

# **CAPW**

## **APPARENT WIND & DIGITAL WINDSPEED COMBINATION**

### **INSTALLATION INSTRUCTIONS**

Your Moor Electronics CAPW is a precision electronic instrument, which has been designed to simplify your quest for a more productive sailing experience. By taking the next 15 minutes and carefully reading these instructions, you will be rewarded with trouble-free service for years to come. Thank you for purchasing this, the finest apparent wind and digital windspeed combination instrument available. Locate the serial number on the instrument housing and record for future reference. Be sure to fill out and return the enclosed warranty card for your CAPW.

Serial No. \_\_\_\_\_

#### **UNPACKING**

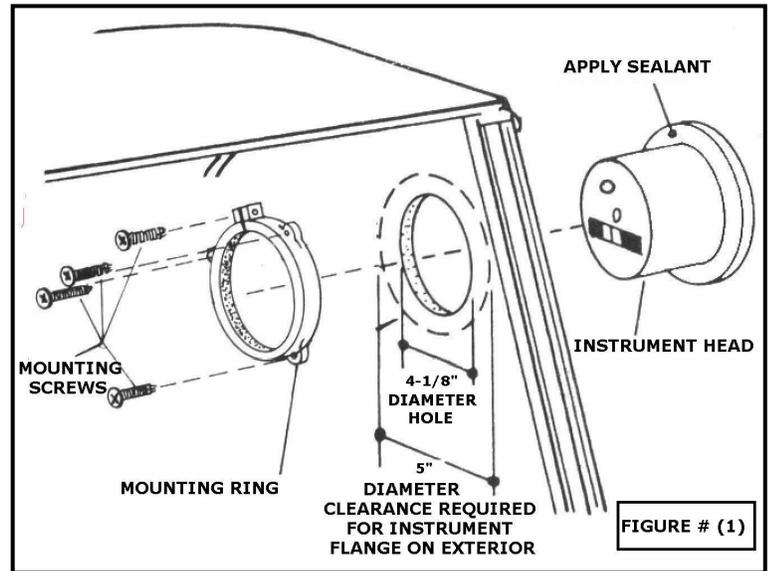
Your Moor wind instrument is a delicate electronic instrument, and care should be taken in unpacking and handling. Moor uses the greatest care and quality control to assure the instrument is complete and in perfect working condition upon packaging for shipment. The following items are packaged with the system.

- Display head
- Display head mounting ring & (4) screws
- 100 feet of 4 conductor cable
- Masthead vane
- Windspeed Cups
- Masthead extension pipe (pre-attached to masthead vane)
- Masthead mounting pipe
- Masthead connector
- Instruction set & warranty card

#### **INSTRUMENT HEAD INSTALLATION (see figure #1)**

- 1) Select a flat, smooth area on the bulkhead where the instrument can easily be seen by the helmsmen. Check for adequate clearance behind the panel.
- 2) Cut a 4 1/8 " diameter hole in the bulkhead.
- 3) Check instrument fit to assure that unit will seat evenly. If necessary, enlarge the hole slightly using a file.

- 4) Apply sealing compound (i.e.: "Boat-Life" caulk) to the backside of the bezel and insert the unit into the hole in an upright position. Warning do not use a bonding epoxy to seal, you may want to remove the unit in the future.
- 5) Place the mounting ring over the back of the unit. Use one self-tapping screw to lock the ring to the case close to the bulkhead, and use the other three screws to snug the unit to the bulkhead.



## **ASSEMBLING THE MAST HARDWARE (see figure #2)**

- 1) Insert the wires from the windspeed cups into the hole in the underside of the vane extension pipe
- 2) Secure the windspeed cups to the underside of the vane body using one of the cotter pins provided.
- 3) Feed both cables from the assembled masthead unit through the mounting pipe, exiting at the hole in the back.
- 4) Insert masthead unit extension pipe into the mounting pipe and secure with the remaining cotter pin provided.
- 5) Position the mounting pipe on the top of the mast so that the masthead unit projects forward of the mast. Secure with screws suitable for material your mast is made of. The mounting pipe is designed to elevate the masthead unit above the top of the mast.

**IMPORTANT: WHEN THE UNIT IS MOUNTED TO THE MAST, IT IS CRITICAL THAT THE ALIGNMENT IS SUCH THAT THE UNIT WILL EXTEND DIRECTLY FORWARD TOWARDS THE BOW OF THE BOAT.**

**CAUTION: DO ALL WIRING WITH POWER DISCONNECTED.**

## **WIRING THE MASTHEAD**

- 1) Run the cable down the mast, taking care not to damage the insulation on the cable. The cable may be run inside the mast, exiting through a hole in the side of the mast near the top. If this is done, use a grommet in the hole to prevent chafe.
- 2) Using the 4 pin connector provided, connect the mast cable to the masthead unit following the wiring table below. Use the male half of the connector on the masthead unit and the female half on the mast cable. The connector halves are polarized to mate only one way.

Make sure when the connector halves are mated, the connections are continued thru the connector as shown in the table.

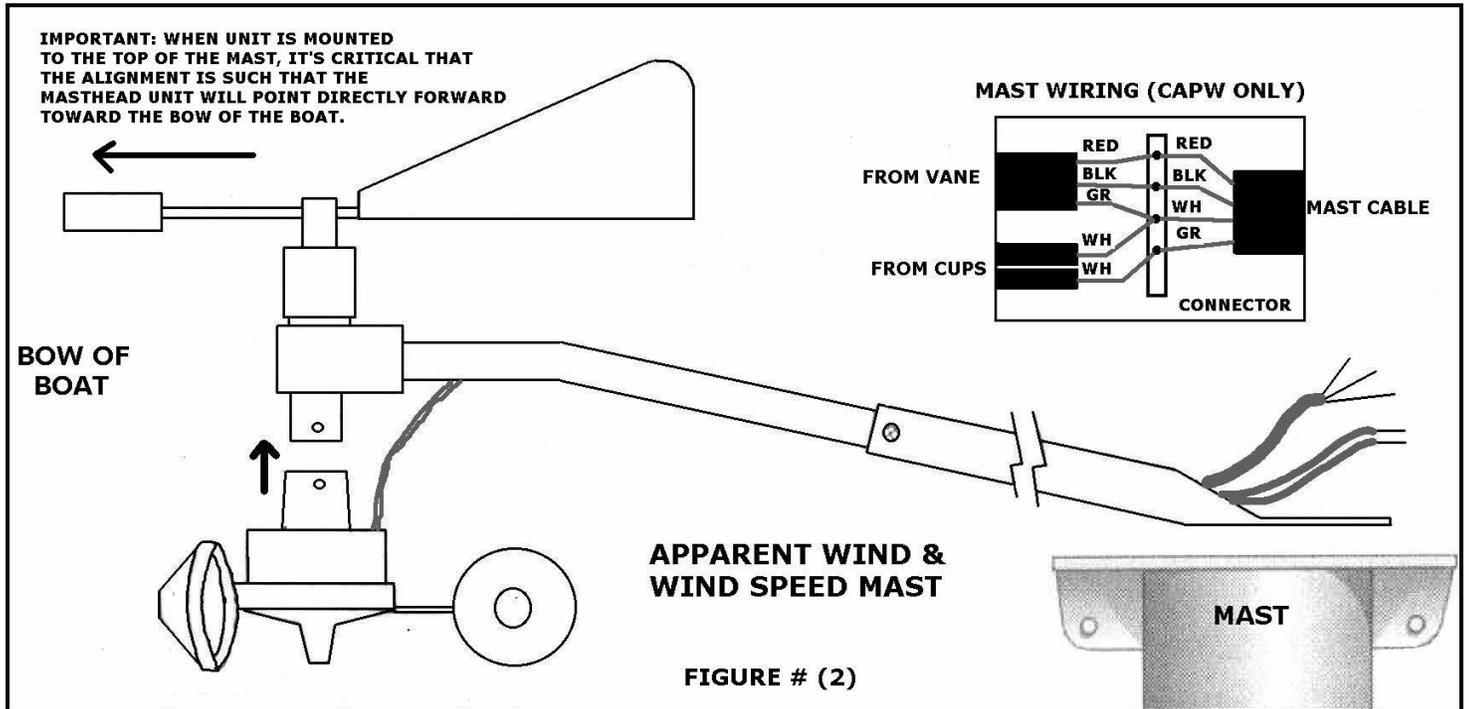
**MALE CONNECTOR**

WIND VANE – BLACK ----->  
 WIND VANE – RED ----->  
 WIND VANE – GREEN & EITHER WIRE FROM WIND CUPS -->  
 WIND CUPS – REMAINING WIRE ----->

**FEMALE CONNECTOR**

MAST CABLE BLACK  
 MAST CABLE RED  
 MAST CABLE WHITE \*\*  
 MAST CABLE GREEN

**\*\* NOTE:** One of the pins on the male half of the connector (masthead unit half) will have two wires connected to it. The **green** wind vane wire and **either** wind cup wire are common and run down the mast as a single white wire of the mast cable.



**DOUBLE CHECK ALL CONECTIONS!!!!** When satisfied that the wires are properly matched, connect the 4 pin connector halves together. It is recommended that the connector be waterproofed with a silicone compound where the cables enter the rubber boot. Do not use any silicone on the mounting pipes.

**CAUTION: DO ALL WIRING WITH POWER DISCONNECTED**

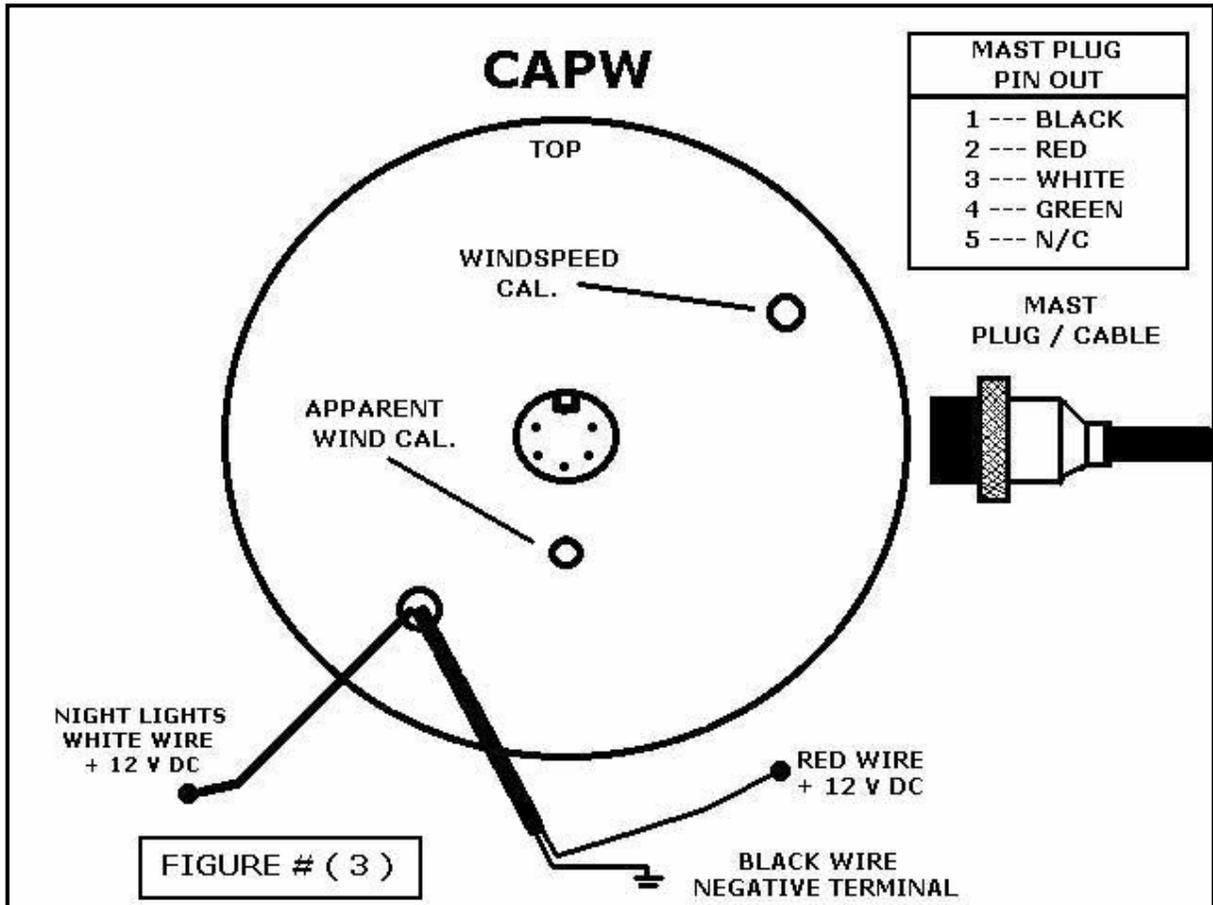
**WIRING THE INSTRUMENT HEAD (FIGURE # 3)**

- 1) Route the mast cable to the instrument location.
- 2) Locate the red and black power leads from the back of the instrument.
- 3) Connect the black lead to the negative ( - ) terminal of the battery or electrical circuit of the boat.
- 4) Connect the red lead to the positive terminal ( +12VDC ) of the battery or electrical circuit of the boat thru a ¼ amp fuse. An on/off switch may be installed in this line if desired.
- 5) Insert the plug of the mast cable into the socket on the back of the instrument, being sure to align the key on the plug with the notch in the socket.
- 6) Apply power to the circuit and the CAPW will accurately display apparent wind direction and wind speed. Your unit is now ready to use.

Note: If the cups are not spinning when power is applied you will get a bounce in the digital wind speed display to a random number and it will count down to zero.

**Night Light:**

A night light is included with the instrument. If you desire to connect it, locate the white wire lead from the back of the instrument and connect it to + 12 volts via a separate switch or connect the white wire to the + 12 volt side of the boats running lights. This way when you turn on your running lights the instruments lights will come on.



## **CALIBRATION**

The CAPW wind instrument was calibrated and tested before leaving the factory, to assure that it is complete and in perfect working condition. Should the instrument ever require re-calibration, we recommend that both the instrument and mast unit be returned to the factory. If, however the need arises to re-calibrate, the following procedure should be used.

### **CALIBRATION OF WINDSPEED**

- 1) Remove the red plastic plug from the upper right adjustment hole on the back of the instruments.
- 2) Using a small screwdriver, 1/8" blade or smaller, insert it into the hole. Now engage the adjustment screw and turn to calibrate. **DO NOT FORCE THE ADJUSTMENT BEYOND THE STOPS.** Clockwise rotation decreases the reading and counter clockwise rotation increases the reading.
- 3) Replace the plastic plug when calibration is complete.

### **CALIBRATION OF APPARENT WIND**

- 1) Remove the red plastic plug from the lower center (near the power cable) adjustment hole on the back of the instrument.
- 2) Turn the mast vane to point 90 degrees to port.
- 3) Using a small screwdriver, 1/8" blade or smaller, insert it into the hole. Now engage the adjustment screw and turn until the meter reads 90 degrees port. **DO NOT FORCE THE ADJUSTMENT BEYOND THE STOPS.**
- 4) By moving the vane to the other tack, the unit should be in calibration. The meter was designed to need calibration only on the one tack. If the meter is out of calibration on all points, the reason could be the vane was not installed properly or you may have a wiring error.
- 5) Replace the plastic plug when calibration is complete.

## **BASIC TROUBLE SHOOTING**

**Most problems are wiring problems.**

- Wire cut or damaged in installation.
- Poor splice or connection at mast cable and masthead pigtail.
- Wind speed will not register unless windspeed is over 30 knots & apparent wind is off around 20 degrees. This problem is caused by a reversal of the green and white wires at the top of the mast.

### **NEEDLE DOES NOT MOVE**

- Power not switched on
- 12 volts not applied to unit
- Polarity reversed ( this could damage the unit)
- Cable to mast head not connected
- Cable to mast head may have been cut when mast was stepped.
- Fuse Blown.

## **CHECKING THE APPARENT WIND VANE**

- The CAPW mast vane consists of a 5000 ohm precision linear potentiometer. To check, first unplug the mast cable.
- Connect an ohmmeter across the red and white wires; a reading of 5000 ohms +/- 10 % should be observed (pins 2 & 3, see figure #3).
- Connect an ohmmeter across the black and red wires; as the vane is rotated, a proportional resistance from 0 to 5000 ohms should be observed (pins 1 & 2).
- Connect an ohmmeter across the Black and white wires; as the vane is rotated, a proportional resistance from 0 to 5000 ohms inverse (opposite) to the above should be observed (pin 1 & 3).

## **CHECKING THE WIND SPEED CUPS**

- Disconnect the mast cable.
- Connect an ohmmeter across the white and green wires (pins 3 & 4). A reading of approximately 600 ohms should be observed. If the cups are rotating the reading will fluctuate around the 600 ohms reading.

## **SERVICE REPAIRS**

Should your instrument become inoperative or in you believe there is a problem with the initial installation, please return the unit to the factory for quick prompt service.

**Moor Electronics, Inc.**  
**Service Department**  
**95 Dorothy St.**  
**Buffalo, NY 14206**

Service number	716-821-5304
E-mail	<a href="mailto:SERVICE@MOORELECTRONICS.COM">SERVICE@MOORELECTRONICS.COM</a>
Web	WWW.MOORELECTRONICS.COM
Fax	716-821-5306

Include return address, daytime phone number, description of problem and masthead units.

With warranty repairs, proof of purchase date is required. Please enclose proof of purchase date and \$14.00 to cover the cost of shipping and handling.

With non-warranty repairs you will be advised of the cost upon our inspection of the unit. Payment may be by Master Card, Visa, check or C.O.D. There is a minimum \$20.00 fee for inspecting any unit that is not under warranty.

## **SPARE PARTS**

39-055-000	Instrument cover
30-112-010	Windspeed cups generator
88-400-102	Apparent wind direction mast unit
15-100-250	Wired 5k potentiometer for apparent wind unit.
99-133-212	Outer mounting ring for case