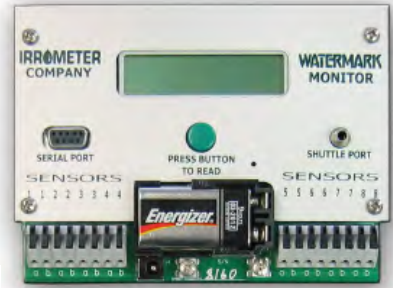
**RSU IRROMETER** – records IRROMETER Tensiometers equipped with a 4-20mA transducer. Requires 900-RSU Adapter and power supply for connection to Monitor.



**7 Series Switching Pressure Gauges** – records Switch Positions to indicate irrigation events.  
7- \* - DC - Switch  
\* Pressure Ranges from 30 to 400 PSI.



**Electronic Switching Gauge** – records soil tension readings automatically.  
7- \* - E  
\* Pressure Ranges from 30 to 400 PSI.  
(REQUIRES ADAPTER)



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

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



**USB to Serial Adapter** – converts a USB port on a laptop to a DB9 serial connection.

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



**900RG Rain Gauge** – Tipping bucket style rain gauge.  
(REQUIRES ADAPTER, SEE BELOW)

**900M-RGA Rain Gauge Adapter** – allows 900RG Rain Gauge to be read by 900M Monitor. Suitable for outdoor mounting.



## Telemetry Options

Radio signal is "line of sight" and varies with site conditions, such as topography, buildings, plant canopy and electrical interference. Range is increased the higher the Field Radio is installed.

Component parts required for a complete telemetry system:

**900M-BP- Battery Pack** – connects to 900M-FR to provide power to the radio transmitter if 115 VAC is not available; includes solar recharging panel.



**900M-FR – Field Radio Transmitter Module** – mounts at the monitor, includes 10' (3 m) cable and 115 VAC plug-in style transmitter.

**900M-BR – Base Radio Receiving Module** – mounts outdoors near the computer used to communicate with the monitor; includes 115 VAC plug-in style transformer and cable for connection to host computer.



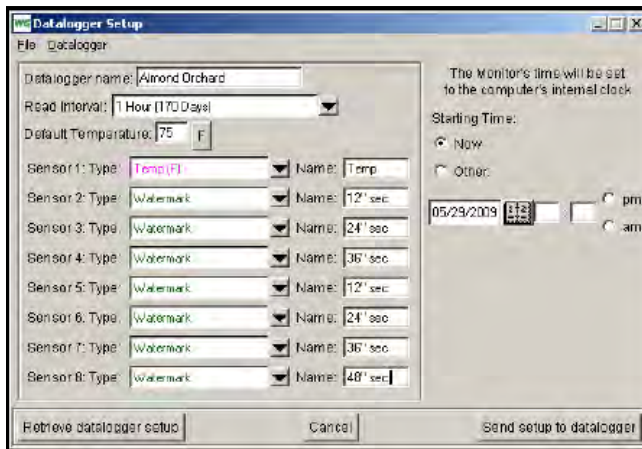
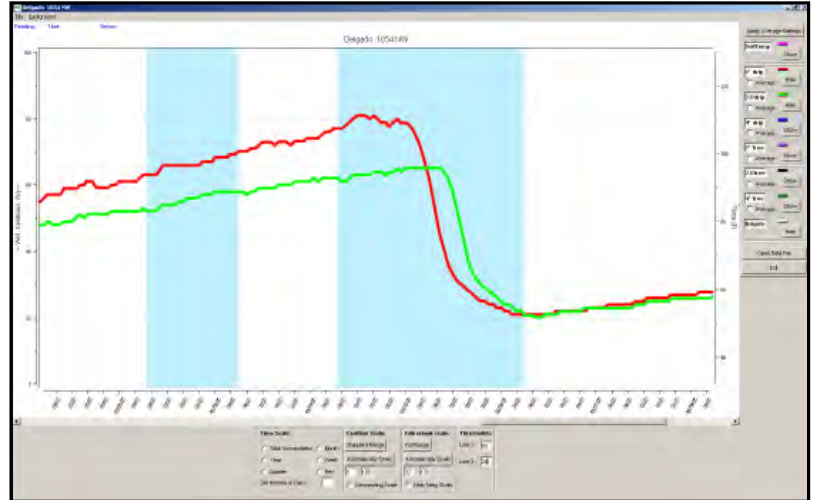




*The WATERMARK Monitor is user-programmed for the individual characteristics of the site being monitored using WaterGraph Software WG3 for 900 Series Monitors.*

## 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 (4-20mA transducer)\*
  - IRROMETER Model E\*
  - Electronic pressure gauges
  - 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, included with the WATERMARK Monitor, is used to set up your individual site profile, launch the datalogger, 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 two 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. Radio and cellular telemetry are available as options that can be purchased with a monitor, or easily retrofitted to an existing monitor already installed.

Radio Management software is included with Radio Telemetry Options.

The screen to the left shows a sample radio configuration. New radios can easily be entered as the system is expanded.

Radio telemetry systems can be ordered pre-programmed for ease of installation.

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