MAXIMUM®
COMMERCIAL INSTRUMENTS

MAC3 Wind Speed Alarm & Controller

Installation Instructions

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Overview

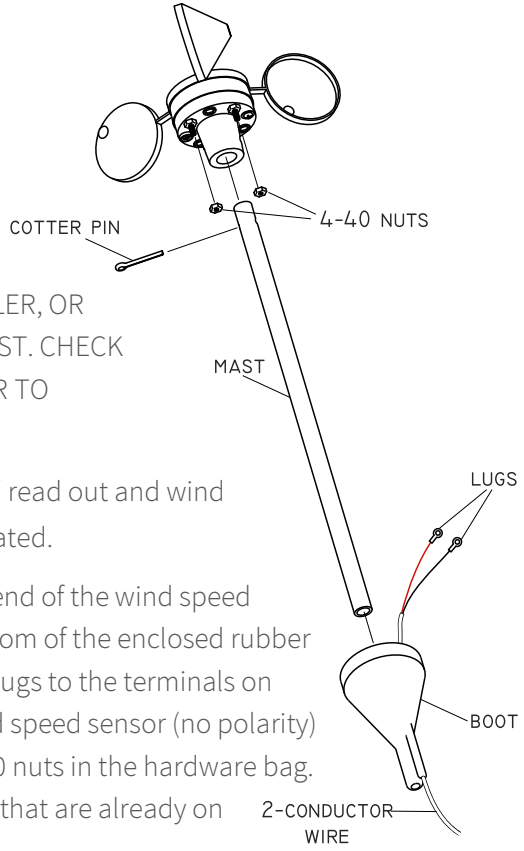
Thank you for purchasing the MAC3 wind speed alarm and controller. This manual is designed to lead you through a step-by-step process to install and operate the MAC3 properly. Please read thoroughly prior to installation.

Note: If this unit is being used as an ALARM, it is to be used as an aide to your current safety program, and it is not to be used exclusively in operations that may affect personal and/or property safety. Please do not use the time delay feature when using the instrument as a wind speed alarm.

It is advisable to bench test your MAC3 prior to final installation.

Installation

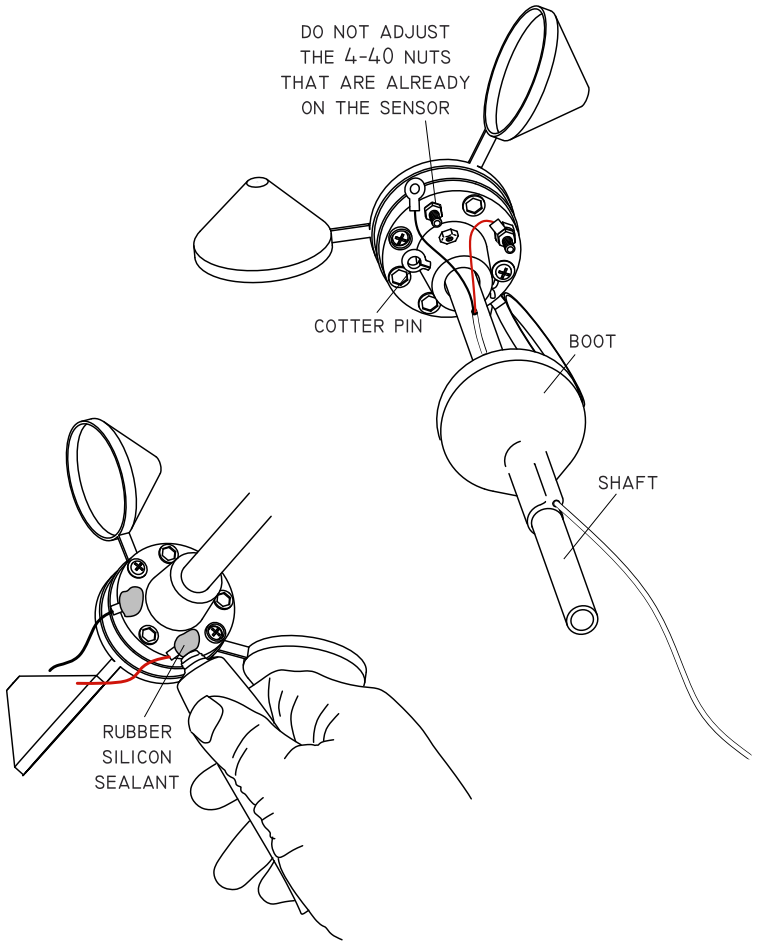
PROPER INSTALLATION IS IMPORTANT. IF YOU NEED ASSISTANCE, CONSULT A CONTRACTOR, ELECTRICIAN, TELEVISION ANTENNA INSTALLER, OR HOME ELECTRONICS SPECIALIST. CHECK LOCAL BUILDING CODES PRIOR TO INSTALLATION.



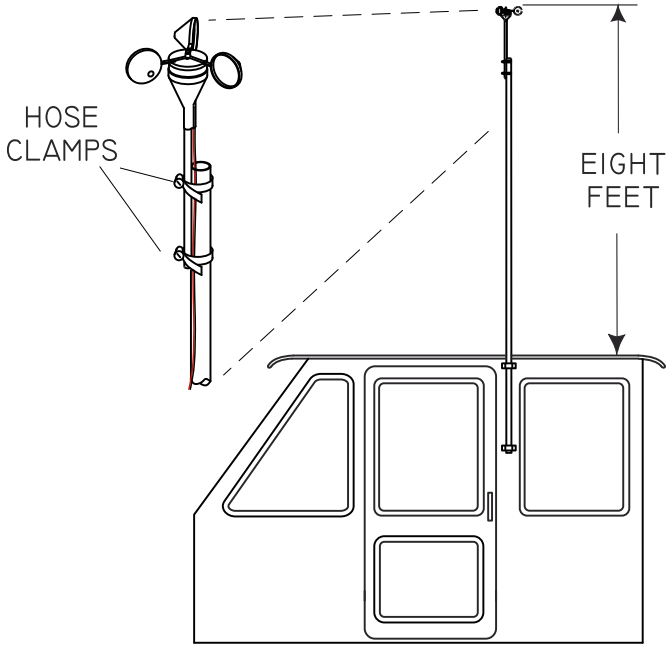
1. Determine where the MAC3 read out and wind speed sensor(s) will be located.

   A. Feed the terminal lug end of the wind speed cable through the bottom of the enclosed rubber boot and connect the lugs to the terminals on the bottom of the wind speed sensor (no polarity) using the supplied 4-40 nuts in the hardware bag. Do not adjust the nuts that are already on the sensor.

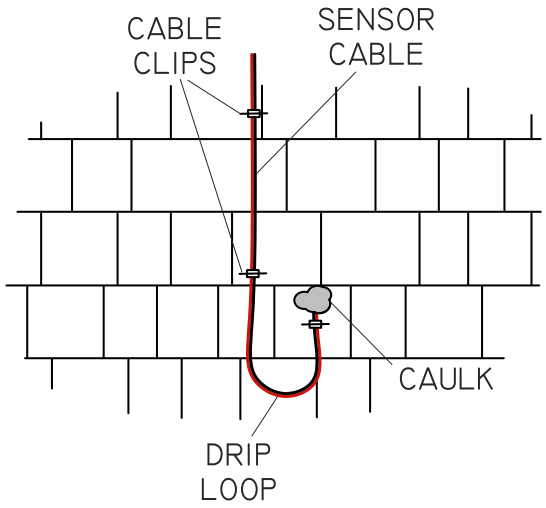
   B. Slide the stub mast through the rubber boot and insert the stub mast into the bottom of the wind speed sensor. Secure the sensor to the mast using the cotter pin supplied in the hardware bag. Coat all wire connections with a rubber silicone sealant and slip the boot over the sensor.



C. Secure the sensor and the stub mast to your antenna mast (not supplied, but available) with the two hose clamps supplied in the hardware bag. Choose a mount that best suits your location and provides at least eight feet of vertical clearance.

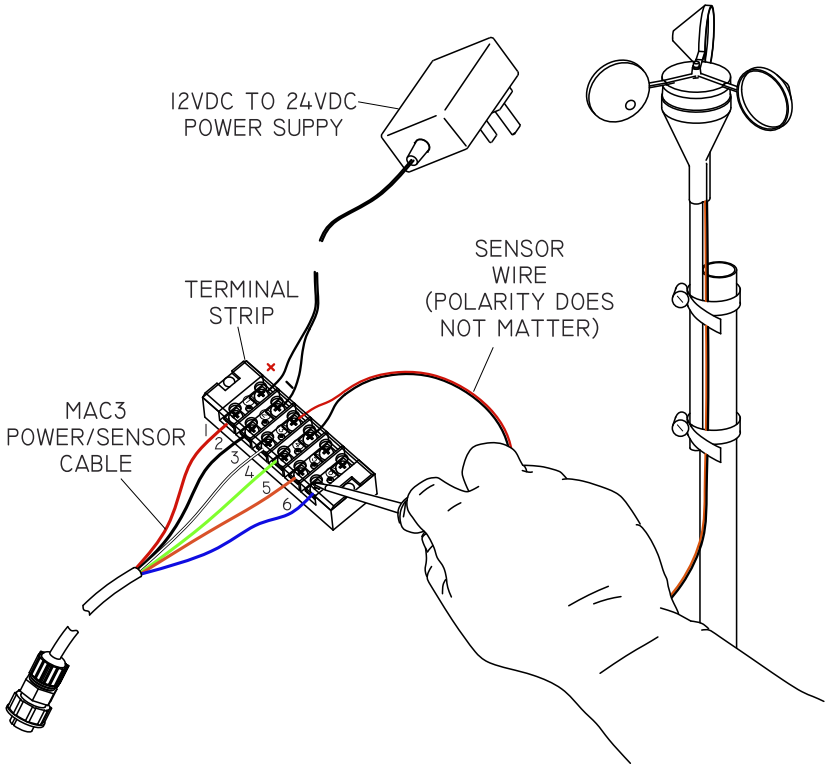


D. Follow the instructions suplied with the antenna mount (not included, but available). Secure the wire to the building or structure using proper cable clips (not included).

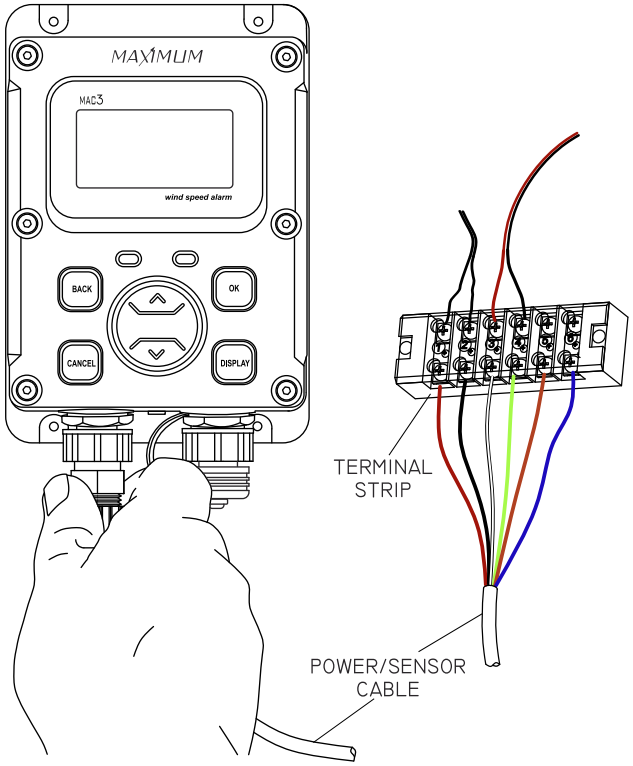


E. Wire the included MAC3 power/sensor cable to the terminal strip supplied in the hardware bag. Terminal strip is marked 1-6, where:

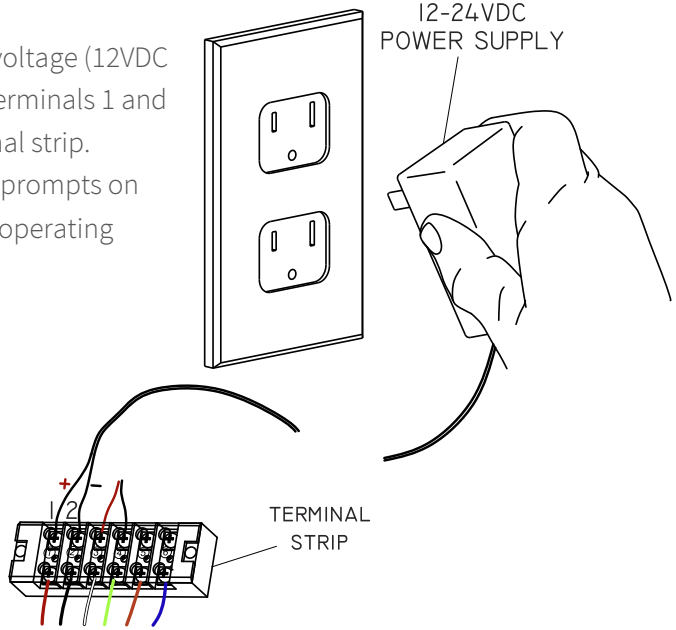
1 = Red = +12VDC/24VDC
2 = Black = Common from Power Supply
3 = White = Sensor 1 (no polarity)
4 = Green = Sensor 1 (no polarity)
5 = Orange = Sensor 2 (optional, no polarity)
6 = Blue = Sensor 2 (optional no polarity)



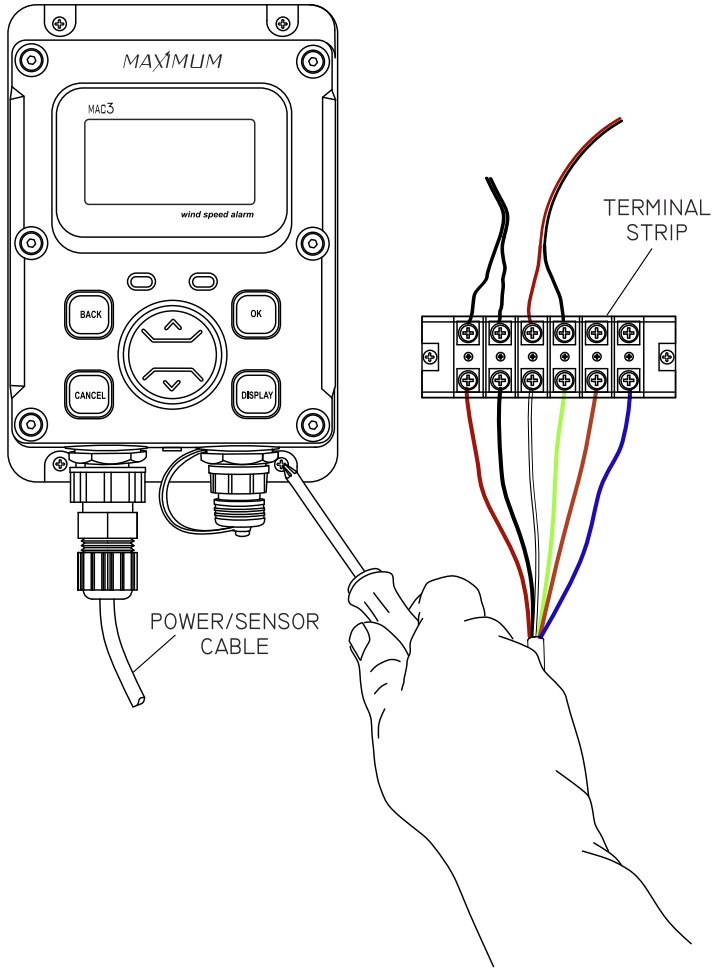
F. Attach the MAC3 power/sensor cable to the left socket and twist the cap to lock it in place.



G. Apply proper voltage (12VDC to 24VDC) to terminals 1 and 2 of the terminal strip. Follow screen prompts on the MAC3 (see operating instructions).



H. Secure MAC3 indicator in a proper mounting location using the screws supplied in the hardware bag. Secure the terminal strip with the screws supplied in the hardware bag to ensure the wire connections are stable. The MAC3 indicator and anemometer are weather-tight to the IP65 standard and are rated for use from -40°F to 158°F (-40°C to 70°C).

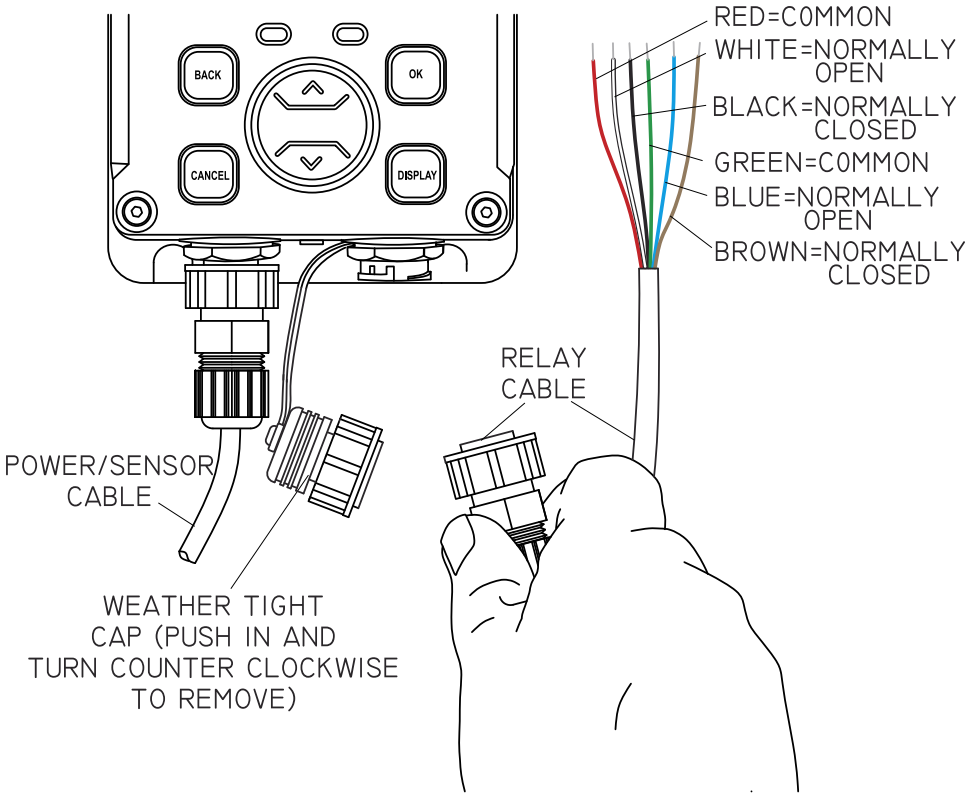


Optional Equipment

Relay Cable

With the optional relay cable (EA077) you have access to the output of two (2) 5A SPDT relays that can control external devices. To install:

1. Remove the waterproof cap on the right connector on the MAC3 indicator.
2. Plug the relay cable (EA077) into the connector.



Dual Sensor Operation

The MAC3 can be configured for simultaneous use with dual sensors to monitor wind speed in two separate locations. An optional second sensor (Kit-#400) can be installed to the orange and blue wires from the power/sensor cable. Follow the set up instructions to select 2 sensor operation.

Other Optional Equipment

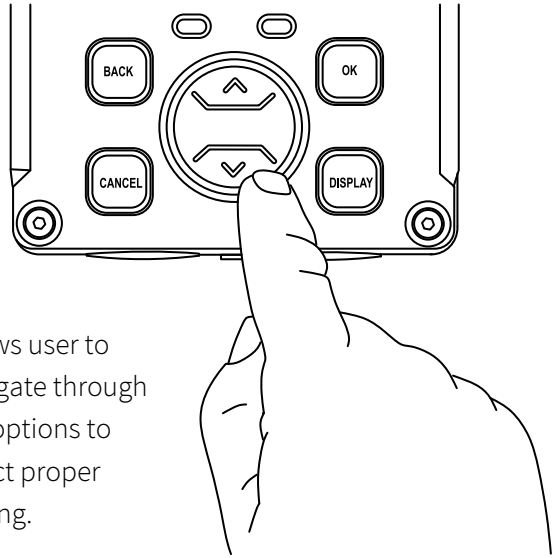
Part #:	EA065	12VDC Power Supply
Part #:	WM033	100' 2-Conductor Shielded Cable
Part #:	WM030	2-Conductor Shielded Cable sold by the foot, 1000' maximum length
Part #:	EH110	External Siren

Operation Manual

1. Connect the MAC3 to a 12 or 24VDC power source per the installation instructions.
   a. MAC3 will conduct a self-test at initial power-up. Once complete, you will see the welcome screen (only for initial set up).

2. Keypad

   a. The MAC3 keypad allows the user to navigate through the screens and options of the wind speed alarm & controller.



Up/Down Arrow Keys: Allows user to navigate through the options to select proper setting.

BACK: Brings the user to the previous screen.

CANCEL: Will cancel the selection and bring the user back to the Data display screen.

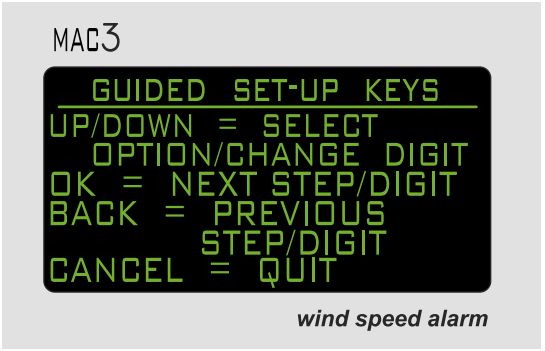
DISPLAY: Enable the main Menu while in the Data display screen.

LEDs: The left LED will turn on YELLOW when set-point 1 is reached as a visual aide.
The right LED will turn on RED when set-point 2 is reached as a visual aide.

3. Guided Set-Up

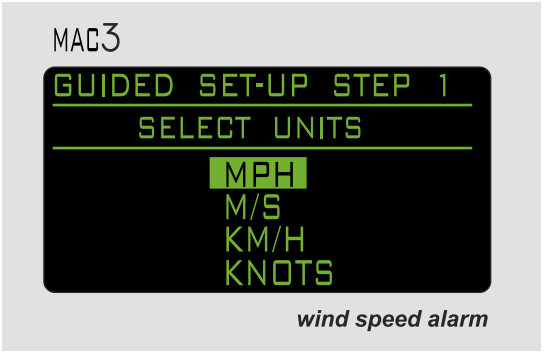
   a. Follow the screen prompts through the set-up procedure. To cancel set-up mode, press the CANCEL button on the keypad at any time.

      Press the BACK button at any time to return to the previous step. Setting any feature to 0000 disables that function.



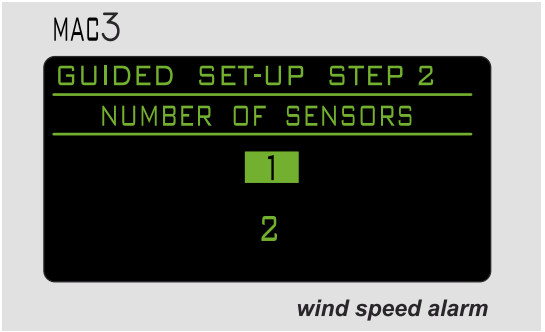
4. Select Units of Measure

   a. Using the up/down arrow keys scroll to select the desired UNITS (of measurement), press OK.

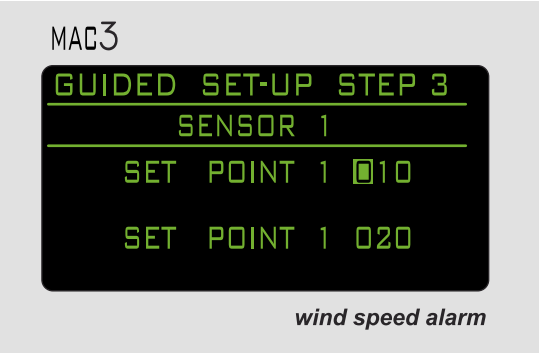


5. Select Sensors

   a. Using the up/down arrow keys, select the NUMBER OF SENSORS installed, press OK.



6. Set Points



a. Using the up/down arrow keys, select the hundred's value for Set Point 1, press OK.

b. Using the up/down arrow keys, select the ten's value for Set Point 1, press OK.

c. Using the up/down arrow keys, select the one's value for Set Point 1, press OK.

d. Using the up/down arrow keys, select the hundred's value for Set Point 2, press OK.

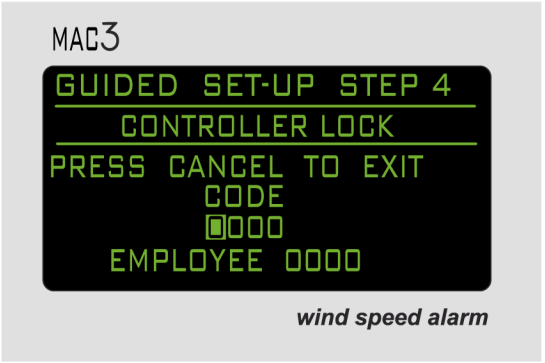
e. Using the up/down arrow keys, select the ten's value for Set Point 2, press OK.

f. Using the up/down arrow keys, select the one's value for Set Point 2, press OK.

g. Follow Steps 1-6 if you selected the optional two sensor installation to set values for sensor 2.

7. Controller Lock

The CONTROLLER LOCK feature allows the user to lock out unauthorized personnel from changing the controller settings. If the Lock Code is set and is then lost, the unit will need to be returned to the factory to reset the code. By pressing the CANCEL button, no Lock Code will be retained and the MAC3 will display current conditions and settings. If the code is set to 0000, the lock feature will be disabled.



a. Using the up/down arrow keys select the first number, press OK.

b. Using the up/down arrow keys select the second number; press OK.

c. Using the arrow keys select the third number, press OK.

d. Using the arrow keys select the fourth number, press OK. Once the fourth number is set, the lock feature will be enabled.

e. Enter an Employee number as a record of who entered the Lock Code. Using the up/down arrow keys select the first number, press OK.

f. Using the up/down arrow keys select the second number; press OK.

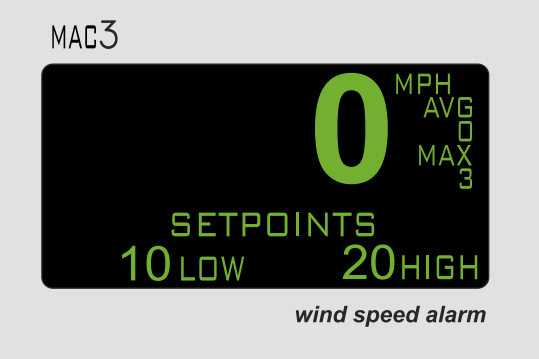
g. Using the up/down arrow keys select the third number, press OK.

h. Using the up/down arrow keys select the fourth number, press OK.

The MAC3 is now fully operational. Set-Point 1 controls relay #1, Set-Point 2 controls relay #2. Relays will activate when the wind speed reaches the selected SETPOINTS. When the wind speed reaches a single Set-Point, the buzzer will sound every second. When both Set-Points have been met, the buzzer will sound continuously.

MAC3 Data Display

1. With one (1) installed sensor



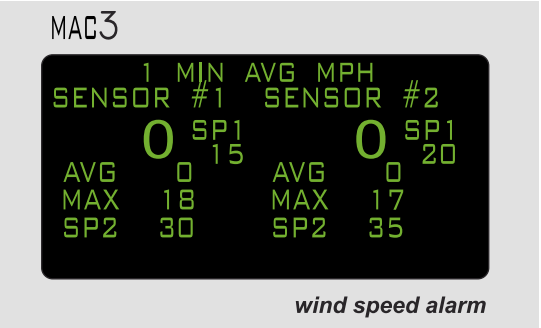
wind speed alarm

   a. When 1 installed sensor is selected, the display will show the current wind speed in the units of measurement previously selected; a running 1-minute average wind speed (unless the average was changed to 2, 5, or 10 minutes); the MAX wind gust since last reset, and the Set-Point values currently selected.

   b. When Set-Point 1 is reached, the buzzer will sound an alternating beep, the word TRIP will be highlighted on the display above the word LOW, and the yellow LED on the keypad will light. When Set-Point 2 is reached, the beep will become steady and the word TRIP will be highlighted on the display above the words LOW and HIGH, and the red LED on the keypad will light.

   c. Gust Reading: The MAX wind gust reading may be reset by pressing the OK and BACK buttons simultaneously.

2. With two (2) installed sensors



wind speed alarm

   a. When an optional 2 sensor set up is used, the screen will split and display the current wind speed in the units of measurement selected for both sensors; a running 1-minute average (unless the average was changed to 2, 5, or 10 minutes); the MAX wind gust since last reset, and the Set-Point values selected for the individual Set-Points as SP1 and SP2.

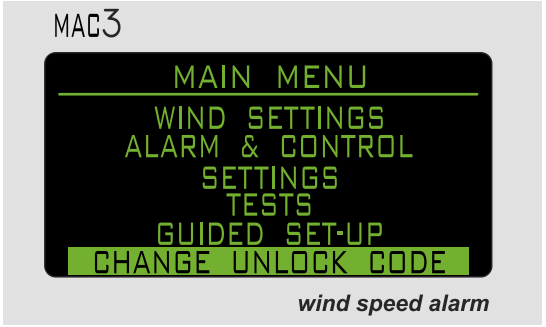
   b. When Set-Point 1 is reached, the buzzer will sound an alternating beep and the word SP1 will change to TRIP, which will be highlighted, and the yellow LED on the keypad will light. When Set-Point 2 is reached, the beep will become steady and the word SP2 will change to TRIP, which will be highlighted, and the red LED on the keypad will light. This will be the same for sensors 1 and 2.

   c. Gust Reading: The MAX wind gust reading may be reset by pressing the OK and BACK buttons simultaneously.

Additional Features

The MAC3 Wind Speed Alarm & Controller has many features that can be customized for your particular installation. If the indicator's lock out feature has been enabled, you will need the unlock code prior to proceeding with changes. If the indicator's features have not been locked you will be able to access the MAIN MENU by pressing the DISPLAY button on the indicator. *Please note that the screen will revert to the data display if it detects no keypad activity for 1 minute.*

1. Changing the Unlock Code



wind speed alarm

a. Select CHANGE UNLOCK CODE using the up/down arrow keys, then press OK. A code of 0000 will disable the lock feature. If the MAC3 has been locked and the unlock code is not known, you can return the unit to Maximum to have the code reset.

wind speed alarm

b. Using the up/down arrow keys, set the first number of the CURRENT CODE, press OK.

c. Using the up/down arrow keys, set the second number of the CURRENT CODE, press OK.

d. Using the up/down arrow keys, set the third number of the CURRENT CODE, press OK.

e. Using the up/down arrow keys, set the fourth number of the CURRENT CODE, press OK.

f. Using the up/down arrow keys, set the first number of the NEW CODE, press OK.

g. Using the up/down arrow keys, set the second number of the NEW CODE, press OK.

h. Using the up/down arrow keys, set the third number of the NEW CODE, press OK.

i. Using the up/down arrow keys, set the fourth number of the NEW CODE, press OK.

j. Using the up/down arrow keys, set the first number of the EMPLOYEE CODE, press OK.

k. Using the up/down arrow keys, set the second number of the EMPLOYEE CODE, press OK.

l. Using the up/down arrow keys, set the third number of the EMPLOYEE CODE, press OK.

m. Using the up/down arrow keys, set the fourth number of the EMPLOYEE CODE, press OK.

MAC3 will return to the data display screen when the final number is entered.

Display Adjustments

1. Brightness/Contrast: Adjust the brightness and contrast of the display using the buttons on the indicator. *This feature will only work on the data display, not when inside one of the menus*.

   a. To adjust Brightness, press and hold the BACK button on the indicator. Use the up/down arrow keys to adjust the display to the desired brightness level.

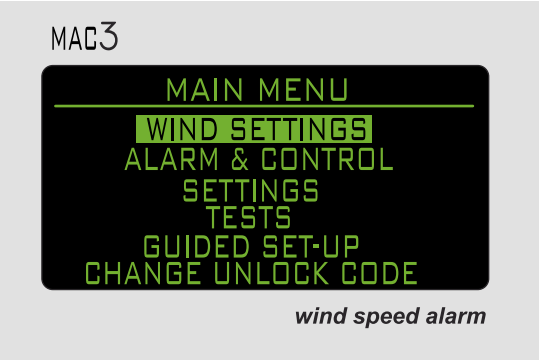
   b. To adjust Contrast, press and hold the CANCEL button on the indicator. Use the up/down arrow keys adjust the display to the desired contrast level.

Wind Settings

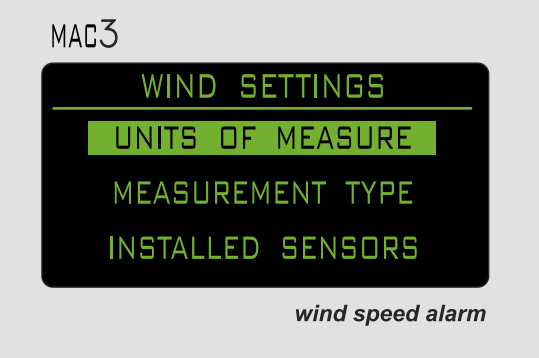
The MAC3 Wind Speed Alarm & Controller offers several user-selectable settings for wind speed measurement. The instructions below detail these setting options.

1. Units of Measure: Press the DISPLAY button to access the MAIN MENU.

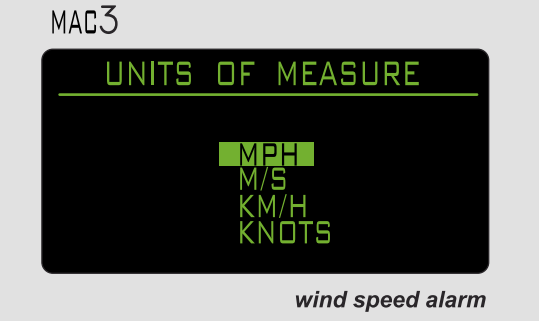
a. Using the up/down arrow keys, select WIND SETTINGS on the Main Menu, press OK.



b. Using the up/down arrow keys, advance to UNITS OF MEASURE, press OK.

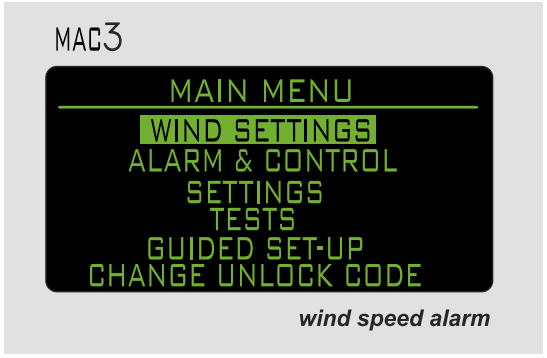


c. Using the up/down arrow keys, select the desired unit of measure, press OK.

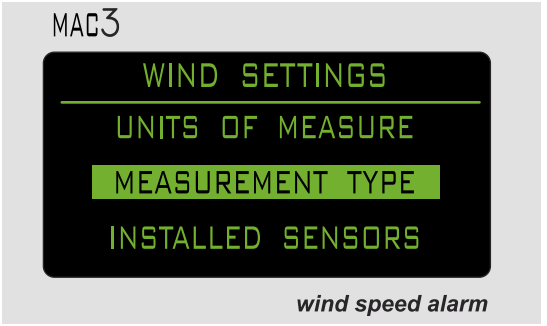


2. Measurement Type: Choose the type of wind speed measurement that appears on the display. Choose from: CURRENT/PEAK, 1 MINUTE AVERAGE, 2 MINUTE AVERAGE, 5 MINUTE AVERAGE or 10 MINUTE AVERAGE. Press the DISPLAY button to access the MAIN MENU.

a. Using the up/down arrow keys, select WIND SETTINGS from the Main Menu, press OK.



b. Using the up/down arrow keys, advance to MEASUREMENT TYPE, press OK



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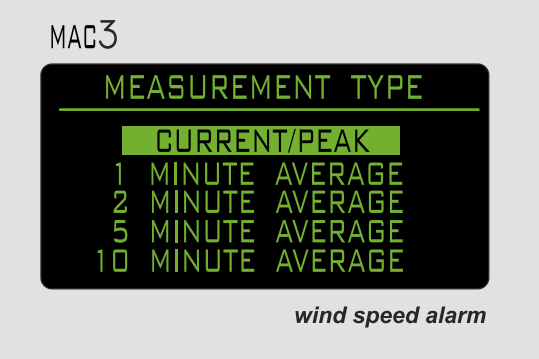
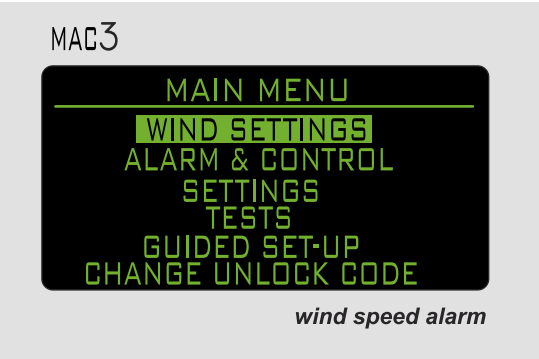
c. Using the up/down arrow keys, select the desired setting, press OK.



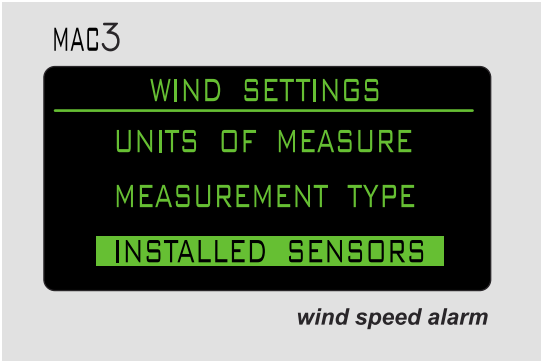
d. When selecting an Alarm to operate on an "average" mode, the individual Set-Point will be controlled by the average time specified. For example: If the MAC3 is set to display wind speed over a 2 MINUTE AVERAGE, wind speeds will need to escalate until the 2-minute average reaches the previously determined Set-Point speed. The alarm will remain on until the 2-minute average drops below that Set-Point.

3. Installed Sensors: The MAC3 is capable of measuring 2 sensors simultaneously. Use this menu to select the number of sensors installed. Press the DISPLAY button to access the MAIN MENU.

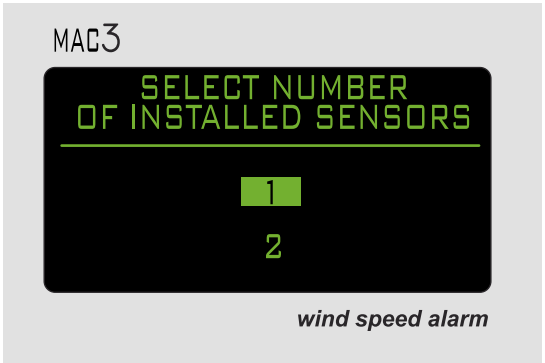
a. Using the up/down arrow keys, select WIND SETTINGS from the Main Menu, press OK.



b. Using the up/down arrow keys, advance to INSTALLED SENSORS, press OK.



c. Using the up/down arrow keys, select the desired setting, press OK.



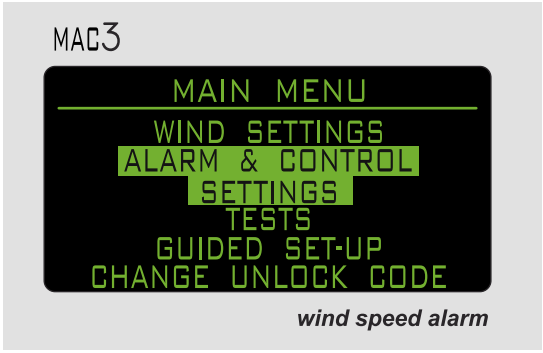
Alarm & Control Settings

The MAC3 Wind Speed Alarm & Controller can be used in various configurations. IMPORTANT: When using the MAC3 as aide to your safety program, it should only be used in either the NORMAL ALARM or LATCHING OUTPUTS mode. The RANGE ALARM and TIME DELAY OUTPUT modes are suitable when the MAC3 is being used as a controlling device only.

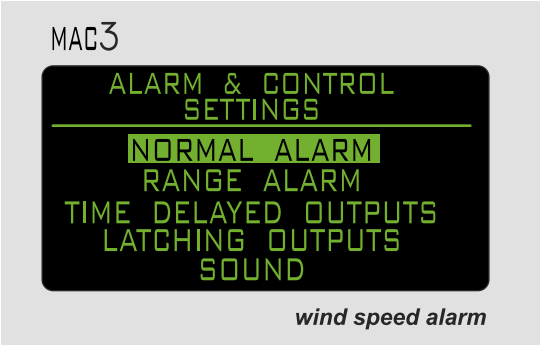
1. Normal Alarm: Use this feature to customize the Set-Points of the MAC3. In NORMAL ALARM mode, the alarm and relay Set-Point will activate when the wind speed reaches the Set-Point value. The alarm and relay will deactivate when the wind speed drops below the same Set-Point.

a. Press the DISPLAY button to access **the Main Menu**.

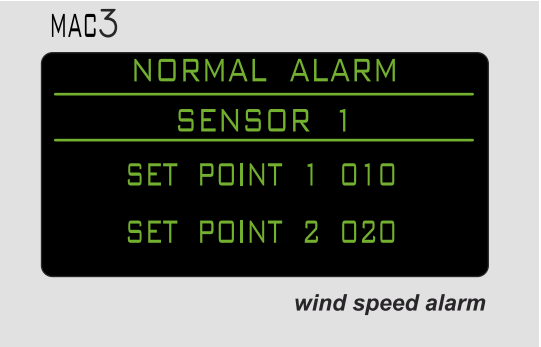
b. Using the up/down arrow keys, select ALARM & CONTROL SETTINGS, press OK



c. Using the up/down arrow keys, select NORMAL ALARM, press OK.



d. Using the up/down arrow keys, set the first number of SENSOR 1, SET POINT 1, press OK.



e. Using the up/down arrow keys, set the second number of SENSOR 1, SET POINT 1, press OK.

f. Using the up/down arrow keys, set the third number of SENSOR 1, SET POINT 1, press OK.

g. Using the up/down arrow keys, set the first number of SENSOR 1, SET POINT 2, press OK.

h. Using the up/down arrow keys, set the second number of SENSOR 1, SET POINT 2, press OK.

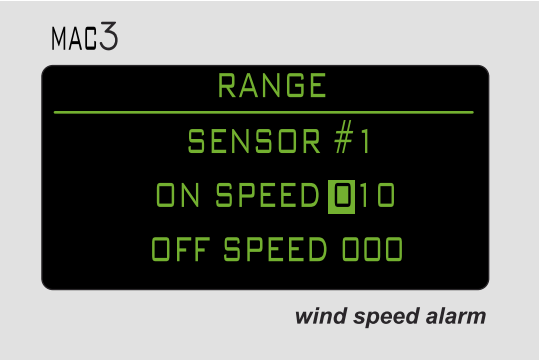
i. Using the up/down arrow keys, set the third number of SENSOR 1, SET POINT 2, press OK.

If you have a second sensor installed follow the same procedure to set for Normal Alarm Sensor 2.

2. Range Alarm: In RANGE ALARM mode, both the alarm and relay will activate at the ON SPEED level is set. They will remain active until the wind speed reaches the OFF SPEED level that is set. The MAC3 can be used as two types of range alarms: 1.) A window comparison where the "On" Set-Point is less than the "Off" Set-Point, or as a comparison with hysteresis where the "On" Set-Point is greater than the "Off" Set-Point.

   a. Using the up/down arrow keys, select RANGE ALARM in ALARM & CONTROL SETTINGS, press OK.

b. Using the up/down arrow keys, set the first number of SENSOR #1, ON SPEED, press OK.



c. Using the up/down arrow keys, set the second number of SENSOR #1, ON SPEED, press OK.

d. Using the up/down arrow keys, set the third number of SENSOR #1, ON SPEED, press OK.

e. Using the up/down arrow keys, set the first number of SENSOR # 1, OFF SPEED, press OK.

f. Using the up/down arrow keys, set the second number of SENSOR #1, OFF SPEED, press OK.

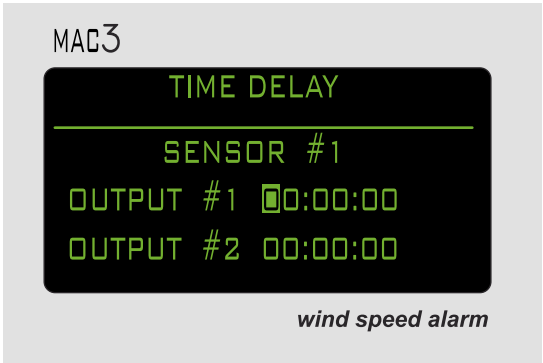
g. Using the up/down arrow keys, set the third number of SENSOR #1, OFF SPEED, press OK.

If a second sensor is installed, follow the same procedure to set for RANGE, SENSOR #2.

3. Time Delayed Outputs: In TIME DELAY mode, the alarm and relay will activate when the Set-Point is reached. Both will remain active for a specified period of time. After that time has elapsed, if the wind speed remains higher than the Set-Point, the timer will reset and continue the delay for the same period of time. Otherwise, it will return to a normal state.

a. Using the up/down arrow keys, select TIME DELAYED OUTPUTS in ALARM & CONTROL SETTINGS, press OK.

b. Using the up/down arrow keys, set the hours delay for SENSOR #1, OUTPUT #1, press OK.



c. Using the up/down arrow keys, set the minutes delay for SENSOR #1, OUTPUT #1, press OK.

d. Using the up/down arrow keys, set the seconds delay for SENSOR #1, OUTPUT #1, press OK.

e. Using the up/down arrow keys, set hour delay for SENSOR #1, OUTPUT #2, press OK.

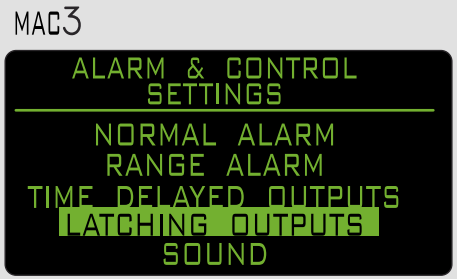
f. Using the up/down arrow keys, set the minutes delay for SENSOR #1, OUTPUT #2, press OK.

g. Using the up/down arrow keys, set the seconds delay for SENSOR #1, OUTPUT #2, press OK.

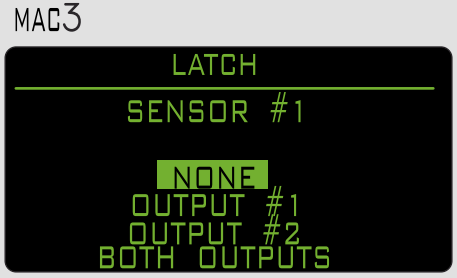
If a second sensor is installed, follow the same procedure to set TIME DELAY for SENSOR #2.

4. Latching Outputs: In the LATCHING OUTPUTS mode, both the alarm and relay will activate at the level you set, and will remain active until the operator releases the latch. To release the latch, press the LOCK button and DOWN arrow simultaneously. The latching value will be equal to the SET POINT 1 setting made during the NORMAL ALARM setting procedure.

   a. Using the up/down arrow keys to select LATCHING OUTPUTS in ALARM & CONTROL SETTINGS, press OK.



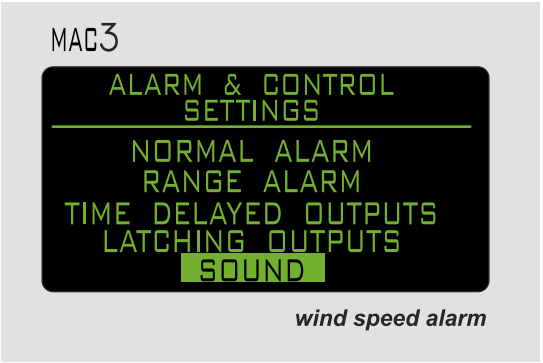
   b. Using the up/down arrow keys, set the desired LATCH mode, press OK.



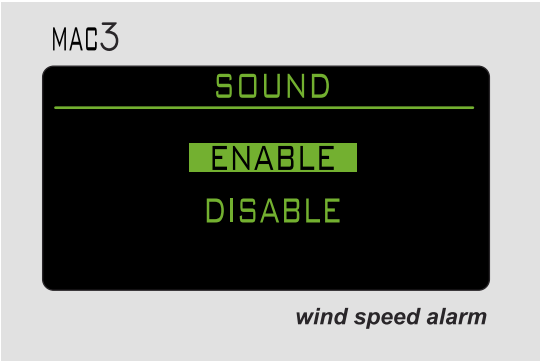
If a second sensor is installed, follow the same procedure to set a LATCH for SENSOR #2.

5. Sound: You can Enable or Disable the built in buzzer. Note: In safety sensitive installations, the buzzer can be a valuable feature. You may also connect a louder external siren (EH110 or EH111) and have it controlled by the external relays.

   a. Using the up/down arrow keys, select SOUND in ALARM & CONTROL SETTINGS, press OK.



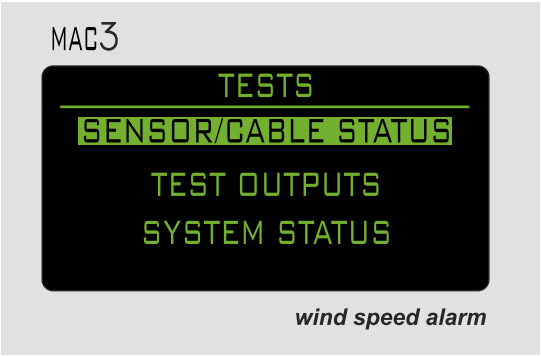
   b. Using the up/down arrow keys, select the desired ENABLED or DISABLED setting, press OK.



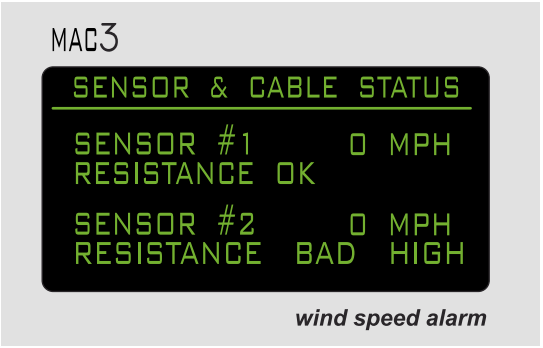
Tests

The MAC3 Wind Speed Alarm & Controller has built-in test routines that assist with troubleshooting the instrument. Press the DISPLAY Button to reach the MAIN MENU and using the up/down arrow keys, select TESTS, press OK.

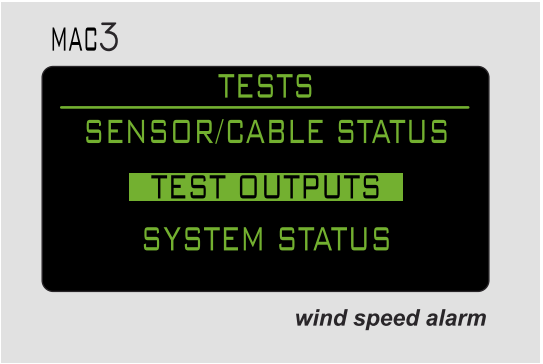
1. Sensor/Cable Status: Using the up/down arrow keys, select SENSOR/CABLE STATUS, press OK.



a. The MAC3 will run a continuous test on the sensors/cables, and display the results. Press the CANCEL button at any time to return the system to normal operation.



2. Test Outputs: Using the up/down arrow keys select TEST OUTPUTS, press OK.



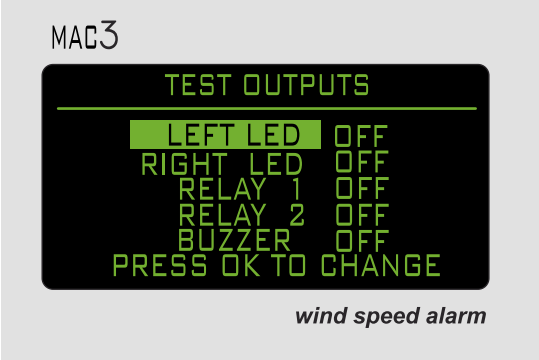
a. Using the up/down arrow keys, select LEFT LED, press OK to toggle the left LED on and off.

b. Using the up/down arrow keys, select RIGHT LED, press OK to toggle the right LED on and off.

c. Using the up/down arrow keys, select RELAY 1, press OK to toggle relay 1 output on and off.

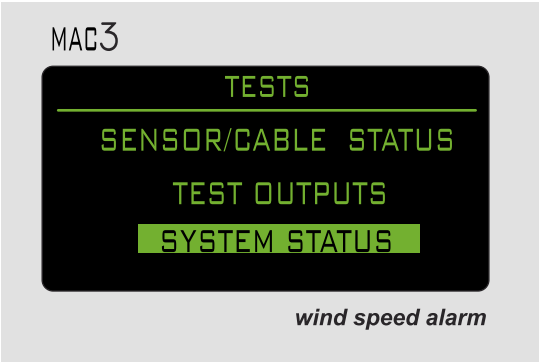
d. Using the up/down arrow keys, select RELAY 2, press OK to toggle relay 2 output on and off.

e. Using the up/down arrow keys, select BUZZER, press OK to toggle the buzzer sound on and off.

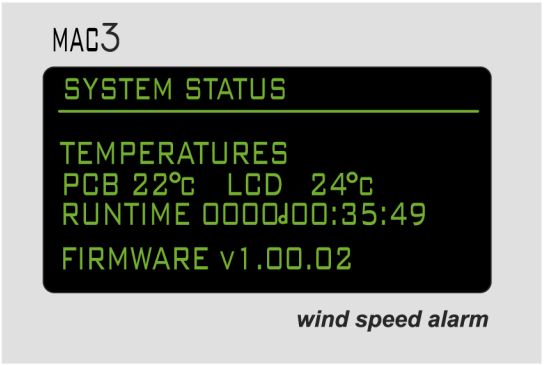


Press the CANCEL button at any time to return the system to normal operation.

3. System Status: This feature will display system specifics such as operating temperature, firmware version, etc. Using the up/down arrow keys, select SYSTEM STATUS, press OK.



a. Once System Status has been selected, the MAC3 will display its current SYSTEM STATUS on the screen.



Press the CANCEL button at any time to return the system to normal operation.

Troubleshooting

Please note, the operating temperature of the MAC3 is -40°C (-40°F) to -70°C (158°F). The MAC3 will shut down if it exceeds these temperatures. Prior to reaching these temperatures, the screen will show a warning to alert the user.

1. No Display: Check to make sure that the power supply is connected and verify its rated output with a multi-meter. If still no display, unplug the power cord from the MAC3, wait 5 minutes and re-apply power.

   a. When the ambient temperature is close to an operating limit, the MAC3 internal temperature may fall outside of the limit and it will not be able to power up. If the ambient temperature is less than -22°F /-30°C or greater than +140°F/+60°C, warm or cool the MAC3 and then re-try powering up.

2. Sensor/Cable failure: If the wind speed display changes to “CONTINUITY TEST FAILURE HIGH RESISTANCE”, or “HIGH OHMS” in 2-sensor operation, check to ensure that there are no breaks in the cable. To test the sensor, disconnect the cable and, using a multi-meter, measure the resistance across the terminals of the sensor. If the sensor is good it will show aprroximately 700 ohms.
3. Change Lock Code Screen: If the entered old code is wrong, then the screen values are all reset to zero and the first digit of the old code value is re-selected.

Specifications

Measurement range:	0 – 255MPH
Accuracy:	± 2 MPH of input and ± 1 digit
Sample Rate:	1.7 seconds
Sound:	85 dB(A)/10cm (min.) @ 3.1kHz, -40 to 70°C
Relays:	Two SPDT relays (rated at 5A at 30VDC)
Operating Temperature:	-40° to +158°F (-40° to +70°C)
Power:	12VDC @ 150mA; 24VDC @ 75mA
Current Draw:	120mA Max with heater off 970mA Max with heater on
Sensor:	3-Cup #400 anemometer
Dimensions:	7.39” height x 5.08” width x 2.26” depth
Viewing Display:	1.375” x 2.625”
Weight:	1.3 LBS

Components

#400 Anemometer

Power Cable

100’ Sensor Cable

Rubber Sensor Boot

14” Stainless Steel Mast

Mounting Hardware

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