CELECTRON
Marine Safety

Bilge Pump Activity Monitor

USER HANDBOOK

CELECTRON *Bilge Pump Activity Monitor*

SKIP DISPLAY DIM SETUP MEMORY
PUMP PERIOD PUMP ACTIVITY DAYS

8 8:888 88

TEST ALARM PUMP ALARMS YES? MINUTES
SET ALARM DELAY STORE CURRENT CLEAR ALL

YES ⬅ ➡ EXIT

BILGE WATCH 8

BILGE WATCH

BW8
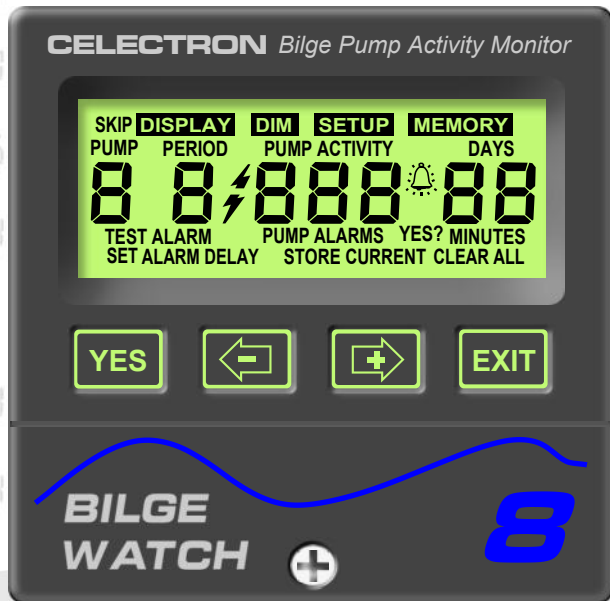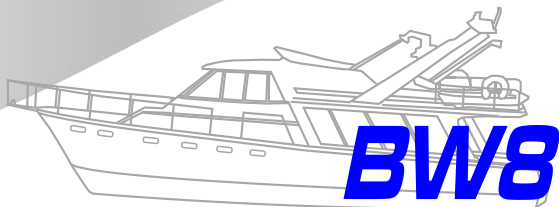
Celectron Limited, Darlington, England.

SYSTEM OVERVIEW

Four out of five boats that sink do so at the dock. Faulty seals, corrosion, cracked or broken fittings and perished hoses are often to blame. Increased bilge pump activity is a sure sign of a developing fault, but automatic bilge pumps can hide the problem. By monitoring and recording bilge pump activity, the **Bilge Watch 8** can provide advance warning of problems in your bilges, before they become emergencies.

While the boat is **unattended**, the BW-8 constantly monitors and records the pump activations and ALARM output activations (Counts up to 999 for each Pump, Alarm and Period) for up to 8 bilge pumps. Two outputs are provided to trigger an ALARM and an ALERT, with user set delays for each pump. The maximum recording time for each period is 99 days. There are 4 periods: the current period plus 3 history periods.

When the boat is **attended**, the BW-8 continues to monitor the pumps, but the inhibit option will disable the ALARM output and the recording function, while maintaining the ALERT output - allowing the user to **exclude expected pump activity**, such as from washing down bilges or known water ingress when under way (e.g. Leaking shaft stern gland seals etc.).

Four keys are used to access all of the BW-8's functions :- The two **arrow keys** are used to move between options or to alter settings - The **YES key** selects an option or accepts a setting - Pressing the **EXIT key** returns you to the previous menu option, it also switches off the alarm.

The BW-8 has a **5 second delay** before it records a pump activation, to rule out false activations, such as those caused by the boat rocking due to wave action. When more than one pump is active, the display cycles through all active pumps. If a pump stays active and exceeds its user set alarm delay then the BW-8 triggers the ALARM and ALERT outputs and records the ALARM output activation; the **Backlight, 'AL'** and the **BELL** symbol flash. The ALARM and ALERT outputs are limited to **10 minutes**, but can stopped at any time by pressing the **EXIT key**.

Unused pump inputs can be **skipped** so that only the pumps in use will be shown on the LCD display.

If a power failure occurs, it is indicated by displaying a **BROKEN LIGHTNING FLASH** symbol to indicate that the **DAYS** count may not be accurate. This is recorded with the history period information for future reference. The BW-8 will automatically recover from a power failure.

Recorded information can be accessed from the **DISPLAY** option in the main menu, the display will alternate between pump activations and ALARM output activations and will cycle through the pumps in use automatically (the arrow keys can override the automatic cycle). The pumps history periods can also be accessed from the **DISPLAY** option.

To conserve power, the display backlight (brightness is user selectable) is normally **OFF** until a key is pressed. It will extinguish **2 minutes** after the last key press.

Activations and settings are stored securely in non-volatile memory.

INDEX

INSTALLATION

PACKING LIST: BW-8 control unit
Wiring loom & insulation sleeves
Cable ties, 3 Threaded studs, 3 Knurled nuts
Wire clamp with 4 #2 pan head self-tapping screws
Drilling template
Quick reference card

ALERT OPTION: Buzzer for ALERT (**AT**) connection -
suitable devices are available from Radio Shack or
Maplin. Device specifications :12 or 24v to suit the boats
system and max total current available 50mA.

REQUIRED TOOLS: Electric Drill
Drill bit set including 4mm & 9.5mm (5/32" & 3/8")
Wire strippers/cutters
Adhesive tape (to hold the template in place)
Deburring bit for holes
#0 cross point screwdriver

> **USE**
> **EYE PROTECTION**
> **WHILE DRILLING**

First, **isolate the power to the bilge pump circuits**. **CAUTION:** It is not unusual to find bilge pumps wired directly to the battery via an in line fuse, bypassing the battery master switch and giving a permanent supply to the pumps. In this case, remove the fuses to isolate the power. Check before proceeding and be certain that the **supply to the pump switches is OFF!**

If you are in any doubt, have a qualified electrician perform the electrical installation.

Bearing in mind, the optimum viewing angle for the LCD display: from face on, to 30º below vertical and 30º either side of horizontal, select a suitable position that has access to the rear for the fixing screws and wires.

As the BW-8 is not a primary instrument, there is no requirement for it to be waterproof, therefore, it should be mounted in a sheltered, dry location in the cabin/wheelhouse, within approximately 550mm/22" of the bilge pump auto/ manual switches.

Check behind the chosen position to make sure it is clear of obstructions such as wiring looms etc. Tape the drilling template in place and following the instructions, drill the required holes and deburr. **Ensure that any metal drill particles are not allowed to drop on other electrical components in and around the mounting position**.
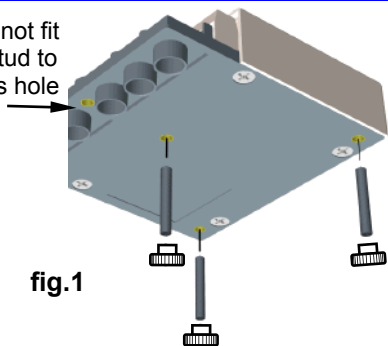
INSTALLATION

Screw the three fixing studs (finger tight) into the threaded inserts on the back of the BW-8. Mount the BW-8 into the previously drilled holes and secure by fitting the knurled nuts to the studs, finger tight (do not use excessive force). See **fig.1**.

Do not fit a stud to this hole

fig.1

Remove the terminal access cover by undoing the single screw on the front of the case.

The BW-8 is supplied with individually colour coded wires fitted with "Piggy Back" 1/4" spade (Faston) connectors, (the most common type of connector used on bilge pump switches).
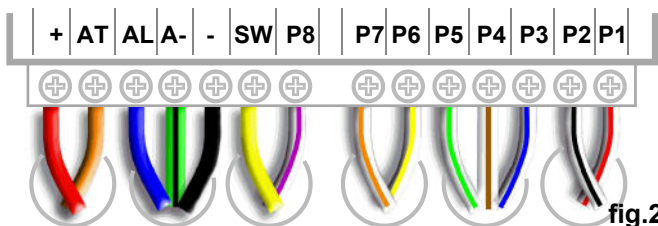
The wires may be cut to length to suit the installation.

From the rear of the panel, bring the wires, grouped together as shown in **fig.2**, through the cable holes.

| + | AT | AL | A- | - | SW | P8 | | P7 | P6 | P5 | P4 | P3 | P2 | P1 |

fig.2

If mounting on a panel thicker than 5mm, use the heatshrink insulation sleeves to protect the wire groups at the rear of the panel; secure in position by shrinking or with insulating tape. See **fig.3**.

Thick Mounting Panel

Insulation Sleeve
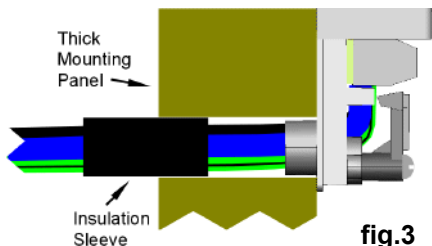
fig.3

Use only enough pump sensor wires to suit the number of pumps on your boat, start with terminal "**P1**" and use the terminal numbers in sequence, omitting the higher numbers if you wish to use less than 8 pumps.

INSTALLATION

First, connect the "Piggy Back" terminal end of the **BLACK** wire to a convenient negative point in the boats electrical system (see **fig.4**). Then strip 4mm of insulation from the bare end and connect this to the "**-**" terminal on the BW-8 terminal block, ensuring that all of the strands enter the terminal hole with no stray strands exposed. Do not use excessive force to tighten the terminal screws (Max torque 2Kg.cm / 2 in.lbs).

Locate the "**MANUAL**" terminal on each of your bilge pump switches and follow the connection instructions and diagram in **fig.4**. Strip the bare end and connect to the corresponding terminal on the BW-8 block. Repeat for each of the bilge pumps.

If your switches have a different method of connecting, remove the spade/Faston connectors and fit the wires in a manner to suit your boat's system. The basic intention is to connect the sensor wires from the BW-8 to the corresponding "MANUAL" terminal on each of the pump switches, along with the existing wires from the bilge pumps/float switches.

Now, locate the positive supply terminal on one of the bilge pump switches (usually the centre terminal) and connect the "Piggy Back" connector end of the **RED** wire to it. Next strip 4mm of insulation from the bare end and connect this to the "**+**" terminal on the BW-8 terminal block.

FITTING THE ALERT OPTION: If your buzzer does not have 1/4" spades, remove the Faston connectors from the **ORANGE** & **GREEN/BLACK STRIPE** wires & use a suitable method to make the connections. Find a location for the buzzer. Connect the Faston connector end of the **ORANGE** wire to the positive terminal of the buzzer, connect the bare end to the "**AT**" terminal on the BW-8 terminal block. Connect the Faston connector end of the **GREEN/BLACK STRIPE** wire to the negative terminal of the buzzer, connect the bare end to the "**A-**" terminal on the BW-8 terminal block. Maximum current is 50mA.

Using the "Piggy Back" connectors.
1. Locate correct terminal for connection.
2. Remove wire connector from terminal.
3. Fit "Piggy Back" connector to terminal.
4. Reconnect existing wire to "Piggy Back"
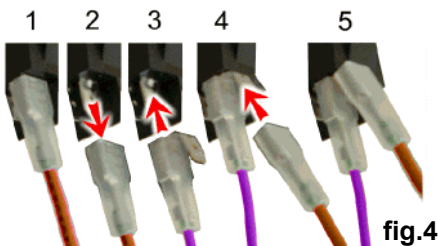5. Completed terminal connections.

fig.4

INSTALLATION

The "**AL**" terminal provides a 10 minute ALARM output (switched positive, 50mA max). This can be connected to the boat's main alarm or a GSM communicator. If you require the ALARM output option connect the **BLUE** wire to the selected device. Connect the other end of the **BLUE** wire to the "**AL**" terminal on the BW-8 terminal block.

The inhibit option stops the recording of pump activations and disables the ALARM output, while still allowing the ALERT output to function.

> If the inhibit option is not used, or if the inhibit wire is connected, but power **is not** applied to it, an alarm activation will trigger both the ALERT and ALARM outputs. If the inhibit wire is connected and power **is** applied to it, an alarm activation will trigger only the ALERT output.

The inhibit function works by applying +12/24 Volts DC to the "**SW**" terminal of the BW-8. Depending on the users requirements, there are several ways to use this option:-

If you want to stop recording pump activity while the boat is under way (e.g. to avoid known bilge pump operation caused by leaking shaft stern gland seals), connect the inhibit wire to the engine ignition accessory terminal or to another circuit that is only live when the boat is under way.

If bilge pump operation is caused by frequent washing down of the bilges, you should consider connecting the inhibit wire to a circuit such as a lighting circuit in the bilge area.

If you want to inhibit the recording function and ALARM output during the day, but need to restore full operation at night, especially the ALARM output (e.g. you cruise in daylight, sleep on board at night), then connect the **YELLOW** wire to a circuit that is normally on during the day, but always turned off at night (engine ignition accessory, saloon lighting, radio or navigation circuits may suit).

Do not connect the inhibit wire to a switch that may be left on inadvertently while the boat is unattended.

The inhibit wire should be protected with a fuse/breaker of no more than **6 Amp**, otherwise, fit an in line fuseholder with a fuse of any rating between **0.1 and 5 amp**. Connect the other end of the **YELLOW** wire to the "**SW**" terminal on BW-8 terminal block.

INSTALLATION

Finish off by tidying the wires into a loom/ harness with the cable ties provided, additional support for the wiring harness may be required on some installations. Fit the wire grip with the four #2 pan head self-tapping screws provided, being careful not to over tighten them. Replace the terminal cover, see **fig.5**. The installation is now complete. It would be a good idea at this point to check all of the wiring and connections before restoring power to the system.

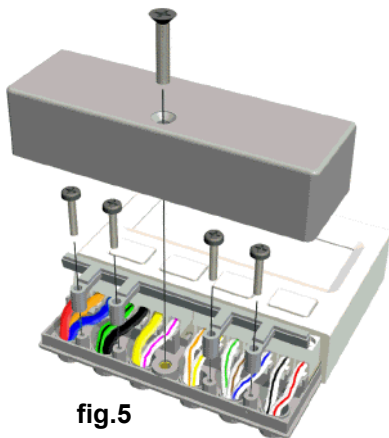The following pages will tell you how to set up the BW-8 to suit your application.

fig.5

On initial power up, the LCD screen will show the full character display for 2 seconds, then changes to one of the menu screens shown below. Screen #1 will be shown if the inhibit option is not used or not powered; Screen #2 shows if the inhibit option is powered. The backlight is illuminated.

DISPLAYED FOR 2 SECONDS ON POWER UP
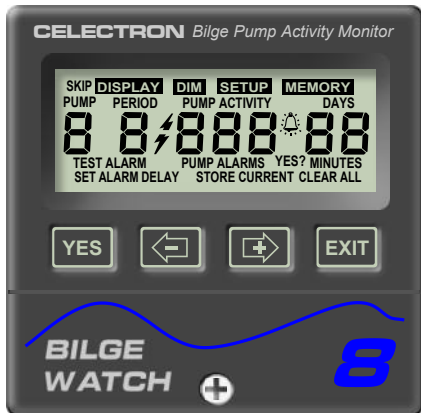
SCREEN #1
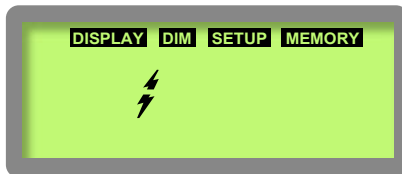
SCREEN #2

USING THE GUIDE

IMPORTANT NOTE: Manually switching the bilge pumps on, will register on the BW-8 and may trigger the ALARM and ALERT outputs, depending on the ALARM output delay set for each pump.

Helpful notes and tips shown in these boxes

Pressing any key will turn on the backlight.

YES ⬅ ➕ **EXIT** The four keys are used to access all functions via the LCD display

DISPLAY is flashing (highlighted). This is how highlighted options or numbers will be represented.

CELECTRON *Bilge Pump Activity Monitor*

DISPLAY DIM SETUP MEMORY
PUMP PERIOD

YES is used to select a high-lighted (flashing) option.
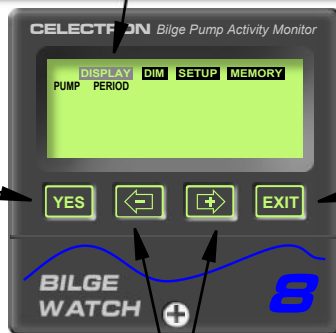
EXIT is used to leave a display (without saving any changes). Also turns off the alarm.

BILGE WATCH ➕ **8**

⬅ and ➕ are used to move between options. The highlighted option flashes. They are also used to change the value of a highlighted (flashing) number.

To set up the BW-8 to your boat carry out the following steps:

1. ACCESSING THE MAIN MENU   **page 8**
2. Set **DIM LEVEL** (back-light brightness)   **page 9**
3. **MEMORY - CLEAR ALL** (clear power fail flag)   **page 10**
4. **SKIP PUMP** (skip unused pumps)   **pages 12 & 13**
5. **SET ALARM DELAY** (for each pump)   **pages 12 & 14**
6. **TEST ALARM** (tests ALARM and ALERT output)**pages 12 & 15**

One of the following displays will be shown (pump activity will add additional digits and symbols) :
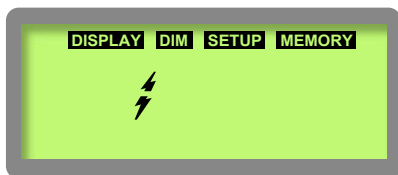
Display symbols:

DISPLAY   DIM   SETUP   MEMORY

These are the four main menu options.

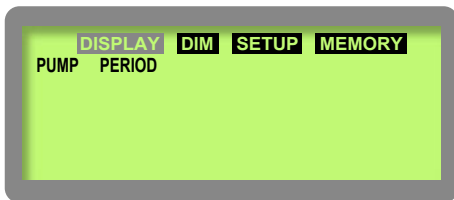⚡ Power fail flag - a break in the power supply has occurred.

Ꮧ Attended mode - inhibit is on.

🔔 Bell symbol - various functions.

Press **YES**

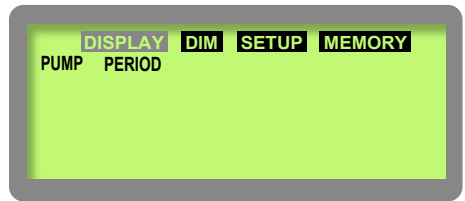In **main menu,** with the DISPLAY option highlighted (flashing)

Power fail flag not shown here, but it will be added to most displays following a power up or power failure.

Press ⬅ or ➡ until the required main menu option is highlighted.

Press **YES** to select the highlighted option.

Follow the instructions on this page to adjust the backlight brightness.

First access the main menu.

DISPLAY **DIM** **SETUP** **MEMORY**
PUMP PERIOD

Highlight DIM option

PRESS **YES** ⇦ ⇨ EXIT

DISPLAY **DIM** **SETUP** **MEMORY**

4

SET

Select DIM option

PRESS **YES** ⇦ ⇨ EXIT
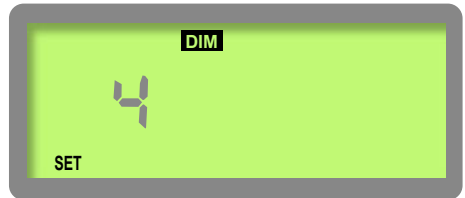
In ALL DISPLAYS, EXIT is used to go back.

DIM

4

SET

Change DIM level 1-8
(8 is maximum brightness)

PRESS YES ⇦ ⇨ EXIT
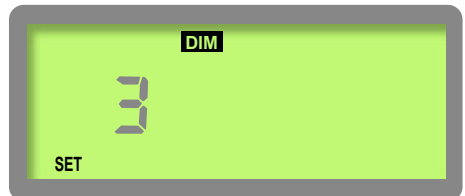
Pressing EXIT now would exit without saving the altered dim setting.

DIM

3

SET

Set new DIM level

PRESS **YES** ⇦ ⇨ EXIT

Display returns to main menu options.

This clears the current plus the 3 history period memories. Also clears the power fail flag.

First highlight the MEMORY option in the main menu

| DISPLAY | DIM | SETUP | MEMORY |

STORE CURRENT CLEAR ALL

Select MEMORY option

PRESS **YES** ⇐ ⇨ EXIT

WARNING! Be careful when using this option, you could accidentally wipe out all of your recorded information.

MEMORY

STORE CURRENT **CLEAR ALL**

Highlight CLEAR ALL

PRESS YES ⇐ **⇨** EXIT

MEMORY
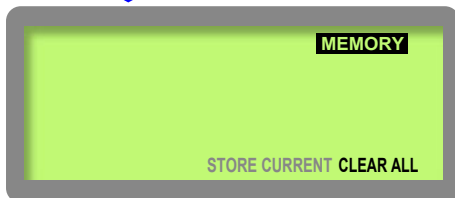
STORE CURRENT CLEAR ALL

Select CLEAR ALL
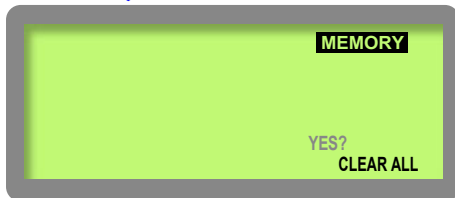
PRESS **YES** ⇐ ⇨ EXIT

After confirming CLEAR ALL, the display will return to the MAIN MENU - DISPLAY option.

MEMORY

YES?
CLEAR ALL

Confirm CLEAR ALL

PRESS **YES** ⇐ ⇨ EXIT

The information stored in periods 1,2 & 3 moves to 2,3 & 4. The information that was stored in period 4 is discarded. Period 1 (current period) is now clear, ready to begin a new period.

PERIODS 2,3, and 4 are history periods, PERIOD 4 being the oldest.

First highlight the MEMORY option in the main menu

DISPLAY   DIM   SETUP   MEMORY

STORE CURRENT CLEAR ALL

Select MEMORY option (STORE CURRENT will be highlighted)

PRESS   YES   ⇦   ⇨   EXIT

MEMORY

STORE CURRENT **CLEAR ALL**
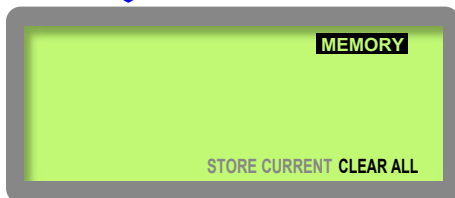
Select STORE CURRENT

PRESS   YES   ⇦   ⇨   EXIT

MEMORY
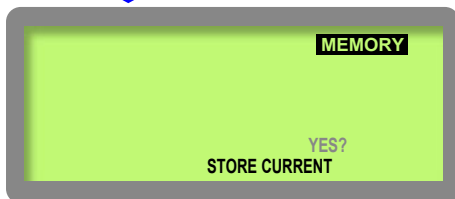
After confirming STORE CURRENT , the display will return to the MAIN MENU - DISPLAY option.

YES?
STORE CURRENT

Confirm STORE CURRENT

PRESS   YES   ⇦   ⇨   EXIT

The SETUP option in the main menu has three sub-options. This page shows how to access these.

First highlight SETUP in the main menu

SKIP DISPLAY DIM SETUP MEMORY
PUMP

TEST ALARM
SET ALARM DELAY

Select SETUP option

PRESS YES ⬅ ➡ EXIT

SET ALARM DELAY

SKIP   SETUP
PUMP

TEST ALARM
SET ALARM DELAY

SKIP PUMP

SKIP   SETUP
PUMP

TEST ALARM
SET ALARM DELAY

TEST ALARM

SKIP   SETUP
PUMP
                        🔔
TEST ALARM
SET ALARM DELAY
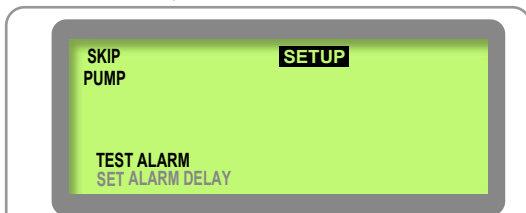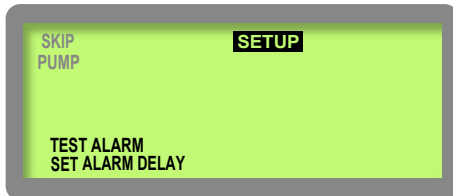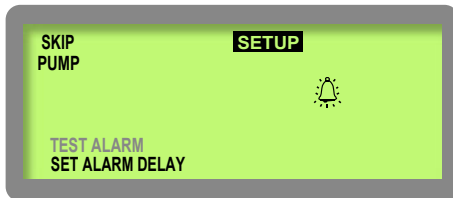
Use ⬅ + ➡ to highlight one of these options.
Then press YES to select.

The following pages describe how to use the three options.

Use this option to skip unused pumps.

First highlight SKIP PUMP in the SETUP sub-options

```
SKIP                    SETUP
PUMP


        TEST ALARM
        SET ALARM DELAY
```

Select SKIP PUMP

PRESS YES ⬅ ➡ EXIT

```
SKIP                    SETUP
PUMP
8                        On
```
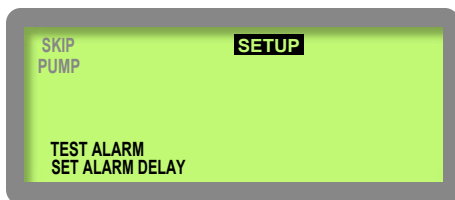
SKIP PUMP starts with PUMP 8. Skip the highest numbers first. PUMP 1 cannot be skipped.

Change pump number

PRESS YES ⬅ ➡ EXIT

Select pump

YES ⬅ ➡ EXIT

```
SKIP                    SETUP
PUMP
3        OFF    On
```
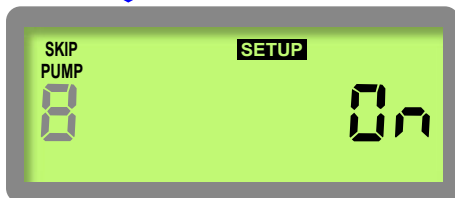
Use this menu sub-option to reinstate a pump.

Highlight pump ON or OFF

PRESS YES ⬅ ➡ EXIT

Confirm setting

YES ⬅ ➡ EXIT

A pump set to OFF will not show in displays other than SKIP PUMP.

Use this option to set the alarm output delay for each pump.

On entering the SETUP menu, SET ALARM DELAY is highlighted

SKIP
PUMP
                          SETUP

TEST ALARM
SET ALARM DELAY

Select SET ALARM DELAY

PRESS YES ⬅ ➡ EXIT

PUMP
1
                          SETUP

On 🔔 06

ALARM DELAY   MINUTES

Change pump number

PRESS YES ⬅ ➡ EXIT

Select pump

YES ⬅ ➡ EXIT

If a pump is active when its alarm delay is set, the activation is regarded as a new activation with the new alarm delay applied.

PUMP
3
                          SETUP

On 🔔 05

SET ALARM DELAY   MINUTES
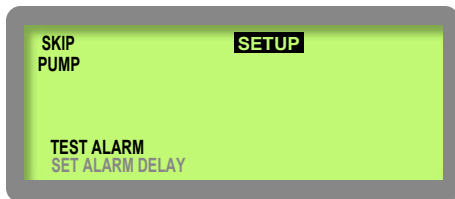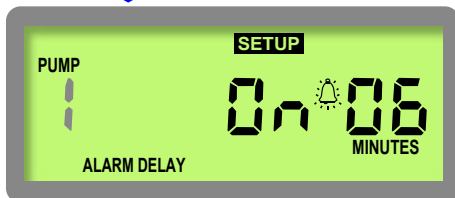
Change alarm delay

PRESS YES ⬅ ➡ EXIT

Confirm setting

YES ⬅ ➡ EXIT

ALARM DELAY SETTINGS 0,1,2,3,4,5,6,7,8,9,10,15,20,30,60 minutes, or OFF
0 = ALARM OUTPUT WITHOUT DELAY
OFF = NO ALARM OUTPUT

Use this option to test the alarm output.

First, highlight TEST ALARM in the SETUP sub-options

```
SKIP                          SETUP
PUMP
                                 🔔

TEST ALARM
SET ALARM DELAY
```

Select TEST ALARM

PRESS **YES** ⬅ ➡ **EXIT**
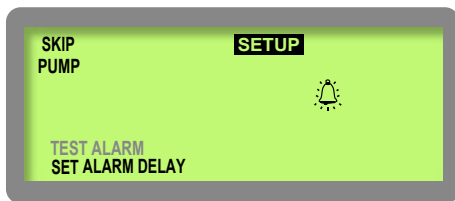
If INHIBIT is on, only the ALERT output will be activated during TEST ALARM.

```
                              SETUP
                                 🔔


TEST ALARM
                  BACKLIGHT FLASHING
```

END TEST

PRESS **YES** ⬅ ➡ **EXIT**

The ALARM & ALERT outputs are limited to 10 minutes duration, or until **EXIT** is pressed.

If an ALARM output trigger occurs and **EXIT** is pressed to stop the ALARM output, all keys are disabled for a few seconds - this stops accidental clearing of the ALARM output information on the display.

If the ALARM output is triggered while the user is accessing the BW-8, the unit automatically jumps to the ALARM output information display. After acknowledging the ALARM output notification (see page 18), the user may manually return to the menu option that they were accessing.

Use this option to view the recorded data.

First, go to the main menu - DISPLAY is highlighted.

| DISPLAY | DIM | SETUP | MEMORY |
| PUMP | PERIOD |
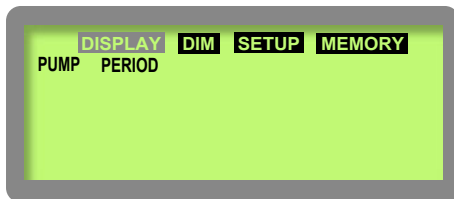
Select DISPLAY option

PRESS　[YES]　[⇐]　[⇨]　[EXIT]

The BW-8 will automatically sequence through the PUMPS. While PUMP is highlighted, pressing [⇐] or [⇨] will manually change pump.

| DISPLAY |
| PUMP | PERIOD | PUMP ACTIVITY | DAYS |

1　1　020　28

Manually change pump

PRESS　[YES]　[⇐]　[⇨]　[EXIT]

While cycling through the pumps, activations are shown first, then the pump ALARM output activations (if any).
DAYS is the current period length.

| PUMP | PERIOD | | DAYS |

2　1　004　28

PUMP ALARMS

🔔 ALARM output activations have occurred for this pump.
🔔 This pump caused the last unattended ALARM output activation.

Use this option to view the history periods for a pump.

First, in DISPLAY - VIEW CURRENT PERIOD, manually change the pump number, or wait until the required pump is displayed.

DISPLAY
PUMP PERIOD   PUMP ACTIVITY   DAYS
1   1   020   28

To manually change pump

PRESS YES ⬅ ➡ EXIT

While PUMP is highlighted, pressing YES will move to the PERIOD select option of the display for the pump number shown on screen.

DISPLAY
PUMP PERIOD   PUMP ACTIVITY   DAYS
8   1   080   28

Go to PERIOD select

YES ⬅ ➡ EXIT

DISPLAY
PUMP PERIOD   PUMP ACTIVITY   DAYS
8   1   080   28

In PERIOD select, use ⬅ & ➡ to view history periods.

Change period number

PRESS YES ⬅ ➡ EXIT

DISPLAY
**PUMP PERIOD   PUMP ACTIVITY   DAYS**
8   2   024   14

When comparing pump activity in history periods, also take into account the length of the periods (DAYS count).

Go back to pump select

YES ⬅ ➡ EXIT

If no key is pressed for 2 minutes, the backlight turns off to conserve power. The main menu options are displayed. The 'A' for attended (inhibit on) and the power fail flag may also be shown.

DISPLAY DIM SETUP MEMORY

DISPLAY DIM SETUP MEMORY

A ⚡
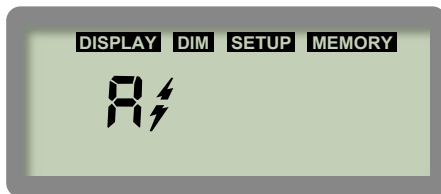
If a key is pressed, the back-light switches on.
If a pump becomes active, the backlight switches on and the display changes to:-

The pump number, 'On' and pump run time are displayed. Active pumps are shown in sequence. A 🔔 is displayed if the activation caused an ALARM output activation.

DISPLAY DIM SETUP MEMORY
PUMP
3   On 02
                    MINUTES

If a pump triggers the ALARM output, the display will show the pump number, pump run time and a flashing 'AL', 🔔 and backlight while the ALARM output is active. Press EXIT to stop the ALARM output.
If the user is accessing the BW-8 when an ALARM output is triggered, the display changes to this screen.

DISPLAY DIM SETUP MEMORY
PUMP
4 A⚡ AL 🔔 04
                    MINUTES
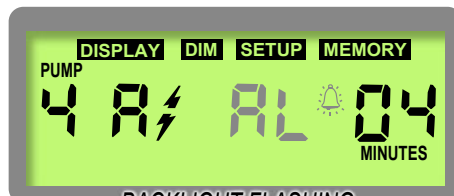
BACKLIGHT FLASHING

If ALARM output triggers occur while you are absent from your boat, the last ALARM output notification stays on the display until you return and acknowledge it.

DISPLAY DIM SETUP MEMORY
PUMP
1   ⚡   AL 🔔 04
                    MINUTES
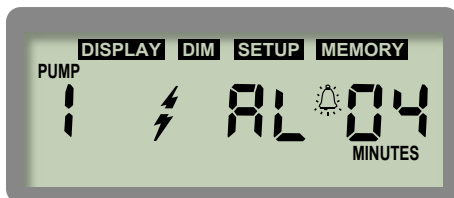
Press **YES** twice to turn on the backlight and acknowledge & clear an ALARM output notification. The BW-8 returns to the main menu.

GETTING THE MOST FROM THE BW-8

Using the ALARM output delay setting:

An ALARM output delay can be set for each pump:- "OFF" (no ALARM output trigger), "ON - 00" (instant ALARM output trigger) or "ON" + a delay time of:- 1 to 10, 15, 20, 30 or 60 minutes. Set the delay time to suit your boats specific requirements and safety needs. If your boat is normally dry, low delay settings will suffice.   If you have an area of the bilges which has a known acceptable water intake, set the delay for the pump that serves that area so as to avoid false alarms.

How to interpret the data:

The BW-8 will show the complete log of pump and ALARM output activity for the current period. By comparing the number of pump activations and ALARM output activations with previous periods, taking into account the length (DAYS count) of the periods being compared, increased activity trends can be detected. It is recommended that you store the current data and start a new period at regular intervals, from one week to three months.

When the boat is attended:

If required, the inhibit option can be used to disable the <u>recording</u> of activations and ALARM outputs; the ALERT output will still be active.

If a pump becomes active, the backlight will illuminate. The active pumps are displayed in sequence with the run time for each shown in minutes. Getting a feel for each pumps activity pattern under different boat operating conditions, will give an early warning of developing problems. Watch out for extended run-times or increased activity - either could be a sign of a worsening leak. Remember, if the inhibit option is activated, the BW-8 will display, but not record pump activations.

TOTAL SYSTEM RESET: To restore the BW-8 to its factory settings and clear all its memory - disconnect power then hold down all keys while reconnecting power. Release keys after 3 seconds.

ERROR MESSAGES: If the BW-8 displays an 'E' letter and a number, an error has occurred. The BW-8 will automatically attempt to clear the fault. If the error message does not clear, disconnect power to the unit. Check the power supply integrity and voltage level (12-24v). Restore power while carrying out a TOTAL SYSTEM RESET (see above). If the error message persists, contact your dealer.

GETTING THE MOST FROM THE BW-8

Example scenario:

Your boat is moored at a marina and during the winter, you check on it about once a month. On each visit, the BW-8 shows that the engine compartment bilge pump has operated once or twice for a short period, not enough to set off an alarm. The boat has twin shafts and you assume the bilge pump activity is due to the stern glands. **The fact that the recorded activity is consistent and minimal is reassurance that the leak is not worsening.** The rest of the boat is dry.

   On the first visit during spring, you find that pump 4 in the forward head has operated once. *Unusual*, you think. **But you assume that some rainwater from a recent storm had found its way in.** *You ignore it*.

   On the next visit the BW-8 shows that pump 4 has been on twice. Again you come up with a logical explanation (after all, the forward compartment is awkward to access). *Again, you ignore it*.

   On the following visit, the BW-8 shows that pump 4 has operated 5 times. Now, you have **real concerns** and no justifiable excuses. You must check it out. Inspection reveals that a skin fitting is weeping a steady trickle of water into the bilges! You organise a lift out with the marina.

   While replacing the skin fitting you notice that the 1/4" (6mm) bolts have eroded to about half their original size and you realise that before long the weep would have become a torrent when the fitting came off completely leaving a 2" (50mm) hole, 2 feet (600mm) below the water line. That is close to 3500 gallons (15000 litres) per hour of water coming on board; assuming a 500 gph pump (ignoring any depreciation for head), that's seven gallons in for every gallon that the pump can get out!

The reason for the eroded bolts? *Yes the sacrificial anodes should have been replaced last season!* (For eroded bolts try substituting, Perished hoses/caulking, cracked skin fittings/hulls, badly fitting hatches etc, etc.)

JUST AS WELL YOU FITTED THE BW-8

If the BW-8 Bilge Pump Activity Monitor warns you of a problem that saves your boat from sinking, please visit our website and send us an E-mail describing the circumstances.
By publishing this information on our website, other boat owners may benefit from your experience.

www.celectron.co.uk

TROUBLESHOOTING

One of the pumps is not showing on the display. The pump has been skipped. Go to SETUP - SKIP and set the pump to 'ON'.

The unit displays, but does not record activations. The INHIBIT connection is enabled. Disable INHIBIT.

One pump does not trigger an alarm. Check its alarm output delay is set correctly. If set to 'OFF', it will not trigger the alarm output.

How do I clear the power fail icon? Once a power fail occurs, it is recorded with the current period. See page 10 (CLEAR ALL) & 11 (STORE CURRENT).

In DISPLAY MODE, the pump number increases without me pressing a key. For ease of use, the BW-8 automatically sequences through the pumps in DISPLAY, but the arrow keys can also be used to manually step through the pumps.

The display is showing an alarm output notification but I know there is more than one pump active. Why isn't the unit showing all the active pumps in turn?

Acknowledge the alarm output notification by pressing the YES key (to enter MAIN MENU). Press EXIT and the BW-8 will cycle through all active pumps.

One pump keeps setting off the alarm but I know about the leak that is causing it and I am not concerned. Increase the alarm output delay time to a more acceptable.

A pump, that I know is running, is not shown as active. It is not skipped. The pump must run uninterrupted for 5 seconds for the instrument to recognise the activation as valid. If the pump runs longer and is still not shown, check the wiring connection.

WARRANTY

Celectron Ltd. warrants this product to be free from defects in material and workmanship for a period of 12 months.   Warranty claims should be made through the original retailer.

The warranty does not cover damage caused by: misuse; improper installation or accidental damage.

Celectron Ltd.'s liability for any warranty claim will be limited to the replacement of the product.

This guarantee does not limit the purchaser's consumer rights. If the local law does not state anything to the contrary, the rights of the purchaser are limited to this guarantee.
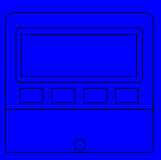
CELECTRON
Marine Safety

BILGE WATCH BW-8 BILGE PUMP ACTIVITY MONITOR

SPECIFICATIONS

Monitors 1 to 8 Pumps
Skip unused pump user option
1 to 99 Day (3 month) , user selectable data period, (store up to a full years data)
Records up to 999 pump activations and alarm outputs for each pump
5 Second delay before pump activation is recorded (eliminates false readings due to rocking motion caused by waves)
Records activations and alarm outputs for the current period plus 3 history periods
User selectable alarm output delay time for each pump (0-60 minutes / OFF)
10 Minute alarm output timer
Alarm output indication with pump run time displayed
Illuminated display and keys with user set brightness (Dim)
Inhibit function disables data recording and alarm output (alert remains active)
Display automatically cycles through active pumps showing pump run time
Power fail indicator recorded with period
User settings and data stored in non-volatile memory
12-24V DC Operation
Power consumption: Monitoring 3mA 12-24V   Max (alarm on) 160mA 12-24V
Alert output: Switched positive output   12/24V (+) 50mA max
Alarm output: Switched positive output   12/24V (+) 50mA max

Control unit:
      Sheltered use only
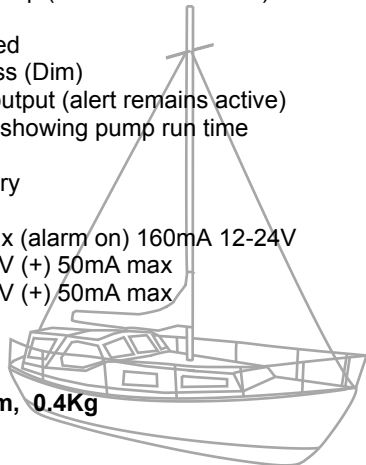   **Dimensions & Weight:**   **- 80x80x23mm, 0.4Kg**
      Height above panel: **- 18mm**
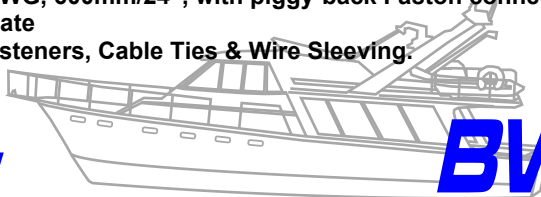
Installation Kit:
      14 wires, 16AWG, 600mm/24", with piggy-back Faston connectors
      Drilling template
      Hardware: Fasteners, Cable Ties & Wire Sleeving.

BILGE
WATCH
BW8