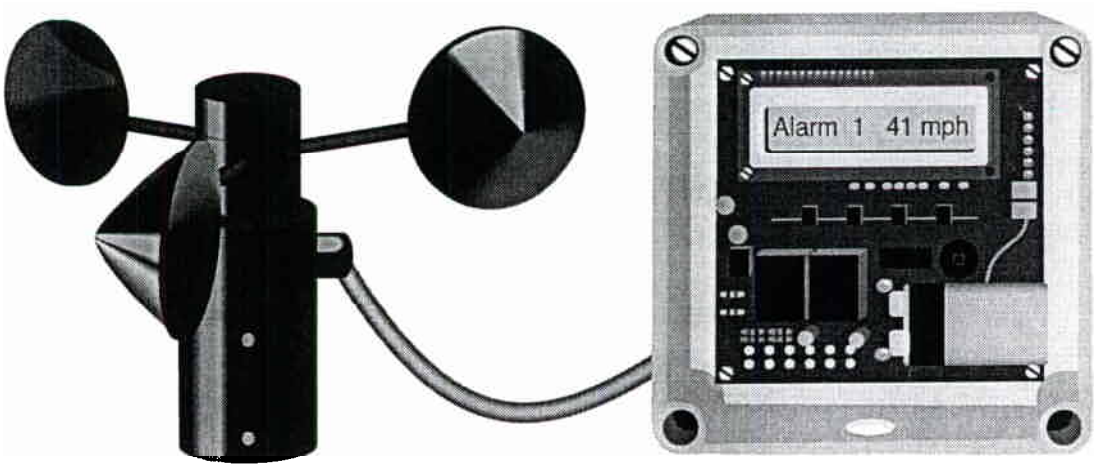
WMS-21

Wind Station



OMEGA®

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Operator's Manual

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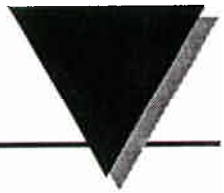


Remove the Packing List and verify that you have received all equipment, including the following (quantities in parentheses):

- WMS-21 Dual Setpoint Wind Station (1)
- 40 Feet of Cable (1)
- Operator's Manual (1)

If you have any questions about the shipment, please call the OMEGA Customer Service Department. When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

OMEGA Engineering
Model WMS-21 Dual Set Point Wind Alarm

Instruction Manual

1.0 INTRODUCTION

The OMEGA WMS-21 is a microprocessor-based dual set point Wind Speed Alarm designed to operate one of two internal control relays whenever measured wind speed exceeds the limit settings. These set points are adjusted digitally under pushbutton control, as is the turn-on and turn-off delay associated with each set point. An integral LCD display indicates the measured wind speed and is also used to set the various alarm parameters using a series of setup menu pages. The buzzer included with the WMS-21 can be enabled and will sound whenever either set point has been exceeded.

2.0 PHYSICAL DESCRIPTION

The anemometer is a compact three-cup unit that conveniently mounts on the end of standard rigid 1" electrical conduit. A magnetic contactor-type of speed transducer is used that permits almost unlimited interconnecting cable length between the anemometer and the alarm unit. The control electronics are housed in a sealed NEMA enclosure with a transparent cover. The WMS-21 is powered from an external source of 12-24 volts AC or DC. An internal 9-volt alkaline battery is used to retain the stored set point values in the event of a temporary interruption of the external power.

2.1 Specifications

Sensor	Three-cup anemometer
Wind Speed Transducer	Sealed magnetic switch
Wind Speed Range	0-99 mph
Wind Speed Resolution and Threshold	1 mph
Wind Speed Integration Interval	2 seconds
Alarm ON or OFF Delay Range	0-99 seconds
Timing Accuracy	±2%
Controls	Protected push buttons that select: Select Menu Item Increment Setting Decrement Setting Run or Set Variables
Indicators	LED's for Alarm Point #1 & #2 1-line x 16-character LCD display
Operating Temperature	-20 to +50 °C (LCD becomes inoperative below 0°C)
Input Power	12 to 24 volts AC or DC
Input Current	60 mA maximum, 5 mA nominal
Alarm Contacts	Form "C" (SPDT)
Alarm Contact Ratings	3 A @ 24 VDC/115VAC
Set Point Battery Back-Up	9-volt transistor battery, NEDA Type 1604A
Mounting	1" pipe
Size	3" high x 2 1/2" turning radius

3.0 QUICK START CHECKOUT

3.1 Unpacking

After carefully unpacking all components, inspect for damage that may have occurred in shipment. Do not discard any packing material until you are certain there has been no damage in transit.

3.2 Quick Start

To quickly check out the system, apply an appropriate low voltage source to the P4 "Power In" terminals located on the right hand side of the printed circuit board. No polarity need be observed for this connection, which uses crimp-on .187" x .020" female quick disconnect terminals that are supplied with the WMS-21 (e.g., AMP "Faston" P/N 2-520409-2). Connect the anemometer to the P3 "Wind Sensor" input on the left side of the pc board using the same type of quick disconnect terminals.

As soon as the unit is powered up, the following message will appear on the LCD display:

Reset Alarm

One depression of the right hand "Set/Run" button will result in the display of :

1 Alarm 15 mph

The 15 mph "default" speed set point may be adjusted by depressing the Up or Down push button. Next, depress the left hand "Parameter Select" button to bring up the next menu item:

1 ON Lag 15 sec

Again, vary the 15 second "default" delay setting by depressing the Up or Down push button. Continue on by setting the four remaining menu items, each with the following default values:

1 OFF Lag 15 sec
2 Alarm 15 mph
2 ON Lag 15 sec
2 OFF Lag 15 sec

Next, depress the "Set/Run" push button again and the display will read:

WindSpeed 00 mph

Blowing on the cups of the anemometer to make them rotate should now cause the wind speed display to respond. Note that in all cases, a change of wind speed reqires a 2-second measurement interval before it will be reflected in the display. Also, once the speed and delay set points are exceeded, the appropriate LED indicator will illuminate and the audible alarm will sound, if it is enabled.

The quick start checkout is now complete.

4.0 INSTALLATION

4.1 Wind Sensor Installation

Mount the wind sensor in an unobstructed location that will realistically sample the ambient wind conditions. The preferred standard exposure of an anemometer positions the wind sensor approximately 10 meters above the highest obstacle within a 300 meters radius of the mounting location.

Mount the wind sensor on 1" o.d. TV mast tubing or Schedule 40 pipe. The mounting mast should be connected to a good electrical ground. Take special precautions to assure that no hazardous power wires are in the vicinity of the wind sensor. Make sure that the wind sensor is mounted vertically for proper operation. Connect the cable from the wind sensor to the control unit. Carefully secure the sensor cable to prevent it from pulling or causing a fray and be careful not to puncture the jacket of the interconnecting cable if staples are used to secure it. The standard wind sensor is supplied with 50 feet of cable; if it needs to be extended, use good splicing techniques and waterproof the splice if it will be exposed to the weather.

4.2 Control Unit

The control unit can be mounted to any convenient vertical surface. Four self-tapping screws are supplied for this purpose. They can be placed through the bottom of four corner holes, which also serve as the attachment point for the black captive screws on the transparent cover plate.

Connect the external electrical circuit to be controlled by the WMS-21 to the appropriate NC (Normally Closed) and NO (Normally Open) contacts of the two control relays. In the event that the WS-21 is used to control electrical loads which exceed its 3-Amp recommended limit, use the internal relays to enable external contactors having the required switching capacity.

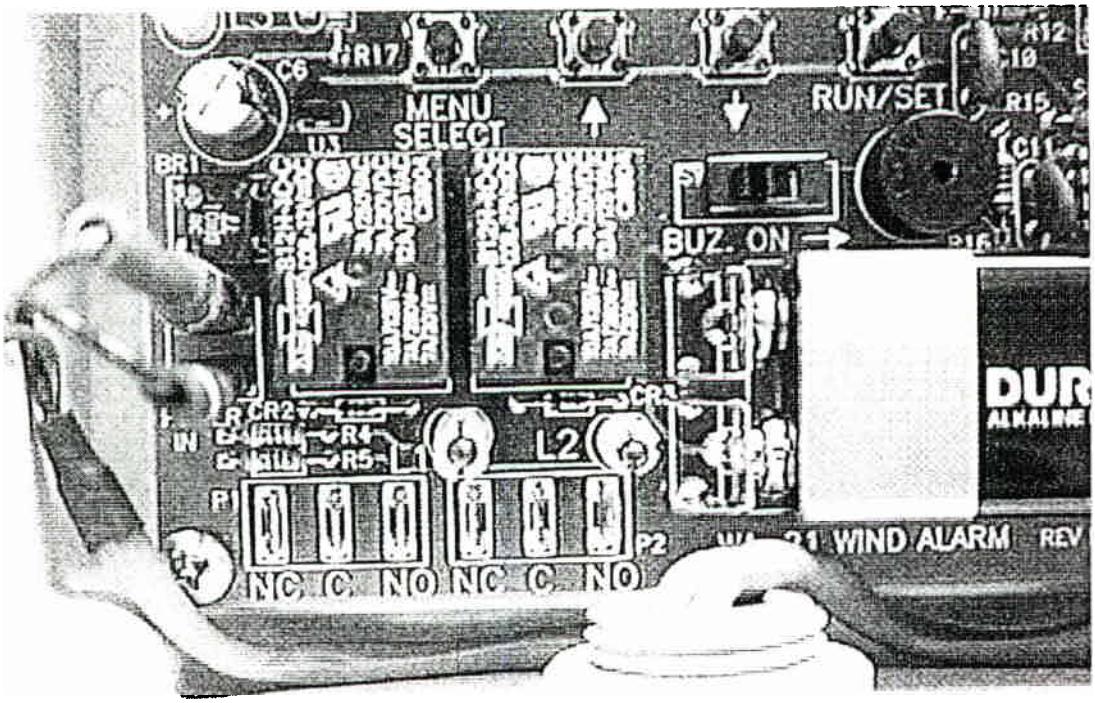
In some instances it may be desired to have an indication that the wind speed lies between the set point #1 and #2 values. This result can be achieved by connecting the Set Point #1 NO contacts in series with the Set Point #2 NC contacts.

5.0 MAINTENANCE AND TROUBLESHOOTING

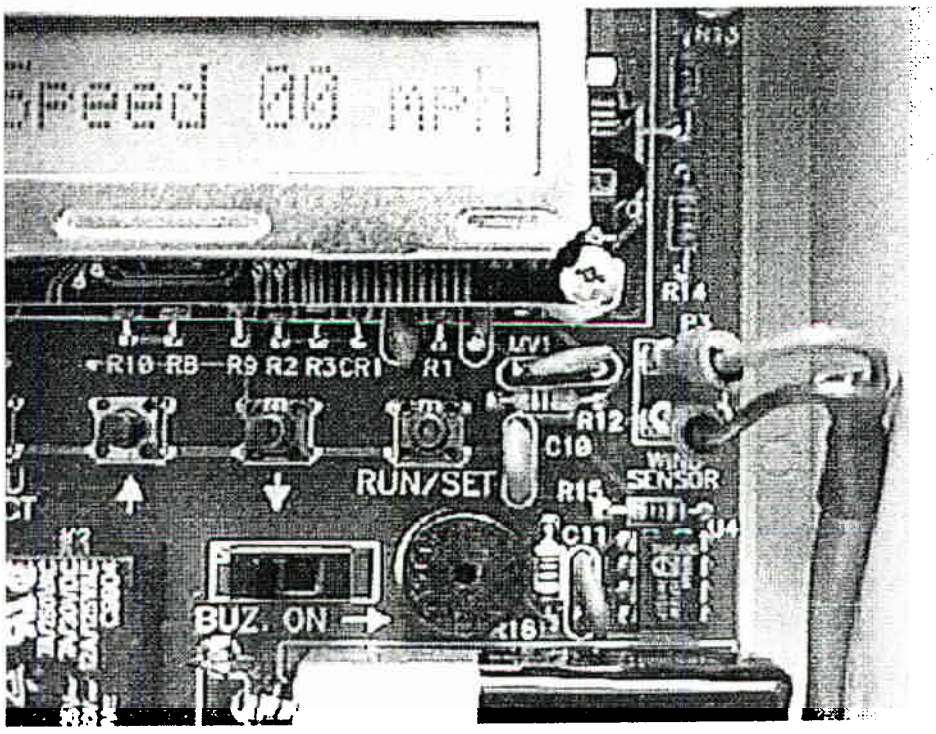
No periodic circuit adjustments are required for operation of the WMS-21. The only adjustment potentiometer is located to the left of the LCD display panel and is used to vary the contrast of the display. Use a small screw driver to change this parameter for personal viewing preference.

The 9-volt alkaline battery on the printed circuit boards services to retain the values of set points and alarm delay intervals whenever there are temporary interruption of the external supply coltage. This back up battery will operate the unit for approximately 100 hours. While being powered by the back up battery the audible alarm will sound when set points are exceeded but the LED indicator lamps and the control relays will be inoperative. In normal service, the back up battery should be replaced at approximately one-year intervals.

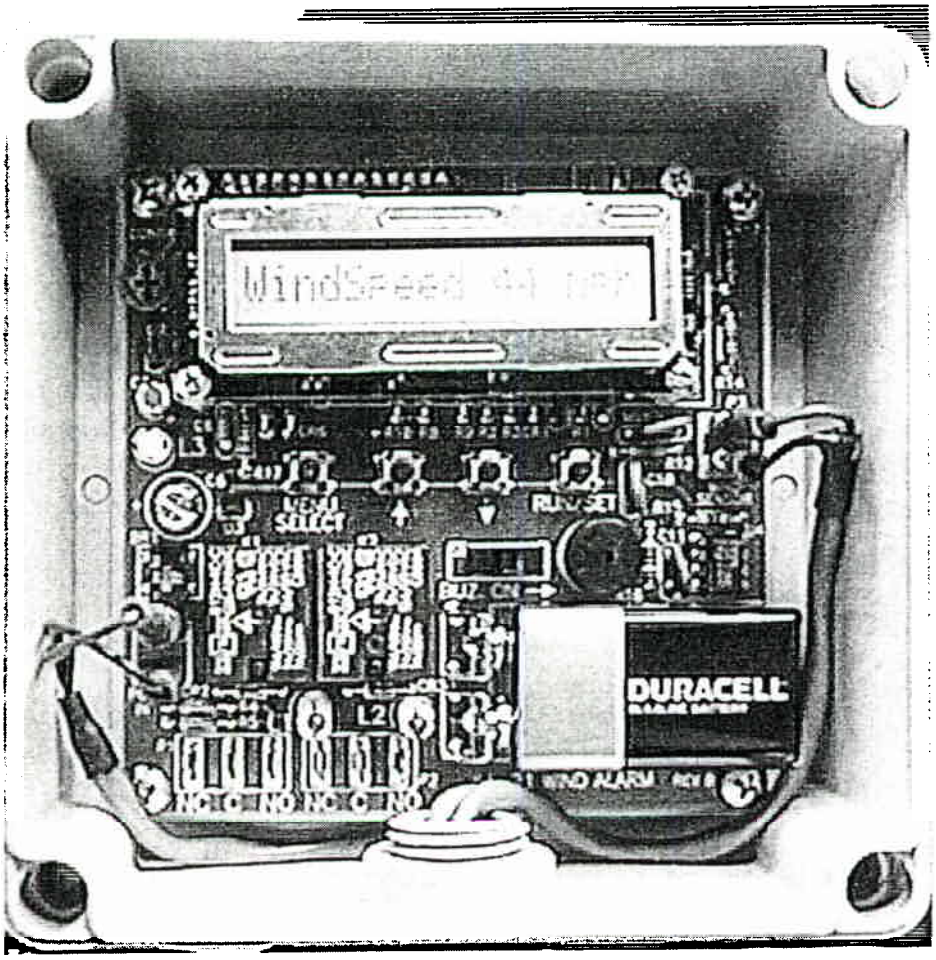
Input
Power
12 ~ 24 V
AC or DC



Relay Output Connections



Wind Speed
Sensor
Input


DURACELL

Correct operation of the anemometer may be confirmed by first disconnecting it from the wind sensor input terminals. Next, connect an ohmmeter or continuity tester to the anemometer quick disconnect terminals. When its wind cups are in motion, there should be a brief periodic connection between its two terminals. The anemometer pulse rate to actual wind speed formula is:

WindSpeed in mph = pulses per second x 2.15

To verify operation of the measuring circuitry in the control unit, use a short length of jumper wire to momentarily close a circuit through the "Wind Sensor" input terminals. This action should cause the WindSpeed display to change from the 00 mph value.

MADE IN USA

WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this WARRANTY is VOID, if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

OMEGA is glad to offer suggestions on the use of its various products. Nevertheless, OMEGA only warrants that the parts manufactured by it will be as specified and free of defects.

OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

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Every precaution for accuracy has been taken in the preparation of this manual; however, OMEGA ENGINEERING, INC. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITION: Should this equipment be used in or with any nuclear installation or activity, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS OR **CALIBRATION,** consult OMEGA for current repair/calibration charges. Have the following information available BEFORE contaction OMEGA:

1. P.O. number to cover the COST of the repair/calibration,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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