200-WS-21-A

User Manual

Dual Set Point Wind Alarm

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Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

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CONTENTS

1 FORWARD

Thank you for purchasing NovaLynx products. NovaLynx has been designing and manufacturing weather instruments since 1988. NovaLynx represents several well-known brands of quality manufacturers, including Gill Instruments, RM Young, Kipp & Zonen, and Vaisala. It is our hope that our products will meet all your monitoring requirements.

2 INTRODUCTION

The **200-WS-21-A Dual Set Point Wind Alarm** includes a rotating cup style anemometer (NovaLynx 200-WS-01B) and internal alarm buzzer. Two independently controlled relays are provided to operate external equipment such alarm lights or sirens. The Wind Alarm can function as an irrigation or fountain over-ride controller.

The back-lit LCD display is easily visible through the transparent cover. With the cover removed the unit is programmed by push-button controls without the need to connect a computer. All set points and the maximum wind speed value are stored in non-volatile memory. DIP switch settings select the units (mph or kph) and enable/disable the buzzer.

Programmable Features:

Alarm Set Points	**Wind speed threshold for the alarm**	
Channel 1	0-100 mph or 0-160 kph	(Default 25 mph / 40 kph)
Channel 2	0-100 mph or 0-160 kph	(Default 50 mph / 80 kph)
Alarm Delays		
Alarm ON Delay	0-99 seconds before alarm/ relay activation	(Default 5 sec)
Alarm OFF Delay	0-99 seconds before alarm / relay de-activation	(Default 5 sec)

When in alarm mode, a blinking LED indicates which relay(s) are active. Each relay can be connected in the normally open or the normally closed mode.

WARNING: It is the responsibility of the installer to properly insulate ALL connections to the relay terminals, especially if high voltages are present. It is also important to provide an earth grounding wire to protect the controller from static discharge, whether or not the relays are connected.

3 SPECIFICATIONS

The anemometer is rated for wind speeds up to 125 miles per hour (201 kph) and has a starting threshold of approximately 1.2 mile per hour (2.0 kph). The Wind Alarm LCD can display speeds up to 99.9 (mph or kph), but the control logic continues to operate above this limit.

200-WS-21-A Dual Set Point Controller Specification	
Display	LCD, 2x16 characters, 3x8 mm character size, backlit
Indicators	Green LED - Power, Red LEDs - Alarms
Setup	DIP switch: WIND/TEMP, MPH/KPH, DEG F/DEG C, BUZZER/DISABLE
Programming	Pushbutton: MENU, UP, DOWN, CLEAR, GO
Connections	All user connections 1/4" male spade terminals (connectors supplied)
Relay specifications	Form "C" (SPDT) N.O. and N.C. Contact rating: 3A @ 24Vdc / 115 VAC
Alarm ON / OFF delay range	0 to 99 seconds
Timing accuracy	± 2%
Measurement range	0 to 99.9
Integration interval	2 seconds
Input Power	12V AC or DC, 50 mA maximum
Operating temperature	-20°C to +50°C
Mounting	Screws included for mounting to a vertical surface
Dimensions	5.12 x 6.25 x 2.95 inch (13.0 x 15.9 x 7.5 cm)
Weight / Shipping	1 lbs (0.45 kg) / 2 lbs (0.9 kg)

200-WS-01B Anemometer Specification	
Measurement Range	125 mph max (55.88 m/s max)
Speed Threshold	1.2 mph (0.5364 m/s)
Speed Constant	1.25 mph = 1 Hz (0.5588 m/s = 1 Hz)
Accuracy	1 mph (0.4470 m/s) or ±3%
Transducer Type	Reed switch, magnet activated
Maximum Rating	10 mA @ 50 V (ac or dc)
Turning Radius	4 inch (10.16 cm)
Cable	40 feet (12 m), 2 conductor, 24 AWG, shielded, tinned leads
Mounting	1.07 inch diameter by 0.82 inch socket (27 mm dia x 21 mm)
	(fits standard 3/4" IPS pipe)
Dimensions	4.5 H x 8.5 W inches (12 x 22 cm)
Weight / Shipping	1 lbs (0.45 kg) / 2 lbs (0.9 kg)

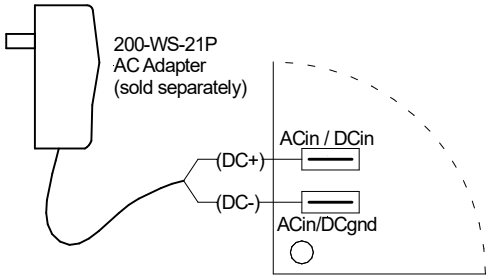
The controller requires a 12V AC or DC power supply. The NovaLynx **200-WS-21P Power Pack** (sold separately) is suitable in most applications, and comes with the proper terminals for easy connection.

4 PRE-INSTALLATION CHECKOUT

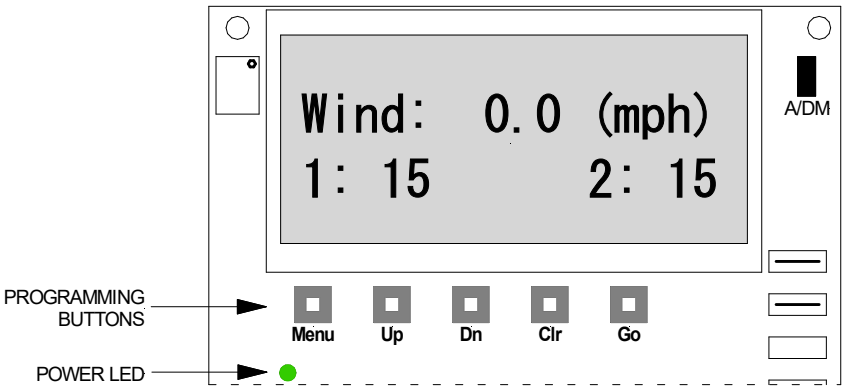
The controller can be operated before installation to become familiar with the menus and programmable features. You will need a power supply and the Wind Alarm controller. The sensor and relays will not be connected for these tests.

4.1 Power Supply Connection

The **200-WS-21P Power Pack** (sold separately) is provided with ¼" spade connectors that fit the terminals at the lower left corner of the Wind Alarm circuit board. If you are using a different power supply, crimp the provided accessory connectors to your 12V AC or DC power source. Plug the AC Adapter into a wall outlet and confirm the green power LED on the Wind Alarm circuit board turns on.



The display should look similar to the illustration on the right. This is the operating mode screen.



NOTE: If you see the word "Temp:" instead of "Wind:" then the DIP switches are in the wrong position. Refer to the "DIP Switch Settings" section of the manual to correct this situation.

4.2 Menu Navigation

MENU	UP	DOWN	CLEAR	GO

The programming buttons are below the display.

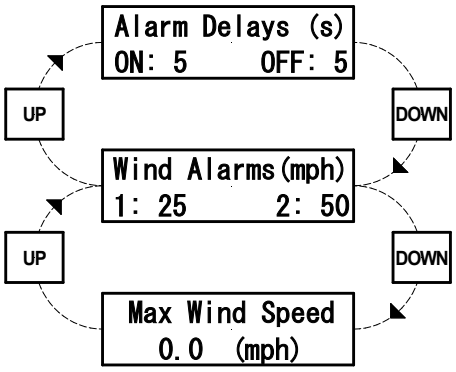
4.2.1 MENU Button

Press the MENU button. One of the three sub-menus will be displayed (depending on which was viewed last). Additional uses of the MENU button will be discussed in the following programming section.

4.2.2 UP and DOWN Buttons

Use the UP and DOWN buttons to cycle through the menus.

1. Alarm Delays – the delay (seconds) before and after an alarm threshold is crossed.
2. Wind Alarms – the set points at which the alarm occurs.
3. Max Wind Speed – displays the maximum wind speed recorded since the last time the CLEAR button was pressed.



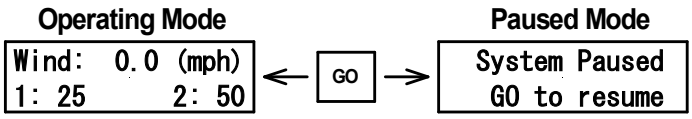
4.2.3 CLEAR Button

The CLEAR button performs the following actions:

1. If the user is in an editable field, the field will be set to the lowest possible value.
2. If the user is viewing the Max Wind Speed, the recorded value will be erased.
3. If the unit is alarming, all delay counters will be cleared.

4.2.4 GO Button

Press GO from any menu to return to operating mode.
If the unit is already in operating mode, press GO to pause the system and disable all alarms.

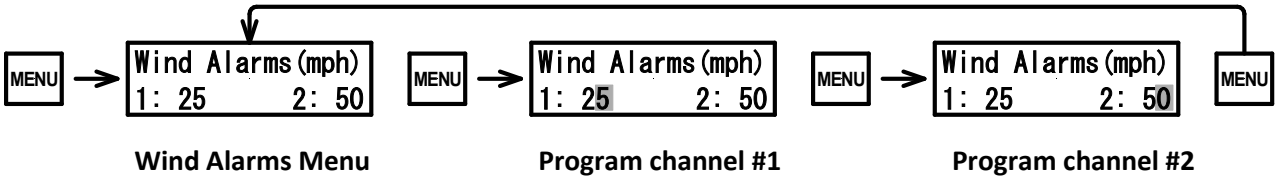


IMPORTANT: Whenever the controller is turned on it is in Operating Mode and the alarms are active. If the system was in Paused Mode before a power failure, it will restart in Operating Mode when power is restored.

4.3 Program Alarm Thresholds

To begin, navigate to the Wind Alarms menu:

1. Press GO until the display shows the operating mode screen (see GO Button, above).
2. Press MENU to bring up one of the three sub-menu displays.
3. Press UP or DOWN to reach the Wind Alarms sub-menu.



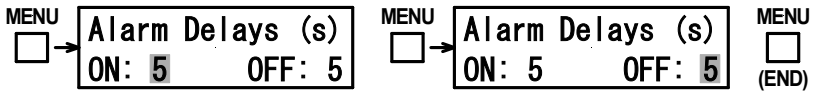
Wind Alarms Menu **Program channel #1** **Program channel #2**

4. Press MENU again. A blinking block cursor will appear on the Channel #1 value.
   - Press UP or DOWN to change the wind speed threshold.
5. Press MENU again. The blinking block cursor will move to Channel #2.
   - Press UP or DOWN to change the value.
6. Press MENU again to complete programming the Wind Alarms.
7. Press GO to return to the operating mode screen.

4.4 Program Alarm Delays

To begin, navigate to the Alarm Delays menu:

1. Press GO until the display shows the operating mode screen (see GO Button, above).
2. Press MENU to bring up one of the three sub-menu displays.
3. Press UP or DOWN to reach the Alarm Delays sub-menu.



ON Delay **OFF Delay**

4. Press MENU again. A blinking block cursor will appear at the ON Delay.
   Note: *The range is 0 to 99 seconds.*
   a. Press UP or DOWN to change the ON Delay.
   b. Press MENU to advance to the OFF Delay.
   c. Press UP or DOWN to change the OFF Delay.
   d. Press MENU to complete programming the Alarm Delays.
   e. Press GO to return to the operating mode screen.

4.5 DIP Switch Settings

The DIP switches are pre-set at the factory and should not need to be adjusted. However, sometimes during installation they get changed accidentally.

1. The Dual Set Point controller is designed to operate as either a wind alarm or temperature alarm. The DIP switch marked "Wt" determines which mode is selected. Set this switch to OFF for wind alarms.
2. Set the "Wu" switch to OFF for wind speed in miles per hour (MPH). Set the switch ON for kilometers per hour (KPH).
3. The "Tu" switch sets the temperature units. This is not relevant to the wind alarms, so it doesn't matter how this switch is set.
4. The "Si" (silent) switch determines whether the internal buzzer operates. The normal setting is OFF which allows the buzzer to operate. The ON setting silences the buzzer.

The controller checks the positions of the DIP switches when the unit initializes during power-up. Disconnect the AC Adapter for a few seconds and then re-connect power to change modes after changing any switches.

5 ANEMOMETER INSTALLATION

WARNING: Avoid overhead power lines whenever possible. If there are overhead power lines, use extreme care to prevent contact with the power lines while installing the equipment. NovaLynx recommends using only experienced equipment installers to avoid injury.

5.1 Anemometer Siting Considerations

Choose a mounting location for the wind sensor that is free of obstructions since nearby objects can create eddy currents that will affect the wind measurements. Try to locate the wind sensor so that the nearest object is 10 x T away from the wind sensor mast, where T is the height of the object.

Roof mounted sensors should be placed on the upwind side of the building and away from all exhaust vents. If the sensor is located on top of a building the sensor height should be 1.5 x H, where H is the height of the building.

In all cases when the wind sensor data is to be correlated to National Weather Service data or World Meteorological Organization data, the standard exposure is 33 feet (10 meters) above the ground.

5.2 Anemometer Mounting

CAUTION: Be careful when working on equipment that is mounted above you. Do not allow others to stand below when equipment is being installed as falling objects can be hazardous.

The 200-WS-01B anemometer is usually mounted at the top of a supporting mast. The base of the sensor accepts ¾" IPS pipe size or any other 1" to 1-1/16" (25 to 27 mm) outside diameter pipe. If the anemometer cannot be mounted at the top of a mast, the NovaLynx 200-153 Mounting Arm (sold separately) can be used to mount the sensor to the side.

The supporting mast or tower should be properly grounded to minimize lightning damage. Where lightning strikes are likely a lightning rod above the level of the sensor, preferably on a separate tower, should be installed.

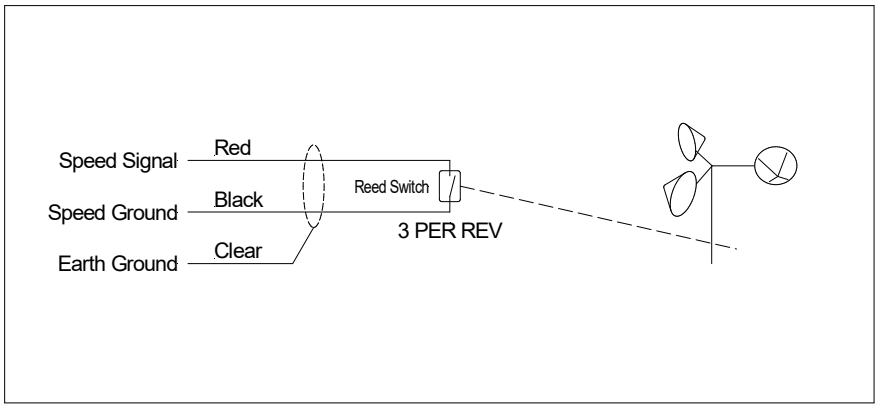
Position the wind sensor onto the end of the mast or mounting arm. Secure the sensor to the mast using the set screws provided in the sensor base. Do not use excessive force when tightening the screws.

5.3 Cable Installation

The PVC jacket of the cable will last for many years outdoors under normal circumstances. In harsh environments it may be necessary to protect the cable with conduit.

Route the sensor cable down the mast and to the monitoring equipment in the most direct manner. Leave a "drip loop" of cable below the entry point to the equipment enclosure to help keep moisture out. Fasten the cable to the mast with cable ties to prevent whipping during high velocity winds. For best results, use plastic cable ties that are resistant to ultra-violet radiation and place them at two foot intervals. Do not over-tighten.

5.4 Anemometer Wire Diagram



Wire Diagram for 200-WS-01B Wind Speed Sensor

NOTE: The shield wire in the sensor cable is electrically connected to the shaft holding the bearing / cup assembly. The purpose is to bleed off static that would otherwise affect the sensor output. It is important to earth ground the shield wire for best results.

5.5 Anemometer Maintenance

Wind sensors experience vibration due to high velocity wind. The vibration can loosen the mounting screws or the support structure. Regular inspection of the mounting hardware is required to prevent damage to the sensor.

1. Tighten the mounting screws if necessary (do not strip the threads in the plastic base of the sensor).
2. Spin the anemometer cup assembly. It should turn freely. A drop of light machine oil (e.g. fishing reel oil) may be applied when needed. Do not use penetrating oil such as WD40 because it will wear off quickly leaving the bearing dry and susceptible to rust.
3. Inspect the cable and ensure it is secured to the mast to prevent damage due to wind whipping.
4. A repair kit (Part number 2502-14-10B) is available in case one of the cup arms is broken.

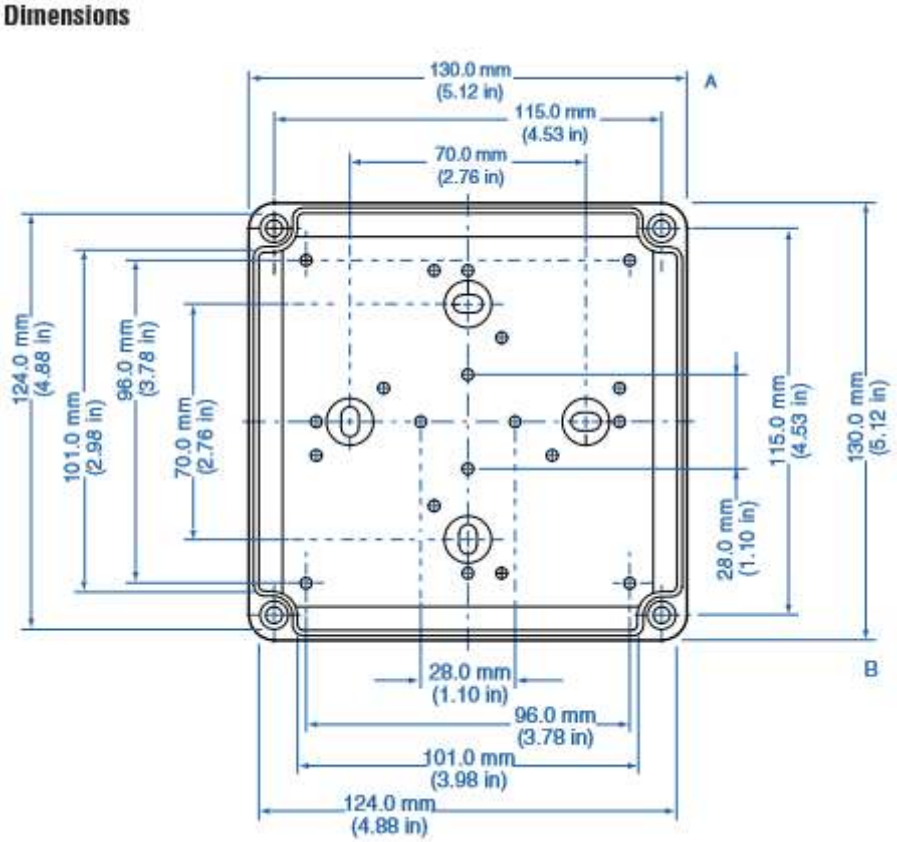
6 WIND ALARM CONTROLLER INSTALLATION

6.1 Controller Location

To be effective the Wind Alarm controller must be in a location where one can view the display and hear the alarm. At the same time it should not be accessible to unauthorized personnel. It will need to be mounted near a 120VAC receptacle for power. If the controller is inside a building the sensor cable will need to be routed outside so that the sensor can be exposed to the wind.

6.2 Controller Mounting

The control unit can be mounted to any convenient vertical surface. Four screws (*#8 x ¾")* are supplied for this purpose. They can be placed through the bottom of the four corner holes, which also serve as the attachment point for the black captive screws on the transparent cover plate.



7 CONNECTIONS

Please refer to the connection diagram in **Appendix A** of this manual.

The anemometer and AC adapter (200-WS-21P, sold separately) are supplied with connectors that fit the ¼" spade terminals on the Wind Alarm circuit board. Extra connectors are provided for connecting an earth ground and alarm relay connections. You will need a crimp tool or heavy duty pliers to make these connections. You will also need to provide insulated wire for the earth ground and relay connections. Stranded wire (14 to 16 AWG) is preferred.

Standard Wire Connector

Wire Connector with an extra lug for Earth Ground

7.1 Anemometer Connection

Route the anemometer cable through the gland fitting and into the case. Connect the earth ground connector with the tab facing down, to make room for the other connections. Attach the red and black wires as indicated on the drawing (Appendix A).

Prepare a suitable length wire with a standard wire connector, and connect it to the lug on the earth ground connector. Route the other end of this wire to a good earth ground – an electrical box with an earth connection or a metal cold water pipe that actually enters the ground. Failure to provide a ground may cause erratic operation and make the system more vulnerable to damage from nearby lightning strikes.

7.2 Power Connection

NOTE: *It is good practice to program the set points and delays, and then operate the system using the visible LEDs and buzzer as alarm indicators for testing the system before connecting the relays to your external equipment.*

Route the wiring from the AC Adapter or other power supply through the cable gland and attach the positive terminal (marked with red shrink wrap or a white stripe on one lead) to the ACin / DCin terminal. Connect the ground wire to the ACin / DCgnd terminal. The power input accepts 12 volts AC or DC.

NovaLynx recommends connecting the AC Adapter to an outlet with a surge suppressor. Power strips with surge suppressors are often used to protect computer equipment and are readily available.

Check your connections to make sure there are no stray wires that could cause a short circuit. Plug in your power supply. The green power LED should turn on and the word "Wind:" will be displayed. If you see the word " Temp:" instead of "Wind:" then the DIP switches are in the wrong position. Refer to the "DIP Switch Settings" section of the manual to correct this situation.

7.3 Relay Connections

There are two internal relays for alarms or operating pumps, etc. Please refer to the specifications to ensure the internal relays are rated for the load you intend to control. If the contact rating is less than required an external relay will be needed (not supplied). Refer the installation to a qualified electrical contractor.

WARNING: Turn off all power sources before connecting to the relays. Identify which relay(s) you will be using and which function is required. When there is no alarm, the N.O. contacts are OPEN. This contact is used to turn something ON when there is an alarm. The N.C. contact does the opposite, i.e. turns something OFF when there is an alarm.

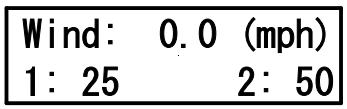
The relay contacts are "dry". Connect the Hot lead to C1 for relay #1 or to C2 for relay #2. Connect the corresponding N.O. or N.C. output to the load. The return side of the load must be connected to Neutral to complete the circuit. Connect the grounding wire to the Earth Ground lug.

WARNING: The unused spade lug (N.O. or N.C.) will be electrically HOT under some circumstances. Place a spare connector or insulating tape over the unused lug to prevent anyone from touching it accidentally.

Be sure you have programmed the Wind Alarm to the settings you desire and the system is operating properly before you connect power to your external devices.

8 ALARM FUNCTIONS

The Wind Alarm controller must be in Operating Mode in order for the alarms to activate. Alarms are disabled while programming and when the unit is in Paused Mode. Be sure to return the unit to Operating Mode when the alarm function is required. (See GO button instructions).



Operating Mode Screen

Alarm Channel #1:

The audible alarm will beep at 400 millisecond intervals (if enabled) and the relay will energize when the threshold and Delay-Before-ON timeout has occurred. A red LED on the circuit board will also flash.

Alarm Channel #2:

The audible alarm will beep at 200 millisecond intervals (if enabled) and the relay will energize when the threshold and Delay-Before-ON timeout has occurred. A red LED on the circuit board will also flash. When both alarms occur together, the beeping will be at 200 millisecond intervals.

Paused Mode

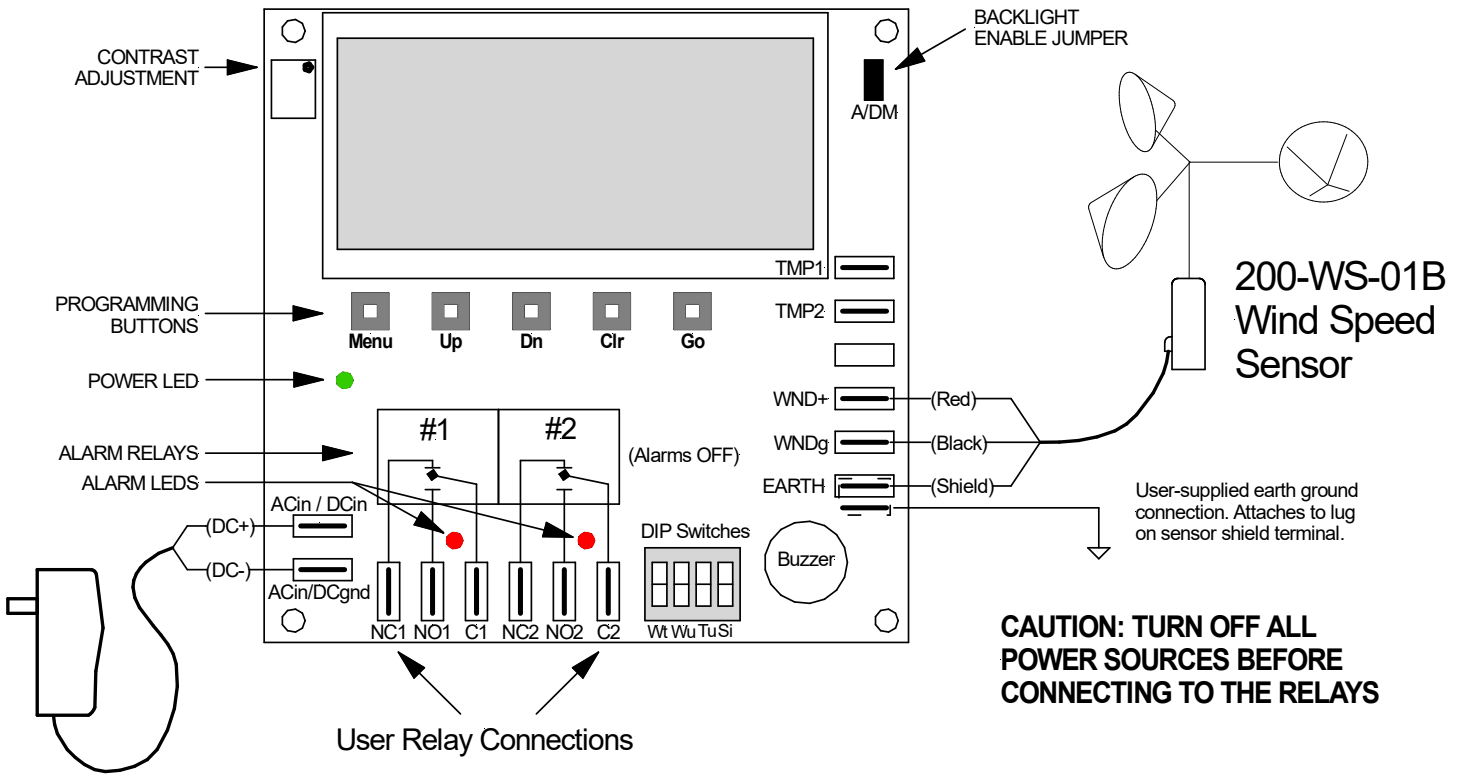
Press the GO button to place the controller in Paused Mode to turn off the alarms and relays. The controller will remain in this mode indefinitely unless the power to the controller is interrupted. Press GO again to return to operating mode.

CLEAR Button (temporarily clears the alarm)

The CLEAR button will stop the alarms by clearing the Delay Before ON timeout. If the wind speed is higher than the threshold the alarm will activate again when the timeout occurs.

APPENDIX A

DUAL SET POINT WIND ALARM
200-WS-21A



DIP SETTINGS		ON	OFF
Wt	MODE	TEMP	WIND
Wu	WIND UNITS	KPH	MPH
Tu	TEMP UNITS	DEG C	DEG F
Si	BUZZER	SILENT	BUZZ

TITLE	Connection Diagram 200-WS-21A
MOD. USAGE	Wind and Temp Alarm
SHEET	1 OF 1
BY	JDC
SCALE	N/A
DWG. NO.	890-0027-01
DATE	11-20-2018

C