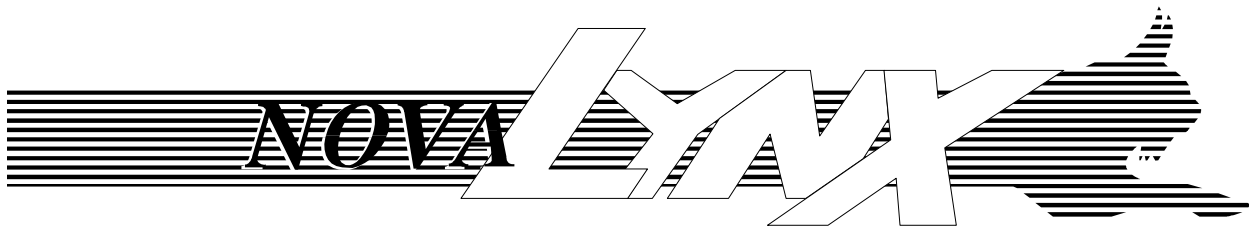


# **NOVALYNX CORPORATION**

**MODEL 200-WS-25  
WIND SPEED & DIRECTION LOGGER  
WITH REAL-TIME DISPLAY**

**INSTRUCTION MANUAL**



REVISION DATE: OCT 2017

## **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.

## **Address**

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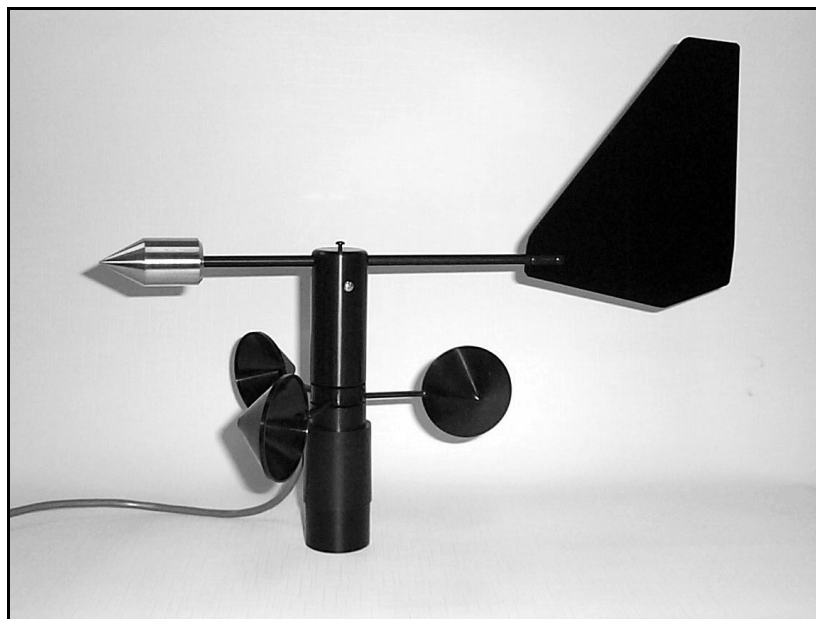
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# MODEL 200-WS-25 EQUIPMENT CONFIGURATION AND IDENTIFICATION



Wind Speed & Direction Display Enclosure



200-WS-02F Wind Speed & Direction Sensor

# NovaLynx Corporation

## Model 200-WS-25 Wind Logger with Real-Time Display Instruction Manual

### 1.0 INTRODUCTION

The 200-WS-25 Wind Logger with Real-Time Display is designed to provide an affordable and easy-to-use solution to monitor wind speed and direction data.

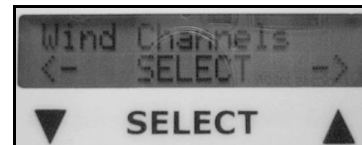
The self-contained system includes:

- WS-02F Wind Speed & Direction Sensor, 40' cable
- WS-25N Data Logger in a NEMA 4X Enclosure
- 12V 7AH Battery & AC Battery Charger
- One SD™ Memory Card and USB SD™ Card Reader

It records wind speed, gust, wind direction, time and date, and battery voltage.

The Wind Data Logger records directly to a Secure Digital™ (SD™) memory card up to 2GB. No special computer interface cables are required. Data is stored in a text file in CSV format (comma separated values). A new file will be created at the end of each day, named by year, month, and day (e.g. 20170415.csv = April 15, 2017).

Using the recorded data is simple. Remove the memory card from the logger and insert it into the USB memory card reader. The card reader can then be plugged into a USB port on your computer (Windows, Macintosh, Linux) and will show up as a drive. To view and graph the data, click on the spreadsheet corresponding to the day of interest. Microsoft Excel, OpenOffice.org, or other spreadsheet program can be used to view, graph, and analyze your wind data.



### SAMPLE OF DATA STORED ON MEMORY CARD

Date and Time,	Speed ,	Gust	Spd count ,,,,,	Direction	Batt Voltage ,	ck sum
2017-07-28 11:35:15,	4.6,	6.8,	95,,,,,,,,,	275,	13.04,,,,,,,,,	218
2017-07-28 11:36:15,	5.0,	7.6,	157,,,,,,,,,	274,	13.04,,,,,,,,,	52
2017-07-28 11:37:15,	5.8,	6.8,	162,,,,,,,,,	273,	13.04,,,,,,,,,	18
2017-07-28 11:38:15,	4.8,	7.5,	121,,,,,,,,,	272,	13.04,,,,,,,,,	137

## 1.1 Features

**Easy Set-up:** No computer required. Three front panel buttons access a simple menu-driven interface.

**Adjustable Logging Interval:** 10 to 50,000 seconds. A 60 second logging interval will last over 600 days on a 1GB SD™ card.

**LCD Display:** Screen displays current information and is used for configuring the data logger. A bright backlight makes the data logger easy to use at night.

**Clock:** An accurate real-time clock is used to time-stamp each measurement, accurate to within 10 minutes per year.

**Logging:** The data logger supports Secure Digital (SD™) or Multi Media Card™ 128 megabytes up to 2 gigabytes.

**Communications:** An available internal RS232 serial port terminal strip is a feature of every wind logger. Some units will have a 6-foot serial cable connected to the logger for connecting optional real-time graphical software (such as 200-WS-25STR) or other devices.



## 1.2 Physical Description

### 1.2.1 The Wind Sensor

The 200-WS-02F Wind Speed & Direction Sensor used with the WS-25 includes a three-cup anemometer and a wind vane. The sensor is ruggedly constructed using UV-resistant ABS plastic and anodized aluminum parts. The cable connecting the pole-mounted wind sensor to the encoder electronics package is typically 40 feet in length but may be extended for a total length of 250 feet.



The wind sensor is the rotating assembly with the three-cup anemometer and wind vane for measuring wind speed and wind direction. The wind vane is mounted onto a common axis with the anemometer and includes a tail fin with a nose weight that provides balance.

Refer to the included 200-WS-02F Manual for more information

Optional wind sensors are available on special order.

Optional air temperature sensor is available on special order.

### 1.2.2 The Wind Logger

The electronics package is housed in a gasketed NEMA enclosure. The logger records wind speed, gust, and direction, date and time, and battery voltage.

The wind logger records directly to a Secure Digital (SD™) card up to 2GB. It is shipped with a 512mb card.

The wind logger is powered by a 12 Vdc 7 Amp Hour rechargeable battery. A 115/220 Vac battery trickle charger is included. A fully charged battery will run the system for about 10-12 days. An optional solar panel charger can be used to charge the battery if AC power is not available.

## 2.0 SENSOR SPECIFICATIONS

### 200- WS-02F WIND SENSOR

#### Wind Speed

Measurement range	0-100 mph (standard) 0-50 m/s, 0-100 knots, or 0-200 km/hr
Speed constant	1.25 mph = 1 pps 75 mph = 60 Hz (pps)
Transducer type	Reed switch
Speed threshold	0.8 mph
Accuracy	1 mph or $\pm 3\%$

#### Wind Direction

Range	0-360 Deg Az
Transducer type	Potentiometer, 20k ohms, conductive plastic
Potentiometer gap	5°
Azimuth accuracy	$\pm 3^\circ$
Threshold	1.2 mph
Bearings	Bushing

#### GENERAL

Mounting	1" o.d. pipe
Cable (sensor to logger)	5 conductor, 24 AWG, shielded, 40' standard
Dimensions	
200-WS-25 Logger J-box	12" H x 10" W x 5" D

## 3.0 THEORY OF OPERATION

Refer to the included 200-WS-02F and Data Logger manuals for more information

## 4.0 INSTALLATION

### 4.1 Unpacking

Empty the loose packing material from the corrugated shipping container and carefully lift out the wind sensor assembly. Refer to the warranty page at the front of the manual for information regarding returning damaged or incorrect equipment. The tail is normally removed for shipping to prevent damage. Reattach to the shaft with the 2 screws.

The following items should be included in the shipping container for the 200-WS-25:

1. Wind Speed & Wind Direction Sensor, with 40 feet of cable
2. Wind Logger in NEMA Enclosure, with 12V battery
3. 512mb SD™ Memory Card
4. USB Memory Card Reader
5. Battery Charger 110/220 Vac
6. Instruction Manuals

### 4.2 Wind Sensor Installation

Choose a mounting location for the wind sensor that is free from obstructions. Use extreme care to prevent contact with electrical power lines while erecting the unit. A typical installation will position the wind sensor approximately 33 feet (10 meters) above the highest obstacle within a 990 foot (300 meter) radius of the mounting location. Position the 200-WS-25 sensor onto the end of a 1" o.d. TV mast tubing or a 3/4" schedule 40 pipe. If the pole is metal it should be electrically grounded to minimize the probability of lightning damage.

**Rotate the anemometer on the pole so that the two set screws or the North label on the anemometer base are facing North.** Magnetic North is adequate for most installations. Should a True North alignment be required, the magnetic declination at the sensor location must be known and applied to the compass reading. Tighten the bottom set screw to fix the directional orientation.

### 4.3 Wind Logger Installation

Mount the transmitter enclosure in a location where it can be conveniently connected to the wind sensor.

Route the sensor signal cable in the most direct manner possible. Avoid sharp corners and edges. Do not crease or fold the cable. The cable must be protected from high winds. Use an appropriate fastener (plastic cable ties, staples, etc.) to secure the cable.



The standard wind sensor is supplied with 40 feet of cable. In the event that the interconnecting cable needs to be extended, use good splicing techniques and waterproof the splice if it will be exposed to the weather.

A terminal strip is located inside the enclosure.

Terminal functions along with the corresponding colors of the wind sensor interconnecting cable are shown in the table below.

The wind sensor is supplied with a 5-conductor shielded cable.

●1	○	Wind Speed Sig - <b>White</b>
●2	○	Wind Speed Ref - <b>Brown</b>
●3	○	Wind Dir EXC - <b>Red</b>
●4	○	Wind Dir Sig - <b>Green</b>
●5	○	Wind Dir Ref - <b>Black</b>
●6	○	Earth Ground - <b>Shield</b>

Sensor Wiring for 200-WS-02F

#### 4.4 Sensor Hook-Up Pin-Out Information

Special order sensors can be connected to the wind logger using the information below.

RJ45 Pin	Wire Color	Anemometer Connector	Temp & ADC Connector
1	Orange / White	Anemometer 0*	Temperature / Analog3
2	Orange	Anemometer 1	Ground
3	Green / White	Anemometer 2	5 Volts
4	Blue	Ground	Analog 4
5	Blue / White	5 Volts	Analog 5
6	Green	Wind Vane 0** / Analog 1***	Analog 6
7	Brown / White	Wind Vane 1 / Analog 2	Analog 7
8	Brown	Ground	Ground

Default sensors: \*Speed, \*\*Direction, \*\*\*Battery Voltage

## 4.5 Anemometer Calibration Values

By default, the 200-WS-25 is setup for the NovaLynx 200-WS-02F and MPH. The logger's anemometer settings can be calibrated in the 'Anemometer Calib' menu within the main setup menu. The WS-25 supports any anemometer with a contact closure or digital switch, however you will need to provide the calibration settings. The WS-25 does not work directly with AC output anemometers.

Anemometer Type	Units	anemo_m	anemo_b
NovaLynx 200-WS-02F	Miles/hour	1.25	0
	Kilometers/hour	2.595	0
	Meters/second	0.5677	0
	Knots	1.102	0

## 5.0 OPERATIONAL TESTING

Refer to the 200-WS-25 Quick Start Instructions.

## 6.0 MAINTENANCE

Maintenance of the wind sensor assembly is limited. Periodic but regular inspections of the equipment is necessary to prevent damage due to loose or missing hardware. Remove all dust, dirt, mud, bird droppings, etc., that may have been deposited onto the cups and vane tail. Repair or replace bent tails. Check the counterweight of the wind direction sensor. Repair the vane shaft if the counterweight is loose. The counterweight is held in place with epoxy.

Apply several drops of light weight (3-in-1) machine oil or lightly spray WD40 onto the anemometer bearing located just below the cups.

Verify the wind vane alignment to North. If the alignment is critical, do the check with a compass. Make corrections to the alignment as needed. Always check the alignment after a severe storm with high velocity winds.

## 7.0 ATTACHMENTS

- **Quick Start Instructions**
- **As-Shipped Setup Sheet**
- **WS-02F Sensor Manual**
- **110-WS-25 Weather Station Manual**

This manual is attached for reference. Although it covers other weather sensors in addition to the wind sensor used by the 200-WS-25 Wind Logger, it provides helpful information including:

1. Instructions on setting the Date and Time (pg 4)
2. Using the RS232 interface (pg 7)
3. Converting wind speed pulse count to average wind speed (pg 12)
4. Understanding logged data (pg 13)

It also provides detailed information about the Data Logger which can be useful.