

# The POWER MANAGEMENT system

## Model BP2000 "The Commander"

Designed to serve the instrument needs for fishing boats  
for the year 2000 and beyond

Designed and Manufactured by  
Omega Two, Inc. - Marine Products Division



Visit us on the web at <http://www.omegait.com>

### Manual 1.0

Software Version 1.0 & up

Hardware Revision A & up

Release date - 8-1-1999

Serial Number \_\_\_\_\_

## INTRODUCTION

The BP2000 is a marine power controller system designed to operate the pumps, lights and horn used on most fishing boats. In addition, information is displayed regarding the time of day, fuel in one or two tanks, battery voltage and water temperature. Another feature is a security system to protect the contents of rod boxes and storage compartments. Because of the unique features of this unit, boat wiring is simplified and reliability improved over conventional switches and circuit breakers. No individual circuit breakers are required as the BP2000 uses over-current protection circuits to shut off devices that draw too much current. However, good installation practices require a properly sized fuse in the wire that supplies the +12 VDC power to the BP2000.

### The functions in this unit include:

- The display of the condition of the battery (VOLTS).
- The display of the (TIME OF DAY).
- The control of the navigation (NAV) and anchor (ANCH) lights.
- The control of the aeration (AER) and recirculation (REC) pumps for live wells. Both ON & OFF times are programmable.
- The control of the (HORN).
- A battery monitor that will turn off pumps in an attempt to maintain enough charge in the battery to enable the engine to start.
- A light behind the LCD to allow the operator to see the instrument after dark. The brightness of this light may be set to any desired level. The keypad is also illuminated for night operation.
- A liquid crystal display (LCD) to show the status of all functions and prompts the operator to accomplish certain functions.
- A small internal beeper sounds each time a button is pressed and is used to get the drivers attention when the fuel is low or a fault condition exists.
- Internal circuit protection for pumps and lights.
- A FAULT indication on the display if a pump or light is drawing too much or too little current. The word "FAULT" appears above the keypad button related to the circuit that has or is about to fail.

## DESCRIPTION OF OPERATIONS

The BP2000 instrument panel is the most advanced instrument available today for controlling power in fishing boats. The following is a description of each of its functions and step-by-step instructions for using these features. While this description may look intimidating, all functions have already been set to values that are most frequently used, so that all you have to do is get into your new boat, go fishing, and enjoy our great outdoors. Later, as you get more comfortable with the instrument, you can change it to meet your unique needs and desires.

### WHEN THE POWER SWITCH IS TURNED OFF:

1. **Definition:** "Power Switch" is the switch in your boat that turns on your other instruments. The BP2000 is always connected to the +12V battery so that it can maintain the correct time of day. The BP2000 senses the "Power Switch" in order to know how to respond to keypad closures and the security system.
2. When the Power Switch is turned off, the LCD display will be blank and all output drivers will be "open" so that devices they control are turned off.
  - ♦ One exception is sounding the horn which will function regardless of whether the display is on or off.
  - ♦ Another exception is the Bilge pump. If the Power Switch was turned off while the bilge was in the AUTO mode, the BP2000 will turn on the bilge pump anytime the float switch sends a signal that water is in the bilge.

### WHEN THE POWER SWITCH IS TURNED ON:

3. The **TIME** of day is displayed. If this is the first time the instrument has been turned ON after being connected to the boat's battery, the time will be "12:00", and it will be necessary to set the correct time.
4. The measured battery voltage is displayed for 5 seconds every 30 seconds instead of the time of day. When battery voltage is being displayed, the word **VOLTS** is also shown.
  - ♦ Note: The microprocessor continuously monitors the condition of the battery in an attempt to maintain enough of a charge to allow the engine to start. When the voltage drops to 11.5 volts continuously for 5 minutes, all functions that draw considerable current from the battery will be turned OFF except the Navigation and Anchor lights and the Bilge pump. Disabled outputs cannot be turned back ON until the battery voltage increases to at least 11.8 volts for 2 minutes. The word "VOLTS" will begin to flash when the voltage drops below 11.5 volts. The flashing display means low battery protection mode and that the pumps will not work.

- ♦ Note: If the voltage drops to less than 7 volts, the even the display will no longer function.

5. Fresh water can be pumped into the live well by turning on the **AERator** pump. When in **MANual**, the **AERator** is always ON. When in **AUTOMATIC**, the pump turns ON and OFF at regular intervals. These intervals may be programmed or factory defaults may be used. Factory defaults are— 12 minutes OFF and 1 minute ON.
6. Water can be circulated in the live well by turning on the **RECirculation** pump. When in **MANual**, the **RECirculation** pump is always ON. When in **AUTOMATIC**, the pump turns ON and OFF at regular intervals. These intervals may be programmed or factory defaults may be used. Factory defaults are— 12 minutes OFF and 1 minute ON.
7. Pressing the **LIGHTS** button will turn on the **ANCHor** light or a second press will turn on both the **ANCHor** and **NAVigation** lights. The LCD display is also lit when the **NAVigation** lights are ON.

## Functions of Keypad:



### Select Button:

Press this button first when you want to change any function. Examples: Changing the time of day or the on or off times of the aerator or recirculation pumps.

Note: If you press and hold the SELECT button for 5 seconds, the clock and water temperature displays will provide manufacturing information that you may need if you ever call the factory for service. The clock displays the number of hours the instrument has been used and the temperature display shows the software revision level and production year.



### MODE Button:

The MODE button is used mainly for multiple button commands in conjunction with the SELECT button. Each use of the MODE button will be discussed later in this manual. Some of the MODE button functions are:

- 1) Setting the clock, 2) Setting on and off times for the live well pumps.

Note: If you press and hold the MODE button for 5 seconds, the clock and water temperature displays will provide manufacturing information that you may need if you ever call the factory for service. The clock plus the temperature displays show the serial number of the unit. For example —2 - 123 would be the 2,123 unit built.



### DIM Button

Pressing this button will cause the light behind the display change. Press and release the DIM button until you see the brightness you want. The display will stay at that brightness.



## INCREASE Button:

When setting values, the DIM button changes to an INCREASE button. Pressing this button while setting time, will cause the time value to increase



## AERator Pump:

The AERator button is used to turn the aerator pump ON and OFF. To turn ON (MANual mode) push once. To turn to AUTO (timer mode) push again. To turn the pump OFF, press the AER button one more time. Each time this button is pressed, the function of the pump will rotate to the next mode as just described.



## DECREASE Button:

When setting values; the AER button changes to a DECREASE button. Pressing this button while setting time, will cause the time value to decrease.



## RECirculating Pump:

The RECirculation button is used to turn the Recirculating pump ON and OFF. To turn ON (MANual mode) push once. To turn to AUTO (timer mode) push again. To turn pump OFF, press button one more time. Each time the button is pressed the function of the pump will rotate to the next mode as just described.



## LIGHTS Button:

The LIGHT button is used to turn the anchor and navigation lights ON and OFF. To turn ON the anchor lights, press LIGHTS once. To turn ON both the anchor and navigation lights, press LIGHTS again. To turn all lights OFF, press the LIGHTS button one more time. Each time the button is pressed the function of the lights will rotate to the next mode.



## BILGE Pump Button:

The BILGE button is used to turn the bilge pump ON and OFF. Pressing the BILGE button once will put the pump into AUTOMATIC mode. This means that the pump will respond the float switch installed in the bilge area. A second press of the BILGE button will turn on the pump and it will run until you turn it off by pressing the BILGE button one more time. Hint: It is best, when you leave your boat in the water, to have the bilge in the AUTO mode so that a heavy rain during the night does not swamp your boat.



## HORN Button:

The HORN button is used to turn the horn ON. The horn will sound continuously while pressing the HORN button. This button is also used to activate the ALARM mode.



## Setting the Clock :

This command allows the user to set the hours and minutes in 12 hour format. Pressing the MODE button moves between HOURS and MINUTES. The digits that are flashing is the value you are currently setting. The time will start counting with seconds at :00 when you exit this editor. The colon will be blinking at one second intervals whenever the display is showing time-of-day.



Increase MINUTES value by 1 (one). or,



Decrease MINUTES value by 1 (one). or,



Accept MINUTES value shown

—next:—



Increase HOURS value by 1 (one). or,



Decrease HOURS value by 1 (one). or,



Accept HOURS value shown & return to normal operation..

## A word about the display of the word FAULT.

You will see the word FAULT turn on occasionally when first turning on a pump or light. An example might be when the pump is not pumping water, or if a light staff is not inserted what the light is turned on. This is because the fault circuit reacts to too little as well as too much current. You can generally ignore these low current FAULTS, although it could be telling you that you that you have a burned out lamp or a broken wire to a pump.

Always be concerned when a pump should be pumping water and the FAULT indicator for that pump is showing. This can mean that the pump is about to fail or that something is wrapped around the impeller and causing the pump to draw too much current. Have a mechanic look at that pump before you go to the lake the next time.

The Accessory function has a different method of showing a fault indication. Instead of the word FAULT appearing, the word ACCESSORY will begin to blink and will continue to do so until the fault is cleared.

To direct you attention to the display, a seven second beep is heard whenever a FAULT is displayed. To silence the beeper sooner, press SELECT.



## Setting the ALARM :

Pressing SELECT and HORN at the same time will toggle the security system ON and OFF each time the command is executed. If the security system is enabled, the word ALARM will be visible to the right of the clock. This is to let you know that the security system is enabled. Once the Power Switch is turned off, the opening of any storage compartment in your boat that has a light in it will trigger the ALARM. The result is the HORN sounding intermittently for five minutes.

The security system may be disabled by pressing SELECT and HORN again, or by turning on the Power Switch.

**Warning!** There is no indication if the security system is enabled when the Power Switch is OFF. This is done so that a would-be thief cannot tell until he opens a storage compartment lid. By this time it is too late... the horn will begin to sound. The box lights do not work when the security system is enabled and the Power Switch is turned off.

**Note:** With the security system disabled, and the Power Switch OFF, opening a storage compartment will turn on the internal light. The BP2000 then monitors the light every 30 seconds to see if the door has been closed. Because of this, you will notice a one second blink of the light every 30 seconds while the Power Switch is OFF. The lights do not blink when the Power Switch is ON.

**Hint:** It is a good idea to disable the security system before towing the boat down the highway. If any box lid is unlatched, it will bounce on a rough bump and set the horn blaring. It is embarrassing to be driving through a town pulling a boat that is indicating with its horn that it wants to pass.

## A word about the display of water temperature.

A temperature sensor is attached at the transom of the boat at a location where it is always in the water. This temperature is continuously displayed along with the word "TEMP". The sensor is a common failure item because of the abuse that it takes in the turbulent water. If it should fail, the digits of the water temperature display will go blank although the word TEMP will still be visible. This should prompt you to replace the sensor as soon as possible. The microprocessor only displays what it believes to be valid temperatures, from 30 to 120 degrees F. Thus it may be blank when the boat is sitting in your driveway on a cold winter day.



## Aerator Pump

### Automatic Timer Programming

This function allows the user to select an OFF time and an ON time in minutes for the AUTO mode of the aerator pump. The value that is blinking is the value that you are currently editing. OFF time is blinking when you first enter this mode.

TIME display shows the time the pump is OFF/ON. Example: 12:01 indicates 12 minutes OFF time and 1 minute ON time.



Increase OFF value (maximum 15 minutes).



Decrease OFF value (minimum 1 minute).



Accept the OFF time and move to setting the ON time.

----NEXT----



Increase ON value (maximum 15 minutes).



Decrease ON value (minimum 1 minute).



Accept the ON time and return to normal operation.

## FUEL TANK DISPLAY

Two displays to show the quantity of fuel in a left and right tank, respectively. If the boat has only one fuel tank only one of the bar graphs will be shown unless the sensor wires are tied together outside of the instrument.

When the fuel level shows only two bars or less, the symbol of a gas pump will begin to flash and will continue to do so until additional fuel is added.

When the fuel level drops below the last bar, the "E" (for Empty) will begin to flash with the gas pump. In addition, the built-in beeper will sound continuously for one minute. Pressing the SELECT key will terminate the beeper sound early, but the display will continue to blink.



## Recirculating Pump

### Automatic Timer Programming:

This mode allows the user to select an **OFF** time and an **ON** time in minutes for the timer mode of the Recirculating pump. The time display will show the OFF time and the ON time for the pump. The time that is blinking is the value that you are currently editing. OFF time is blinking when you enter this mode.

TIME display shows the time the pump is OFF:ON.

Example: 12:01 indicates 12 minutes OFF time and 1 minute On time.



Increase OFF value (maximum 15 minutes).



Decrease OFF value (minimum 1 minute).



Accept the OFF time and move to setting the ON time.



Increase ON value (maximum 15 minutes).



Decrease ON value (minimum 1 minute).



Accept the ON time and return to normal operation.

## ACCESSORY FUNCTION



The BP2000 provides an undedicated output labeled ACCESSORY. The boat manufacturer may use this output for anything that requires +12 volts at a current of less than 6 amps. Typical uses include lights in the livewell, depth finder in the front of the boat, or an AM-FM radio. When this function is enabled, the word ACCESSORY will be displayed on the right side of the display. The FAULT indicator is unique for this output. Instead of the word FAULT appearing, the word ACCESSORY will blink.

## USE METER

By pressing and holding down the SELECT button for five seconds, the Clock display will change to show the number of hours the instrument has been used. When displaying usage, the word CODE will also be shown. Although this value is the accumulation of time that the Power Switch has been turned on, and not engine hours, this information can be useful to schedule maintenance or other purposes. Like the odometer on an automobile, this value cannot be reset in the field. The maximum time that the USE METER will show is 1,999 hours before it recycles to 0,000.

## SERVICE Wiring Table

Omega Two Inc. 2245 E. Keamew Springfield, MO			
Drawing: BP2000-HJ2			
Document revision: D		AUGUST 1, 1999	
Description of Connector Use: Pin numbers on J1 and J2 are read from right to left as viewed from the back.	External wire gage	External wire color	load current capacity
<b>Connector J1 (on right as viewed from the rear)</b>			
Pin # 1	+12V in	16	RED POWER
Pin # 2	Aerator Pump	16	GRN 6 amp max
Pin # 3	Recirculation Pump	16	GRN/RED 6 amp max
Pin # 4	Bilge Pump #1	16	BRN 6 amp max
Pin # 5	Bilge Pump #2	16	BRN 6 amp max
Pin # 6	Accessory	16	PINK 6 amp max
Pin # 7	Navigation Lights <sup>1</sup>	16	WHT 2 amp max
Pin # 8	Anchor Lights	16	WHT/BLK 2 amp max
Pin # 9	Rod Box Lights	16	WHT/RED 6 amp max
Pin # 10	GND	16	BLK POWER
<b>Connector J2 (on left as viewed from the rear)</b>			
Pin # 1	+12V in	16	RED POWER
Pin # 2	Horn	16	BLU 2 amp max
Pin # 3	Water Temp - +5V	20*	RED pwr to VET
Pin # 4	Water Temp - sensor	20*	GRN input
Pin # 5	Water Temp - GND	20*	BLK pwr to VET
Pin # 6	Fuel Tank - right	18	YEL input
Pin # 7	Fuel Tank - left	18	YEL/RED input
Pin # 8	Switched +12V	18	RED input
Pin # 9	Bilge Float Switch	18	BLK/WHT input
Pin # 10	GND	16	BLK POWER

### Notes:

- +12V must be redundant because if several pumps are turned on at the same time, the current rating for one pin will be exceeded.
- GND is repeated for reliability and reduced noise.
- Key is located on the underside of connector.
- Water temperature wires are a 3 conductor cable.

This is **REPRESENTATIVE** of an installation.  
CONTACT YOUR BOAT MANUFACTURER FOR SPECIFICS  
CONCERNING YOUR BOAT

## Things your DEALER can do to correct a problem:

ALL SERVICE WORK MUST BE DONE EXTERNAL TO THE INSTRUMENT.

**WARRANTY IS VOID IF THE UNIT HAS BEEN OPENED.**

### Symptom: Unit appears dead.

1. Make sure the battery is OK. The unit will shut itself OFF if the battery voltage is less than 7 volts.

2. Make sure the unit has power by testing the first and last pin of either connector. These connections are +12V and GND. If this voltage is missing, check the in-line fuse. If blown, replace with the same amp value. This fuse is selected by the boat manufacturer, but in no event should a value of more than 30 amps be used.

3. Unplug BOTH connectors on the back of the unit, or disconnect the positive battery terminal. Then, reconnect. This will reset the electronic circuits and may cause it to work again.

### Symptom: The battery seems to discharge when the boat is not being used.

The BP2000 instrument uses very little current from the battery when every light and pump is turned off. Like the electric clock in your car, the instrument can discharge the battery after several weeks of not recharging the battery. The length of time before the battery discharges to the point where the engine cannot be started depends on many things, including 1) condition of the battery, 2) whether the pumps have been used, 3) the amount of current that the engine (it also draws current continuously from the battery) and other items in the boat have used. **For extended periods when the boat is not used, keep a trickle charger on the battery, or disconnect the positive lead from the battery.**

## Things YOU can do to correct a problem:

1. Make a list of each function that does not work or work properly. This can give you a good insight as to where the problem originates. Look for anything that is common to some or all of the defective functions.
2. Most electronic equipment failures are related in some way to connections. Look for broken or frayed wires or a connector that has become loose.
3. Ask your dealer to assist you in finding the problem.
4. Call the factory. You will need the information your dealer wrote on your portion of the warranty registration card including the serial number, the date purchased, and the dealer from whom you bought it. You will also want to know the functions that do not work that you listed in #1 above. It would be very helpful if you could make the call with a cordless phone while sitting in the boat.

Call 417-831-5155 8 AM to 4:30 PM -- Monday through Friday

Ask for "marine service"

## Service Policy:

It is intended that all instrument repairs are to be done by the factory. Service parts and repair information will **not** be furnished to dealers or service establishments

**Please call 1-417-831-5155 for a return material authorization (RMA) number before returning a unit for repair. You may also email us at [Omega2@cland.net](mailto:Omega2@cland.net)**

### Returning an instrument to the factory for service:

#### If the unit is considered in warranty:

1. Call the factory and discuss the problem with a service technician to make sure that the problem is actually in the instrument. Sending in the instrument and leaving the problem in the boat will not cure the problem.
2. Ask the service technician for an "RMA" number.
3. Package the unit securely, with lots of foam packing material. **The warranty does not include shipping damage, so it is best to do it right.**
4. Include a note taped to the instrument that tells us about the problem. Comments like "doesn't work" are of no value in helping us find the problem. Comments like "Horn is intermittent" are very helpful.
5. Make sure your name, phone number, and RMA number are on BOTH the inside and the outside of the shipping carton. An envelope taped to the outside is acceptable for including this information.
6. Insure the package.
7. We prefer you ship UPS or Federal Express.
8. You pay the shipping charges to us. We pay them when we ship the unit back to you via UPS ground. We will refuse packages shipped C.O.D.

#### Returning the instrument if the unit is out of warranty:

1. The procedure is almost the same to send an out-of-warranty instrument back for repair as that described above for a warranty return.
2. The difference is you will be charged for the repairs. We will call you once we know what the repair charges will be. You may send a check for that amount or we can return the unit to you C.O.D. We gladly accept Visa, MasterCard and American Express.

## SPECIFICATIONS

<b>SIZE:</b> inches(cm)	<b>Width = 7.0 (17.78)</b> <b>Height = 3.0 (7.62)</b> <b>Deep = 3.5 (8.89)</b> Requires a cutout of 6.70 by 2.75 inches.
<b>WEIGHT:</b>	approximately 17 Oz. (.490 Kg)
<b>OPERATING VOLTAGE:</b>	12.6 VDC nominal. Display will operate from 7 to 15 volts. Voltage above 15 VDC may damage the unit.
<b>CURRENT REQUIREMENTS:</b>	approximately .025 amp with the unit ON but all pumps and lights turned OFF. The current decreases slightly when the Power Switch is turned OFF.
<b>OPERATION TEMPERATURE:</b>	0 to 120 degrees Fahrenheit. The unit will operate outside these limits, but performance parameters have not been established.
<b>STANDARD EQUIPMENT:</b> (provided by Omega Two, Inc.)	One - BP2000 "Commander" instrument. One - Owner's manual. One - Warranty Registration card. One - water temperature sensor. Two - mating connectors for rear panel.

### Notice:

Omega Two, Inc. reserves the right to make changes to this product without prior notice and without liability.

## WARRANTY

We are pleased to warranty the BP2000 unit to be free of workmanship defects and component failure for a period of 2 years from the date you purchased it. If for any reason it does not perform as described in this manual, return it to us and we will repair it within two working days or send you a "loaner" until yours can be repaired.

We do have to make the following limitations:

1. There is no warranty if the warranty registration card is not completed, mailed, and received by Omega Two, Inc. when the instrument was purchased.
2. The warranty is void if the instrument was installed or maintained improperly.
3. The plastic panel covering the LCD glass can be easily scratched. This normal usage and is not covered by this warranty.
4. The water temperature probe is not covered under this warranty.
5. The warranty is void if it has been flooded, struck by lightning or other act of God.
6. You must pay shipping charges to us and when the unit is repaired, we will pay the shipping charges back to you. We use UPS ground delivery unless you want to pay the difference.
7. Omega Two reserves the right to repair or replace the unit at our discretion.
8. In no case shall Omega Two be liable in contract or in tort (including negligence) for special, indirect, incidental or consequential damages such as, but not limited to, loss of profits or revenue, property damage, other damages, costs or expenses which might be claimed as a result of the use or failure of the product, excepting only the expense of the repair to the instrument as described above.

If a unit is returned to Omega Two, and we determine that for any reason it is not "in Warranty", you will be notified by phone (if possible) or in writing, to let you know the cost of repair before any work on the unit is accomplished. You may then approve the work or ask that we return the unit to you freight C.O.D. If you do not wish the unit returned, we will keep it for 30 days (in case you change your mind) and then dispose of it as we see fit.