



WeatherTracker 300 Degree Day Tracker

PRODUCT MANUAL

Item # 3500



Spectrum[®]
Technologies, Inc.

CONTENTS

General Overview	3
Specifications	4
Station Installation	5
Meter Operation	6
Getting Started	7
Archives	11
Screens	12
Degree Days/ Chill Hours	14
Warranty	15

This manual will familiarize you with the features and operation of your new WeatherTracker. Please read this manual thoroughly before using your instrument. For

customer support, or to place an order, call

Spectrum Technologies, Inc.

(800) 248-8873 or (815) 436-4440

between 7:30 am and 5:30 p.m. CST

FAX at (815) 436-4460

E-Mail at info@specmeters.com

GENERAL OVERVIEW

Thank you for purchasing a WeatherTracker. All Weather Tracker models allow you to conveniently monitor air temperature. Your model may also have the ability to measure one additional sensor. Current conditions and historical data are easily viewed on the station's LCD screen.

The internal electronics calculate Growing Degree Days (GDD) for up to three degree day counters. For example, one counter can be activated at planting while another can track the development of insects. The station also calculates Chill Hours, which is the total amount of hours during which temperatures have been below a specified low temperature. The arrow keys allow you to scroll through the sensor readings, Degree Day/Chill Hour calculations as well as set your temperature ranges.

SPECIFICATIONS

The air temperature sensor has a measurement range of -4° to 158°F (-20° to 70°C) and an accuracy of ±1°F (±0.7°C). The ranges and accuracies for the applicable external sensors are listed in the following table.

Model #	External Sensors	Measurement Range	Accuracy
300	None	N/A	N/A
310	Temperature	-22° to 212°F -30° to 100°C	±1°F ±0.7°C
360	Rainfall	maximum of 2" per hour	±4%
365	Temperature ----- Rainfall	-22° to 212°F -30° to 100°C ----- maximum of 2" per hour	±1°F ±0.7°C ----- ±4%

STATION INSTALLATION

The WeatherTracker has the versatility to be located in any micro-climate for recording weather data. Hardware is included for attaching it to a 1" to 1¼" outside diameter mast (pipe). Use a 5' - 10' length of conduit or pipe as the mast mount. When purchasing and/or cutting the mast to size, plan on placing 1½' - 2' of the mast into the ground. It can also be mounted to a wooden post with the screws that are provided.

The radiation shield protects the temperature sensor from solar radiation and other sources of reflected heat. If other sensors are included, secure the sensor wires to the mast just below the display module with a plastic tie. This will make the wires less vulnerable to being accidentally severed during the season.



Figure 1: WeatherTracker mounted on 1" conduit

METER OPERATION

The WeatherTracker does not have a button or switch for powering up and down. Instead, the device is operational whenever the battery is installed. The battery connection can be accessed by removing the face plate (fig. 2). The cover may be difficult to remove. Exercise care when replacing the plate to ensure the buttons are not damaged. When replacing or reinstalling the battery, the time and date must be reprogrammed (see Setting Date and Time p. 6). The Current Conditions screen is updated every 20 seconds.

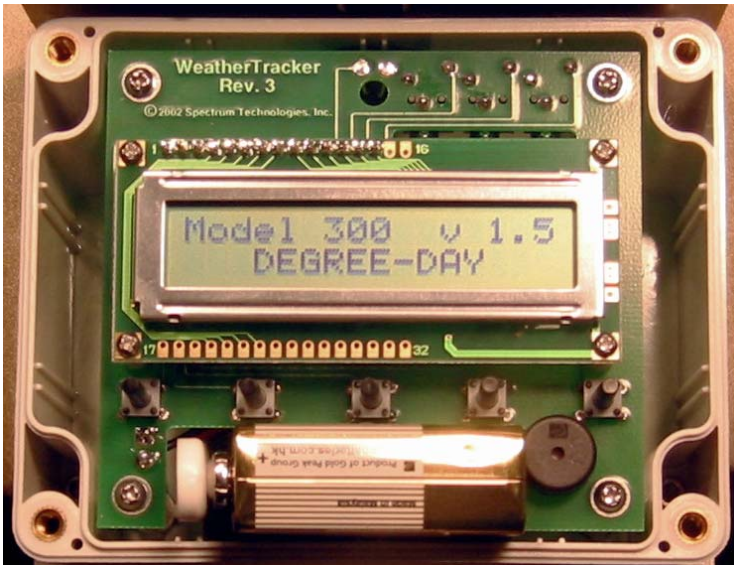


Figure 2: WeatherTracker Battery Compartment

GETTING STARTED

New meters, or meters that have been out of service, must be configured before being placed in the field. This section takes you through the configuration process. After setting the time, unit system, or calculation parameters, the display will revert to the Current Values screen (see **Screens**, p.12)

Install Battery (see **Meter Operation** pg. 5) for instructions on installing the battery.

Setting Date and Time:

1. Press **Display**.
2. Press **Set**.

Select Parameter
To Be Set (↑↓)

3. Press the down arrow key once to reach the Time & Date screen.

TIME & DATE
Press SET

4. Press **Set**.

09-22-03 11:45AM
Press SET

5. Press **Set**.
6. Enter the month using the arrow keys.

**--22-03 11:45AM
Press SET

7. Press **Set**.
8. Enter the day.

9. Press **Set**.
10. Enter the year.
11. Press **Set**.
12. Enter the hour.
13. Press **Set**.
14. Enter the minutes.
15. Press **Set**.
16. Enter AM or PM.
17. Press **Set**.

Setting Display Units:

If the display is off, press **Display** to turn it on.

1. Press **Set**.

Select Parameter
To Be Set (↑↓)

2. Use arrows to scroll to display units.

DISPLAY UNITS
Press SET

3. Press **Set**.
4. Use the arrow keys to choose the desired units.
5. Press **Set**.

Setting Degree Day Counters:

Caution: Be careful when entering a parameter update screen for a degree day counter when that counter is enabled. If the **Set** key is pressed, the counter status will become modifiable and the archives WILL BE ERASED. If this is not desirable, press one of the arrow keys instead of the **Set** key to exit the screen.

If the display is off, press **Display** to turn it on.

Select Parameter
To Be Set (↑↓)

1. Press **Set**.

DEG DAY COUNT #1
Press SET

2. Scroll to Degree Day Counter #1 screen.
3. Press **Set**.

Counter: DISABLED
BASE=55 UPPER=55

4. The counter will say DISABLED.
5. Press **Set**.
6. Use arrow keys to scroll to “Start Now” option. This will start the degree day counter. The other option is DISABLED.
7. Use arrow keys to scroll to BASE.
8. Press **Set**.
9. Choose the base temperature using the arrow keys.
10. Press **Set**.
11. Choose the upper temperature limit using the arrow keys.
12. Press **Set**.

Setting Chill Hour Counter:

Caution: Be careful when entering a parameter update screen for a chill hour counter when that counter is enabled. If the **Set** key is pressed, the counter status will become modifiable and the archives **WILL BE ERASED**. If this is not desirable, press one of the arrow keys instead of the **Set** key to exit the screen.

If the display is off, press **Display** to turn it on.

Select Parameter
To Be Set (↑↓)

1. Press **Set**.

CHILL HOURS
Press SET

2. Scroll to the Chill Hour screen.
3. Press **Set**.

Counter: DISABLED
BASE=40

4. The counter will say **DISABLED**.
5. Press **Set**.
6. Use arrow keys to scroll to “Start Now” option. This will start the degree day counter. The other option is **DISABLED**.
7. Use arrow keys to scroll to **BASE**.
8. Press **Set**.
9. Choose base temperature using the arrow keys.
10. Press **Set**.

ARCHIVES

Daily Archive

The Daily Archive retains the last 30 days of data. If the battery power runs low, the WeatherTracker will stop measuring and archiving data until the battery is replaced.

After using the arrow key to select a certain day from the Daily Archive, the WeatherTracker will then cycle through all the information stored for that day. This will include a screen with the high and low temperatures for that day, any active degree day counters and the average readings for any sensors connected to the device. If a currently active Degree Day Counter was not active on that day, the screen will say “No Data”.

Displaying Archives

If the display is off, press **Display** to turn it on.

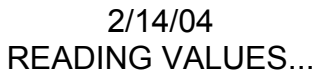
1. Press Current/Archive once to bring up the daily



DAILY ARCHIVE
Select Day (↑↓)

archive.

2. Use the arrow keys to scroll to the date of interest.
3. The unit will automatically scroll through all the



2/14/04
READING VALUES...

screens for that date.

4. Press Current/Archive again to bring up monthly summaries.
5. Use the arrow keys to scroll through the past 12

SCREENS

The following figures give examples of what each of the various weather monitor screens look like.

-Initial information screen

Model 330 v 1.9 Grape IPM Alert

This is the first screen that comes up when you turn on the logger. It gives the model number, version number and model description. This screen is from a Model 330 version 1.9 Grape Pest Alert Tracker.

-Current Values

Air Temp 74°F Leaf Wet Hours 05

This screen shows the current air temperature and status of the leaf wetness sensor (Dry or Wet) and the cumulative number of hours for the day. The current temperature on this screen is 74°F. The leaf wetness sensor is wet, and there is a total number of 5 leaf wetness hours for the day.

-Daily High and Low Values

HI 74°F 01:58 PM LO 66°F 03:05 AM

This screen shows the high and low temperature for the day, along with the times at which they occurred. This screen shows a high temperature of 74°F at 01:58 PM and a low of 66°F at 03:05 AM.

-Degree Day Counter

DD #1 50-86° 16 Since 07/03 2125

This screen shows the information for Degree Day Counter #1. This counter is using a temperature range of 50 to 86°F. So far it has accumulated 16 Degree Days (DD) for today's date and has accumulated 2125 since the counter was started or reset on July 3.

-Time, Date

-Battery Level

09-08-02 07:09PM BATTERY AT 90%

This screen shows the current date, time and battery strength. The current date is 09-08-02 and the time is 07:09 PM. The battery is at 90%.

DEGREE DAYS/CHILL HOURS

Degree Days

Temperature is a key factor contributing to the development of plants, insects and plant diseases. Degree Days are a way to quantify the amount of heat that is available, which is a function of the time the temperature is within a given temperature range. For example, if the base temperature is determined to be 40 degrees and the actual temperature is 41 degrees for 24 consecutive hours, one Degree Day is said to have accumulated ($41 - 40 = 1$ degree for 24 hours or 1 day). Degree Days indicate the developmental stage of a pest generation. This allows for more precise pesticide recommendations.

The WeatherTracker calculates Degree Days using the integral method. Degree Day values are calculated at 15 minute intervals to produce Degree Quarter-Hours (DQH), which are then summed over a full day. DQH are calculated as follows:

$$DQH = T_{\text{avg}} - T_{\text{base}}$$

Where T_{avg} is the average temperature over the 15-minute interval and T_{base} is the base temperature. If the average temperature is greater than the upper limit of the temperature range, the upper temperature limit is used instead of the average temperature when calculating DQH. If the average temperature is less than the base temperature, DQH is set equal to zero for that interval.

Chill Hours

Chill hours are calculated as the amount of time spent below a base temperature. Chill hours accumulations are used to estimate dormancy for tree fruit.

EXTERNAL TEMP SENSOR

The External Temperature Sensor includes a 10 foot cable.

Install your External Temperature Sensor following the guidelines below:

- To monitor soil temperature, bury the sensor at a determined depth.
- To monitor water temperature, drop the sensor into the water to the desired depth.
- If the cable runs along the ground, use metal or plastic conduit to protect the cable from rodents.
- Attach the cable to the mounting mast below the Weather Tracker using the wire tie supplied. This will ensure that the sensor cable does not become unplugged by pests or strong winds.

If you have questions on sensor placement for your particular purpose and/or geological area, contact your cooperative extension agricultural agent for further suggestions on field placement.

Inspect the sensors frequently to make certain that the sensors have not been damaged and are clear of obstructions.

WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, or unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.

Spectrum[®] ***Technologies, Inc.***

12360 S. Industrial Dr. E
Plainfield IL 60585
(800) 248-8873 or (815) 436-4440
Fax (815) 436-4460
E-Mail: info@specmeters.com
www.specmeters.com