1500 Pier C Street
Long Beach, CA 90813
(310) 320-4349
www.signetmarine.com
service@signetmarine.com

SIGNETMARINE Inc.
signetmarine.com

SL 60

Instruction Manual

WINDPOINT/WINDSPEED SYSTEM

SL 60

INSTRUCTION MANUAL

INTRODUCTION

This manual contains description, specifications, and instructions for the installation and operation of your SL60. PLEASE READ ALL OF THIS INSTRUCTION MANUAL; it will answer most of your questions. If you require further assistance, contact your Signet dealer, your nearest authorized warranty repair station (addresses furnished upon request), or Signet.

DESCRIPTION

The SL60 features advanced microprocessor-based technology resulting in low power drain plus improved accuracy and reliability for the most demanding marine applications, both racing and cruising. The SL60 indicates digital windspeed from 0 to 99 knots in 1-knot increments on a 1/2-inch high, 2-digit LCD (Liquid Crystal Display) display. This low-power display has high visibility, even in direct sunlight. The analog dial tracks apparent wind direction a full 360 degrees relative to boat direction from 0 to 180 degrees port and starboard in 5 degree increments. Night lights, separately powered from the indicator, provide dusk-to-dawn illumination of the indicator face. This indicator face is completely sealed to withstand weather, washdown, and salt water corrosion. The case of the indicator is matte black to minimize reflective glare. A plastic cover is provided to help protect the indicator's face when it is not in use. The indicator may be installed on a bulkhead or in Signet's Pedestal/Mast/Bulkhead Universal Mounting Pod (part no. 1-0002.100).

The tri-cup portion of the M2430-4 Masthead Sensor generates its own transducer signal and rotates on low-friction, stainless steel bearings. The wind-vane portion of this sensor receives transmitter reference voltage from the indicator. The vane is aerodynamically designed for lightweight counter-balancing and is hydraulically dampened for greater precision under all wind conditions.

The system's indicator and night lights are powered by 12 VDC. The indicator contains reverse-polarity protection.

SPECIFICATIONS

WINDSPEED

RANGE: 00 to 99 knots (2-digit)

ACCURACY: +/- 1% of full scale

AVERAGING PERIOD: 1 second if change is greater than 5 knots
2.6 seconds if change is between 1.6 and 5 knots
8 seconds if change is less than 1.6 knots

CALIBRATION: DEFAULT = 98 kts at 60 Hz

INTERNAL CALIBRATION, 8 position dual stripline connector with jumpers (max correction = 100%)

WINDPOINT

RANGE: 0 to 360 degrees (0-180 degrees port or starboard)

ACCURACY: +/- 1% of full scale

CALIBRATION: Mechanical adjustment accessible thru rear cover

GENERAL

POWER: 12 vdc +/- 25% (contains reverse polarity protection)

POWER DRAIN: less than 200 mA without lights
less than 500 mA with lights

MASTER/SLAVE: Internal switch removes transmitter
Excitation for slave operation

UNPACKING

When you receive the SL60 system, inspect the shipping container before opening it. If the package shows any sign of obvious damage, contact the shipping company immediately. If the package appears to be in good condition, unpack the container and verify that all of the following components are included and appear in good condition (Figure 1):

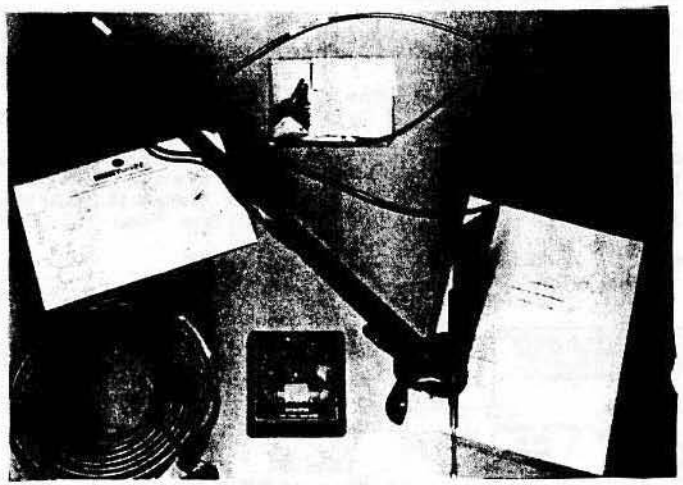


Figure 1

1-4300.100 Indicator
1-0000.100 Indicator mounting kit
1-0000.512 Protective cover
1-4300.090 Instruction manual and warranty card
1-1307.260 Power cable/Y cable
1-1300.260 80' Mast cable
M2430-4 Masthead sensor

DISPLAY INSTALLATION

The bulkhead mounting kit allows for flush mounting against an instrument panel or bulkhead (kit #1-0000.100).

Bulkhead Installation:

1. Select a location with proper instrument operation clearance with 2" of clearance behind the panel (connector clearance). The instrument should be mounted to insure a 90 degree viewing angle from all positions in the cockpit.

2. Follow the instructions printed on the mounting template provided for drilling operation (see Figure 1).

3. Attach threaded studs to the (4) bass inserts located on the rear of the instrument (DO NOT OVERTIGHTEN STUDS TO INSTRUMENT).

4. Place instrument (with studs attached) and gasket against the instrument panel and tighten the wing nuts evenly (DO NOT OVERTIGHTEN) to insure even compression of the soft gasket. (See Figure 2).

Tools required: Drill with a 1/4" drill bit
2" dia hole saw
Standards screwdriver (small)

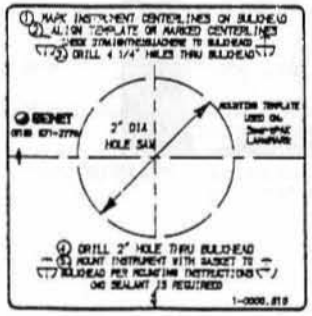


FIGURE 1
(MOUNTING TEMPLATE)

POWER
Red = +12VDC
Black = Ground

LIGHTS
White = +12VDC
Green = Ground

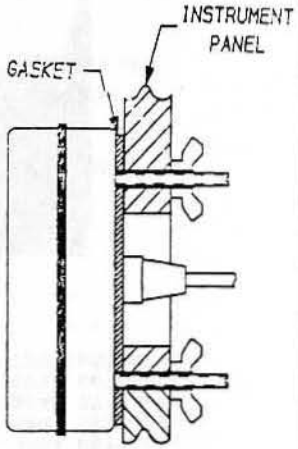


FIGURE 2
(BULKHEAD ASSEMBLY)

WARNING: Do not locate the display within 9" of a compass.

MASTHEAD SENSOR INSTALLATION

Reference Figure 3 throughout this section. Select a location on the top of the mast that will permit the sensor's staff to point aft. The sensor can be mounted, as an option, pointing to the bow. This is not recommended, however, since the sensor may not be visible from the helm and is more subject to sail damage.

The masthead sensor should be installed in two steps: (1) before the mast is stepped, and (2) after the mast is stepped and rigged.

INSTALLATION EQUIPMENT:

#7 drill
1/4-20 tap
5/64 Allen wrench
silicone sealant
2 grommets
1 cable strain-relief clamp or strap
wire cutter
box wrench set
Phillips head and flat blade screwdrivers

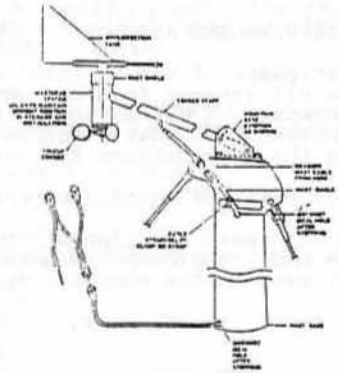


Figure 3. Installation of masthead sensor.

INSTALLATION BEFORE STEPPING

Using the sensor's mounting base as a template, with the taller end of the base toward the stern, drill two 0.20-inch diameter holes in the end of the mast. Tap these holes with the 1/4-20 tap. Mount the base with the taller end aft and secure loosely with the bolts and lock-washers provided.

It is not recommended that the staff, vane, and tri-cup sensor be mounted before stepping in order to avoid damage to these components. NOTE: DO NOT CUT THE MAST CABLE AT THE MASTHEAD OR INSIDE THE MAST ITSELF.

1. Drill two 1" holes in the mast, one near the top and the other recommended near the mast base, to accomodate the mast cable. Insert a grommet in each hole; this grommet must accomodate a 3/8 " hole and the thickness of the mast wall.

2. Run the mast cable with the male connector down the inside of the mast, starting at the masthead, through the grommeted holes. The female connector must remain at the masthead. On a mast with internal halyards, protect the mast cable by first inserting a PVC (polyvinyl-chloride) tube down the length of the mast. Secure the tube away from the halyards. Then run the mast cable inside the tube.

3. Mount a cable strain-relief clamp or strap to the mast immediately above the grommeted cable entrance hole near the masthead. This clamp is to be placed around the mast cable to hold it secure. Once the mast is stepped, this clamp will eliminate strain on the upper connectors.

INSTALLATION AFTER STEPPING AND RIGGING

Storage or shipment of the masthead sensor on its side or upside down may allow oil seepage from the vane's hydraulic damping assembly. This oil seepage is normal and will not affect operation of the sensor if it is cleaned off just prior to mounting. Pay special attention to cleaning the area between the staff and dust shield.

1. Before going up the mast and installing the sensor:

   A. The wind vane must be aligned. Turn the dust shield until the FWD 0 degree notch matches the white alignment mark on the sensor's upper body.

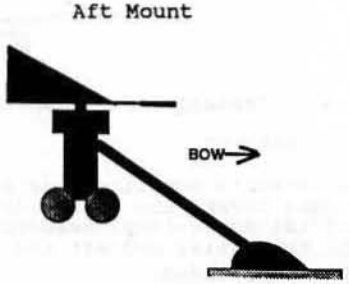


Figure 3A. Alignment of wind vane dust shield.

   B. Hold the dust shield to zero reference point. Then, if the staff will be installed pointing aft as recommended, mount the vane on top of the dust shield pointing over the staff (see Figure 3A). If the staff will point to the bow, the vane is mounted in the opposite direction (see 3B)

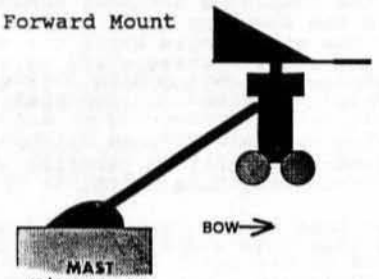
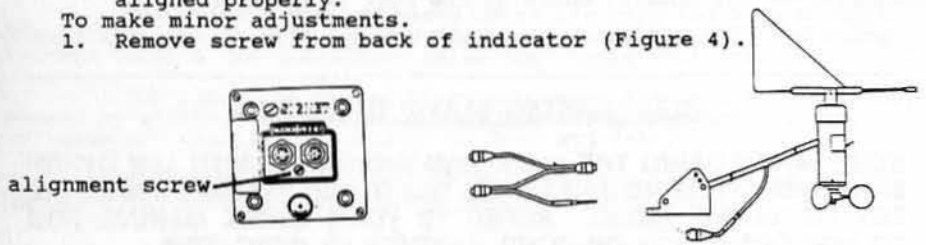


Figure 3B

   C. Remove the 10-32 lock-nut and washer from the bottom wind-speed-end of the sensor's body. Install the tri-cup by fitting it over the remaining nut. The recessed area of the tri-cup must face upward. Replace the 10-32 lock-nut and washer and firmly tighten.

Before taking masthead aloft:
1. Connect masthead connector directly to 8-pin connector on power/Y cable coming from back of the SL60 indicator (see Figure 4).
2. Turn on 12 VDC power to system.
3. Turn vane through 360 deg. and be sure the indicator is aligned properly.

To make minor adjustments.
1. Remove screw from back of indicator (Figure 4).



2. Use screwdriver to adjust indicator reading while holding masthead vane at fixed position.

Figure 4

NOTE: Do not use alignment screw to make adjustments over 35 degrees. Realign the vane first, and use alignment screw to tweek in minor errors.

2. Take the completed masthead sensor assembly up the mast, place the staff in the mounting base, insert the mounting bolts, and proceed to adjust the staff angle until the sensor's body is perpendicular to the water. Three staff adjustment positions are provided on the sensor's mounting base. If more adjustment is required, use a shim under the mounting base.

3. With the mounting base bolts loose, align the staff with the backstay so the sensor assembly is parallel with the fore-aft axis. Firmly tighten all mounting base bolts.

4. Connect the masthead sensor cable connector to the mast cable connector. Dress the cable and tighten the cable strain-relief clamp or strap.

5. Seal all holes, including the grommeted cable hole, with silicone sealant.

6. At the mast base, gently pull any loose cabling through the grommeted hole. Seal the hole with silicone sealant.

INDICATOR CONNECTIONS

1. Run the remaining cable from the base of the mast to the indicator location. If the standard cable is too short, 10' extensions may be ordered from your Signet dealer (P/N 1-1300.260-1).

2. Connect the 8 pin windpoint/windspeed connector to the 8 pin connector on the power/Y cable on the rear of the indicator.

SL60 "MASTER/SLAVE" OPERATION

NOTE: WHEN USING THE SL60 WIND INDICATOR WITH ANY OTHER SIGNETMARINE WIND INDICATOR, THE OTHER INDICATOR MUST BE SET TO "SLAVE" MODE. REFER TO YOUR USERS MANUAL FOR "SLAVE" OPERATION ON YOUR PARTICULAR INDICATOR.

SIGNETMARINE, 16321 GOTHARD ST. UNIT E
HUNTINGTON BEACH, CA 92647 (800) 227-4607

WINDSPEED CALIBRATION

The windspeed function of the indicator is calibrated at the factory in an open wind tunnel and should not require further calibration after installation. Before attempting any further adjustment, first be sure that the windspeed tri-cup is spinning freely in the wind.

THEORY OF OPERATION

The windpoint section of the indicator is a dc servo system. The wind vane position determines the masthead sensor's potentiometer slider position. Three taps on the potentiometer provide three voltages with a direct relation to vane position. These three voltages are current-amplified in the indicator (there is no voltage amplification) and used to drive the 3-coil servo meter assembly in the indicator.

The windspeed tri-cup is a transducer with an ac output signal. This signal is measured and displayed by the indicator. The indicator's windspeed circuitry utilizes a microprocessor to do the processing and conversion of the windspeed data to drive the LCD display.

New data is supplied every 2 seconds to the output ports which drive appropriate segments of the 2 digit LCD. The program provides averaging with about an 8-second time constant to minimize flickering of the display.

The indicator operates on a nominal 12 volt dc power source and is not damaged by steady-state voltages as high as 16 volts dc or transients as large as 25 volts peak. Internally, this supply voltage is regulated to supply several different values for different circuits.

The drivers for the servo motor are supplied by a circuit consisting of a 14 volt zener diode; thus, normally this operating voltage becomes one diode drop below the supply voltage.

The windpoint transmitter is powered from a 6.8 volt zener, biased up halfway between the supply voltage and ground. These voltages are usually referred to as "+9" and "+2".

The entire windspeed system, including microprocessor, operates on +5 volts, supplied by an IC voltage regulator.

SIGNETMARINE
LIMITED TWO YEAR WARRANTY

SIGNETMarine's Limited Two Year Warranty warrants its instruments to be free from defect in material and workmanship under normal use two years from date of purchase by initial owner, or three years from date of manufacture, whichever is earlier. Products not purchased within three years from date of manufacture will not be covered by warranty. Proof of date of purchase is required to validate all warranty service.

Instruments which prove to be defective in the first year of the warranty period will be repaired or replaced free of charge including labor, F.O.B. our factory, or designated Service Centers (addresses furnished upon request). Transducers or cables are not covered after installation.

The limited warranty for the second year of the warranty period covers only non-moving parts, such as electrical components. Meter movements will not be covered after one year. All units qualifying for warranty repair after one year are subject to a service charge of $20.00.

Items returned for warranty repair must be prepaid and insured for shipment. Warranty claims are processed on the condition that prompt notification of a defect is given to SIGNETMarine within the warranty period. SIGNETMarine shall have the sole right to determine whether in fact a warranty situation exists.

SIGNETMarine warranty does not cover travel time, mileage expenses, removal, reinstallation or calibration.

This warranty does not cover defects caused by installation, abuse, or electrical damage. SIGNETMarine will not warranty any instruments damaged during shipment to the factory which arrive either less the case or were improperly packed. Repair attempts by other than authorized Service Centers will void warranty.

SIGNETMarine is continually making design changes and improvements that adapt to original circuit configuration. These may be incorporated as required in older units on a minimal charge basis. Pre-authorization must be given by SIGNETMarine before any field upgrades are undertaken.

CONSEQUENTIAL DAMAGES

SIGNETMarine shall not be liable for special consequential damages of any nature with respect to any merchandise or service sold, rendered, or delivered.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.