WeatherBoss

Operation Manual

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Introduction

Thank you for choosing Bartlett Instrument's WeatherBoss; the weather station that helps protect your greenhouse and improve growing efficiency. The WeatherBoss includes wind, rain, temperature, humidity and light readings. The WeatherBoss is both a wind and rain alarm and can act as a remote sensor module. As a wind and rain alarm, it will activate an output when the wind speed exceeds a programmed wind speed set point or the rain sensor detects a programmed level of moisture on the sensor surface. As a remote sensor module, it can share alarms and readings with other controllers as well as our Headgrower cloud platform.

This manual will guide you through settings and options and explain the function of the WeatherBoss. The installation manual will guide you through placement and use of the sensors.

General Operation

The main function of the WeatherBoss is to warn when it is raining and/or winds are high. The optical rain sensor is highly reliable and requires no configuration. The WeatherBoss features two wind alarms; each allowing a high and low speed set point assignable to the 8 cardinal/ordinal directions. At the ClimateBoss environmental controller, the alarms can then be assigned to the various vents to give high and low speed alarm based on direction. For instance, Alarm 1 could be assigned to Vent A. It could have a high speed alarm for winds from the East but a low speed for winds from the West. Alarm 2 could be the opposite; having a high speed alarm set for wind from the West and low speed alarm from the East. This alarm could be assigned to Vent B giving it the opposite protection of Vent A.

Through our Radio Link product, the alarms and other sensor readings are broadcast to other controllers. Sensor reading usage can vary by controllers in the network. For example, the light reading can be used by a ClimateBoss to extend a greenhouse energy shade. While the TimeBoss controller on the network may use the same light reading broadcast by the WeatherBoss to turn off lighting when the sun is bright enough.

The WeatherBoss is most versatile when used with Radio Link, and either the ClimateBoss or TimeBoss controller, along with Headgrower. However, it is also backwards compatible with CIS and wired alarm set ups.

User Interface

The WeatherBoss features a color graphic touch screen display to enhance ease of use. Most indicator boxes also function as buttons so users can quickly access and edit the specified feature's settings. Most settings can also be accessed thru the menu list. See figure 1 for a quick guide the display and key functions.

Communications

WiFi is standard on all "Boss" controllers. The controller uses WiFi to download the latest firmware so you are always up to date. It can also use the WiFi to talk directly to Headgrower for programming and monitoring from your phone or desktop. Often the controller is equipped with Radio Link to allow long distance communications between controllers for sharing sensor data.

Home Screen Overview

Menu
Displays the following menu options:
Settings
Configuration

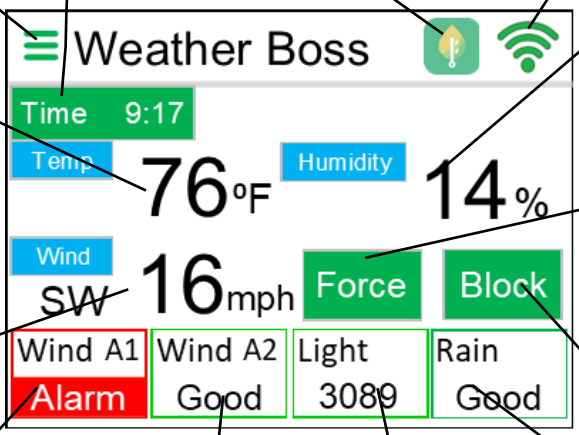
Current Time
Current time in military time. Press to change time.

Headgrower Button
Press to view options for connecting the controller through Headgrower. Also found in the menu.

WiFi Status/Button
Indicates current WiFi status. Green bars indicate signal strength. A red X indicates no WiFi connection. Press to enter the WiFi menu.

Outside Temperature
Displays the outdoor temperature reading. Informational only.

Humidity Reading
Displays the current humidity reading. If no sensor is attached, it will read 0%.



Force
Used to manually activate an alarm. Will stay active until cancelled.

Wind Speed/Direction
Displays the wind speed and wind direction (if optional directional sensor is used). If a standard anemometer is used, it will always display N (North).

Block
Used to block an active alarm for 20 minutes before reverting back to normal operation.

Wind A1 Reading
Displays the current status for the Wind Activation #2 Alarm. Alarm will displayed as pictured when the activation speed has been maintained for the activate delay time.

Wind A2 Reading
Displays the current status for the Wind Activation #2 Alarm. When the alarm is active, it will change from Good to either be yellow (Force) or red (Alarm).

Light Sensor Reading
Displays the current light sensor reading in micro moles per second per meter squared.

Rain Sensor Reading
Displays the current rain sensor reading. When the alarm is active, it will change to either be yellow (Force) or red (Alarm).

Menu Screen

By pressing the Menu button – indicated by 3 bars in the top left corner - on the Home Screen, you'll be taken to the Menu Screen. The Menu Screen is a list of various options from controller info, WiFi settings, and more. For more information on each component of the Menu, see the descriptions below:

Settings

Set Clock - Select to set the *WeatherBoss* clock. It is in military time. For Example: 3PM is entered as 15:00, 12AM is entered as 0:00, and 10AM is entered as 10:00. The clock can also be changed from the main screen by pressing Time.

Set Date – Select to set the Day, Month, and Year in the controller.

Temperature/Speed Units – Used to change the temperature & speed scale for the controller. Options are Fahrenheit/MPH or Celsius/KPH.

Configuration

Controller Info –**Firmware Version**, **Serial Number** and **Mac address** for the controller are shown here. This information may be required if you need any technical support. Additionally, it is used in conjunction with the Headgrower cloud platform for remote monitoring and control of the WeatherBoss. See the WiFi section for more information about firmware updates.

WiFi – Set up Wi-Fi for Firmware download and for remote control and monitoring from the Headgrower cloud platform (Requires subscription).

Enable Wi-Fi – Enable or disable the Wi-Fi feature. **Disable** turns Wi-Fi capabilities off at all times. **Enabled** turns the Wi-Fi on any time it is within range of a setup Wi-Fi connection.

Wi-Fi Setup – To set up Wi-Fi for the *WeatherBoss*, press "**Wi-Fi Setup**" and the controller will scan for nearby networks. Select your desired network and enter the password (if required) and press "**Save**".

*****For security reasons, we highly recommend that the user place all controllers into a separate logical network or VLAN, separate from other networks, routers, and hardware.**

Update Firmware – If your controller is connected to the internet through the WiFi module, by pressing Update Firmware, the controller will connect to www.bartinst.com to see if any updates are available. Once it has found the firmware, you have the option to update your controller. Updating firmware will **NOT** affect the controller's programs.

Reset WiFi – Press Reset WiFi when having trouble with the WiFi connection. The controller will reset the WiFi connection and attempt to reconnect to your currently saved connection.

Manual WiFi Setup – Used to manually set up a WiFi network that is hidden or otherwise not found when running WiFi Setup. Enter the network name under SSID and press "**Save**". Under Password, enter the network password at press "**Save**".

WiFi Status - Displays the currently connected network, WiFi signal strength, and cloud connection status.

Headgrower Options – Used to set up the WeatherBoss for use with the Headgrower App and desktop version.

Headgrower Via – Enable to allow the WeatherBoss to communicate to Headgrower.

Headgrower Network – Select appropriate option for the WeatherBoss to communicate to Headgrower either as a Client, Hub, CIS, or Off. See your Headgrower manual for more information.

Headgrower Channel – Select the appropriate communication channel for the Headgrower app. See your Headgrower manual for more information.

Headgrower ID – Displays the HEadgrower ID for your controller. This is similar to your controllers serial number and cannot be changed.

Humidity Cal – Used to enter the calibration code for the optional humidity sensor. Calibration codes can be found on the Humidity Calibration sheet sent with your humidity sensor. The humidity sensor does not come with the standard *WeatherBoss* but is an additional option. Set to 0 if no sensor is connected.

Light Sensor Source – Used to activate or deactive the light sensor option. Select Off if no sensor is used or select Apogee SQ-110-SS if the light sensor is attached. After making the selection, press "**Save**".

Reset Factory Defaults - Resets all settings to factory defaults. Upon selection, you will be asked to confirm before the controller will be reset.

Calibrate Touch – Used to re-calibrate the touch screen if buttons aren't working properly. Press the "**Calibrate Touch**" button and follow the onscreen instruction to re-calibrate.

Factory Protected - Factory protected is used by Bartlett to set controller and display modes.

Sensor Readings

The WeatherBoss comes standard with a wind speed, temperature and optical rain sensor. Other optional sensors include a wind direction sensor, light sensor, and humidity sensor. See more information below about each sensor and how the information is used.

Rain Sensor

The optical rain sensor is used to sense when there is rain. When the sensor detects enough run off, the alarm will activate. If the WeatherBoss is connected via CIS or Radio Link, it will close the selected vents to Step 1. The output will remain activated until the moisture level drops below the rain sensitivity level.

Wind Sensor/Alarm

The wind sensor is used to measure wind speed and alert when the wind speed has surpassed the Activation Speed. There are two alarms so there can be low and high speed alarms from different directions. If the optional directional sensor is attached, alarm can be activated based off the direction of the wind as well. The wind speed must remain above the activation speed for the length of time specified by the activate delay setting. The wind alarm will remain activated until the wind speed drops below the drop out set point wind speed (Drop Speed). The wind speed must remain below the Drop Speed for the length of time specified by the Drop Delay setting. The WeatherBoss will default to reading N (North) for wind direction if a standard anemometer is being used.

High Activation Speed – If the wind speed is greater than the High Activation Speed the alarm will activate. When the alarm activates, the environmental controller will close any open vents to the first programmed position. Choose your vent settings in the Headgrower App/Desktop or through CIS. The activation set point may be programmed for any wind speed between 0 and 99 miles per hour (0 and 159 kilometers per hour).

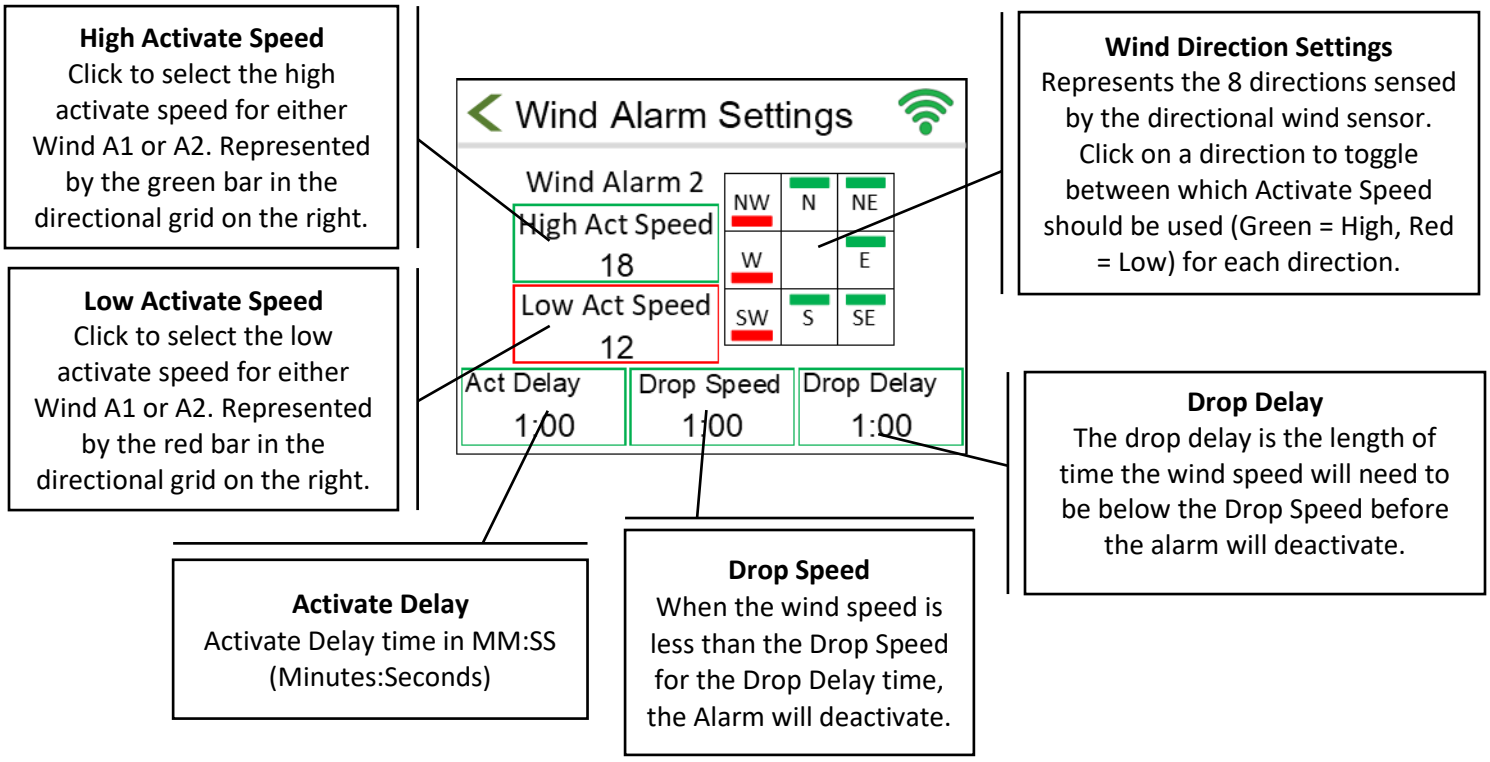
Low Activation Speed - If the wind speed is greater than the Low Activation Speed the alarm will activate. When the alarm activates, the environmental controller will close any open vents to the first programmed position. Choose your vent settings in the Headgrower App/Desktop or through CIS. The activation set point may be programmed for any wind speed between 0 and 99 miles per hour (0 and 159 kilometers per hour).

***When a directional wind sensor is used, the high and low activation speeds can be used to set different activation points for different wind directions. For example: N, NW, W, and SW can all be set to activate at the High Activation Speed, while S, SE, E, and NE can all be set to activate at the Low Activation Speed.

Activate Delay - The activate delay is the length of time that the wind speed will need to be above the activation set point for the alarm to activate. When the alarm activates, the environmental controller will close any open roof vents to the first programmed position. The activation delay may be programmed from 00:00 (MM:SS) to 99:99 (99 minutes:99 seconds).

Drop Speed - If the wind speed is less than the drop out set point the alarm will decactivate. When the alarm deactivates, the roof vents will be under the control of the environmental controller. The drop out set point may be programmed for any wind speed between 0 and 120 miles per hour (0 and 192 kilometers per hour).

Drop Delay – The drop out delay is the length of time that the wind speed will need to be below the drop out set point for the alarm to deactivate. When the alarm deactivates, the roof vents will be under the control of the environmental controller. The drop out delay may be programmed from 00:00 (MM:SS) to 99:99 (99 minutes:99 seconds).



Temperature Sensor

The WeatherBoss's thermistor takes the outside temperature reading. This is an informational only sensor for outside temperature.

Humidity Sensor (Optional)

The humidity sensor is used to monitor the humidity in the outside air. The humidity probe needs to be calibrated before proper monitory of humidity levels can occur. The calibration code for your humidity sensor (found on the paperwork provided with your humidity sensor) needs to be entered into the WeatherBoss. Go to Menu -> Configuration -> Humidity Cal and enter the 4 digit code provided and press "**Save**". If a humidity sensor is not being used, the setting should be set to 0 and the controller will display a 0% humidity level at all times. If the WeatherBoss is connected through Radio Link or Headgrower, the humidity levels sensed can be used to open and close programmed vents and other

equipment. If a humidity sensor is not being used, the setting should be set to 0 and the controller will display a 0% humidity level at all times.

Light (PAR- Photosynthetic Active Radiation) Sensor (Optional)

The light sensor is used to detect the number of photons arriving in a square meter every second. The photons are measured in micro moles per second per meter squeared. 300-500 is typical on a cloudy day. 2000 is high reading on a sunny day. The WeatherBoss only has a light reading to shared with other Bartlett Environmental controllers connected through Radio Link. When connected the photo sensor reading can be used to control lighting, shade or misting. If a light sensor is not being used, it can be deactivated by pressing Menu -> Configuration -> Light Sensor Source, select Off, and press "**Save**".

Manually Activate Alarm

The **Force** button may be pressed at any time to activate the output of the Weather Alarm, this is a manual override feature. The Weather Alarm will close any open vents to the first programmed position that are programmed to in CIS or Headgrower. The roof vents will remain closed for ten minutes or until the **Cancel or Block** button is pressed. After ten minutes the roof vents will automatically return to being controlled by the environmental controller. The Weather Alarm will return to normal operation. When **Force** is pressed the Wind A1, Wind A2, and Rain boxes on the main screen will turn yellow and read Force.

Block Alarm

The **Block Alarm** button may be pressed at any time to cancel the output of the WeatherBoss, this is a manual override feature. The WeatherBoss will allow any roof vents to return to the control of the environmental controller. The roof vents will remain under control of the environmental controller for 20 minutes or until the **Force** key is pressed. The WeatherBoss will return to normal operation.

Defaults

Restore factory default settings. The default settings are:

Activation Set Point – 20 MPH

Drop Out Set Point – 15 MPH

Activation Delay – 4 Seconds

Drop Out Delay – 6 Seconds

Units – English

Response Time – 1

Wind Alarm – On

Rain Alarm – On

Diagram 1 – Activation and Drop Out Delays

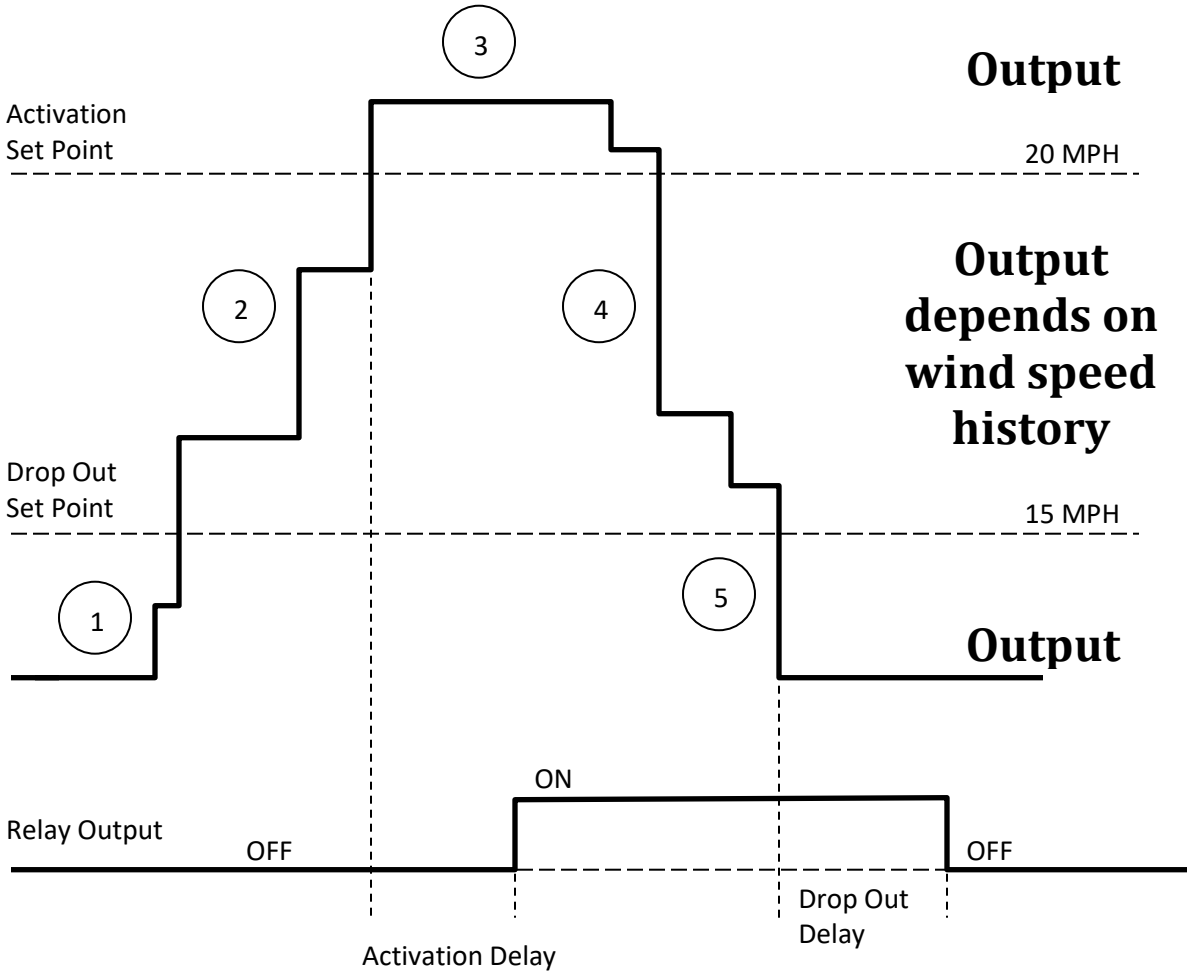
The WeatherBoss will close any open roof vents to the first programmed position when the when the wind speed exceeds 20 miles per hour for 4 seconds. The roof vents will return control of the roof vents to the environmental controller when the wind speed drops below 15 miles per hour for 6 seconds.

Activation Set Point – 20 MPH

Drop Out Set Point – 15 MPH

Activation Delay – 4 Seconds

Drop Out Delay – 6 Seconds



1. Output Off – Wind speed is below the activation and drop out set points
2. Output Off – Wind speed is below the activation set point and the output has not been triggered

3. Output On – Wind speed is above the activation set point, output triggers after activatation delay
4. Output On – Wind speed is below the activation set point and the output has been triggered
5. Output Off – Wind speed is below the activation and drop out set points, output turns off after drop out delay

Diagram 2 – No Delays

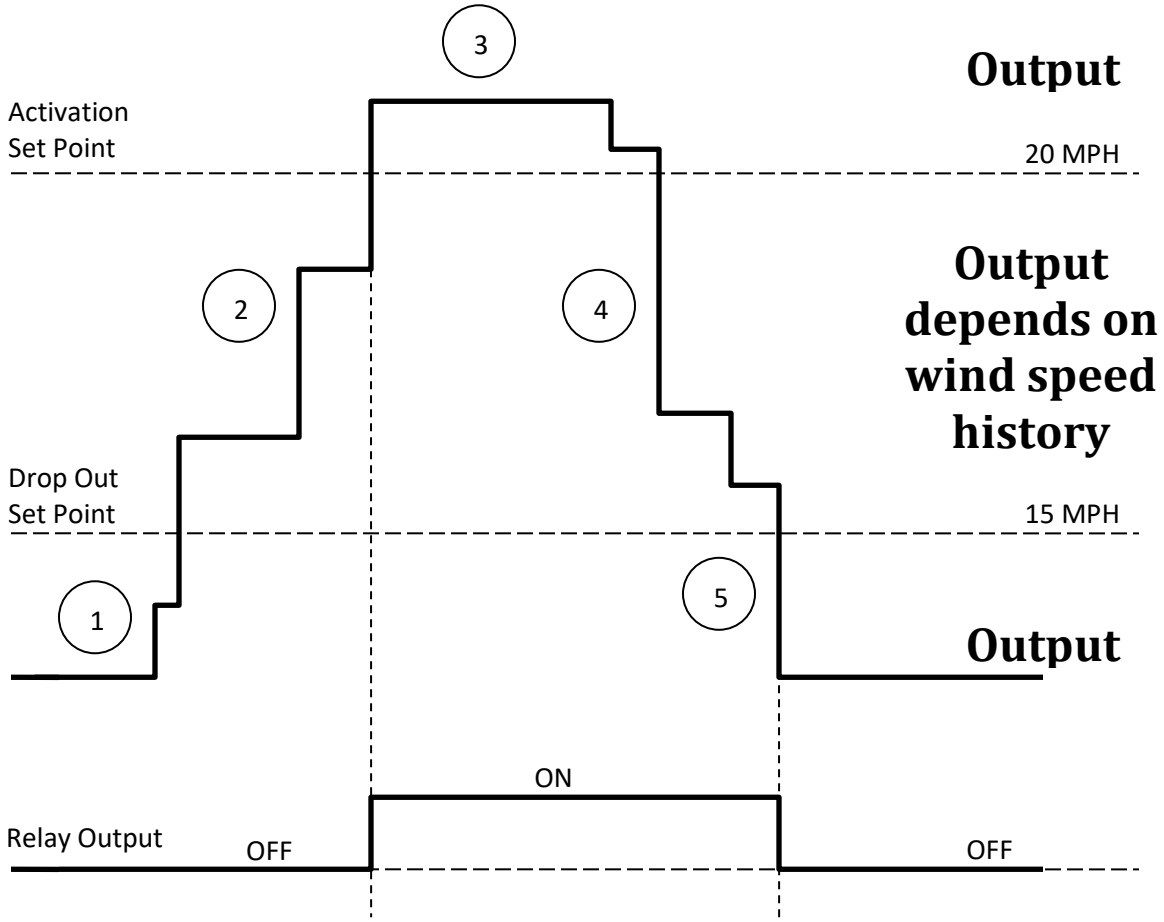
The WeatherBoss will close any open roof vents to the first programmed position when the when the wind speed exceeds 20 miles per hour. The roof vents will return control of the roof vents to the environmental controller when the wind speed drops below 15 miles per hour.

Activation Set Point – 20 MPH

Drop Out Set Point – 15 MPH

Activation Delay – 0 Seconds

Drop Out Delay – 0 Seconds



1. Output Off – Wind speed is below the activation and drop out set points
2. Output Off – Wind speed is below the activation set point and the output has not been triggered
3. Output On – Wind speed is above the activation set point, output triggers immediately
4. Output On – Wind speed is below the activation set point and the output has been triggered
5. Output Off – Wind speed is below the activation and drop out set points, outputs shuts off immediately