Summit

Installation & Operation Instructions

MAXIMUM®
WEATHER INSTRUMENTS

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New Bedford, MA 02745
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www.maximum-inc.com

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Introduction

Thank you for purchasing a Wireless Summit. These instructions are designed to take you step by step through the process of installing and using a Wireless Summit. Carefully following these instructions will help ensure many years of trouble free service from your installation. If you are uneasy about the installation you should consult a qualified professional. TV antenna, satellite dish, ham radio, home entertainment and alarm system installers are good choices. You should be able to locate some of these professionals in your area by consulting the yellow pages. It is always best to show prospective installers these instructions and obtain quotations from a few different installers in your area.

Preparing for Installation

What you need for the installation

To install Summit you will need the following items.

Components Included with Wireless Summit

You may want to check off each item as you unpack the instrument.

- ☐ Indicator (readout, brass case)
- ☐ 2 Pluggable Terminal Strips (one 3-position and, one 2-position)
- ☐ 120 VAC to 24 VDC adapter with 6' of cable (large adaptor)
- ☐ 120 VAC to 12 VAC adapter with 6' of cable (small adaptor)
- ☐ Wireless Receiver
- ☐ Wireless Wind Transmitter
- ☐ Wireless Temperature Transmitter
- ☐ Wind Speed Sensor (generator)
- ☐ Wind Direction Sensor (distributor)
- ☐ Straight Sensor Mast
- ☐ Formed Sensor Mast
- ☐ Rubber Sensor Boots
- ☐ Hardware Pack
  - ☐ 2 Stainless Steel Cotter Pins
  - ☐ 10 Brass Hex Nuts #4-40 (there are 2 extra)
  - ☐ 2 #6 Pan Head 1" long Wood Screws
  - ☐ 2 Stainless Steel Hose Clamps.
    These are used to secure the sensor masts to a main support mast. The included clamps are suitable for a 1" to 2-1/2" diameter main support mast. If you are using a larger diameter main support mast you will need to obtain larger hose clamps from a hardware store.
- ☐ Battery Charger
- ☐ 2 AA NiCad Batteries
- ☐ 2 AA Alkaline Batteries

Components Not Included with Summit

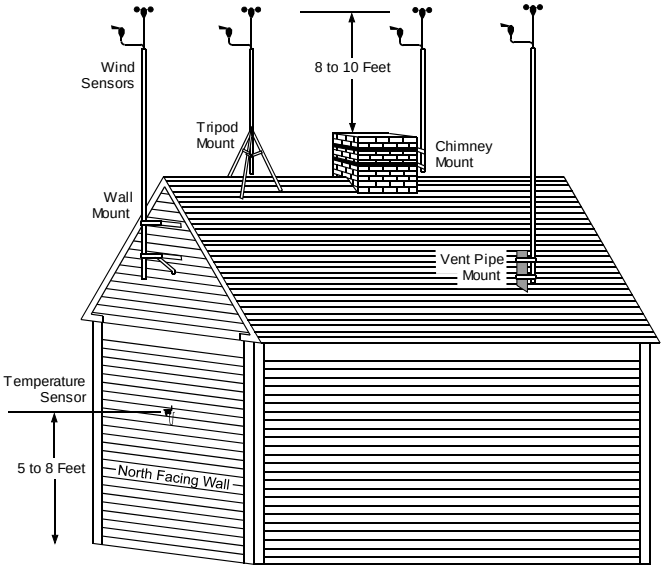
Main support mast. See the "Choosing locations for the components" section for details.

Light oil or grease for coating the sensor terminals (e.g. WD-40, Vaseline, white lithium grease).

Choosing locations for the components

Temperature Sensor

Select a location for the temperature sensor that is protected from direct sunlight and clear of potential physical damage. A North exposure of 5 to 8 feet above the ground is recommended (see diagram). Keep the sensor away from sources of heat such as windows, doors and, dryer vents. Alternatively you can mount the sensor in a properly sited meteorological instrument shelter.



Wind Sensors

The higher the wind sensors are mounted the more unobstructed their exposure to the wind and the more accurate their readings.
We recommend that you mount the sensors at least 8 to 10 feet above the highest object on the roof. TV antenna masts and mounts are excellent for this purpose and, are available from Radio Shack and other TV/Electronics stores (check under "Antenna" in your yellow pages). Antenna mounts are available in a wide variety of configurations some of the more common types are shown in the diagram.

Indicator

Wireless Summit's large size allows it to be easily read from over 100 feet away when properly installed. For best performance you should avoid locations where direct sunlight will shine on the instrument. You must also have an AC outlet near the selected location. Both AC adaptors have a 6 foot cord. You can extend this distance by splicing wire to the adaptor. The table below gives the maximum distance allowed for various gauges of wire.

Extending the AC Adapter wire		
Wire Gague AWG	Extension wire length in feet	Total wire length (including AC adapters 6 foot cord)
22	5	11
20	10	16
18	15	21
16	20	26
14	35	41

Installation

Batteries & Charging

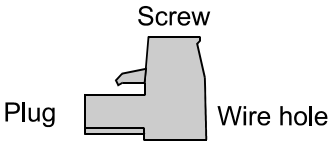
Charge the two AA NiCad Batteries in the supplied Battery Charger. The batteries should receive a minimum 12 hour charge prior to initial use. When installed in the Wireless Wind Transmitter, the AA NiCad Batteries will continually recharge via the internal solar charging system. The characteristics of NiCad batteries are such that they may require replacement every two to three years, depending on conditions. Be sure to always use 1000 milliamp NiCad batteries in the Wireless Wind Transmitter.

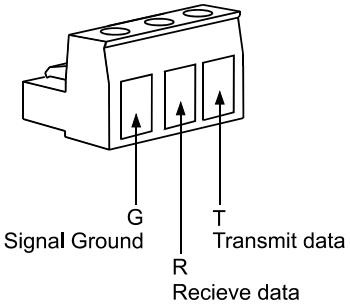
The two AA Alkaline Batteries are for the Wireless Temperature Sensor and once installed, should last one to two years, depending upon conditions. You will need to access this sensor periodically, so it should be conveniently located. Be sure to always use AA Alkaline Batteries in the Wireless Temperature Transmitter.

Trial wiring

To ensure your confidence in the instruments' operation, it is recommended that you perform a trial wiring in the comfort of your home or garage, prior to final installation.

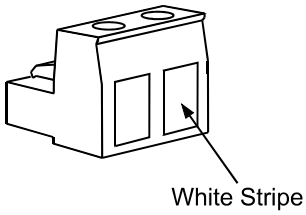
Connect the Wireless Receiver to the 3-position Pluggable Terminal Strip. There are six wires coming from the bottom of the Wireless Receiver. Attach the BLACK wire to the "G" terminal and WHITE wire to the "R" terminal of the 3-position Pluggable Terminal Strip.





Connect the Wireless Receiver to the 12 VAC Adaptor (small adaptor), by attaching the RED and GREEN wires to the two wires from the adaptor. Polarity does not matter.

Connect the 24 VAC Adaptor (large adaptor) cable to the 2-position Pluggable Terminal Strip. The 24 VAC Adaptor is polarity sensitive, so be sure to connect the wires as shown in the diagram.



DO NOT USE THE SAME AC ADAPTOR FOR BOTH THE WIRELESS SUMMIT AND THE WIRELESS RECEIVER.
DO NOT PLUG IN EITHER AC ADAPTOR AT THIS TIME.

Sensor testing

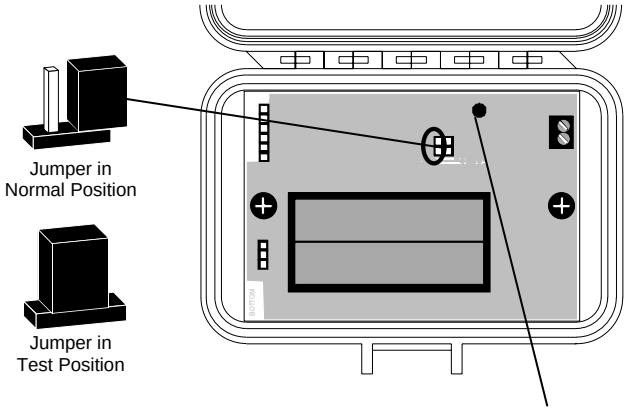
When installing the transmitters for a Wireless Summit, you will need to follow a very specific testing procedure. You will test each transmitter individually and then deactivate it (remove the batteries) while testing the other. Start with the Wireless Temperature Transmitter and finish with the Wireless Wind Transmitter. Once both transmitters have been tested and are transmitting good data, you can permanently install the batteries.

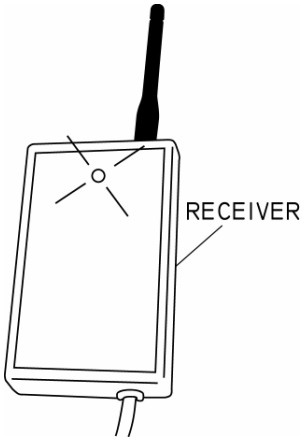
Prior to the start of exterior transmitter testing, you should move the assembled Wireless Summit and Wireless Receiver arrangement as close as possible to its final interior location and plug in both AC Adaptors.

Temperature Sensor

Open the thumb-latch on the Wireless Temperature Sensor and place the circuit board jumper into the test position (see diagram).

Install the two AA Alkaline Batteries.





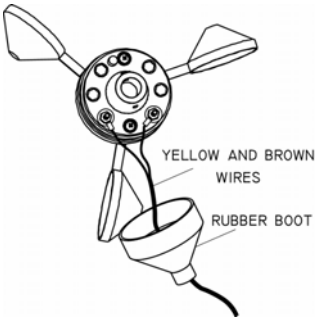
Note: Immediately after installing the batteries, a red LED inside the Wireless Temperature Transmitter will flash one time, indicating that the Transmitter is functioning properly.

The red LED on the Wireless Receiver should blink every four seconds and a temperature should display on the Wireless Summit indicator.

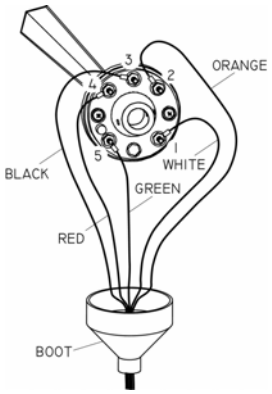
Take the Wireless Temperature Sensor to the desired outside location and confirm that the red LED on the Wireless Receiver continues to blink every four seconds. If you lose the signal, try another exterior location until the Wireless Receiver blinks every four seconds and you continue to see a temperature reading on the Wireless Summit.

Remove AA Alkaline Batteries from the Wireless Temperature Sensor; place the circuit board jumper back into the normal position and un-plug the AC Adaptors for both the Wireless Summit and the Wireless Receiver.

Wind Sensors

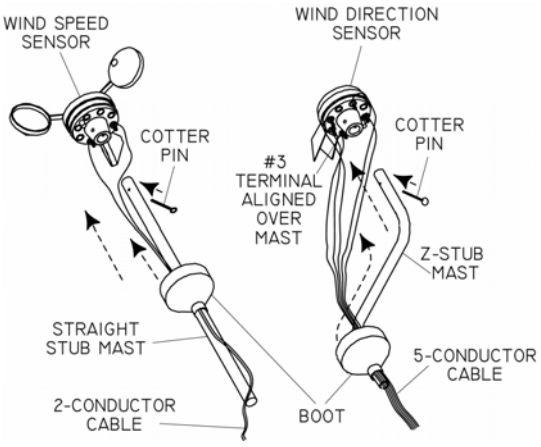


Thread the YELLOW and BROWN wires from the Wireless Wind Transmitter through the small access hole in one of the Rubber Sensor Boots. Using the Brass Hex Nuts from the Hardware Pack, attach the wires to the two terminals on the Wind Speed Sensor (polarity does not matter).



Thread the WHITE, ORANGE, BLACK, RED and GREEN wires from the Wireless Wind Transmitter through the small access hole in the other Rubber Sensor Boot. Using the Brass Hex Nuts from the Hardware Pack, attach the wires to the five numbered terminals on the Wind Direction Sensor as follows:

WHITE ..... to ……. Terminal #1
ORANGE .....to ……. Terminal #2
BLACK ..... to ……. Terminal #3
RED ..... to ……. Terminal #4
GREEN ..... to ……. Terminal #5



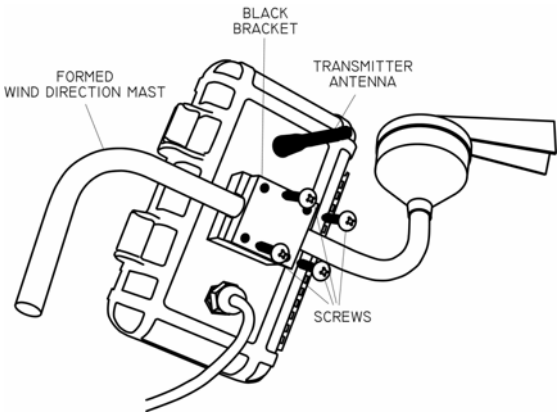
Slide the Straight Sensor Mast through the Rubber Sensor Boot and insert it into the Wind Speed Sensor, securing it with one of the supplied Stainless Steel Cotter Pins.

Slide the Formed Sensor Mast through the Rubber Sensor Boot and insert it into the Wind Direction Sensor, securing it with the other Stainless Steel Cotter Pin.

IMPORTANT: ALIGN THE NUMBER 3 TERMINAL OVER THE TOP OF THE HORIZONTAL ARM PORTION OF THE FORMED SENSOR MAST.

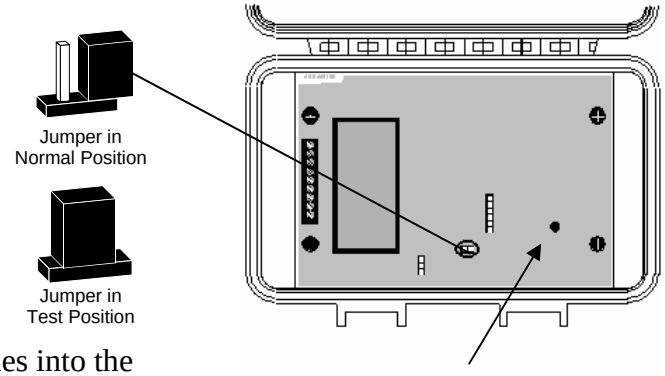
Attach the Wireless Wind Transmitter to the horizontal arm of the Formed Sensor Mast. Start by removing the four stainless steel screws which hold the black locking brackets together.

Sandwich the Formed Sensor Mast arm between the two black locking brackets, reinstall and tighten the four stainless steel screws. Angle the Solar Panel to approximately 22.5 degrees above the horizon. See Page 14 for 22.5° template.



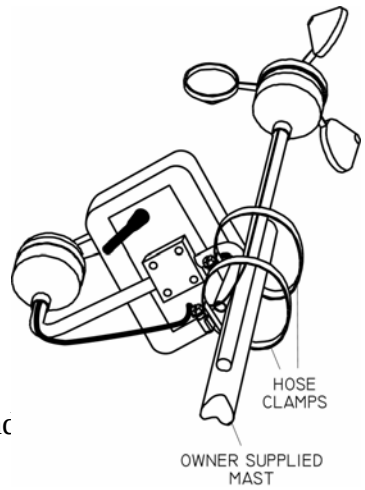
You are now ready to test the Wireless Wind Transmitter.

Open the thumb-latches on the Wireless Wind Transmitter and place the circuit board jumper into the test position (see diagram).

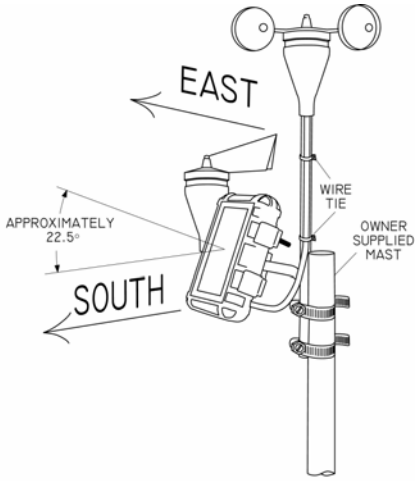


Insert the two fully charged NiCad Batteries into the Wireless Wind Transmitter. Immediately after installing the batteries, a red LED inside the Wireless Wind Transmitter will flash one time, indicating that the Transmitter is functioning properly. Then plug in the AC Adaptors for both the Wireless Summit and the Wireless Receiver. The red LED on the Wireless Receiver should blink every two seconds.

Secure both Sensor Masts to your main support mast using the supplied Stainless Steel Hose Clamps. Using electrical tape or plastic wire ties, firmly affix any loose wire to the horizontal arm of the Formed Sensor Mast and to your main support mast.



Bring the assembled Wireless Wind Transmitter/Sensor mast as close as possible to its final exterior location and verify that the red LED on the Wireless Receiver is blinking every 2 seconds. If you lose the signal, try another exterior location until the Wireless Receiver LED blinks every two seconc



Remove the two AA NiCad Batteries from the Wireless Wind Transmitter; place the circuit board jumper back into the normal position and then reinstall the AA NiCad Batteries.

Permanently mount your main support mast following the manufacturer's directions.

IMPORTANT: THE FORMED SENSOR MAST ARM MUST FACE EAST WITH THE SOLAR PANEL FACING SOUTH.

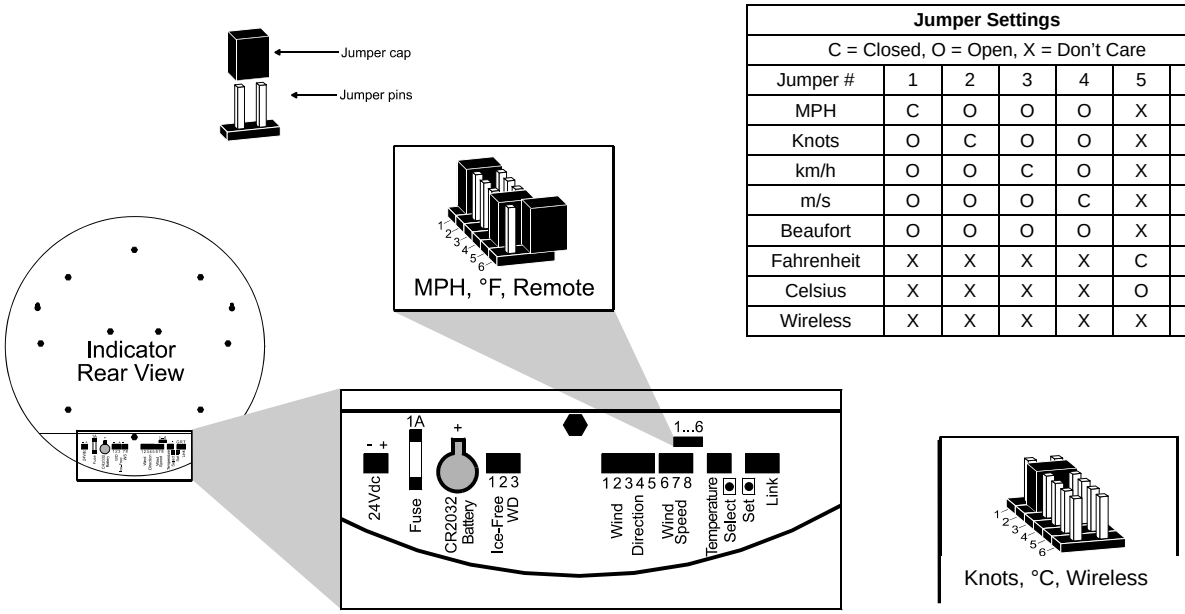
PLEASE NOTE: The Wind Direction Sensor will not transmit data until the Wind Speed sensor is operating.

Once you have completed installation of the mast, return to the Wireless Temperature Sensor and install the AA Alkaline Batteries.

Unplug both the 12 VAC and 24 VAC Adaptors.

Configuration of Indicator

You are now ready to configure Wireless Summit Indicator. First, the units of measurement jumpers need to be set. There are six standard PC type jumpers like you find on the circuit boards in a PC. When the jumper cap is mounted on the jumper pins, the jumper is closed, if the cap is not mounted on the pins, the jumper is open (see diagram). The first four jumpers control the units of measurement for wind speed, the fifth jumper sets the units of measurement for temperature and, the sixth jumper sets master or remote operating mode. Wireless Summit is shipped with the jumpers set for: Speed = MPH, Temperature = °F and Mode = Remote (see diagram). The following table shows all of the valid jumper settings. If you want to use other units of measurement then you must change the jumper settings using the table and diagrams.



Jumper Settings						
C = Closed, O = Open, X = Don't Care						
Jumper #	1	2	3	4	5	6
MPH	C	O	O	O	X	X
Knots	O	C	O	O	X	X
km/h	O	O	C	O	X	X
m/s	O	O	O	C	X	X
Beaufort	O	O	O	O	X	X
Fahrenheit	X	X	X	X	C	X
Celsius	X	X	X	X	O	X
Wireless	X	X	X	X	X	O

Now it's time to plug the terminal strips into the indicator. Note that there is a plug already installed in the space for the optional ice-free wind direction sensor, don't remove this plug. To plug in a terminal, position it with the screw heads oriented toward the middle of the indicator and press into place firmly. The connectors will snap into place when inserted correctly. Go ahead and plug the terminals into the appropriate positions on the indicator (see diagram) The AC adapter connects to the position labeled 24Vdc. **DO NOT plug in the 24 VAC adapter (large adaptor) to a wall outlet yet**.

Before powering up the instrument you need to understand the boot sequence.

When Wireless Summit is powered up it first lights up all the LED's for 3 seconds.

Next, Wireless Summit turns off all the LED's for 2 seconds.

During this time Wireless Summit is reading the jumper settings and doing its POST (Power On Self Test).

The POST codes are now shown on the speed and temperature digits for 6 seconds.

The wind speed 1's digit shows the instrument type, 0 = wireless.

The temperature 100's digit shows the wind sensor type, 0 = Ice Free, 1 = Standard.

The temperature 10's digit indicates the wind speed units of measurement, 7 = m/s, E = km/h, L = Knots, P = MPH and, Blank = Beaufort.

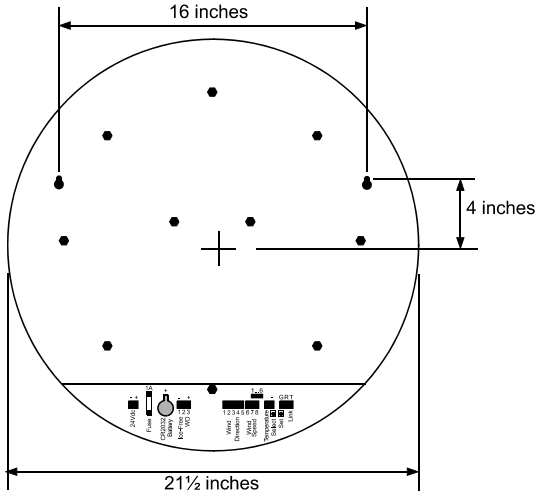
The temperature 1's digit shows the temperature units of measurement, 0 = °F, 1 = °C.

Finally Wireless Summit starts a ten second countdown for start of normal operation. The wind speed digits count from 0 to 9 and, the temperature digits will show 32, during this period.

Now plug the 24 VAC adaptor into a 110VAC wall outlet. Check the POST codes to make sure you have installed all jumpers correctly. Once the instrument has completed the boot sequence, the North, south, East and, West LED's will turn on and the number displays will shows dashes. Whenever a Wireless Summit has not received at least ten seconds worth of valid data from the Wireless Receiver, the display will show this pattern. If there is a properly functioning Wireless Receiver connected to the data link cable then the Wireless Summit will start showing the readings in about ten seconds. This completes the testing, unplug the 24 VAC adaptor from the 110VAC wall outlet and, disconnect the wires from the terminal connectors.

Final installation of Indicator

The indicator hangs on the wall from the two hanger holes on the back. The holes will accept #10 or #8 screws and are located on 16 inch centers for easy mounting (see diagram). Depending on the wall material you may need to use wall anchors, molly bolts, etc. Install the indicator mounting screws now.



Make a hole in the wall behind the Indicator, large enough to feed the Wireless Receiver and AC Adaptor wires through.

CAUTION: DO NOT MOUNT THE INDICATOR WITH ANY WIRES UNDER ITS LIP BECAUSE OF SHORT CIRCUIT HAZARD.

Feed both AC Adaptor cords from the wall outlet, through the wall to the Indicator.

On the back of the Indicator, connect the cable from the Wireless Receiver and the 24 VAC Adaptor to the appropriate terminal connectors.

Drop the connected Wireless Receiver through the hole in the wall. It is appropriate for the Wireless Receiver to hang freely within the wall cavity. You may also attach the Wireless Receiver to the inside of the wall with double-sided tape or a bracket of your own design.

Hang the indicator on the mounting screws.

Plug both AC Adaptors into the 110 VAC outlet. Verify that the POST codes are correct. This completes the installation of your Wireless Summit.

Appendix A – Indicator Specifications

Display Range and Resolution

Wind speed	0 to 255 MPH	1 MPH
Wind direction	16 compass points	22.5°
Temperature	-40 to 122 °F	1°F

Power Requirement

24 to 28 VDC @ < 1Amp

Appendix B - Troubleshooting

Occasionally, you may experience disruptions in data transmission. The most likely cause will be expired batteries in the external wireless transmitters. When "NS" appears in the temperature readout window of your Wireless Summit, it signifies "No Signal" from one of the transmitters. In the following chart, the location of the horizontal line(s) indicates which sensor most likely needs new batteries:

Wind sensor not transmitting

Temperature sensor not transmitting

Wind and temperature not transmitting

If you have a problem with Wireless Summit, before contacting Maximum, please try the following troubleshooting instructions to narrow down the source of the problem. If you need further assistance you may contact us.

Symptom	Things to check
LED's do not light.	AC Adaptor wiring. AC adaptor power, 24 to 28 VDC. AC outlet power, 110 to 120VAC. Indicator fuse.
Fuses keep blowing.	AC Adaptor wiring.
The m/s units for wind speed will not work even though the jumpers are set correctly.	Make sure that there is a terminal connector installed in the ice-free direction terminals and, that the connector has a jumper wire connecting terminals #1 and 2.
After power-up, you see wind readings of "0" MPH and the North LED illuminated, or a temperature reading of "32", and you do not believe these are the actual conditions.	Transmitter batteries may be bad. This is an indication that the Wireless Receiver is not receiving data from the sensors.

Appendix C - Common Questions and Answers

Q What are the two push button switches for?

A The two push button switches are only used with Summit remotes that calculate Highs, Lows or Averages. They are used on the remotes for setting the time of the built-in clock.

Q How do I test the clock battery?

A You can do this with a battery tester or you can simply set the time. Wait a few minutes then unplug the AC power. After a couple more minutes reconnect the 24 VAC power. If the clock comes up with midnight instead of the time you just set, the battery is dead.

Q What if I want the high/low/average readings to reset at a time other than midnight?

A This can be done by intentionally setting the time wrong when you set the clock. You need to set the time so that Summit thinks it is midnight at the time you want the reset to happen. To calculate the time to set on Wireless Summit you first calculate the time offset. The time offset is equal to 24:00 minus the desired reset time. Some examples are, for a reset time of 6:00 the time offset = 24:00 - 6:00 = 18:00. For a reset time of 15:00 (3:00PM) the time offset = 24:00 - 15:00 = 9:00. Once you have calculated the time offset, you should note it on the back of the instrument and in these instructions. Now you set the clock ahead by the amount of the time offset. For the examples, if the current time is 10:24 and, you want a reset time of 6:00. The time offset is 18:00 so, you want set the clock ahead by 18 hours which is 28:24. Obviously you can't set a clock to 28:24 so you subtract 24 hours giving you a time of 4:24 to set on the Summit clock. If you wanted the reset time to be 15:00, the time offset is 9:00 so, you set the clock ahead 9 hours which is 19:24. This method will work with very odd reset times like 18:47 but, the addition and subtraction are more difficult, 24:00 - 18:47 = 5:13. If the current time is 21:54 then you'd set it to 21:54 + 5:13 = 27:07, 27:07 - 24:00 = 3:07.

Appendix D - FCC Notice

Information to the Summit User

Warning: Changes or modification to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 designated 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 the receiver.
- Connect the equipment into an outlet on a circuit different than from that which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Shielded cables must be used with this unit to ensure compliance with the Class B FCC limits.

If necessary the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: HOW TO IDENTIFY AND RESOLVE RADIO TV INTERFERENCE PROBLEMS. This booklet is available from the U.S. Government Printing Office, Washington DC 20402 Stock No. 004000003454.

Appendix E - Warranty

Five year limited warranty

Maximum instruments are supported by many years of experience in building weather instrumentation to the most exacting standards of construction. Instrument sensors and details are consistently the highest quality so that their accuracy can meet the needs of commercial users. This allows us to offer the following warranty:

Maximum Inc. of 30 Samuel Barnet Blvd., New Bedford, MA. warrants its weather instruments to be free from defects in the material and workmanship for five years from date of original purchase. This warranty does not cover damages due to improper installation or use, lightning, damage attributed to unauthorized service, or damage that can be directly identified as the result of a power surge. Nor does this warranty apply if any seal on any instrument is broken. Any defective weather instrument which is returned for service will be repaired, or replaced, at the option of Maximum, free of charge. The forgoing is in lieu of all express warranties.

Procedure

The instrument must be returned, postage prepaid, to Maximum and should be accompanied by a return address and a brief statement of the malfunction. Services under this warranty will be available at any time of the year and will be completed within three weeks after the instrument is returned. The return of the warranty card is not a condition of warranty coverage, but may serve as evidence of your date of purchase.

Limits of Liability

The foregoing shall constitute the sole and exclusive remedy of any owner of a Maximum weather instrument for the breach of warranty including the implied warranties of merchantability and fitness. Implied warranties with the respect to Maximum weather instruments, which shall exist only if imposed by law, shall be limited in duration to the duration of this warranty. IN NO EVENT SHALL MAXIMUM INC. BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE INSTALLATION OR USE OF ANY INSTRUMENT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you. Maximum does not make or assume or authorize any other person to make or assume for it any other warranty or liability in connection with its weather instruments. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Owners Notes