

ULTIMETER II OWNER'S MANUAL

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QUICK START GUIDE







FOR THOSE WHO DON'T HAVE TIME TO READ
INSTRUCTIONS
(AND THOSE WHO DO)

In addition to these few "Quick Start" paragraphs, please be sure to read the section on installation very carefully. It includes important safety information as well as time saving installation tips, and a description of our time-saving wind direction calibration feature.







SUGGESTION: DO NOT UNCOIL CABLES UNTIL YOU HAVE TESTED AND BECOME FAMILIAR WITH ALL COMPONENTS AND ARE READY TO INSTALL THE SYSTEM.

ABOUT THE KEYBOARD

There are six "data keys", each identified by a symbol as shown below:

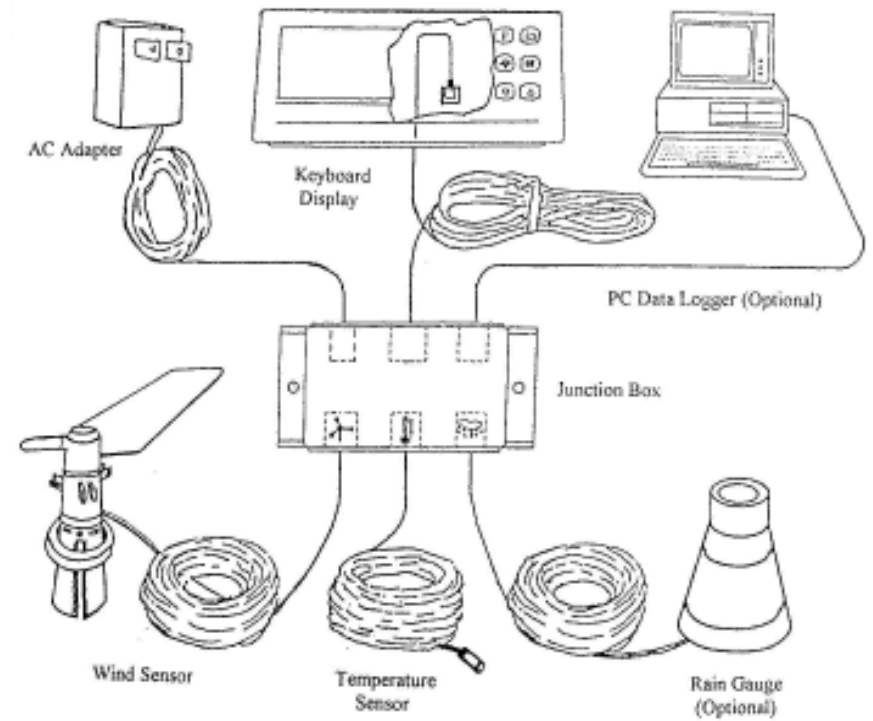
					
WIND SPEED	WIND CHILL	TEMP	RAIN	TIME	DATE

In addition, there are six "utility keys", each identified by a symbol as shown below:

					
ALARM	CLEAR	LAMP	SCAN	UP	DOWN

WIRING DIAGRAM

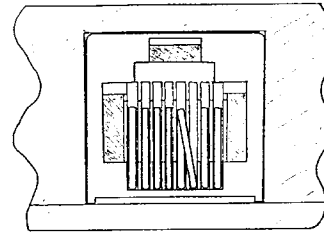
Connect components to Junction Box as shown in diagram below.



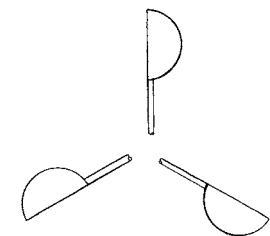
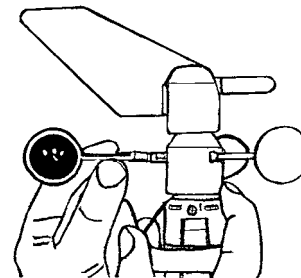
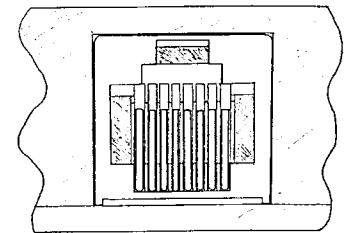
NOTE: BEFORE YOU INSTALL A BATTERY, APPLY POWER FROM THE AC ADAPTER. See that the LCD Display turns on. This will verify proper operation of the AC adapter, before the battery is installed. Be sure to check connectors as shown on p. 5.

Check all receptacles for crossed wires (see illustration below). This can occur during plug-in and unplugging of the cables. It can be corrected by using a pair of tweezers to gently lift the wire back into the correct slot.

WRONG



RIGHT


















(TOP VIEW)

NOTE: THE CUP ARMS MUST BE ORIENTED AS SHOWN OR WIND DIRECTION WILL BE INCORRECTLY DISPLAYED and the cup arms will not properly lock into the clips.

TO DISPLAY WIND DIRECTION






After installation, the *ULTIMETER*[®] II will constantly indicate the prevailing wind direction on its 16 point compass rose. The system minimizes confusing "jitters" by ignoring momentary direction changes that occur during transient wind gusts. It also avoids erroneous readings, by "locking" the direction display when there is no wind, i.e. when the cups are not spinning. Therefore, in order to test or demonstrate the wind direction function, you must spin the cups. You'll find it is best to blow somewhat steadily on the cups, rather than abruptly spinning the anemometer housing with your fingers.

TO DISPLAY OTHER DATA







- a) Press and release the desired data key:   
  or . The corresponding symbol will appear on the screen and the current data value will be displayed.
- b) Next, press and release  or  if you wish to display the lowest or highest value recorded for wind speed, wind chill, or temperature, or if you wish to change between display of daily rainfall  and monthly rainfall .
- Press and release  or  once again to display the time at which the highest or lowest wind speed, wind chill, or temperature, occurred.
- Press and release  or  a third time to display the date on which the highest or lowest wind speed, wind chill, or temperature, occurred.
- c) Next, if you wish to display the present alarm setting, press and release .

NOTE: The *ULTIMETER*[®] II is designed to minimize the chance of someone else accidentally clearing your data or changing your settings. That is why in the procedures below you must first display the value you wish to change, then press a key and keep it pressed for about 3 seconds before data will be cleared or changed.











TO CHANGE MEASUREMENT UNITS OR FORMAT (mph, kmph, or knots; Fahrenheit or Celsius; inches or cm.; 12 or 24 hour format; day/month or month/day format):

- a) Press and release the desired data key:   
 or . NOTE: Units for wind chill will be the same as for temperature.
- b) Press the same data key a second time AND KEEP IT PRESSED UNTIL THE DISPLAY CHANGES. Repeat this step until data is displayed in the desired units or format.


TO ADJUST TIME OR DATE

- a) Press and release  or .
- b) Press  and/or  AND KEEP IT PRESSED until the displayed value is close to correct..
- c) Press  or  as needed until the desired value is displayed.

TO SET AN ALARM




- a) Press and release the desired data key: , ,
or .
- b) If you wish to set an alarm for temperature, press and release  or  to display highest or lowest temperature.
- c) Press and release  to display the current alarm value.
- d) Press  or  AND KEEP IT PRESSED UNTIL THE DISPLAY CHANGES. Continue to press  or  as necessary until the desired alarm value is displayed.

TO CLEAR AN ALARM SETTING, RESET A HIGHEST OR LOWEST VALUE, OR RESET A RAINFALL TOTAL:

- a) Display the alarm setting or stored value you wish to clear.
- b) Press the clear key  AND KEEP IT PRESSED UNTIL THE DISPLAY CHANGES.

ANSWERS TO A FEW MOST LIKELY QUESTIONS . . .

WHAT DOES A FLASHING DISPLAY MEAN?

1. The compass rose will flash as a reminder if no battery is installed or if the battery is weak. The battery is tested each midnight and each time you press . Press the clear key  momentarily to stop the blinking.
2. A flashing display also is a signal that:
 - you are about to change some adjustable value, or
 - you are about to clear some stored data, or
 - you are about to change the units of measurement.
3. When displaying lowest wind chill, a flashing display means that the instrument has recorded a wind chill below -100°F, which it is unable to display. (This will happen if the anemometer cups have spun without the temperature sensor connected.) To stop the flashing, plug in the sensor, press  and keep it pressed for about 5 seconds.
4. Sometimes an electrical storm or line power surge can cause the keyboard to be disabled. To correct this condition, unplug the junction box cable from the back of the keyboard display and remove the 9-volt battery. Install the battery again and reconnect the junction box cable.

NOTE: If you have adjusted wind direction calibration yourself (ref. page 29), it will be necessary to re-enter the Wind Vane Correction Constant after performing this procedure. Follow instructions under "Wind Vane Correction Constant" on p. 29. If the problem persists, please inquire about our special 4-Line Static Electricity Discharge Unit.

WHAT IS THE MODULAR 4 CONDUCTOR JACK ON THE SIDE OF THE CONTROL UNIT?

It is for interconnection to a personal computer. The special interface cable required is supplied as part of a hardware/software option. Otherwise, this jack should not be used.

WHAT IS THE UNMARKED MODULAR 4 CONDUCTOR JACK ON THE JUNCTION BOX?

This is for an alternate interconnection to a personal computer.

I. INTRODUCTION

Congratulations on selecting The *ULTIMETER*® II Home Weather Station. To take full advantage of its advanced features, please take a few minutes to read through and follow this short booklet. Its simple step-by-step instructions will speed you through system installation and help assure you many years of complete satisfaction.

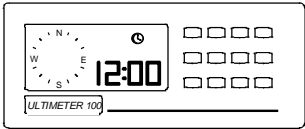
SUGGESTION: DO NOT UNCOIL CABLES UNTIL YOU HAVE TESTED AND BECOME FAMILIAR WITH ALL COMPONENTS AND ARE READY TO INSTALL THE SYSTEM.

II. PRE-INSTALLATION TESTING

Before you uncoil any cables, you should interconnect and test the system components, as described below. This will allow you to become familiar with the system and assure that all components are functioning properly before you install them.

Setup

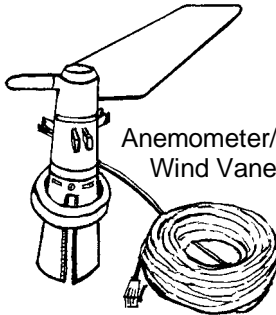
- 1. Carefully remove each component from its shipping container and place them all on a clear work area.
- 2. As shown below, identify the basic system components and any accessories you have ordered.



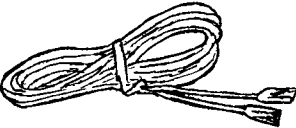
Keyboard/Display Unit



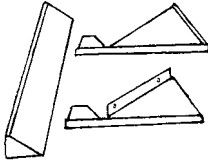
Junction Box



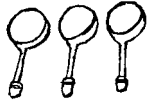
Anemometer/
Wind Vane



Junction Box Cable



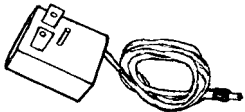
Desk Stand



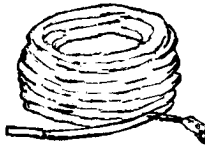
Anemometer Cups



Cable Ties



AC Adapter

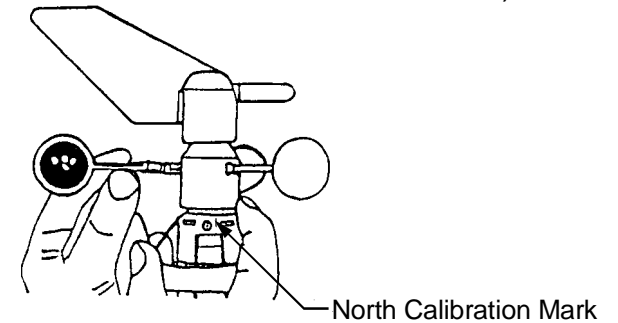
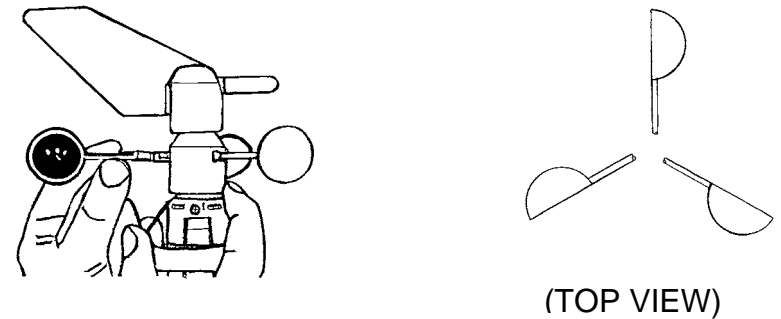


Temperature Sensor

Not shown: 2 screws for desk stand; 2 screws for wall mounting keyboard/display unit; 2 drywall screws for wall mounting keyboard unit; mounting bracket and screw for temperature sensor.

3. Plug each cup arm firmly into a retaining clip on the anemometer housing. Be sure that each cup arm snaps solidly into its retaining clip.

NOTE: THE CUP ARMS MUST BE ORIENTED AS SHOWN OR WIND DIRECTION WILL BE INCORRECTLY DISPLAYED and the cup arms will not properly lock into the clips.

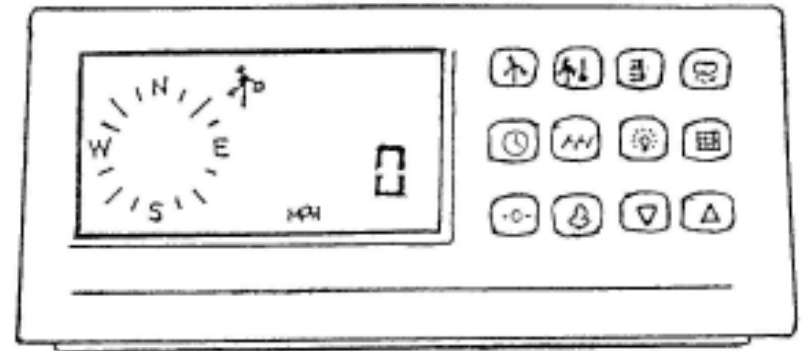


4. Without uncoiling the cables, plug the wind vane cable, the temperature cable and the rain gauge cable (if ordered) into the junction box, in accordance with the markings on top of the junction box.

NOTE: If you have ordered any extension cables, do not uncoil them, but insert each between the junction box and the thermometer, anemometer/wind vane, or rain gauge, just as it will be used in your actual installation.

5. Uncoil the 8 ft. junction box cable and plug one end into the receptacle on the back of the keyboard/display unit. Plug the other end into the junction box, opposite the temperature cable.








6. Plug the ac adapter cable into the junction box, then plug the adapter itself into a 110 volt 60 cycle outlet. The liquid crystal screen will come on, displaying the wind speed symbol, "0 MPH" and the compass rose for wind direction, as shown below.



IMPORTANT NOTE CONCERNING WIND DIRECTION:

The *ULTIMETER® II* is designed to detect and display the prevailing wind direction on its 16 point compass rose. The system minimizes confusing "jitters" by ignoring momentary direction changes that occur during transient wind gusts. It also avoids erroneous readings, by "locking" the direction display when there is no wind, i.e. when the cups are not spinning. Therefore, in order to test or demonstrate the wind direction function, you must spin the cups. You'll find it is best to blow somewhat steadily on the cups, rather than abruptly spinning the anemometer housing with your fingers.

Test Anemometer/Wind Vane Functions

1. Press the wind speed key, marked .
2. If you wish to display wind speed in units other than mph, press  again and keep it pressed. The screen will flash 3 times, then display wind speed in kmph. Each time you repeat the procedure, wind speed will be displayed in alternate measurement units; mph, kmph, or knots.
3. Blow gently and steadily on the anemometer cups, so they rotate clockwise when viewed from above and the screen displays a fairly steady wind speed reading of 4 mph or more (8 kmph or 4 knots). Stop blowing when a wind direction arrow is displayed within the compass rose. The wind direction sensor works only while the anemometer cups are spinning. This prevents any false indication of the last wind direction.
4. Point the wind vane in the opposite direction. Again blow gently and steadily on the cups. The wind direction arrow will shift to the opposite side of the compass rose.
5. Now blow on the cups a little harder, until the reading increases, then let the cups stop.
6. Press the up key, which is marked . The screen will display the highest wind speed registered while you were blowing on the cups.
7. Press  again. The time symbol will come on and the screen will display the time when that highest wind speed was recorded.
8. Press  again. The calendar symbol will come on and the screen will display the date when that highest wind speed was recorded.
9. Press  one last time. The screen will again display the highest wind speed.
10. Press the clear (reset) key, which is marked  and keep it pressed. The screen will flash three times, then replace the old highest wind speed with the current wind speed of zero.

NOTE: The *ULTIMETER*[®] II does not display a low wind speed value, simply because zero is normally the lowest wind speed measured.

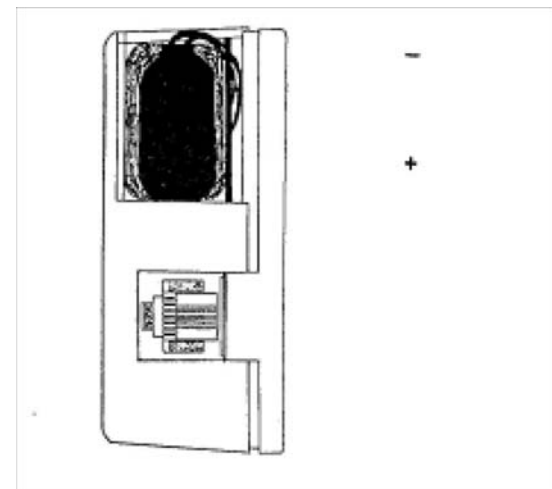
11. Press any function key to exit the highest value display.

Install a 9 Volt Alkaline Back-up Battery







We suggest you install a fresh 9 volt back-up battery (not included) at this time, in order to preserve any settings or adjustments that you make while testing the system.

The back-up battery compartment is located on the lower right side of the keyboard/display unit. To open the compartment, slide the cover in direction of arrow. Pull out the battery connector and plug the connector onto the battery terminals. Insert the battery (as shown below) about half way into the compartment. Turn the keyboard upside down (as shown below), and slide the battery in all the way - don't force! Tuck the wires into the compartment, and replace the cover.







NOTE: It is important to verify that the instrument functions when powered from the AC adapter, without a battery installed. If you installed a battery before operating the instrument on AC power, remove the battery now and verify proper operation on AC power. Reinstall the battery.



Test Clock Functions



1. Press and release the clock key, which is marked . The clock symbol will appear on the screen and 12:00 will be displayed in 12 hour format (i.e., afternoon and evening hours will be indicated by "PM" next to the clock symbol on the screen).
2. If you prefer to display time in 24 hour format, press  again and keep it pressed. The display will flash 3 times, then display time in 24 hour format. Release the key.
3. Press  or  and keep it pressed. The screen display will flash 3 times, then the displayed time will begin to change up or down, according to which key was pressed. Release the key when the displayed time is close to correct.
4. Use the  and  keys to set the exact time.

Test Date Functions






1. Press and release the date key, which is marked . The calendar symbol will appear on the screen and "01-01" indicating January 1 in month-day format.
2. If you prefer to display date in day-month format, press  again and keep it pressed. The display will flash 3 times, then display date in day-month format.
3. Press  or  and keep it pressed. The screen display will flash 3 times, then the displayed date will begin to change up or down, according to which key was pressed. Notice that after a few seconds, the date changes more rapidly. Release the key when the correct month is displayed.
4. Use the  and  keys to set the exact date.

When you are entirely satisfied with the instrument's performance, you are ready to proceed.


Test Temperature Functions

1. Press and release the temperature key, which is marked  on the keyboard/display unit. The screen will display current temperature in degrees Fahrenheit and a thermometer symbol.
2. Press  again and keep it pressed. The screen display will flash 3 times, then display temperature in degrees Celsius.

Release the key. Repeat this procedure until the units you intend to use are displayed. Each time you repeat this procedure, temperature will be displayed in alternate units; Celsius or Fahrenheit.


3. Hold the temperature sensor in your hand for 2 or 3 minutes. The temperature indicated on the screen will rise.
4. Release the temperature sensor and allow the indicated temperature to come back down several degrees.
5. Press the up key, which is marked . The screen will display the highest temperature registered while you were holding the sensor.
6. Press  again. The time symbol will come on and the screen will display the time when that highest temperature was recorded.
7. Press  again. The calendar symbol will come on and the screen will display the date when that highest temperature was recorded.
8. Press  one last time. The screen will again display the highest temperature.
9. Press the clear (reset) key, which is marked  and keep it pressed. The screen will flash three times, then replace the old highest temperature with the current temperature.
10. Press any function key to exit the highest value display.



Test Wind Chill Functions


1. Press and release the Wind Chill key, which is marked  on the keyboard display unit. The screen will display current wind chill temperature and both the anemometer and temperature symbols. The reading will be in the same units (Fahrenheit or Celsius) selected for temperature.


NOTE: The *ULTIMETER*[®] II calculates wind chill when the temperature is below 50°F. If the temperature is above that, or if the anemometer cups are not spinning, the wind chill temperature will be the same as the current ambient temperature.


You can verify operation of the wind chill function by cooling the temperature sensor to below 50°F and blowing on the cups. One convenient reference point is that a temperature of 32°F with a wind speed of 32 mph results in a wind chill of 0°F. A comparable metric reference is that a temperature of 0°C with a wind speed of 16 kmph results in a wind chill of -16°C.


2. Press the down (or low) key, which is marked . The screen will display the lowest wind chill temperature recorded since the data was last cleared.

NOTE: The display may flash after you press the  key. This is not a problem. It just means the instrument has recorded a wind chill below -100°F, which it is unable to display. (Perhaps you spun the anemometer cups before the temperature sensor was connected.) To stop the flashing, first be sure the temperature sensor is connected, then press  and keep it pressed for about 5 seconds. The current wind chill will be displayed.

3. Press  again. The time symbol will come on and the screen will display the time at which the lowest wind chill was recorded.

4. Press  again. The time symbol will come on and the screen will display the date at which the lowest wind chill was recorded.






5. Press  one more time. The screen will again display the lowest wind chill.

6. To reset the lowest wind chill, press the clear (reset) key, which is marked  and keep it pressed. The screen will flash three times, then replace the old lowest wind chill with the current lowest wind chill value.

NOTE: The *ULTIMETER*[®] II does not store a highest wind chill value, as this would normally be the same as the highest temperature value, which is stored.

Test Rain Functions

This section applies only if your system includes an optional rain gauge.

1. Press and release the key marked . If you have followed the above test procedure, the screen will display ".0 in." or ".1 in.", the rain symbol, and the up arrow which indicates the larger (monthly) accumulated rainfall.
2. If you wish to display rainfall in centimeters, press  again and keep it pressed. The screen display will flash 3 times, then display rainfall in centimeters.
3. Turn the rain gauge upside down briefly, then right it and set it down. The displayed rainfall total should increase by 0.1 in.
4. Press the clear (reset) key, which is marked  and keep it pressed. The screen will flash three times, then this rainfall total will be reset to zero.
5. Press the down (lowest) key, which is marked  to display the smaller (daily) rainfall total. The matching symbol will now appear on the screen, along with the rain symbol and the same rainfall total displayed earlier after you inverted the rain gauge.
6. Press the clear (reset) key, which is marked  and keep it pressed. The screen will flash three times, then this rainfall total will be reset to zero.
7. Press any other function key to exit rain display.

III. PLANNING YOUR INSTALLATION

Please take a few minutes to plan the installation of your home weather station. You'll help assure your long term satisfaction with the installation and almost certainly save time and effort in the process.

It may be helpful to remember that the cable lengths are:

Wind Sensor: 40 feet Temperature Sensor: 25 feet
Rain Gauge (Optional): 40 feet Junction Box Cable: 8 feet
AC Adapter Cord: 6 feet

First you must decide where each system component is to be installed. We suggest that you determine the optimum location of the prime components in the order shown below.

Control Unit Location - The primary considerations in placement of the Keyboard/Display unit are: which room it should go in, and should it be wall mounted or desk mounted.

Room Selection

- in which room will the data be most useful (e.g. bedroom, kitchen, hallway near hall closet, solarium, etc.);
- in which room will the most people be able to enjoy and use the data (e.g. living room or family room);
- other factors being equal, which room will make for easiest wiring.

Wall Mount Advantages

- better visibility from most of the room;
- wiring can often be completely concealed -- may offer shorter wire runs to outside sensors, possibly avoiding the need for extension cables.

Desk Mount Advantages

- convenient access to keyboard;
- optimum visibility from desk chair;
- short wire length for future computer connection.

Anemometer/Wind Vane Location - The anemometer/wind vane is designed to clamp around the top 3-1/2 in. of a mast having a diameter of at least 1 in. and not more than 1-1/4 in. An aluminum mast is ideal (available at K-Mart and many other stores) but you can also use a thin-wall steel mast, of the type sold by Radio Shack and other stores.

NOTE: DO NOT MOUNT THE WIND SENSOR DIRECTLY ON TOP OF IRON PLUMBING PIPE OR EMT ELECTRICAL CONDUIT. Pipes and conduit have relatively thick ferrous (magnets will stick to them) walls, which can interfere with the proper operation of the magnets in the anemometer/wind vane.

If you wish to use iron pipe or electrical conduit as a mast, simply add a short section of PVC to the top and clamp the wind sensor onto the PVC. There are many ways to do this, but two typical methods are:

- a. If you are using a 3/4 inch water pipe as a mast, screw a PVC pipe adapter with a 6-inch piece of 3/4 inch Schedule 40 PVC pipe onto the top of your mast.
- b. If you are using 1-inch EMT electrical conduit as a mast, just press a 12-inch long piece of 3/4 inch Schedule 40 PVC pipe six inches into the top of the conduit.

In either method, PVC should not be used for the entire mast because the **MAST MUST BE GROUNDED**. In addition, PVC pipe is not strong enough to be used as a mast.

Considerations for locating the mast:

- use an existing TV or FM-type mast if you can.
- mast should extend at least 4 feet above its supporting structure (e.g., the peak of your roof) or other nearby obstruction. You may be able to add an extension to an existing mast.
- the mast should, as nearly as possible, be exactly vertical.
- the top 3-1/2 in. of the mast must be free. Again, you may be able to add a short extension to an existing mast.
- if you are installing a new mast, it will be most economical to locate it within 40 ft. of the junction box, so you won't need an extension cable.

- mast must not be mounted on, or directly next to, an active chimney. Flue gasses are very corrosive.

CAUTION: MAKE SURE THE MAST YOU USE IS PROPERLY GROUNDED. IF YOU HAVE ANY DOUBT, HAVE IT CHECKED BY A QUALIFIED TV SERVICE PERSON.

Temperature Sensor Location

NOTE: Before drilling holes and permanently installing the temperature sensor, experiment with the temperature sensor location to be sure of satisfactory readings.

Generally speaking, you should locate the temperature sensor:

- in the shade where it can never receive direct sunlight
- protected from wind and rain
- where air can circulate freely around it (e.g. avoid closed gable ends that can trap a pocket of warm air)
- away from incidental heat sources, such as roof circulation vents
- not directly above radiated or reflected heat sources such as cement patios or large picture windows
- so that the last three feet of cable (or more) are outside the structure in the open air
- so that the cable, rather than the sensor itself, is secured by the supplied clamp

It is surprising how much these factors affect temperature readings; we have seen errors of 4° to 6° caused by just one of these factors.

Rain Gauge (Optional) Location

- in the open, away from overhanging trees
- well clear of the house or other structures that might block blowing rain
- easily accessible for periodic inspection and cleaning

Junction Box Location

- must be indoors
- must be close to an ac outlet, so the ac adapter cord can reach it
- a vertical orientation is preferable to minimize the possibility of dust getting into the junction box

If you will not require extension cables (that is, if the external sensors are each close enough to the control unit location) it is usually best to locate the junction box within 8 feet of the control unit.

Extension Cables

Normally it is best not to extend the total cable length from the temperature sensor to the keyboard display unit beyond 33 feet (the 25-foot temp sensor cable plus the 8-foot junction box cable). Longer cables tend to increase the temperature reading slightly. For example, a total length of 193 feet (using four 40-foot extension cables) increases temperature readings about 1.5°F.

There is no problem extending the anemometer/wind vane cable or optional rain gauge cable to 200 feet or more. Be sure the extension cable used is correctly wired - if in doubt, proper extension cables may be obtained from Peet Brothers Company.

Instead of extending more than one sensor cable, it may be possible and more economical to place the junction box further from the keyboard/display unit, using a longer junction box cable.

NOTE: If you plan to use a sensor extension cable that will be joined outside, you must plan to waterproof the connection. We offer inexpensive and effective weatherproofing kits for this purpose.

IV. INSTALLING YOUR *ULTIMETER*[®] II COMPONENTS

Installing the Anemometer

1. Slide the locking ring up as far as it will go on the fingers.
2. Place the anemometer/wind vane over the top of the mast with all four fingers on the outside of the mast.
3. Slide the clamping ring down over the fingers until you start to feel significant resistance.
4. Find the North Calibration Mark on the anemometer (this is the small black line located near the screw head - see illustration on page 11). Rotate the anemometer on the mast until the calibration mark is facing due north. Use a compass or other directional reference.
5. Firmly clamp the anemometer in place by repeatedly pulling the locking ring down, first a little on one side, then a little on the opposite side, keeping it more or less level, until you can't pull it down any further.
6. Using the cable ties provided, secure the cable to the mast. One tie should be placed just about 2 in. below the anemometer/wind vane. The other two should be evenly spaced below that.

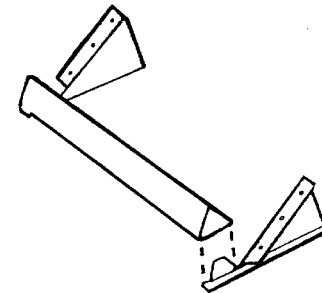
Installing the External Temperature Sensor

1. Drill a pilot hole at the desired location.
2. Mount the supplied clamp and temperature sensor taking care that its protective metal housing does not touch any nearby surface.

Installing the Keyboard/Display Unit

Desk or Shelf Mounting

1. Assemble the desktop stand as shown below.



2. Place the keyboard/display unit on the stand so the two alignment pins on the stand fit firmly into the matching holes on the back of the instrument.
3. Secure the Keyboard/display unit to the stand, using the two screws provided.
4. Insert the plug of the junction box cable into the back of the control panel. Be sure it "clicks" into place.
5. Position the assembled unit as desired.

Wall Mounting







1. Drill two pilot holes 5 in. apart for the supplied wood screws or supplied drywall anchors
2. Install the screws, leaving them about 1/8 in. out from the wall.
3. Insert the plug of the junction box cable into the back of the control panel. Be sure it "clicks" into place.
4. If the junction box cable is to run down the wall, insert the cable into the groove provided on the back of the keyboard/display unit.
5. Hang the keyboard/display unit from the two projecting screws.

Installing the Junction Box







1. Drill two pilot holes 3-1/2 in. apart at the desired mounting location.
2. Mount the junction box; use wood screws (provided) for a wooden wall or drywall anchors (provided) for a sheet rock wall.
3. Plug in cables from the ac adapter, keyboard display unit, thermometer, anemometer/wind vane, and rain gauge, if applicable.

V. DETAILED OPERATING INSTRUCTIONS



There are six "data keys", each identified by a symbol as shown. Whenever data is being displayed, the corresponding symbol appears on the display. To display the current value, press the appropriate data key.

					
WIND SPEED	WIND CHILL	TEMP	RAIN	TIME	DATE

There are six "utility keys", each identified by a symbol as shown. The use of each is described below.

					
ALARM	CLEAR	LAMP	SCAN	UP	DOWN

Weak Battery Indication

The instrument is normally powered by an ac adapter. A 9-volt alkaline battery should be installed to preserve data during a temporary power interruption. Each midnight and whenever you press , the instrument will apply a load to check the back-up battery. If a battery is not installed or is starting to become too weak to provide the necessary protection, the wind direction compass rose will flash on and off to alert you. To stop the compass rose from flashing press .

Selecting Metric or English Display Units






The following units of measure can be selected

Wind Speed:	mph; kmph; knots
Temperature:	F; C
Rainfall:	in.; cm
Time:	12 hr. format with PM symbol; 24 hr. format
Date:	Day-Month; Month-Day






To change the units of measurement:

1. Press the data key to display the function.
2. Press the same data key again and keep it pressed for approximately 3 seconds, until the displayed units change.

Setting the Time

1. Press .
2. Press  or  and keep it pressed for approximately 3 seconds, until the minutes start to change. Release the key when the displayed time is close to correct. Use  and  to adjust the value to the exact time. Seconds are automatically set to zero whenever you change the minute setting.

Setting the Date

1. Press . The calendar symbol and date will be displayed.
2. Press  or  and keep it pressed until the correct month is displayed. Then repeatedly press  or  to set the day within the month.





Displaying High and Low Values (With Times and Dates)

The following high and low values can be displayed with time and date of occurrence:



Highest Wind Speed	Highest Temperature
Lowest Wind Chill*	Lowest Temperature

*Please see note at the end of this section.



To display a highest or lowest data value:

1. Press the data key.
2. Press  for the highest value or  for the lowest value. The highest or lowest data value will be displayed together with the data symbol and the  symbol (highest) or  symbol (lowest).

To display the time when that high or low occurred:

3. Press the same  or  key once again. The clock symbol will be displayed together with the time when that high or low value occurred.

To display the date when that high or low occurred:




4. Press the same  or  key a third time. The calendar symbol will be displayed together with the date when that high or low value occurred.

NOTE: Wind chill display is limited to -99°. If wind chill below -99°F is anticipated, temperature must be displayed in Celsius.

Displaying Rainfall





When an optional rain gauge is connected, the system keeps track of two separate rainfall totals. Daily rainfall is indicated by the ▽ symbol on the display, monthly by the △ symbol.

To display accumulated rainfall:

1. Press . The rain symbol will come on and the instrument will display whichever rain total you looked at last (indicated by the △ or ▽ symbol).
2. Press  or  to display the other total.

To reset accumulated rainfall to zero:

After you have taken the reading, reset the ▽ total each day and the △ total each month. To reset:

1. Press .
2. Press  or  if necessary to display the total you wish to reset.
3. Press  and keep it pressed for approximately 3 seconds, until the display changes to "0".








Alarms

An alarm can be set for the following:


Highest Wind Speed	Highest Temperature
Time	Lowest Temperature

When an alarm condition occurs, an audible alarm will sound, and the alarm setting will flash on the display.

To set an alarm value:


1. Press the appropriate data key.
2. Press  if you wish to set an upper alarm value, or  if you wish to set a lower alarm value. (This step does not apply to the time alarm.)
3. Press . The alarm symbol will come on and the present alarm setting will be displayed.
4. Press  or  and keep it pressed for approximately 3 seconds until the alarm setting starts to change. Release the key when the displayed value approaches or is beyond the desired setting.
5. Use  and  keys to adjust the value.
6. Press any data key to exit the alarm setting mode.

To completely clear an alarm setting:


Perform steps 1 - 3 as above, then press  and keep it pressed for approximately 3 seconds, until "OFF" is displayed.

To stop an alarm temporarily:

(the alarm will resume if the alarm condition still exists or reoccurs)

1. Press  briefly.
2. Press any data key to exit the alarm setting mode.

To stop an alarm and completely clear the alarm setting:



1. Keep  pressed for approximately 3 seconds until "OFF" is displayed.
2. Press any data key to exit the alarm setting mode.

Automatic Scanning


The instrument can continually scan any of the following data at 5-second intervals:

Wind Speed	Rainfall
Wind Chill	Time
Temperature	Date

To select data to be scanned:





1. Press  and keep it pressed until "SEL" (select) appears on display.
2. Press the data key of each function you wish to include in the scan.
3. Press  to end the selection process and start the scan.

To exit scan mode, press any data key.

To resume scanning, press and release .

Wind Vane Calibration Adjustment

Your anemometer/wind vane has been factory-calibrated to correctly indicate wind direction when installed per the instructions on p. 23, and should not require recalibration. However, if you wish to adjust wind direction readings after installation, (to correct a difference between display readings and actual wind direction) you may use the following procedure.

1. Perform when you have a fairly steady breeze from a known direction.
2. Press  and  simultaneously to display the wind vane correction constant (the keyboard initially has a correction constant of zero).
3. Press and hold  or  to adjust the wind vane correction constant. After approximately 3 seconds the wind vane correction will start changing. Increase the constant if you want the direction diamond on the display to move counter-clockwise to match actual wind direction. Decrease the constant if you want the direction-indicating diamond to move clockwise to match actual wind direction.
4. Repeat Step 4 as necessary until the wind direction is correctly displayed. Record the Wind Vane Correction Constant below.
5. Press any function key to leave this operation and retain the correction constant that is displayed.

NOTE: The correction constant is a number from 0 through 255. Each digit represents approximately 1.4 angular degrees of correction ($360 \div 256$) that is added to the uncorrected wind direction.

Record your Wind Vane Correction Constant here _____

Care of Liquid Crystal Display

If the keyboard display unit's LCD becomes dirty, clean with a soft damp cloth only. Use no harsh or abrasive cleaners, as these will permanently scratch the surface of the display. Do not spray any liquids or cleaners directly on the display unit (especially the keyboard buttons).

VI. SPECIFICATIONS

Temperature Range:	-55°F to +122°F in 1 degree increments -48°C to +50°C in 1 degree increments	
Wind Speed:	0 to over 150 mph 0 to over 240 kmph 0 to over 130 knots	
Wind Direction:	16 point "compass rose" analog display	
Wind Chill:	-99°F to +50°F -97°C to +10°C	
Rainfall:	Daily and monthly totals in 0.1 inch increments Daily and monthly totals in 2.5 mm increments	
Cable Lengths:	Wind Sensor	40 feet
	Temperature Sensor	25 feet
	Rain Gauge (Optional)	40 feet
	Junction Box Cable (Std.)	8 feet
	AC Adapter	6 feet

VII. RADIO FREQUENCY INTERFERENCE

If the *ULTIMETER® II* is used near an extremely powerful radio transmitter, its high and low temperature readings can be affected. This would normally only be encountered in the immediate vicinity of commercial radio or TV stations, or high-power ham radio transmitters. If you think you are experiencing this problem, please inquire about our inexpensive, 30 dB 4-line RFI filter.

VIII. REPAIR AND EXCHANGE SERVICE

In Case of a Problem

Your *ULTIMETER*[®] II is designed to provide years of trouble free operation. If the instrument completely stops operating, the cause is probably inadequate power due to a faulty ac adapter, a faulty connection to the adapter, or weak or missing battery when operating from internal power. To correct the problem, disconnect all batteries and external power, then reapply proper power.

Also, be sure to see page 5 (crossed wires in receptacles) and page 8 ("Answers to Commonly-Asked Questions").

If a problem persists, please write or call our Technical Service Department at (908) 531-4615. We will do everything possible to assure your satisfaction.

Repair and Exchange Service

Any defective *ULTIMETER*[®] II may be repaired or exchanged for a factory reconditioned instrument of the same type with like-new performance. Under warranty there is no charge. Beyond warranty the charges are modest, depending upon the condition of the instrument.

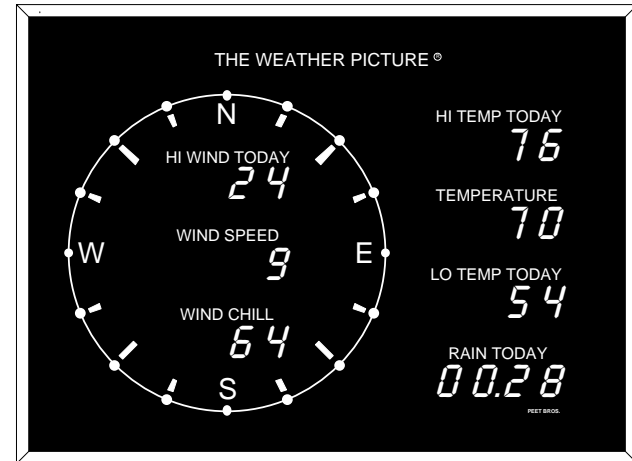
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WARRANTY

Each *ULTIMETER*[®] II carries a limited warranty against defects of material or workmanship for a period of 1 year from the date of initial purchase. Our responsibility under this warranty is limited to the repair or replacement of instruments returned to us postage paid, together with proof of purchase date. This warranty shall not apply to instruments subjected to misuse, abuse, tampering or unauthorized service. Neither we nor our representatives, distributors, nor dealers shall be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

AVAILABLE ACCESSORIES

We are continually developing new products and accessories to make your *ULTIMETER® II* Weather Station more interesting and valuable to you. Our two most popular items are:



THE WEATHER PICTURE

NEW for '98!

Finally a *big* weather display you can read from across the room - and handsome enough for any setting. THE WEATHER PICTURE displays information it receives from an ULTIMETER Weather Station, continuously providing and updating all the vital weather data you have pre-selected, without having to press a single key.

Its 8" compass rose and large 0.8" illuminated red numerals are clearly visible, day and night. THE WEATHER PICTURE is **perfect for homes as well as schools, hotels, offices, country clubs, stores, marinas, corporate lobbies, ski lodges, emergency management stations, etc.** - any place needing up-to-the-second *local* weather data. Can be totally customized to display any of over 60 weather functions on each numeric display. Available in two sizes (11"x 15" or 10"x11") and in two frame styles (brushed aluminum or teak).

Self-Emptying Rain Gauge

Automatically empties itself every 0.1" of rain and sends a signal to the keyboard/display unit, which maintains two independent rain totals. You can use one total to record daily accumulation and the other for monthly.

Data Logger

Special cable and software to record weather data on a personal computer. Features 4 simultaneous graphs of weather conditions over the last 20 hours, updated every five minutes. Or, you can display data from any selected part of the log file in graphic or tabular form. Available for IBM and Macintosh computers.

For additional information about these or other accessories, please contact your *ULTIMETER*[®] II dealer or Peet Bros. Company. We'll be happy to advise you of latest developments and answer any questions you may have.