



## IC-10 Sensor Monitor Guide

**Device ID:** \_\_\_\_\_

**\*IMPORTANT\*** This **Device ID** will be required to register your device. If installing multiple devices, make sure to note which ID's are installed in each location.

The IC-10 is a cellular device reporting to IRROMETER's IRROcloud platform. Reliable cellular service is required in the area of installation for proper operation.

Additional information about using the IRROcloud platform, sensor interpretation, wire extension requirements, and troubleshooting can be found on the home page of IRROcloud by clicking on the IRROcloud icon in the upper left.

[www.irrocloud.com](http://www.irrocloud.com)

### IRROcloud Registration

We recommend registering your device prior to installation to allow for quick validation of communication once installed. If this is your first IC-10, you will need to create an account on the IRROcloud platform:

Go to [www.irrocloud.com](http://www.irrocloud.com) and select the "Create New Account" option in the lower right of the login screen. Follow the prompts to create and then activate your new account. A valid email address will be required.

Once your account is created, or you already have an existing account, you will need to add this device to your account. Login, go to the main Dashboard page, click on the "Register New Device" link in the upper left of the device list.

Input the device ID code from above and choose confirm. The IC-10 will now be added to your account and will be visible on the device list.

## IC-10 Installation

This Monitor is shipped with the batteries uninstalled. Complete the rest of the installation before installing the batteries.

A Phillips head screwdriver will be required for installation. If modifying sensor wire lengths, cutting and stripping tools will also be needed, along with waterproof wire splices. Sensor installation may require a 7/8" (22 mm) diameter bar (or 1/2" IPS pipe) or an IRROMETER Coring Tool, Auger, or Slide Hammer Tool.

The IC-10 can be mounted on a pole or post with the provided screws. Secure with holes at the top and bottom flanges. Installation must be vertical, and at a height that will prevent any flooding of the enclosure. Additional height may be necessary for areas with poor cellular reception.

Use a screwdriver to remove the six screws securing the cover. These screws are not retained in the cover, use care to avoid losing any.

Remove the plug from each cable gland used and route sensor wires into the IC-10, pulling enough through to provide some slack in the wires after connection. Tighten the gland on the fitting to secure the wires and weather-proof the enclosure. Leave the plugs in all unused glands.

Each sensor channel on the IC-10 is labeled for the appropriate sensor, two wires per channel:

**S-TEMP:** Soil Temperature Sensor (Red Wires)

**SM1 – SM6:** Watermark Soil Moisture Sensors (Green Wires)

**IRRIG:** Irrigation Switch (Red and Black Wires)

**RAIN:** Tipping Bucket Rain Gauge (Red and Yellow Wires)

**A-TEMP:** Air Temperature Station (Black Wires)

To connect the sensors, lift the black lever on each port, insert the stripped wire end, and close the lever.

Once all sensors are connected and installation is complete, install the batteries as shown in the battery holder. In about one minute, the IC-10 will attempt to connect to IRROcloud. Success is indicated by the following patterns on the green LED located above batteries:

- Solid for up to 30 seconds (attempting to connect to cellular network)
- Blinking for 5 to 20 seconds (connected to network, attempting to send data)
- Solid for up to 30 seconds (success, disconnecting)

If the LED never blinks, a cellular connection could not be established. Once this pattern completes, the device will show activity on IRROcloud if communication was successful. Install the cover using all six screws and installation is complete.

New units include data service which will require a renewal one year after activation. Expected battery life is 2+ years and no other hardware maintenance should be necessary.

If using the mapping feature on IRROcloud, note the exact location where the device is located so that you can input the latitude and longitude coordinates.

## **Sensor Installation**

### **WATERMARK (200SS - Green Wires)**

#### **Conditioning**

If time permits, conditioning the sensors before installation will provide the most accurate results immediately. Avoid soaking for extended period of time. Without conditioning, a few irrigation cycles will be needed before accurate response.

To condition sensors:

- Soak for 30 minutes partially submerged and let dry overnight
- Soak again for 30 minutes in the morning, let dry through the day
- Soak the sensors overnight, remove in the morning.
- Always install sensors wet.

#### **Installation**

Sensors must be installed in the root zone either vertically or up to a 45° angle. Using a 7/8" (22 mm) diameter bar (or 1/2" IPS pipe) or an IRROMETER Coring Tool or Slide Hammer Tool, make a hole to the desired depth. With hard or rocky soil, a larger hole can be made with a soil auger. Fill the bottom of the hole with a mud slurry made from native soil, then push the sensor down into the slurry. This process will 'grout' the sensor to the soil for maximum contact. Backfill the rest of the hole with the remaining mix. (visit [www.irrometer.com](http://www.irrometer.com) for installation videos)

Before installation, the sensor can be attached to a 1/2" class 315 PVC (thin wall SDR 13.5) or 3/4" CPVC (SDR 11) pipe with an PVC to ABS cement. The pipe becomes a conduit to protect the sensor wires and also helps to install and remove the sensor, if desired. Cap the top of the pipe to prevent water having access to the sensor through the pipe. A small hole should be drilled at the bottom of the pipe just above the sensor, to allow water to drain away if it becomes trapped in the pipe. (visit [www.irrometer.com](http://www.irrometer.com) for pipe assembly instructions)

### **Soil Temperature (200TS, Red Wires)**

The Soil Temperature sensor should be installed in at a depth representing an average of the upper two WATERMARK depths. All WATERMARK sensor readings will be compensated by this sensor if connected, for better accuracy.

Bore a 1/2" (13 mm) or larger diameter hole in the soil and insert the temperature sensor. Backfill the hole.

## **Air Temperature Station (ATS - Black Wires)**

The air temperature station includes a radiation shield for optimal sensor accuracy and can be used to send text message alerts for frost reporting.

## **Sensor Placement**

A “sensor station” is a single point of measurement with multiple sensors installed at different depths. Shallow rooted crops less than 12” [30cm] can use a single sensor, but deeper-rooted row crops (small grains, vines) will need at least two depths and trees may require thee to cover the root zone. An IC-10 can be installed as a single sensor station, or split between two with wire extensions on the sensors. Not to exceed 1000ft (18 AWG). As a general rule of thumb, one sensor station every 10 to 15 acres is recommended.

**Furrow or Flood Irrigation**– Locate sensing stations about 2/3 of the way down the run, just ahead of the tail or backup water. This is the area where water penetration is usually the poorest. With tree crops, locate sensors on the southwest side of the tree (in the Northern Hemisphere) as this side gets the hot afternoon sun.

**Sprinkler Irrigation** –With tree crops, locate sensors at the drip line of the canopy being sure that they are not obstructed from the sprinkler’s distribution. With row crops, locate sensors right in the plant row.

**Center Pivot Irrigation** – Place sensors at 4-5 locations down the length of the pivot (between towers) just ahead of the ‘start’ point. Additional locations at “hot spots” or good production areas of the field, can help give a better overall view of the field.

**Drip or Micro Irrigation** – Sensors must be located in the wetted area. With drip emitters this is usually 12"-18" (30-45 cm) from the emitter. With micro-sprinklers, usually 24"-36" (60-90 cm) is best.

**WARRANTY:** The IRROMETER COMPANY warrants its products against defective workmanship or materials under normal use for one year from date of purchase. Defective parts will be replaced at no charge for either labor or parts if returned to the manufacturer during the warranty period. The seller’s or manufacturer’s only obligation shall be to replace the defective part and neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or inability to use the product. This warranty does not protect against abuse, shipping damage, neglect, tampering or vandalism, freezing or other damage whether intentionally or inadvertently caused by the user.

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