Solar Sync
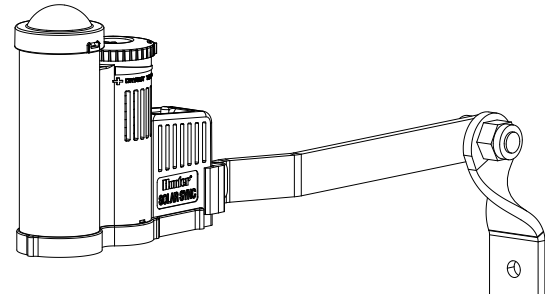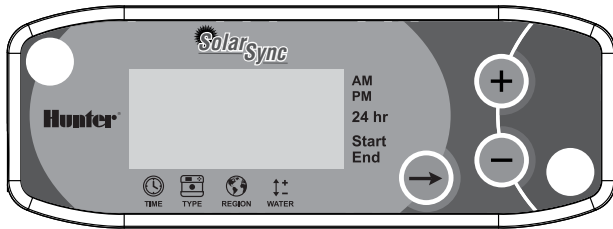
ET Sensor and Module for Hunter Pro-C/ICC Controllers

Owners Manual and Programming Instructions

Hunter®

TABLE OF CONTENTS ....

INTRODUCTION..

The Solar-Sync is a sensor system that, when connected to Hunter Pro-C and ICC controllers, will automatically adjust your controller watering based upon changes in local climate conditions. The Solar-Sync utilizes a solar and temperature sensor to measure on-site weather conditions used to determine evapotranspiration (ET), or the rate at which plants and turf use water. In addition, the Solar-Sync sensor includes a Hunter Rain-Clik™ and Freeze-Clik™ sensor that will shut down your irrigation system when it rains and/or during freezing conditions.

A small module connects the sensor to the controller and will automatically increase or decrease watering run times based on changes in weather. The result is a new water-efficient irrigation product that promotes water conservation and healthier plants. You simply program your controller like you normally would, and the Solar-Sync takes over from there, eliminating the need to manually adjust your watering schedule.

SYSTEM OVERVIEW AND OPERATION ....

The Solar-Sync System is simply and easily installed on any Hunter Pro-C or ICC irrigation controller. The System consists of the sensor that is placed in an area where it can receive full sun and rain. The module is installed next to or inside your Hunter Pro-C or ICC controller. The Solar-Sync sensor measures solar radiation and temperature and calculates the daily evapotranspiration (ET) factor for irrigation. This represents the amount of water lost by the plants due to local climatic conditions, which needs to be replaced by irrigation. The Solar-Sync sensor also includes a Hunter Rain-Clik™ rain sensor that will automatically shut down the irrigation system during rain events, thus preventing unwanted irrigation when it is raining.

Enter a mid summer watering program in your Pro-C or ICC per the programming instructions in the Owner's Manual provided with your controller. The Solar-Sync module receives data from the sensor and applies it daily to the controller's water schedule by adjusting the controller's programmed irrigation run times through the seasonal adjustment feature in the controller.
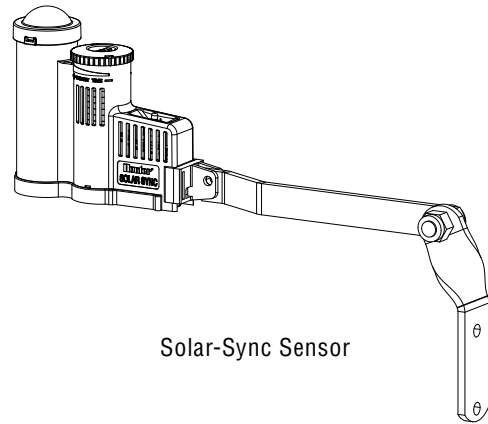
Solar-Sync Sensor
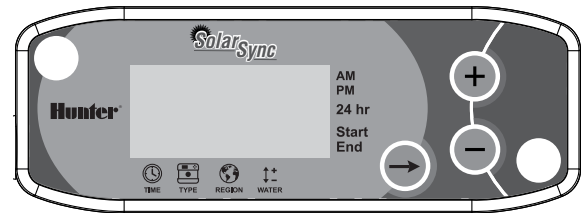
Solar-Sync Module

SYSTEM INSTALLATION ....

Installing the Sensor

Using the screws provided, mount the Solar-Sync sensor on any surface where it will be exposed to unobstructed sun and rainfall, but not in the path of sprinkler spray. The sensor needs to be oriented upright and the swivel bracket can be moved for mounting on angled surfaces. Loosen the locknut and screw before swiveling the bracket and then retighten. The Solar-Sync sensor is designed to be wired directly to the Solar-Sync module and not to the sensor terminals inside the controller. The Solar-Sync sensor is supplied with 40 ft./12 m of wire, however, additional wire can be added to the sensor to a maximum of 200 ft./60 m (18 AWG/1 mm diameter minimum).

> ⚠ **Note: Place Solar-Sync sensor where it can receive full sun.**

Attach the **Green** and **Black** wires from the sensor to each of the corresponding **Green** and **Black** wires from the module. It is recommended that these connections be made inside the controller cabinet, if mounted outdoors. Use waterproof wire connectors if the wire connection is installed outside.

Sun

Solar Sync
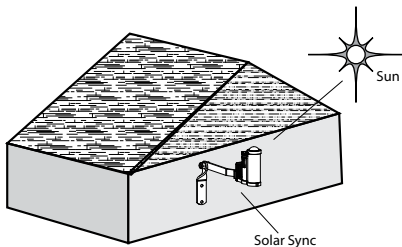
The Rain-Clik™ will keep the irrigation from starting or continuing during rainfall. No adjustment or calibration is required for the Rain-Clik™ sensor. The Rain-Clik™ uses patented Quick Response technology that will shut the system off during the first few minutes of rain. The only adjustment that is necessary is the vent ring that will either slow down or speed up the time at which the sensor dries out and the system is turned back on. Opening the vent will speed up the dry out time and closing the vents will slow down the dry out time.

Vent Ring

Vents
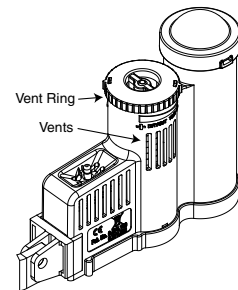
In addition, the Solar-Sync's built-in temperature sensor provides system shutdown when freezing conditions occur. At approximately 37° degrees/3°C and below the Solar-Sync module will command the controller to shut down. A "sensor off" indication will be displayed on your controller when the sensor is active. When temperatures rise above 37 degrees/ 3°C, automatic irrigation will be activated.
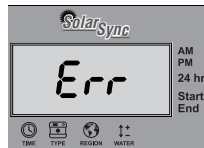
Sensor Fault Message

If the Solar-Sync module shows Err, check the connections between the module and the sensor.

Solar Sync

Err

AM
PM
24 hr
Start
End

TIME   TYPE   REGION   WATER

3

Maintaining the Sensor

The Solar-Sync sensor is designed for outdoor use, but must be kept clean to function correctly. Wiping the clear dome covering the solar radiation sensor every 6 months is recommended. Do not use harsh chemicals or abrasives on the clear dome.

DOME
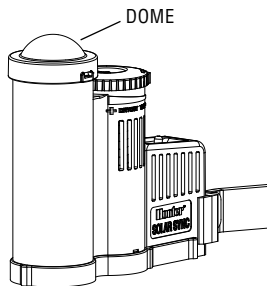
Installing and Wiring the Module

Begin by activating the CR2032 backup battery (used for date/time backup in the event of a power outage) by pulling the battery insulator at the bottom of the module. The expected battery life is ten-years. If the battery requires replacement, the battery compartment is located on the back of the Solar-Sync module. Remove the cover and install the battery with the positive side (+) of the battery visible, facing toward you. Replace the battery cover.
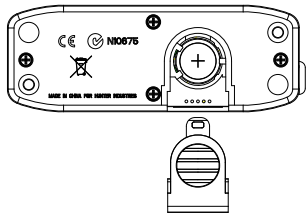
The Solar-Sync module is designed to be wall-mounted next to the irrigation controller. A rubber cover is provided for outdoor installations to protect the module from the weather. Use two anchors or self-tapping screws to secure the module to the wall. Place the rubber cover mounting tab behind the module before screwing the module to the wall.
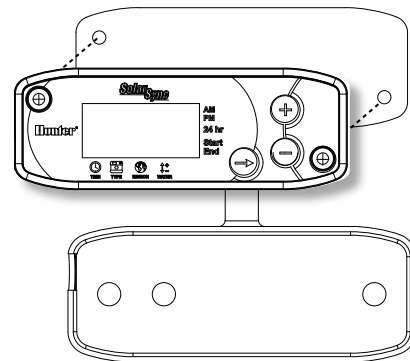
Bypassing the Sensor

If the Rain Sensor or Freeze Sensor is preventing system operation, SENSOR OFF will be displayed on the controller's display. Simply move the Bypass switch on the controller to **BYPASS** and the Solar Sync's Rain and Freeze Sensor will be bypassed. This allows you to operate your system. The Solar Sync will continue to make adjustments to your controller's watering schedule.

The controller's Rain Sensor switch should be in the **ACTIVE** position for the Rain Sensor and Freeze Sensor to interrupt watering during rainy and/or freezing conditions.
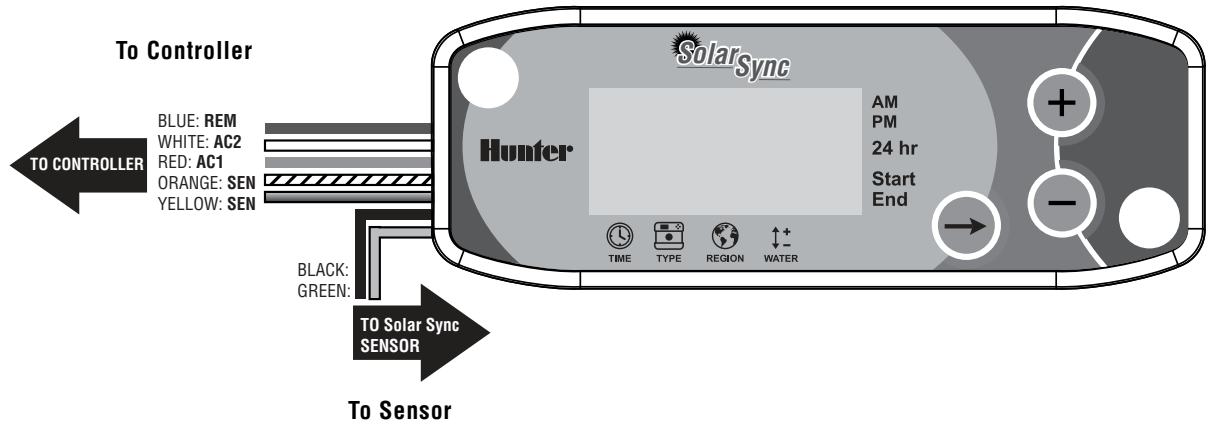
Installing the Solar-Sync Module

Turn off AC power to the irrigation controller, before connecting the Solar-Sync module to the controller. The 7-conductor cord extends through the left side of the module and is color-coded to simplify wiring connections.

Wire from module	Attach wire to:
Red	24 VAC (AC terminal 1)
White	24 VAC (AC terminal 2)
Blue	Remote terminal (REM)
Yellow	Sensor terminal (SEN)
Orange	Sensor terminal (SEN)
Green	Solar-Sync Sensor (green wire)
Black	Solar-Sync Sensor (black wire)

SOLAR-SYNC MODULE WIRING CONNECTIONS

To Controller

BLUE: **REM**
WHITE: **AC2**
RED: **AC1**
ORANGE: **SEN**
YELLOW: **SEN**

TO CONTROLLER

*Solar*Sync

Hunter

AM
PM
24 hr
Start
End

TIME   TYPE   REGION   WATER

BLACK:
GREEN:

TO Solar Sync
SENSOR

**To Sensor**

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Pro-C Controller Connection (PCC Series)

The PCC series version of the PRO-C is designed so that the Solar-Sync module can be installed inside the controller cabinet. Use the two screws provided to mount the module as shown in the diagram.

1. Connect the **red** wire from the ET Module to the AC1 terminal.
2. Connect the **white** wire from the ET Module to the AC2 terminal.
3. Connect the **blue** wire from the ET Module to the REM terminal.
4. Remove the flat metal jumper from the two SEN terminals.
5. Connect the **yellow** wire to one of the SEN terminals.
6. Connect the **orange** wire to the other SEN terminal.

Pro-C PCC Controller   **Solar Sync Module**

⚠ **Note: For Pro-C PCC Series controllers, there are provisions inside the controller to mount the Solar-Sync module.**

Controller Connections

SEN: ORANGE   **REM:** BLUE
**SEN:** YELLOW   **AC2:** WHITE
                    AC1: RED
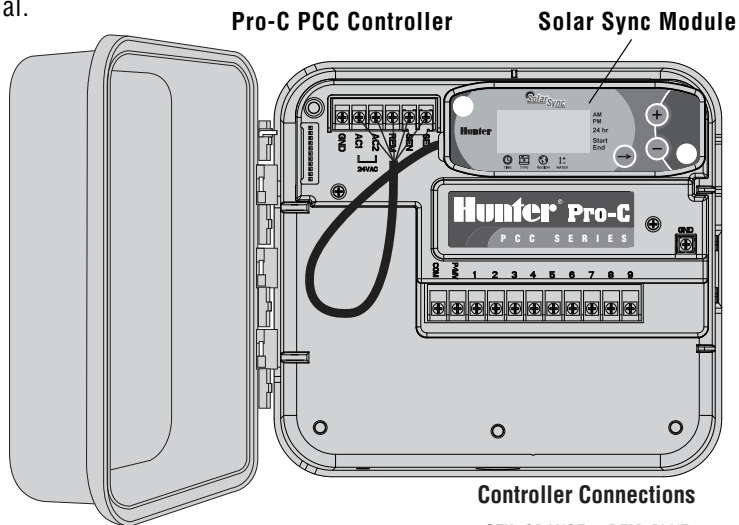
Pro-Controller (PC Series)

For the PC series PRO-C Modular controller, mount the Solar-Sync module on the wall next to the controller cabinet. There is an additional knockout on the right side of the controller cabinet to route Solar-Sync wires into and out of the cabinet.

1. Connect the **red** wire from the ET Module to the AC1 terminal.
2. Connect the **white** wire from the ET Module to the AC2 terminal.
3. Connect the **blue** wire from the ET Module to the REM terminal.
4. Remove the flat metal jumper from the two SEN terminals.
5. Connect the **yellow** wire to one of the SEN terminals.
6. Connect the **orange** wire to the other SEN terminal.
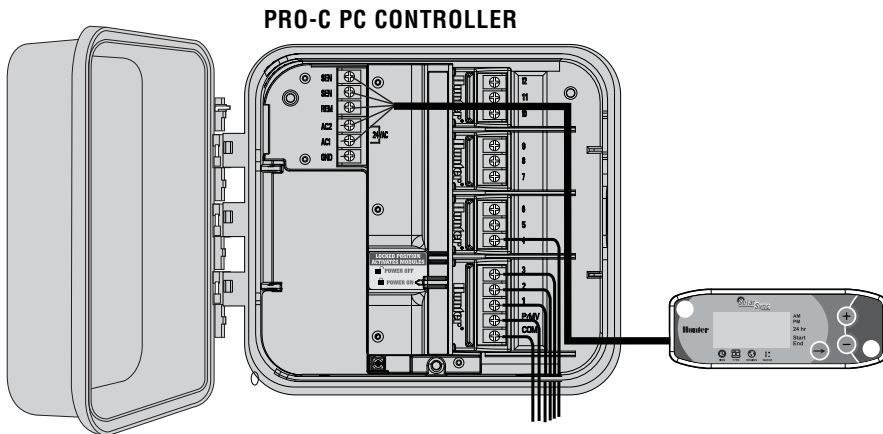
ICC Controller Connection

1. Connect the red wire from the ET Module to the bottommost of the terminals on the power module labeled "AC".
2. Connect the **white** wire from the ET Module to the upper of the two terminals on the power module labeled "AC".
3. Connect the **blue** wire from the ET Module to the terminal in the controller labeled REM.
4. Remove the flat metal jumper from the two SEN terminals.
5. Connect the **yellow** wire to one of the SEN terminals.
6. Connect the **orange** wire to the other SEN terminal.

PRO-C PC CONTROLLER

ICC POWER MODULE

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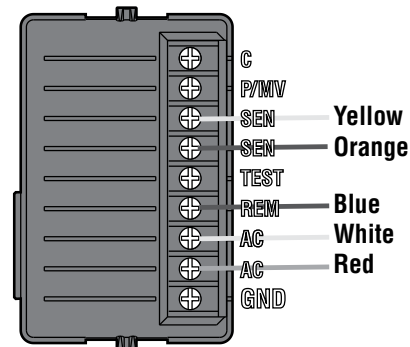
PROGRAMMING YOUR CONTROLLER ....

Program your Hunter Pro-C or ICC controller as specified in the Owners Manual for your controller. **When setting station run times, enter the time that would normally be programmed during the peak summer watering season.** The Solar-Sync is designed to adjust all run times daily based upon on-site weather conditions. This is done through the seasonal adjustment feature on your controller. It is recommended that all programming be conducted with the controller Seasonal Adjustment set at 100%.

Making Adjustments

After programming the Solar-Sync module and your controller, it is recommended that you leave it a few days to gather sun and temperature data. If necessary, there are two ways to make adjustments:

- If your landscape is wetter or drier than it should be, the watering adjustment feature on the Solar Sync Module (see page 11) can be used to make global watering adjustments.

- If you find an individual zone is wetter or drier than the rest of the site, simply increase or decrease the amount of run time entered in the controller for that station.

> ⚠ **Note: Set station run times for peak summer watering with seasonal adjustment set at 100%**

PROGRAMMING THE SOLAR-SYNC MODULE ....

The Solar-Sync is simple to program. Only a few initial steps are necessary to program the module. When power is initially turned on the display will show the time of day. Pressing the ➔ button will sequence through the programming functions on the module. An arrow along the bottom of the display will indicate the function being programmed.
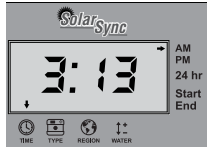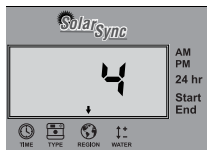
Current Time 🕐
Press the ➔ button press until the arrow is displayed over the 🕐 icon. The time of day will be flashing. Use the ⊕ or ⊖ button to set the current time. The arrow to the right of the display indicates AM or PM.
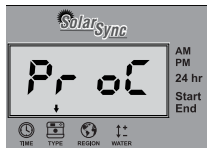
Controller Type ▦
Press the ➔ button until the arrow is displayed over the ▦ icon. Use the ⊕ or ⊖ button to select either a Pro-C or ICC controller.

Region 🌐
For accurate measurements, the Solar-Sync module needs to be programmed for the typical ET (average July ET) for your region. Use the table on the next page to determine your region. Press the ➔ button until the arrow is displayed over the 🌐 icon. Use the ⊕ or ⊖ button to select your region (regions 1 through 4).

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PROGRAMMING THE SOLAR-SYNC MODULE ....

The table will assist you in identifying the type of region you live in. There are four basic ET regions, each with descriptions of the region, along with typical ET and temperature characteristics. It is recommended that, if possible, the region be chosen based upon average July ET or peak summer ET (inches/mm per day).

Use the following table for choosing your region (reference below). You can use the A, B or C row to help you choose which region is best for your area:

A) Based upon the ET of your region using the **average** July ET or peak summer ET (inches/mm per day). This is the preferred option when selecting your region.

B) Based upon the temperature for your region using the **average** July or the dryest month high temperature (not the highest temperature for July).

C) Based upon the general description of your region.

If any of the choices in the rows apply to your situation, then that is your region setting choice.		
If the average July ET is **< 0.17" (4.3mm) per day**	If the average high temperature for July is **65°-75° (18°c - 24°c)**	• **U.S. Northern States** • **Coastal Regions**
If the average July ET is **0.18" – 0.23" (4.6mm – 5.8mm) per day**	If the average high temperature for July is **75°-85° (24°c - 29°c)**	• **Mountains** • **U.S. Northern Inland States**
If the average July ET is **0.24" – 0.29" (6.1mm – 7.4mm) per day**	If the average high temperature for July is **85°-95° (29°c - 35°c)**	• **U.S. Southern States** • **Inland/High Desert**
If the average July ET is **> 0.30" (7.6mm) per day**	If the average high temperature for July is **95°-105° (35°c - 41°c)**	• **Deserts**

region **1** — region **1**
region **2** — region **2**
region **3** — region **3**
region **4** — region **4**

* For southern hemisphere locations use the month of January.
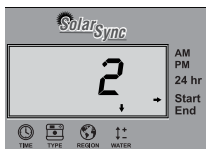
Watering Adjustment ↕±

If you find that your landscape is "wetter" or "drier" than it should be, a watering adjustment function is provided to adjust watering equally to all stations. Use the ➔ button until the arrow is displayed over the ↕± icon. Use the ⊕ or ⊖ button to increase or decrease the amount of watering scaled 1 to 10 (1 for less water and 10 for more water). Hunter recommends observing performance carefully over the first weeks of operation before adjusting the watering.

> ⚠ **Note: If an individual zone is "wetter" or "drier" than the rest of the system, simply add or decrease the amount of run time on the controller.**
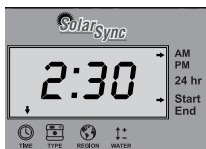
HIDDEN FEATURE

No Water Window

If required, the Solar-Sync offers no water window capability that prevents any irrigation from occurring during a specific period of the day. The No Water Window is a hidden feature. Press and hold the ➔ button for 5 seconds to program the No Water Window.

An ➔ will be flashing at Start along the right side of the display. Use the ⊕ or ⊖ button to adjust the time you would like the no watering period to start. Pressing the ➔ button again will display an arrow flashing at End. Use the ⊕ or ⊖ button to adjust the time you would like the no watering period to end.

Controller Compatibility

The Solar-Sync is designed for use with Hunter Pro-C (PC or PCC series), and ICC controllers.

Specifications

- Power Input: 24VAC 50/60 Hz (from controller)
- Current draw: 25mA @ 24VAC
- Non-volatile memory
- Replaceable 10-year lithium battery: CR2032 (for backup timekeeping only)
- Wiring: 18 AWG/1mm diameter minimum from the sensor to the module
- Max distance module from controller: 6 ft./2m
- Max distance sensor to module: 200 ft./60m

Dimensions

- Solar-Sync Sensor: 3"H x 9"L x 1"D
    (7.6cm x 22.9cm x 2.5cm)
- Solar-Sync Module: 1-3/4"H x 5"W x 5/8"D
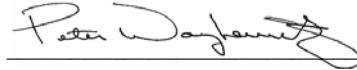   (4.4cm x 12.7cm x 0.6cm)

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential instal-lation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

CERTIFICATE OF CONFORMITY TO EUROPEAN DIRECTIVES

Hunter Industries declares that the irrigation sensor Solar Sync complies with the standards of the European Directives of "electromagnetic compatibility" 87/336/EEC and "low voltage" 73/23/EEC.

Project Engineer

CE