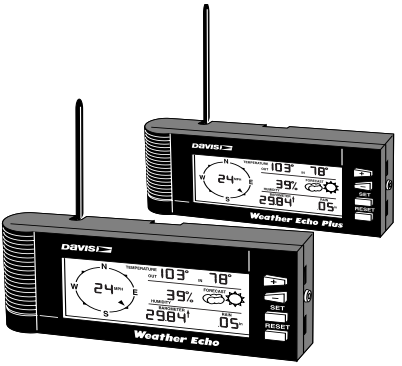



# WEATHER ECHO

## AND WEATHER ECHO PLUS INSTALLATION MANUAL

The Weather Echo and Weather Echo Plus displays act as radio receivers showing weather data transmitted by any "DavisTalk"compatible host station. When transmitted by a host station with the appropriate sensor installed, the Weather Echo and Weather Echo Plus can show the data in the table below.

| DATA FROM HOST WEATHER STATION | Weather Stations | | |
|---|---|---|---|
| | With ConsoleLink™ | | WIRELESS WIZARD & MONITOR |
| | WIZARD | MONITOR | |
| Wind Speed | Yes | Yes | Yes |
| Wind Direction | Yes | Yes | Yes |
| Barometer | No | Yes | No |
| Rainfall | Yes | Yes | Yes |
| Outside Temperature | Yes | Yes | Yes |
| Outside Humidity | No | Yes | Yes |
| Inside Humidity | No | Echo only. Echo Plus has it built in. | No |

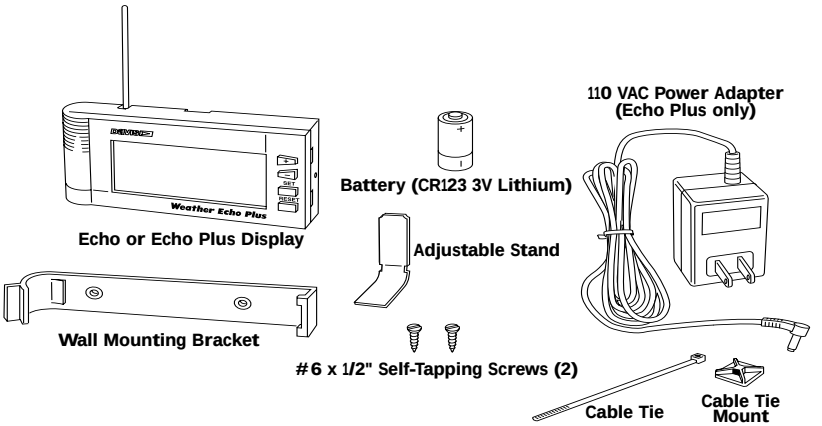
The table below highlights the differences between the Echo and Echo Plus.

| BUILT-IN FUNCTIONS | ECHO | ECHO PLUS |
|---|---|---|
| Inside Temperature | Yes | Yes |
| Inside Humidity | No (Can receive inside humidity from host station) | Yes |
| Backlighting | No | Yes |
| AC Power Option | No | Yes |

The Echo and Echo Plus communicate on one of 8 different ID codes. This allows you to operate multiple systems in the same geographic area.

*The receiver operates on a low power frequency that does not require you to have a FCC license.*

## COMPONENTS




## INSTALLATION STEPS

The Echo and Echo Plus come pre-assembled; all you need to do is to set up and install your display. Here are the steps you need to follow:

1. **Install the battery, page 3.**
2. **Attach the power adapter (Echo Plus only), page 4.**
3. **Mount the display, page 5.**
4. **Set the transmission ID to the host station transmission ID, page 4.**
5. **Choose the screen units, page 10.**
6. **Set up the display, page 10.**

## LOCATING THE WEATHER ECHO/WEATHER ECHO PLUS

Try to position the Echo or Echo Plus display and the host station transmitter as close as possible for best results. The typical maximum ranges are as follows:

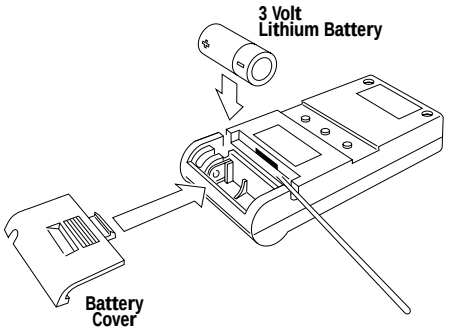
- **Through walls and ceilings: 100 to 200 feet (30 to 60 m)**
- **Through trees and foliage: 100 to 200 feet (30 to 60 m)**

## INSTALLING THE WEATHER ECHO/WEATHER ECHO PLUS

The Echo and Echo Plus comes supplied with a 3 Volt Lithium battery.

### To install the battery:

1. **Remove the battery cover on the back of the display.**
2. **Insert the battery in the appropriate direction in the battery compartment.**




*INSTALLING THE BATTERY*

3. **Reattach the battery cover.**

---

**Note:** *The battery life is 10 to 12 months in normal mode and 10 to 14 months in power savings mode. With Echo Plus, use the battery supplied for a totally wireless operation, or use the power adapter supplied. The adapter powers the Echo Plus' backlight function also.*

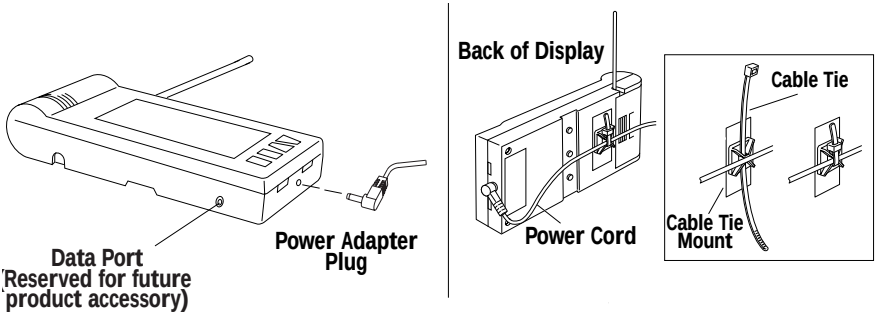
---

## Attaching the Power Adapter

The Weather Echo Plus comes with a 110 VAC power adapter.

### To attach the power adapter:

1. **Insert the power adapter plug into the jack at the side of the unit.**
2. **Remove the backing paper from the cable tie mount and affix to the back of the unit as shown below. (This prevents the power adapter plug from accidentally unplugging.)**




*ATTACHING THE POWER ADAPTER*

3. **Push the cable tie through the holes in the cable mount with the cable tie vertical to the unit and the fastening end at the top and facing the unit.**
4. **Guide the adapter cord across the back of the unit and through the cable tie. Securely fasten the tie.**
5. **Plug the power adapter into the wall outlet.**

---

**Note:** *When you plug in the power adapter, the display backlight automatically turns on. To extend battery life, the display backlighting does not operate when the unit is running on battery power. When you remove the power adapter, the unit automatically reboots but the current time is lost. You will need to rest the time when this happens.*

---

### To turn off the backlighting:

- **Press and hold the + and MODE buttons for 4 seconds.**

## Setting the Unit to the Host Station Transmission

When you first power up the display, it attempts to tune to the radio transmissions of the host station.

- **When no station is within range, it shuts down after 1 minute to save power.** If this happens, make sure the host station is on and transmits data.

### To re-attempt tuning to the host station:

- **Remove the battery and reinstall it 5 seconds later.**

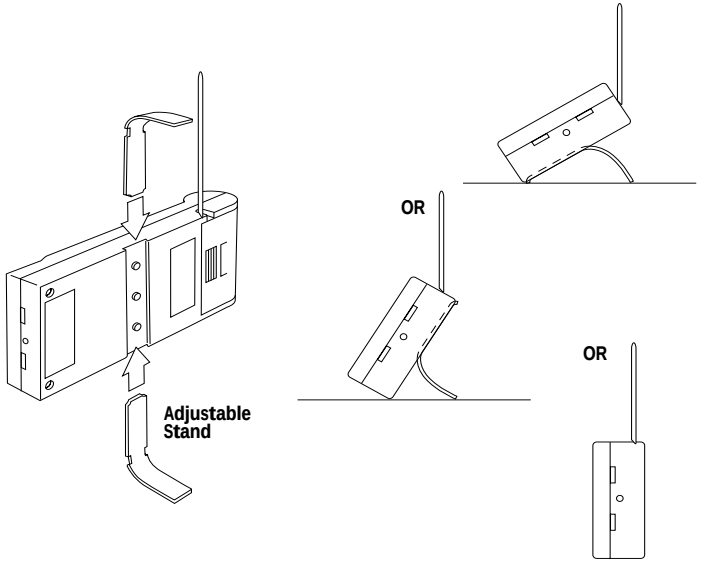
## MOUNTING THE WEATHER ECHO AND WEATHER ECHO PLUS

There are two ways you can position the display:

- **On a shelf or other horizontal surface.**
- **On a wall mounting bracket.**

### To sit on a horizontal surface:

- **Slide the metal stand into the groove at the back of the display unit. Adjust the stand up or down to hold the display at a comfortable viewing angle. Remove the stand to sit the display vertically on a shelf.**




*SITTING THE DISPLAY ON A HORIZONTAL SURFACE*

**Note:** *At any mounting angle, bend the antenna into a vertical position to get the best range.*

### To change the screen contrast:

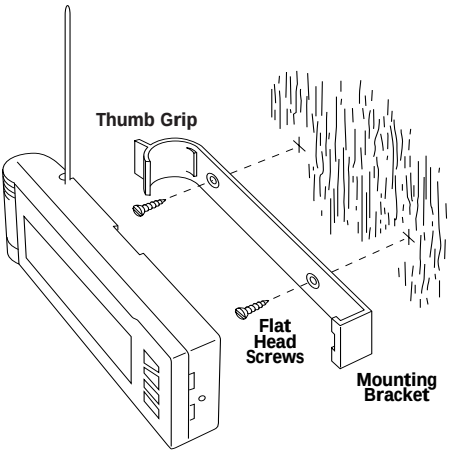
- **Hold the + button down to increase the screen brightness.**
- **Hold the - button down to decrease the screen brightness.**

**To mount on a wall using a mounting bracket:**

You need the following:

- **A mounting bracket (supplied)**
- **Two #6 x 1/2" (1.7 cm) flat head screws (supplied)**
- **A small Phillips-Head screwdriver**

1. **Remove the metal stand if attached.**
2. **Fasten the mounting bracket to the mounting location using the two 1/2" (1.7 cm) screws, making sure to position the bracket with the thumb grip on the left.**




*MOUNTING ON A WALL MOUNTING BRACKET*

3. **Push the display gently into the mounting bracket until it clicks into place.**

## ABOUT THE DISPLAY KEYS AND THE DISPLAY MODES

The Weather Echo and Weather Echo Plus display has 3 modes:

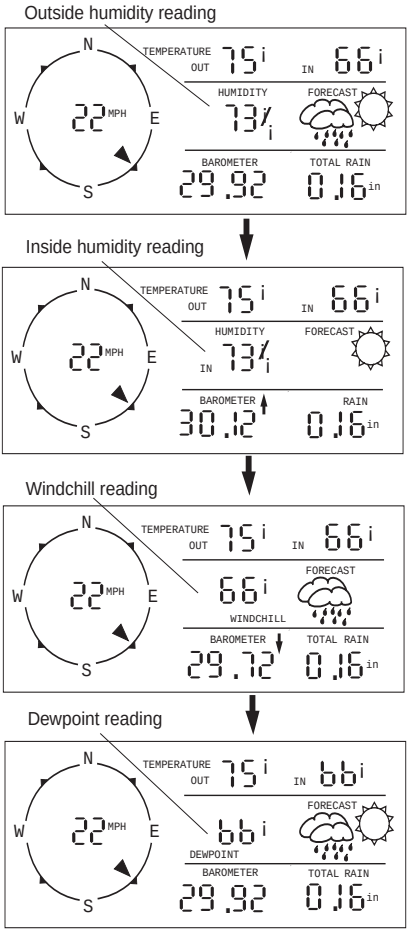
- **Mode 1 —Current Weather Data**
- **Mode 2 —Highs and Lows Weather Data**
- **Mode 3 —Set-up**

The Weather Echo and Weather Echo Plus display has 4 keys: MODE, SET, - and + . Use each key as follows:

- **MODE—to select (in a sequential round robin fashion) in Modes 1 and 3.**
- **SET—to set data that alternate in Mode 1 and 2 and for data entry in Mode 3.**
- **"-"—to scroll backward in Mode 1 and 2 and to decrement in Mode 3.**
- **"+"—to scroll forward in Mode 1 and 2 and to increment in Mode 3.**

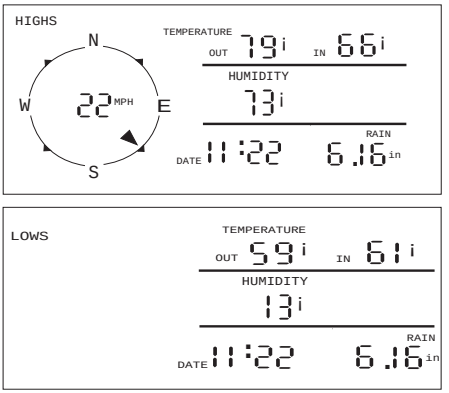
Use each mode as follows:

- **Use Mode 1 to view the current weather data as shown below.**
  Press the "+" or "-" key to change the data in the areas indicated below



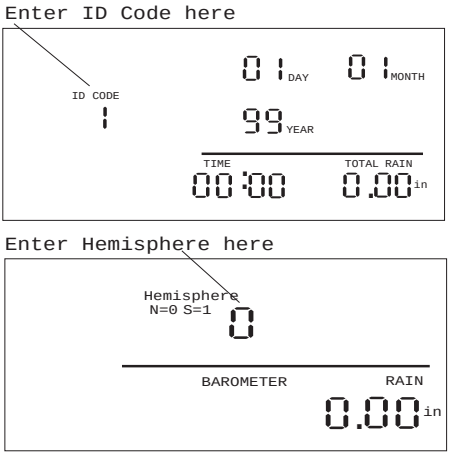

**Note:** *At first power up, humidity and barometer readings, if available, do not display for up to one minute. The forecast displays in about 3 hours. (See page 21 for the update intervals thereafter.)*

- **Use Mode 2 to view the high and lows for the current day and the previous 7 days.**




*MODE 2 SCREENS*

- **Use Mode 3 to set up the time, date, transmitter ID, and rainfall total, to calibrate rainfall, barometric pressure, and to choose your hemisphere.**




*MODE 3 SCREENS*

The barometer display only shows up if data is being transmitted.

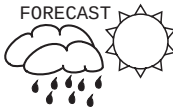
**To change display modes:**

- **Press the MODE key momentarily to change from Mode 1 to 2.**
- **Press and hold the MODE key for at least 4 seconds to change from Mode 1 to 3.**

**Note:** *You can only access Mode 3 (set-up) by going to Mode 1 and then pressing and holding the MODE key for at least 4 seconds.*

### Interpreting the Forecast Icons

The Echo and Echo Plus can display forecast when they receive data from a weather station with a built-in barometer. You can view forecast icons when a minimum of three hours of weather data is stored in memory. The forecast is derived from barometric readings, three-hour barometric trends, the prevailing wind direction, the season, the hemisphere, and whether or not it is raining. To get a more accurate forecast, your weather station should include a rain gauge. The forecast icons indicate the possible forecast over the next 12 hours in the Mid-Latitudes both North and South of the Equator. Here's how to interpret the icons.

| FORECAST ICON | INTERPRETATION |
|---|---|
|   | Mostly clear |
|   | Partly cloudy |
|   | Mostly cloudy |
|   | Precipitation possible |
|   | Precipitation likely |
| No Icon | Less than three hours of recent data is available, so no forecast can be made. Or, no barometer reading is being received. |

**Note:** *The forecast feature gives reasonable forecasts most, but not all of the time.*

## SETTING UP THE WEATHER ECHO/WEATHER ECHO PLUS

Before you begin to read data from your display, you need to set up:

- **The display preferences**
- **The current information**

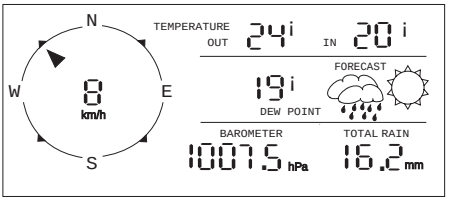
You also need to calibrate for barometric pressure and rainfall.

### Setting up the Display Preferences

If you have a US model, the default display unit for rainfall is inches. If you have an OV model, the default display unit for rainfall is millimeters.

#### To display data in English or Metric units:

- **Press and hold down the SET key for 4 seconds in Mode 1.**
  All measurement units in all modes change to Metric.
- **Press the SET key a second time to view wind speed in meters per second (m/s).**
  All measurement units in all modes remain in Metric.
- **Press and hold down the SET key for 4 more seconds to return to English units.**




*METRIC SCREEN*

#### To change the screen contrast:

- **Hold the + button down to increase the screen brightness.**
- **Hold the - button down to decrease the screen brightness.**

You can pick one of the following four screens to be your home screen:

- **Outside humidity**
- **Inside humidity**
- **Windchill**
- **Dewpoint**

#### To choose the home screen:

- **Use the + and - buttons to cycle through the four screens.**
  The screen you leave visible becomes your home screen.

**Note:** *In the Highs and Lows mode, press the MODE key once to change to the home screen. In the Set-up mode, press and hold the MODE key for 4 seconds to return to the home screen.*

### To set the unit to power saving mode:

- **Press and hold the + and - keys simultaneously for 4 seconds in Mode 1.** A bull's-eye appears in the bottom left corner of the display, to indicate the unit is in power saving mode. In power saving mode, you see the bull's-eye most of the time except when it blinks off as the unit receives information.

**Note:** *In power saving mode, battery life increases by 25 to 50% and the average wind speed updates every minute. When you press a key, the unit updates as if in normal mode. The unit returns to power-saving mode after 10 minutes of keyboard inactivity.* ***If you are using your Weather Echo or Weather Echo Plus with a SensorLink transmitter, you cannot use the power saving mode.***

### To restore the unit to normal power mode:

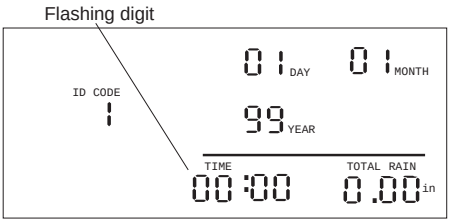
- **Press the + and - keys together for 4 seconds to return to normal power mode.** In normal power mode, the bull's eye is not visible most of the time except when it blinks on as the unit receives information.

## Setting up the Current Information

Follow the sequence below to set up current information on the display.

### To set the time:

1. **Press the MODE key and hold down for at least four seconds until the display changes.** The screen changes from the default screen to the screen below and the first of the time digits flashes.




*SETTING THE TIME*

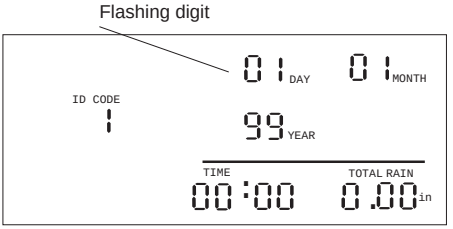
2. **Input the correct digit value using the + or - key.**

**Note:** *You need to input the time in 24 hour format. For example, 3PM is 15:00.*

3. **Press the SET key to accept the value and move on to the next digit.**
4. **Repeat steps 2 and 3 to input the remaining time digits.**

### To set the date:

1. **Press the MODE key to change from Time to Day.**
   The first of the day digits flashes.




*SETTING THE DATE*

2. **Input the correct digit value using the + or - key.**
3. **Press the SET key to accept the value and move on to the next digit.**
4. **Repeat steps 2 and 3 to input the remaining day digit.**
5. **Press the MODE key to change from Day to Month.**
6. **Repeat steps 2 and 3 to input the remaining month digit.**
7. **Press the MODE key to change from Month to Year.**
8. **Repeat steps 2 and 3 to input the year digits.**

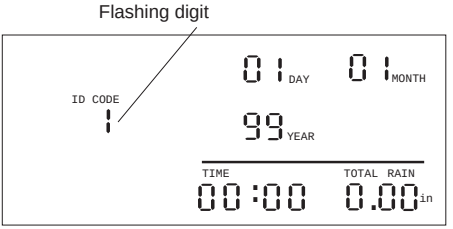
---

**Note:** *After the year 1999, the year digits revert to 00, thus the year 2000 displays as 00, and the year 2001 displays as 01.*

---

### To set the transmitter ID Code:

1. **Press the MODE key to change from Year to ID Code.**
2. **Input a digit value from 1 to 8 using the + or - key.**




*SETTING THE TRANSMITTER ID CODE*

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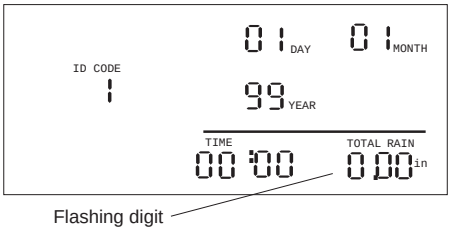
**Note:** *You need to set the ID Code to the same ID code as your host station.*

---

### To add past rainfall totals:

1. **Press the MODE key to change from ID Code to Total Rain.**
2. **Input the first digit value using the + or - key.**




*ADDING PAST RAINFALL TOTALS*

3. **Press the SET key to accept the value and move on to the next digit.**
4. **Repeat steps 2 and 3 to input the remaining digits.**

Next, you need to input barometric data, select the correct hemisphere for forecasting, and calibrate the rain gauge.

### To enter barometric readings from the host station or other station:

1. **Press and hold down the MODE button to return to the home screen.**
2. **Wait for approximately 1 minute until the unit receives barometric data from the host station.**
3. **Press and hold down the MODE key to return to the set up screen. Change to the new screen after you input the rainfall totals.**

   A new screen appears as shown below with an empty barometer field.

---

**Note:** *After 1 minute, you can view data in the barometer field only if your host station has a barometer installed.*

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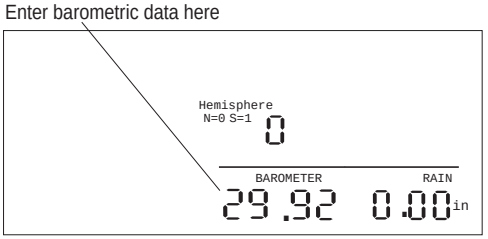
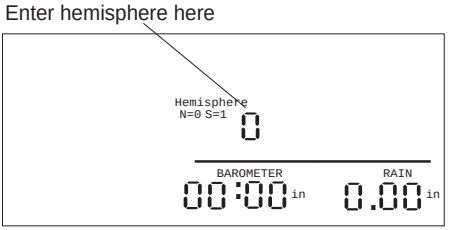



*ENTERING BAROMETRIC DATA*

4. **Input the first digit value using the + or - key.**
5. **Press the SET key to accept the value and move on to the next digit.**
6. **Repeat steps 2 and 3 to input the remaining barometric digits.**

### To select the hemisphere:

1. **Press the MODE key to change from Barometer to Hemisphere.**




*SELECTING THE HEMISPHERE*

2. **Input a value of 0 for the Northern hemisphere and 1 for the Southern hemisphere using the + or - key.**

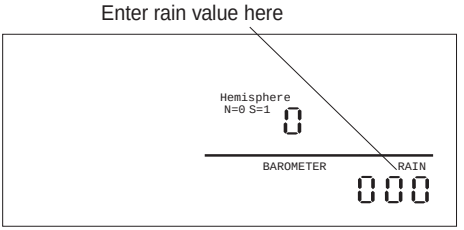
---

**Note:** *If you do not specify a hemisphere, the default hemisphere is the Northern hemisphere. Hemisphere is used in the weather forecasting feature of your display.*

---

### To calibrate the rain gauge:

1. **Press the MODE key to change from Hemisphere to Rain.**
2. **Input a value of 100 if you have a 0.01" rain gauge.**
3. **Input 127 if you have a 0.2 mm metric rain gauge.**
4. **Input 10 if you have a 0.1" rain gauge.**




*CALIBRATING THE RAIN GAUGE*

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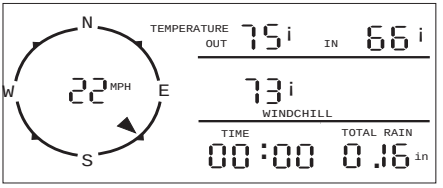
**Note:** *If you have a US model, the default display unit for rainfall is inches. If you have an OV model, the default display unit for rainfall is millimeters. To change to a different display unit, see "To display data in English or Metric units" page 10.*

---

## VIEWING CURRENT WEATHER DATA

You can view the following current weather data automatically while in Mode 1:

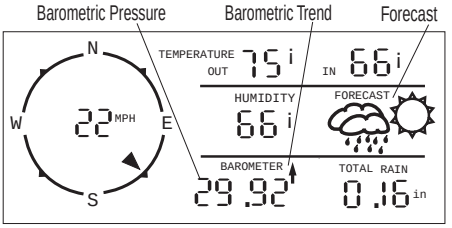
- **Outside temperature**
- **Inside temperature**
- **Wind speed**
- **Wind direction**
- **Daily rain alternating with total rain**




*CURRENT WEATHER DATA DISPLAY*

If your host station has a barometer, you can also view:

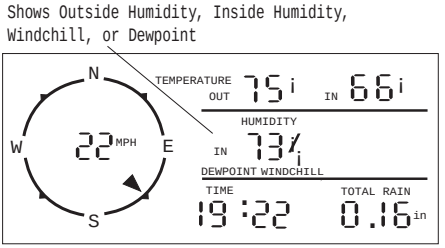
- **Barometric pressure**
- **Barometric trend**
- **Forecast**




*BAROMETRIC PRESSURE AND FORECAST DATA DISPLAY*

**To view outside and inside humidity, windchill, and dewpoint:**

- **Press the + or - keys in Mode 1, to view data in this order:**
  - Outside humidity
  - Inside humidity
  - Windchill
  - Dewpoint

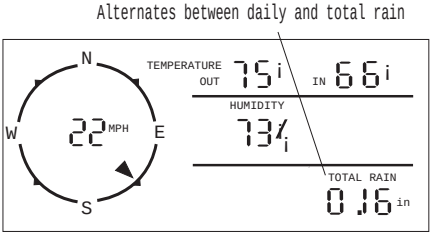



*HUMIDITY, WINDCHILL, AND DEWPOINT DATA DISPLAY*

**Note:** *Not all host stations provide humidity data.*

**To view the daily rainfall and accumulated rainfall totals:**

- **Press the SET key to freeze the rain field.**
  The rain field alternates between showing daily and total rain every 3 seconds.

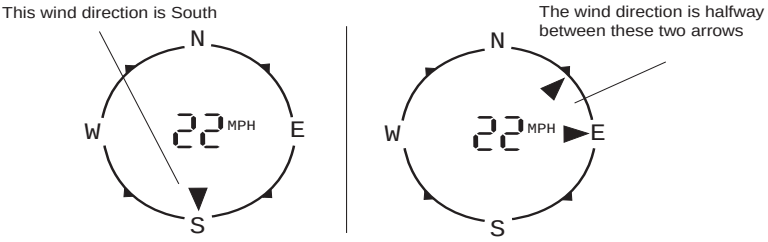



*DAILY RAINFALL AND ACCUMULATED RAINFALL DISPLAY*

- **Press the SET key again to restart alternating mode.**

### Reading the Wind Direction

There are eight wind direction arrowheads. A single arrowhead turns on when the wind is within ±12° of the direction of the arrowhead. When the wind is in the middle 21° between two arrowheads, both arrowheads turn on.

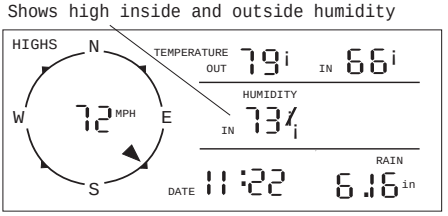



*WIND DIRECTION DISPLAY*

## VIEWING HISTORICAL WEATHER DATA

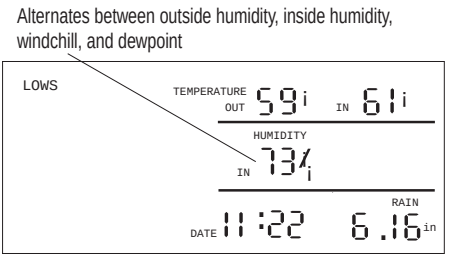
In Mode 2, you can view historical highs and lows as far back as seven days.

- **On the HIGHS screen you can find:**
  - High outside temperature
  - High inside temperature
  - High outside humidity
  - High inside humidity
  - High wind gust
  - Wind direction during high wind gust
  - Daily rain
  - Date




*HIGHS SCREEN*

- **On the LOWS screen you can find:**
  - Low outside temperature
  - Low inside temperature
  - Low outside humidity
  - Low inside humidity
  - Low wind chill
  - Daily rain
  - Date




*LOWS SCREEN*

**To view the current and previous day's highs and lows:**

- **Press the - key once, to view the lows for the current day.**
- **Press the - key a second time, to view the highs of the previous day.**
- **Press the - key a third time, to view the lows of the previous day.**
  You can view the highs and lows for the current and previous seven days by repeatedly scrolling back using the - key.
- **Press the + key to reverse the direction and move forward towards the current day.**

---

**Note:** *The default screen in this mode is the highs for the current day.*

---

### Viewing Humidity Data

Depending on your host station capability, you may also be able to view highs and lows for both outside and inside humidity in Mode 2. The Weather Echo Plus has a built-in, inside humidity sensor.

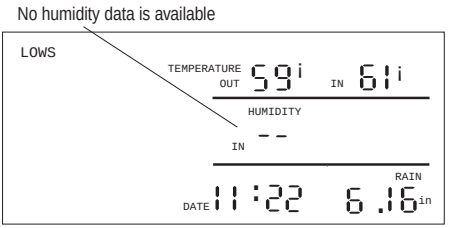
On the HIGHS screen, the humidity display alternates every 3 seconds between the following data:

- High outside humidity (this requires a host station with outside humidity)
- High inside humidity (this requires a host station with inside humidity, or an Echo Plus display)

On the LOWS screen, the humidity display alternates every 3 seconds between the following data:

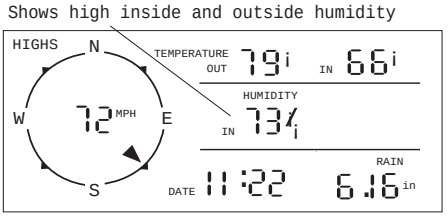
- Low outside humidity (this requires a host station with outside humidity)
- Low inside humidity (this requires a host station with inside humidity, or an Echo Plus display)
- Low windchill

If the data is unavailable, you see bars in the place of the data as shown below.




**To view highs for inside and outside humidity:**

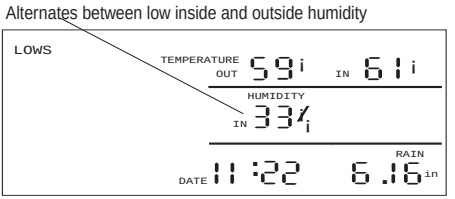
- **Press the SET key to fix the humidity field in Mode 2.**
  The humidity field alternates every 3 seconds between showing highs for inside and outside humidity.




- **Press the SET key again to restart alternating mode.**

**To view lows for inside and outside humidity:**

- **Press the SET key to fix the humidity field in Mode 2.**
  The humidity field alternates every 3 seconds between showing lows for inside and outside humidity.




*LOWS FOR HUMIDITY*

- **Press the SET key again to restart alternating mode.**

## MAINTENANCE

- **Replace the battery when the compass rose blinks on and off at 1 second intervals.**
  After power up, the barometer field shows the current time. The forecast is empty until the display receives valid barometric data. The time displays in 12 hour format.

## TROUBLESHOOTING

While the Weather Echo and Weather Echo Plus are designed to provide years of trouble-free operation, occasional problems may arise. If you experience a problem, check the troubleshooting list below:

- **The display is not receiving any field data.**
  The display and host station may be too far apart, or there is an obstruction such as foliage, or furnishings in the communication path. Check the bull's-eye on the LCD display to see if the Echo display is receiving data. Try moving the display closer to the host station or move the host station closer to the display.

- **The compass rose is flashing on and off.**
  The battery in the display is low and you need to replace it.

- **The display shows dashes (bars) instead of data.**
  If sensor data is unavailable, the display shows bars instead of data (barometer will appear empty). If you want to receive the data, add the appropriate sensor to your weather sensor collection.

- **The user preferences and set-up data disappear when the battery is replaced.**
  User preferences and set-up data entered less than 15 minutes before the battery is replaced are lost when you remove the battery. To save user preferences and set-up data, keep the unit powered for at least 15 minutes after you select your preferences and input the set-up data.

## TECHNICAL SUPPORT

If you are still unable to solve the problem after reading the troubleshooting list, call the factory at (510) 732-7814 for assistance.

*Please do not return your unit for repair without prior authorization.*

## SPECIFICATIONS

- **Receive Frequency—U.S. Models: 916.5 MHz, Overseas Models: 868.35 MHz**
- **ID Codes—8 user selectable**
- **Temperature Range—32 to 140 °F (0 to 60°C)**
- **Update Interval**
  - Current Wind Speed—2.5 seconds
  - Current Wind Direction— 2.5 seconds
  - Average Wind Speed—1 minute (in power saving mode only)
  - Average Wind Direction—1 minute (in power saving mode only)
  - Outside Air Temperature—10 seconds to 1 minute
  - Inside Air Temperature— 5 minutes
  - Outside Humidity—10 seconds to 1 minute
  - Inside Humidity:
    Echo (from weather station)—1 minute
    Echo Plus (built-in)—5 minutes
  - Rain—10 seconds
  - Barometer —1 minute

**Note:** *All rain counts are saved in the transmitter until successfully transmitted.*

## FCC PART 15 CLASS B REGISTRATION WARNING (US MODELS ONLY)

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 installation. This equipment generates, 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.**
- **Consult the dealer or an experienced radio/TV technician for help.**

Changes or modifications not expressly approved in writing by Davis Instruments may void the user's authority to operate this equipment.

## NOTES

Product Numbers: 7602, 7603, 7602OV, 7603EU & 7603UK

Davis Instruments Part Number: 7395.116
Weather Echo And Weather Echo Plus Installation Manual
Rev. C  Manual (5/11/00)
Controlled Online:  Weather:DavisTalk:Weather Echo

This product complies with the essential protection requirements of the EC EMC Directive 89/336/EC.



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