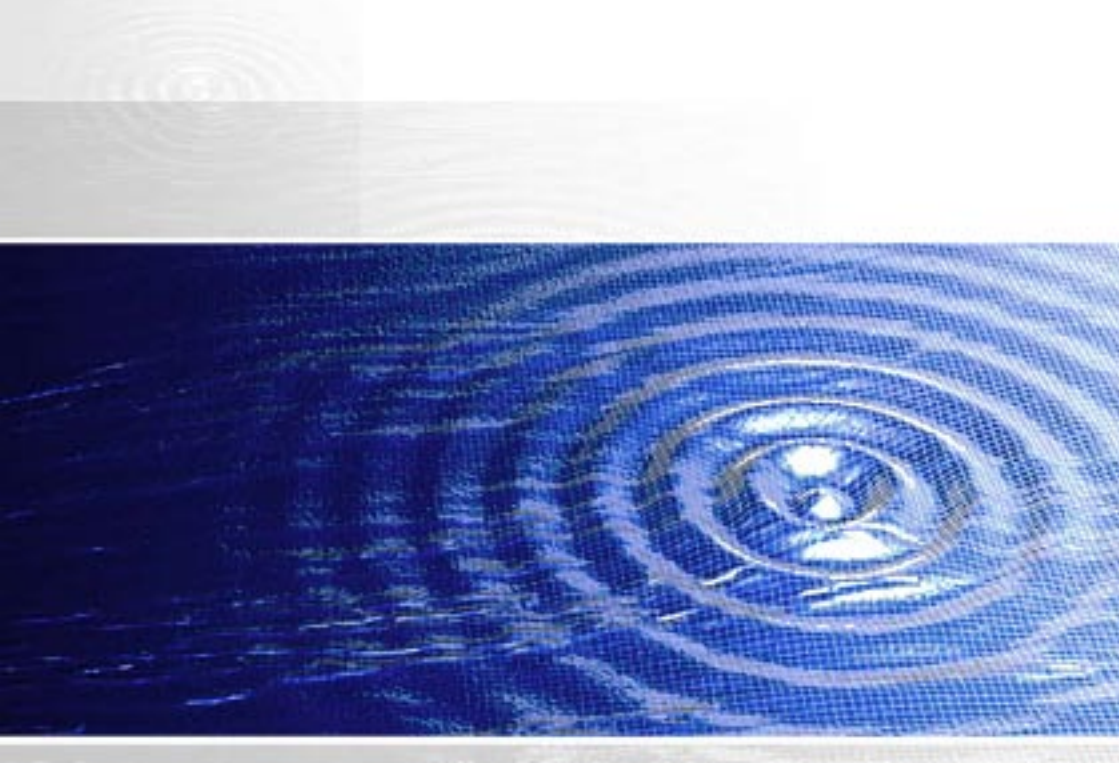


EMC Technologies Report Number: M040642_Cert_Tx

APPENDIX K – User Manual



MOBiLert Crewsafe 7000 Series



Installation and Operation Manual

MOBiLert Systems
Ver. 0.1 Prerelease

FC Compliance information statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

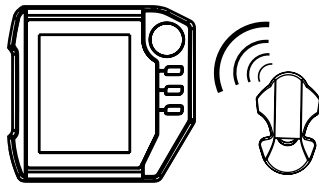
NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

WARNING

Any changes or modifications not expressly approved by MOBilarm Ltd. could void the user's authority to operate this equipment



MOBiLert Crewsafe 7000 Series

Installation and Operation Manual

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Section One

1.0 Introducing your MOBILert System

1.1 What is MOBILert?

MobiLert is a dedicated system designed to help prevent loss of life at sea. The system uses personal radio transmitters to maintain a constant link with a central Console Unit. The moment a PTX is out of radio range for more than 7 seconds, an alarm is sounded and the exact GPS position is logged. The MobiLert Console will then automatically switch to a track back screen giving the direction and range back to the victim.

1.2 How it keeps you safe

Every PTX sends out a constant radio heartbeat to the Console. Providing your crew is wearing a PTX you can be sure that they are within about 30 Meters of the boat. MOBILert is an active system. Any flat batteries, broken PTXs or failures in the transmission system will result in an alarm.

1.3 What you have to do

As the Captain, crew safety is your responsibility. This system will only work if it is turned on and all of your crew are wearing PTXs. Make sure that PTXs are easy to find, you have enough on board and every one knows how to respond to an MOB emergency.

1.4 What MOBILert will do

MOBiLert will give the Captain piece of mind that all crew are safely onboard. We have put a lot of effort into making the PTX small, tough and easy to wear. Providing they are worn properly by the crew, the system will keep track of the PTXs proximity and the battery condition. In the event of a MOB Emergency, MOBILert will log the position that the PTX went missing and provide the helmsman with instructions on how to get back to the MOB position.

1.5 What MOBiLert can not do

MOBiLert can not replace good safety practices and procedures. MOBiLert won't stop people falling overboard, can't stop them drowning and has only limited ability to find them when they are in the water. MOBiLert should be considered the last line of defense

Section Two

Installing for best performance

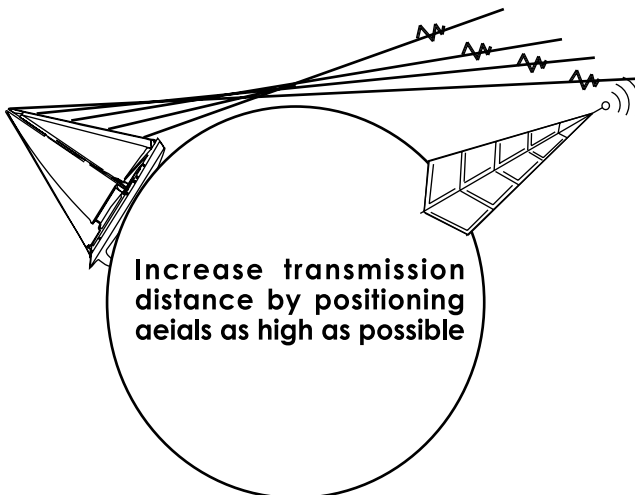
2.1 A short lesson in radio frequency propagation.

The biggest benefit of the way we have done things is that the system is fail-safe. Any prolonged breaks in the radio link will result in an alarm. So, to make it free of false alarms we need to put some thought into the installation. The system uses a radio link in the UHF range so the link needs to be more or less "line of sight". This is similar to the ships VHF radio. (At UHF frequencies, the signals can bounce off metal and water which means that occasionally it can see around corners but we don't want to count on it.)

The other property of the system is that it has some ability to see through Fiberglass and wood. It is blocked completely by aluminum and steel so if your boat is made from these materials you have to be very careful where the Console is mounted and look at using Repeater Antennas to cover any blind spots.

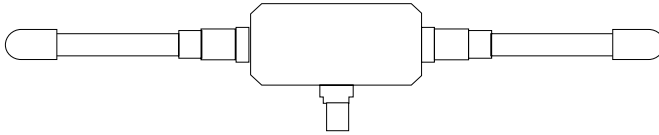
The higher you are the further you can see. Just like the Ships VHF radio, the higher you can install the Console's antennas the stronger the link to the Pendants will be. However, you still have to be able to read the Console particularly in a MOB Emergency as it will tell you how to steer back to the MOB location.

Once the boat gets around 40 feet and above the height of the Console's antennas becomes even more important.



2.2 Using the External Dipole Antenna

Your MOBi-Lert kit contains an external Dipole antenna.



The purpose of this antenna is to make sure that the system remains free of false alarms on large boats or for difficult installations.

The Dipole antenna connects to the Console via the centre RP SMA connector and need to have the self vulcanizing tape wrapped around the SMA connector to protect the finish.

The three meter cable length is enough so that it can be mounted as high as possible inside the vessel. The external Dipole is NOT waterproof so it must be used inside the cabin.

The self adhesive tape will stick to most dry wood, plastic, fiberglass or glass surfaces. The cable will need to be supported with "P" clips or self adhesive mounts to take the strain off the antenna.

The antenna will not work if it is mounted against steel or aluminum surfaces.

It is really important that the antenna is orientated properly.

You have two options depending on your specific circumstances.

1. Mounting it vertically so that the ends point up and down.
2. Mounting it horizontally so that the ends point to the Port and starboard sides. (Not to the bow and stern).

It is possible that for smaller boats it will not be necessary, but it is possible to fit it anyway.

If there is no way to get the antenna up high and out of the wet area, (Possibly for centre cockpit boats) then contact Mobilarm for some external waterproof antenna options.

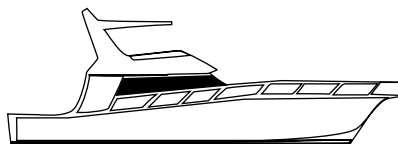
2.3 Finding the sweetspot

Motor Yachts

If the boat is a Fly bridge cruiser, installing the console by the steering station on the fly bridge will provide the best coverage of the decks fore and aft. You may need to experiment with positions to get the best coverage of crew below in the saloon. Even though it is unlikely that anyone can fall overboard from inside the saloon, it will be more convenient for your crew to not have to worry about taking Pendants off when going below.



For all other Motor cursers, the steering station usually has a good view of the decks and is in exactly the right place if a MOB track back is needed. In all cases use the bracket mount to keep the unit clear of other dash board mounted gear.

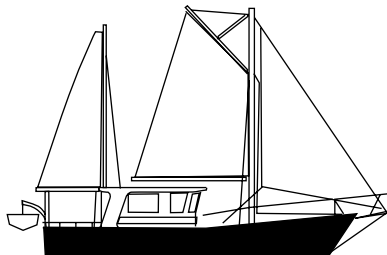


If possible, the best position can often mounted on the wheel house roof. In this case reverse the bracket.

Sailing Yachts

Yachts with a “Dog House” or Wheel house.

Just like the Motor yachts, mount the Console as high as possible in front of the steering station. Use the bracket if possible and keep the Console clear of other metal instruments and the compass.



Centre and Aft cockpit boats.

The installation location is a little more critical particularly if the boat is 40 feet or longer. The challenge here is to get the Console as high as possible but protect it from physical damage.

Mounting it on the steering binnacle will provide good coverage and if it is high enough, no problems right up to the bow.

If you have a dodger and it is possible to mount it above the companion way then this works really well. Good results also come from mounting into the "Garage" above the companionway. Use the Bulkhead Kit supplied and mount it as far away from the other instruments in the garage as possible.

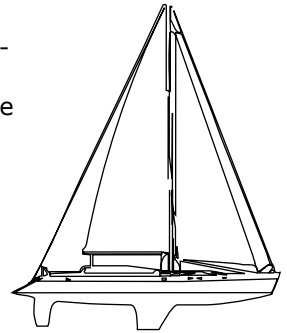
If a location on the deck above the companionway is not an option then the next best place is beside the companionway and as high as possible. Use the bulkhead mount to keep it flat against the cabin and away from your other instruments. If necessary move an existing Log or Wind instrument down to give the Console the highest position. Wherever you put the Console make sure that it is clear of halyards and sheets. We have built it tough but it won't be able to anchor 2000 Sq feet of spinnaker.

Mounting it in the foot well of the cockpit may work for small boats and cockpit crew but you are likely to get false alarms if you have people working on the foredeck. Test the unit first by putting it in the chosen location and make sure that you have a reliable link to the Pendants at the extremities of the boat. Only if all is OK start drilling holes.

Mounting below decks.

As mentioned, the radio waves sent by the Pendants do have some ability to penetrate Fiberglass and wood. It is possible to mount the Console below decks and get reliable coverage. Pick a location that is away from metal like fridges and SSB radios and is in as much clear air as possible.

Remember, if you do get a MOB Emergency you will need to find a way to relay the track-back information to the helmsperson.



2.4 Testing for reliability

BEFORE YOU DRILL ANY HOLES...

Go through this procedure. It's quick and may save some heart-ache and filler.

Setup:

1. Make sure that the Pendants are charged and operating.
2. Temporarily locate the Charger in the area you *intend* to permanently mount it. (See the section on installing the charger)
3. Use tape (double sided), Blue Tack or a volunteer to locate the Console in the place you have figured out is the best.
4. Temporarily connect power to the Red and Black wires of the Console Power cable. (Use a cigarette lighter adapter or even 12Volts worth of torch batteries)
5. Plug in the power cable (Don't worry about hooking up the GPS yet).
6. Switch the Console on and wait until it changes to the Pendant Status screen.
7. Attach a Pendant to the Belt Clip of some volunteers.
8. Leave one Pendant in the Charger.

Procedure:

Making sure that the Pendants can be read from the Charger

Identify the Pendant that is in the Charger.

Using the signal strength meter (Series of vertical bars beside the Pendant Status) make sure that you get 4 bars showing.

Confirm that the Pendant that is in the Charger is showing "Charging" on the Console. Take it out and confirm that it changes to "Safe" and put it back as see that the Console can read it as "Charging" again.

If that bit is OK then proceed.

Otherwise, as a first option, try and find a better place for the charger. As a last resort, relocate the Console.

Making sure that that the Pendants can be read from all over the boat. Ask your volunteers to go to all of their usual places and stop. Looking at the display check the signal strength indicators (vertical Bars) and look for any Pendants that drop from 4 bars to 3 or more. If after about 10 seconds all 4 bars on every Pendant are showing then move onto the next test.

For the second test, ask the volunteers to move about the boat very slowly. Keep your eyes glued to the Console and look for any missing bars. The reason for the slow movement is that a "dead spot" might only be a yard wide and the system needs a few seconds to respond. Make sure that you cover extremes like the pulpit and crouching down at the anchor well.

If you don't get any dropouts then your location is good. As a final test, send a volunteer below decks. Make sure that they can at least get to the Charger unit without any losses of signal strength. Try other areas below decks to see what is possible. An engine room lined with lead based insulation is always going to be a big ask, so don't worry if this set off a MOB alarm.

2.50 Mechanical considerations

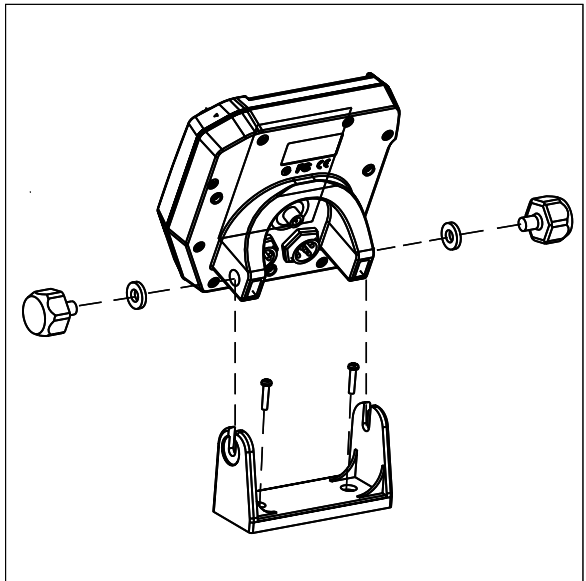
Unlike a GPS or fish finder, you don't have to look at the screen all of the time. MOBi-Alert will tell you when you need to look at it.

2.51 **Bracket Mounting**

The bracket needs to be mounted on a flat surface in a position that can be seen by the helm. Check that you have enough clearance behind the unit to mount the connector(s).

The Console can be tilted but not rotated so make sure that you can look as squarely on as possible. Use the two self tapping screws to mount into wood. Self tapers can also be used on fiberglass but metal thread screws and nuts are a better option. Either way, if it is a wet area then seal the holes with a good quality marine sealant before mounting the bracket.

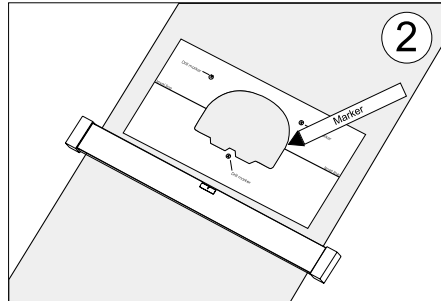
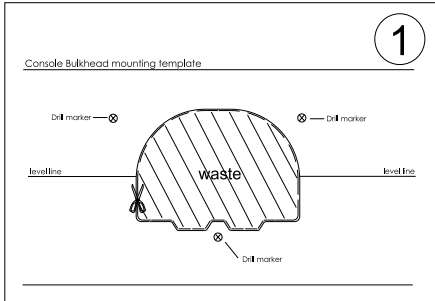
Slip the two neoprene washers onto the studs of the thumbscrews. Thread the two thumbscrews partly into the console and slide the unit into the bracket. Once seated in the bracket, adjust the angle and tighten the thumbscrews.



2.52 **Bulkhead Mounting**

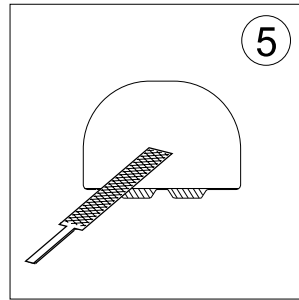
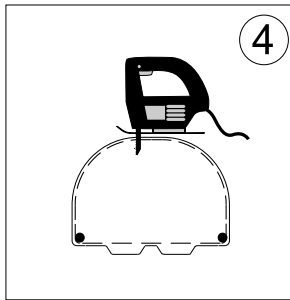
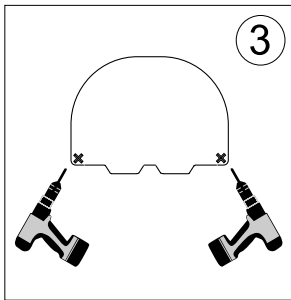
Once you have found the “sweet spot” using the procedure outlined above, find a location that is flat for at least 150mm x 150mm. Check that you have about 60mm of space behind

the bulkhead for cable clearance. If you need to confirm the location from the inside then drill a small hole (1/8th inch) in the centre of the proposed location and check that all is clear behind.



1. Find the mounting template supplied at the rear of this manual and remove from text. Using a scissors carefully cutout the waste section from the template.

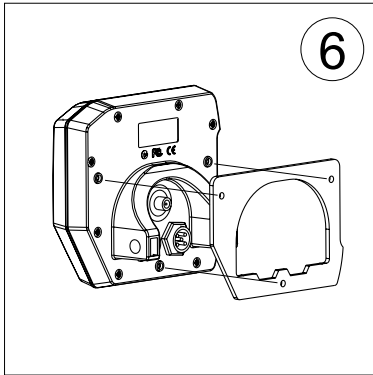
2. Use the level line on the template to get the template horizontal. Use some tape to hold the template in place and carefully draw around the inside of the template. Keep this template for step 8



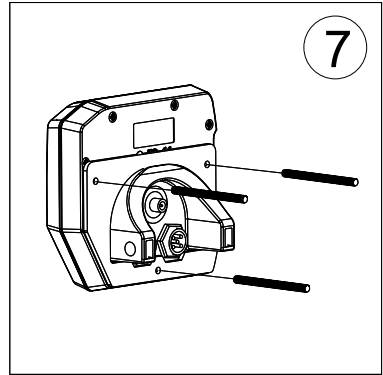
3. In each of the bottom corners drill a 1/2 inch hole.

4. Using a jig saw or something similar, cut out the centre section. It will probably be easier to cut straight across the bottom. Take a lot of care with the cutting. Clearances are tight along the base of the cutout.

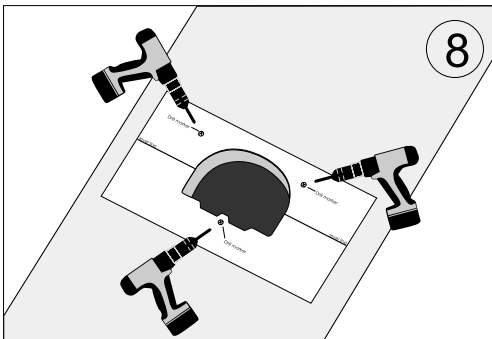
5. Use a file to remove material from the two notches at the bottom. As you are cutting and filing, continue to check the fit by offering up the Console to the hole.



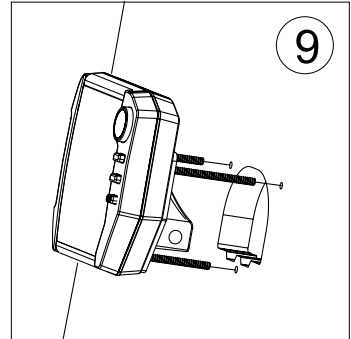
6. Find the foam sealing gasket and remove the adhesive backing. Lay the console face down on a bench. Apply the gasket sticky side down onto the back of the console. Take care with this job as the adhesive is a high quality and won't be too easy to re apply.



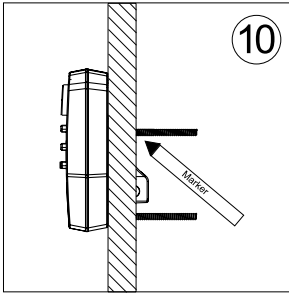
7. Once the gasket is on, thread in the 3 studs.



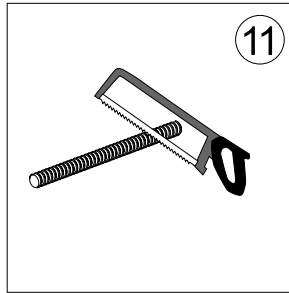
8. Offer the template up to the mounting surface and temporarily affix, ensuring the hole in the template and the hole in the mounting surface align with no obstructions. If all is OK then drill the mounting holes as marked on the template.



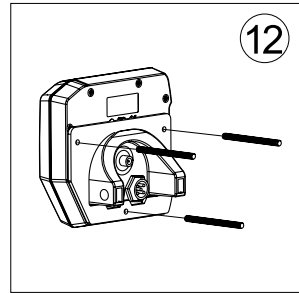
9. Offer the Console up to the hole and check that it fits nicely without catching on any sides. You should feel a bit of give as the gasket compresses.



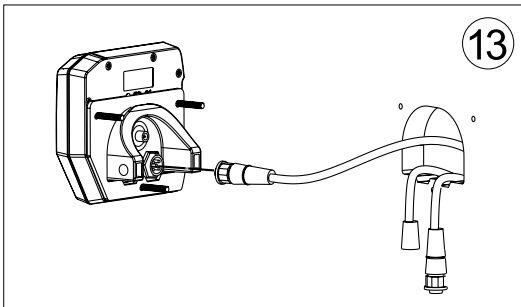
10. Mark the studs where they exit the inside of the bulkhead.



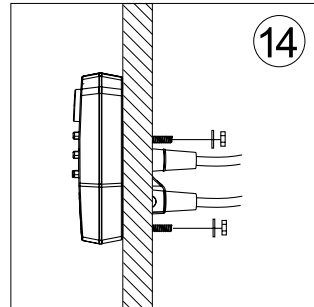
11. Remove the studs from the console, add about 15mm for the nut and washer and cut off the excess.



12. Re-apply the thread to the console.



13. Feed the cable(s) through hole and plug them in. Make sure that the locking ring on the connectors is seated home. (You should feel a solid CLICK)
Switch on the system and make sure that the display appears.
If you are using a separate GPS, confirm that the GPS is connected properly by checking for on screen warnings.



14. Place the Console into the hole and fit the brass washers and M4 nuts to the studs. Tighten these until they are firm and slightly compress the gasket. If the mounting surface is curved then you will not be able to seal by applying extra tension. (Make up a spacer to compensate for the curve)
DO NOT over tighten the nuts.
The brass inserts pressed into the plastic case will break out and possibly fracture the case. This may cause the Console to leak.

2.60 Electrical considerations

The MOB-ilert Console has two very sensitive receivers. Some care is required with the cabling to make sure that stray radio signals (noise) does not get into the system and swamp the Pendant transmissions.

2.61 Connection to essential services power

Some vessels (either by law or by choice) have a second battery dedicated to the ships radios. The principal behind this is that in the event of the main ships batteries becoming discharged or flooded, the ship can still use her radios to call for help.

These radio batteries are often sealed "Gel Cell" types and placed high above the waterline. If you do not already have this system it may be worth considering installing it.

If you do have this type of system and there are no regulations prohibiting other equipment being connected to the essential service battery then this is the ideal place to connect MOB ilert.

In the event of a serious event where the boat loses crew and power, the essential services battery will allow the remaining crew to issue a radio MAYDAY and be able to report the MOB position.

In addition, keeping MOB-ilert powered up keeps the track back active for crew recovery.

2.62 Connection to standard ships power

If a second battery is not an option then cable the Console up to the ships fuse or switch panel. A separate switch is not necessary as the Console has its own power switch. A separate fuse or circuit breaker is necessary to protect the ships power circuit. If you are connecting directly to the battery include a 1 amp inline fuse holder. (Use a marine grade part available from most marine retailers).

2.63 Keeping the cables out of trouble

Termination

The Console power / data cable is a multi purpose cable designed to do several things at once. If you are using the MOBi-lerT GPS then the Power cable will only need to be connected to the ships power and the remote Alarm. A connection to the ships GPS as well will require all three terminations. If you are planning to use more than just the power and external alarm wires it may be worth considering using a water resistant junction box. (These are usually available from Marine equipment retailers).

Using a junction box you can split the common earth lead to service the Console power, remote Alarm and also the ships GPS feed. Either way, any wire to wire splices should be soldered and sealed with silicon, Heat shrink tubing or self amalgamating tape. If possible, solder automotive crimp connectors if these are used for any part of the installation.

Routing the cables.

The digital signals sent by GPS are usually at low levels so it is important to make sure that the power / data cable does not pick up interference (noise) from other systems. In addition, the noise from some devices can jump across the internal protection circuitry and interfere with the sensitive receiver circuits in the Console.

Where possible, keep the Console power / data cable away from all these devices:

Radio power / antennas
Engine ignition
Engine tachometer
Alternator feeds
Fish finders' power and transducer cables.

Crossing noisy wires at right angles reduces a lot of problems otherwise a separation of about 10cm is usually good enough.

Before lacing the cabling into the boat, temporarily use tape to hold the Power / Data cable in location and turn all the other systems on. Satisfy yourself that MOBi-lerT works 100%.

If all is good then complete the installation by securing the cables with "P" clips and wire ties.

2.64 Connection of the External Alarm

Your MOBi-Lert kit contains one external piezo alarm.

It is essential that this alarm is connected into the system.

The console has an internal alarm but due to the complete waterproofing of the case the noise it produces will not be enough to attract attention outside a few meters.

The external alarm needs to be mounted in a dry area and a place that can be heard from the steering station. Try it out before drilling holes. Once the desired location has been found then complete the installation by securing the cables with "P" clips, self-adhesive clips and wire ties.

2.7 How the charger works

The charger is a microprocessor controlled system that stores, manages and charges up to 6 pendants at one time.

It uses electromagnetic fields to inductively charge the pendants and in this way avoids problems associated with metal contacts.

Signals sent by the charger are used to manage the pendants. The charger is able to put the pendants to sleep and wake them up again. The charger has only two power wires and no switches.

The LED indicator on the top of the unit will indicate the presence of adequate power and when a pendant shutdown is taking place.

2.8 Finding the best spot

MOBi-Lert will only protect your crew if they are wearing the pendants. Therefore it is really important that the pendants are kept fully charged and are easy to get to during normal boat operations.

The first considerations are to make sure that power is available and that charging pendants are within reliable radio range of the console.

The second consideration is for ease of use.

A location inside the cabin and near the main companionway is ideal. In this position people can clip on a pendant before stepping out into exposed areas. Mounting the charger in a place that can be easily seen also has advantages as the Capitan can visually check to see if enough pendants have been taken to cover the topside crew.

The pendant LEDs are pretty bright so that they can be seen in sunlight and consequently may be bright enough to disturb sleeping crew so a position that is not in direct view of the sleeping areas is desirable.

2.9 Testing for reliability

Once you have picked a spot that looks like it's a good fit, temporarily locate the charger in this position and install the pendants.

Power up the charger and make sure that the Console can reliability pick up all of the pendants.

(See section 2 for further details on commissioning the system.)



2.10 Mechanical considerations

Mounting on a Vertical surface

The charger is designed to be mounted onto a vertical surface like a bulkhead or beside the companionway.

The reason is that it needs to be vertical is that if it raining or the seas are running high, pendants and crew are likely to be wet. Placing a wet pendant into the charger will not bother the equipment but if the charger is mounted on a horizontal surface eventually the pendant bays will fill with water and dirt.

The charger can be mounted vertically with the power cable facing up or horizontally with the power cable coming from the left hand side.

<i>Mounting orientation</i>	<i>Internal mounting</i>	<i>External mounting</i>
	✓	✓
	✓	✗

Use the four 10G self tapping stainless steel screws to secure the charger firmly to the boat. Bear in mind that in rough seas crew may fall against it or use it to hold onto so make sure that it is really well fastened.

Self tapers can also be used on fiberglass but metal thread screws and nuts are a better option. Either way, if it is a wet area then seal the holes with a good quality marine sealant before completing the job.

2.11 Electrical considerations

Running the cable

Routing the cable can be done externally from the top or left hand side and secured to the boat with cable clips or P clips. Alternatively, the charger has provision for the cable to be concealed by running it through the bulkhead directly underneath where it exits the charger housing.

<<<<DIAGRAM>>>>

The cable needs to be terminated to a separately switched and fused supply of ships power between 11 and 28 volts. The switch is very important to the operation of the system so it needs to be readily accessible. A fuse or circuit breaker of 1 amp will sufficient to protect the circuit.

Make sure that any wire to wire splices are soldered and sealed with silicon, heat shrink tubing or self amalgamating tape. If possible, solder automotive crimp type connectors if these are used for any part of the installation.

Pendants

2.12 How the Pendants work

Each Pendant contains a microprocessor and a radio transmitter. During manufacture the microprocessor is given a unique identification code. The microprocessor's job is to manage the battery charging, perform diagnostics and transmit its unique code to the Console about once every second.

At one end you will see a large black ferrite core. This is used to supply power necessary to recharge the Nickel Metal Hydride batteries. At the other end is the high gain helical antenna and status LED. (See section 3 on what the LED tells you)

2.13 Making it easy for crew to use them

All crew have to wear Pendants to be monitored.

Turning this task into a habit that all of your crew will do automatically requires a bit of effort up front.

You will have to secure the Pendant clips to commonly used clothing and equipment and make sure that your crew never leaves the cabin without one.

2.14 Some options for wearing them

MOBi-Clip System

Each kit comes with two clips for every Pendant.

1. Lanyard clip is designed to be attached with lashing or webbing to equipment or hung around the neck
2. Belt clip that has belt loop moulded for flat attachment to equipment or to be worn on the belt.

Using the supplied clips will produce the best results. The reasons are as follows:

It allows for efficient radio transmission.

Attaching and removing is quick and positive

It is visible to the Captain and other crew

The Pendants LED can be monitored for battery status changes.

Alternatives to the Clip system

Keeping the Pendant in a pocket may work if the pocket is high like a top pocket or shoulder pocket. If you put the Pendant in pants pocket or inside your wet weather gear the RF signal tends to get soaked up by your body mass. You may get false alarms when crouching down at the anchor well for example.

Using a pouch (like supplied with rigging knives) will also work well as it keeps a small gap between your body and the Pendant.

Lanyard Clip

The Lanyard clip is primarily for attachment via webbing or lashing for equipment mounting.

Due to its lower profile it is also the simplest to wear using a neck lanyard.

WARNING: If you are wearing a pendant around the neck make sure that the lanyard can separate easily in the event that it gets snagged.

Belt Clip

The Belt clip is the most versatile for universal attachment.

In addition to slipping it on a belt, it is wide enough to fit over most safety webbing systems like those found on Personal Floatation Devices (PFD) and safety harnesses.

For almost all applications it is best if the Clip guides face down when you are wearing the equipment. The Pendant doesn't care and the clip is less likely to get caught on something.

Section Three

Using the system

3.10 Pendant Status LED

A multifunction LED in the front of the pendant will indicate to the crew any one of 5 states.

These conditions are:

- 3.11 Short Green flash once every 2 seconds:**
Battery good and the Pendant is transmitting
- 3.12 Short Red flash once every 2 seconds:**
Battery Low and Pendant is transmitting – Pendant needs to be recharged. (The crew will have up to 8 hours to recharge the Pendant.)
- 3.13 Long Orange flash once every 5 seconds:**
Indicates that the Pendant is in the Charger
Battery fully recharged and ready for use.
- 3.14 Red on hard:**
Indicates that the Pendant is in the Charger
Recharging is in progress.
- 3.15 LED is off:**
Two possible states
Pendant is in “sleep” mode and is not transmitting
Pendant batteries are completely flat

3.2 Charger Status LED

- 3.21 Long Green flash once every 3 seconds:**
Charger is powered up and operating normally

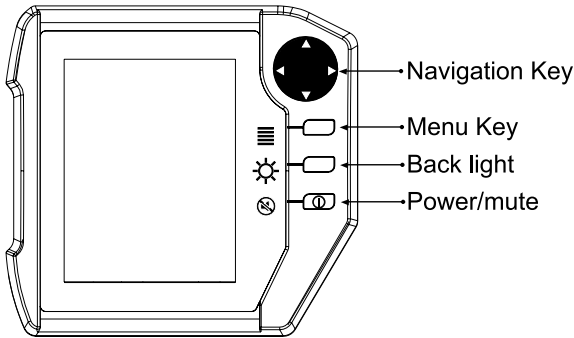
3.22 Quick alternating Red and Green flash.
(Only lasts for about 5 seconds.)

Power has been removed from the Charger and the
Charger is putting any installed Pendants into sleep mode

3.23 LED is off:

Power to the charger is off.

3.30 Controls on the Console Unit



The Console uses 7 buttons to control all features.

These buttons are from top to bottom.

4 Way menu navigation key

Menu access key

Screen backlight key

Power / Alarm mute key.

Of these 4 keys, the Power / Alarm mute key is the only one that has dual functions.

3.31 What the buttons do



4 Way menu navigation key

The Navigation button allows you to move through the menu items.

Each menu page will have arrow instructions to help you find your way.



Menu access key

The Menu key will take you directly into the systems menu screens. Once in the menu systems, continually pressing this key will take you back to the main menu.

(More on the Menu's later.)



Screen backlight key

Pressing this key will adjust the level of the screen backlight. It operates in a continuous loop from dimmest to brightest and around again.



Power / Alarm mute key

Pressing and holding this key for one second will power the Console up. When powered up, pressing this key again will bring up the Power Off menu.

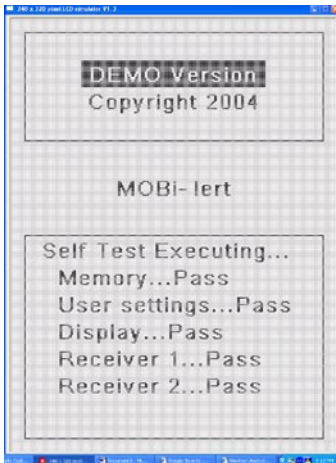
In the event of an active alarm, pressing this key will silence the continuous alarm and put the alarm into an active reminder state.

3.32 Powering up the display

Press and holding the power key for one second and the Console will power up.

The first screen that you see is the BOOT LOADER START-UP screen showing the software revision information.

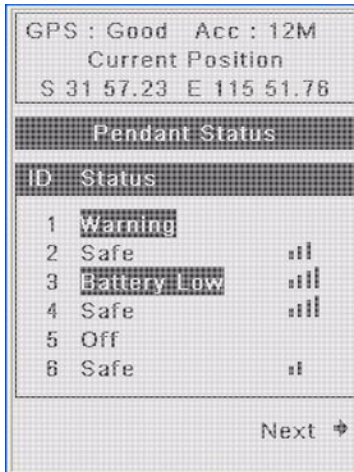
A few seconds later the Console will automatically switch to its internal diagnostic screen and run a series of self tests.



Assuming all goes well with these tests, the system will automatically switch to the Pendant Status Screen.

3.4 Normal Operation – Pendant Status Screen

Providing you GPS is connected and your pendants are in range and not asleep, your Pendant Status Screen should look something like this.



The top three lines show information from systems GPS.

Lower down is the Pendant Status list. This screen shows a list of Pendants that have been programmed into the system. Pendant Status list show 3 columns of information:

Pendant ID

Column one is the Pendant I.D. This displays the number assigned to each of the configured Pendants. This number is user assigned and may not correspond with the Pendant Serial number.

Pendant Status

The Pendant Status column tells you what the Pendants are doing.

Pendant Signal

The last Column represents the signal strength and is a visual indicator of the quality of the link to the Pendant.

In the same way as a Mobile Phone will display signal strength, the more bars that you see displayed the better the link.

When a Pendant is in a bad location and the Console is losing contact, these bars will start to drop. If they disappear altogether the Console will display WARNING, and then in a few seconds, a full MOB alarm.

Possible conditions are:

Safe:

This indicates that the Pendant has good battery level, is operating properly and is in range of the Console.

WARNING:

WARNING indicates that the Console has lost contact with a Pendant for 3 seconds and a provisional GPS position has been logged.

After this point the Pendant will either return to Safe or Battery Low if the Console receives a further transmission OR go into full MOB alarm if nothing further is heard.

Battery Low:

This indicates that the Pendant has low battery level, is operating properly and is in range of the receiver. A battery will give the crew member about 6 hours to swap Pendants and recharge the flat one. Any Battery Low indicators will be highlighted by a flashing inverse video entry. If a Battery Low Pendant gets out of range, a full MOB alarm is issued.

Charging:

Pendant is no longer active and is in the MOB i-Alert Charger being recharged.

Off:

This means that the Pendant has not been registered as active and is out of range or has been shut down.

NOTE: When the Console is switched on it will listen for all of the Pendants registered in its memory.

If it can hear them it will display on the screen one of the first three Status conditions described above.

If it can't hear them it will report them as OFF.

If a Pendant is listed as Safe or Battery Low and loses contact, a full MOB alarm is raised.

If a Pendant is listed as Charging (In the Charger) and loses contact, the Console assumes that the Pendant has been put to sleep and no alarm is raised.

.

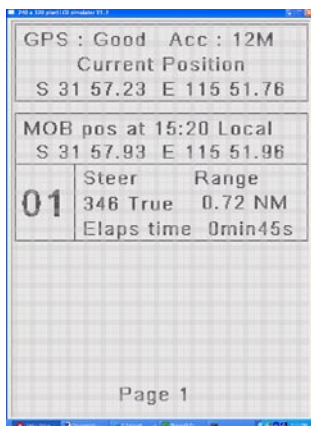
3.5 MOB screen

If an active Pendant loses contact with the Console, a full MOB alarm is issued.

A pulsed alarm will be emitted from the Console and the external alarm.

The Console will automatically switch to the MOB screen.

The user will get the following information:



The top three lines show information from systems GPS.

It shows the ships current position.

The next block of information is MOB data.

First line displays the exact time and GPS coordinates of the event. This information is vital to SAR authorities.

Next block of information is the missing Pendant ID followed by the bearing and range back to the MOB location.

The bearing and range information will give the helmsman instructions on how to steer back to the location of the MOB.

The information is calculated from the point where the MOB occurred. It will constantly update to provide the Helm with updated bearing and range data.

If any further Pendants go missing, separate entries for each will appear in order on the MOB screen.

If there are more MOB entries than can fit on the display the operator will be prompted with a Next symbol. Pressing the Navigation key will bring up the next list of entries.

Once a Pendant is back in range, the MOB entry for it will be

automatically cancelled. Once all of the MOB entries are back in range the alarms will stop and the screen will switch back to the normal "Pendant Status Screen"

3.6 Recharging the Pendants

At the end of the day or when "Battery Low" is indicated by either the Pendant or Console, the crew will normally return his or her Pendant to the Charger.

This is done not only to recharge the Pendant but also as a convenient storage location.

If the Charger is powered up, installing the Pendant will cause the Pendant LED to change from flashing (Green or Red) to solid RED.

This indicates that the Pendant is in fast charge mode.

The Pendant will stay in this mode for between 45 minutes for a fully charged unit and 15 Hours for one with completely flat batteries.

After maximum charge has been achieved the Pendant will display a long Orange flash once every 5 seconds to indicate that it is fully charged and in a trickle charge state.

Whenever the Pendant is in a powered up Charger, the Console will list the Pendant as "Charging".

Switching the Pendants off and on.

Putting the Pendants to sleep.

The sleep state is where the Pendant is monitoring its battery but is not transmitting.

Reasons you may want to do this include,

Finished sailing for the day.

Taking the Pendants home or transporting them somewhere.

(Particularly important for air travel.)

Need to remove them from the airwaves when someone close by is trying to register a different set of Pendants.

To do this, all that is required is to install them into a powered up charger and remove the power.

The Charger LED will flash quickly between red and green and tell the Pendants to go to sleep.

You will see that all of the Pendant LED's will turn off.

The Console will show that Pendant as OFF.

Waking the Pendants up.

It's easy; just insert a sleeping Pendant into a powered up Charger.

The Pendants LED will glow RED and the Console will report that the Pendant is charging.

3.7 switching the pendants on and off

Putting the Pendants to sleep.

The sleep state is where the Pendant is monitoring its battery but is not transmitting.

Reasons you may want to do this include,

Finished sailing for the day.

Taking the Pendants home or transporting them somewhere. (Particularly important for air travel.)

Need to remove them from the airwaves when someone close by is trying to register a different set of Pendants.

To do this, all that is required is to install them into a powered up charger and remove the power.

The Charger LED will flash quickly between red and green and tell the Pendants to go to sleep.

You will see that all of the Pendant LED's will turn off.

The Console will show that Pendant as OFF.

Waking the Pendants up.

It's easy; just insert a sleeping Pendant into a powered up Charger.

The Pendants LED will glow RED and the Console will report that the Pendant is charging.

Section Four

Making changes to MOBILert

4.1 Changing the screen settings

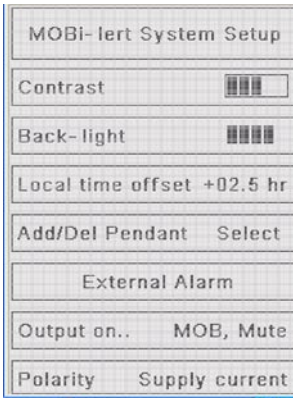
Hitting the Menu key will bring up the following Menu choices:

Pendant Status
System Setup
Event Log

Selecting Pendant Status takes you back to the Pendant Status Screen described above.

System Setup

The System setup screen allows you to configure MOBi-ler to suit your application and preferences.



The following options are available.

1. Contrast
2. Back-Light
3. Local time offset
4. Add/Del Pendant
5. External Alarm

Looking at each inturn.

4.1.1 Contrast

This setting will adjust the contrast of the LCD display.

Use the down arrow on the Nav Key to select the setting (You will see a square box drawn around the level bars) □.

Push the Nav key left arrow to increase the setting and the right arrow to decrease.

4.12 Back-Light

This setting will adjust the level of the screen backlight.

Use the down arrow on the Nav Key to select the setting (You will see a square box drawn around the level bars) □.

Push the Nav key left arrow to increase the setting and the right arrow to decrease.

Note. This function is also available from the □ Key on the front panel.

4.2 Local time offset

The MOBi-lert system has no internal clock and derives its time and date from the connected GPS.

The GPS delivers time information as Coordinated Universal Time (UTC). The Local time offset allows you to put in a value to correct the on-screen time from UTC to local.

This local time value is determined by the operator and is not updated automatically. If you change time zones you will need to manually adjust this setting.

Note: The information stored in the Event Log is only recorded as UTC. Therefore if the local setting is wrong or the rescue authorities request the time of the event in UTC this information is available in the Event Log.

4.3 Add/Del Pendant

The fourth option on the System Setup.

From here you can Add, Delete or change the displayed ID of a Pendant.

Information is presented in three columns marked:

Serial#, Status and ID

The serial Number column displays the full serial number of the Pendants that the Console can hear. The serial number is in Hexadecimal so you will see letters as well as numbers. The serial numbers cannot be changed.

The next column is the **Status of the Pendant.**

The Pendant can be reported as six possible states:

Safe	Pendant is registered and in range – Battery good
Battery Low	Pendant is registered and in range – Battery Low
Charging	Pendant is registered and in range and charging
MOB	Pendant is registered but out of range
OFF	Pendant is registered but its state has changed from Charging to out of range
Unreg'd	Pendant is not registered but can be heard by the system

The Pendants that the console has registered in its database is displayed on the top.

Below these entries are the Unreg'd Pendants that the Console can hear. Use the up down arrow keys on the Navigation key to select a Pendant to change.

Use the Left / Right arrow keys to prepare the field for changing. The entry will change into inverse video.

Pendant Management		
Pendants Found		
Serial#	Status	ID
F000000A	Safe	08
F0000085	Safe	09
F0000073	Safe	10
F0000001	Unreg'd	--
F0000021	Unreg'd	--

Page 2

Press ↑ or ↓ to scroll
Press ← or → to edit

Use the up/down keys to scroll through the available numbers.

You will only be able to select a number if it has not already been assigned.

Once the Pendant is set the way you want it, hit right arrow to save the setting.

In addition to setting the Pendants displayed number you can also permanently delete a Pendant from the system.

The reasons that you might want to do this include:

- If a Pendant has been lost or damaged
- If a Pendant belonged to temporary crew who are leaving the boat.

There is no need to delete pendants if you are not using them or you have left them at home.

Providing Pendants are shut down using the charger then the system knows that they are off.

The display will still show their status but it will be Off.

Note: If a Pendant was MOB when the system is shut down the system will remember this status when it is powered back on.

To delete a pendant scroll through the available numbers until you get to Del? Hit the right arrow key to activate

You will be asked to confirm.

Delete Pendant. Are you sure? YES/NO

If you hit any key other than up arrow to select yes and then right arrow to confirm then the system will cancel the delete operation.

WARNING:

BE ABSOLUTELY SURE THAT THE PENDANT THAT YOU ARE DELETING IS NOT BEING USED BY ANYONE.

Pendant Management		
Pendants Found		
Serial#	Status	ID
F0000029	MOB	01
F000002C	Safe	02
F0000014	Batt Low	03
F00000A8	Safe	04
F00000D7	Off	05
F00000EE	Safe	06
F0000018	Safe	07

Page 1

Press ↑ or ↓ to scroll
Press ← or → to edit

If you delete a Pendant that someone is wearing then that person is no longer protected. MOBILert cannot tell you if that crew member is lost overboard.

To exit back to the main menu, hit the menu key again.

External Alarm

In addition to the External Alarm supplied with the kit, the systems provides for a second external output. This output is a relay that will switch the ships power out at 100mA.

You could possibly use this output to do the following:

- Sound another external alarm. Inside the cabin?
- Activate a MOB function on your self steering
- Activate an engine shutdown
- Release a danbuoy or some other safety device.
- Generate an automated distress call on a VHF radio etc..

Configuring the remote alarm

You have two settings available to customise the output of this device.

Output on: This setting defines what event will trigger the External Alarm.

Options are:

- 1. Disabled**
- 2. MOB Only**
Alarm is triggered only on a MOB event
- 3. MOB, Mute**
Alarm is triggered by a MOB and cannot be muted

4. Batt low

Alarm is triggered by any battery low conditions reported by an active Pendant.

5. Bad GPS

Alarm is triggered by a loss of GPS information

The next setting is Polarity

this setting defines the output of the port when it is triggered.

Settings are:

1. Switch on

Ships voltage is normally off and is switched on when triggered.

2. Switch off

Ships voltage is normally on and is switched off when triggered.

Section Five

Appendices

5.1 Console bulkhead mounting template

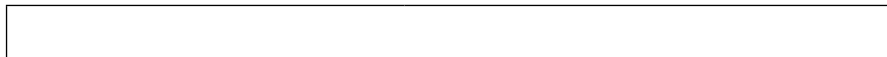
5.2 Console connection diagram

5.3 Charger connection diagram

5.4 MFP 0012 Console - Technical Specifications

5.5 MFP 0013 Charger Technical Specifications

5.6 MFP 0015 Pendant Technical Specifications



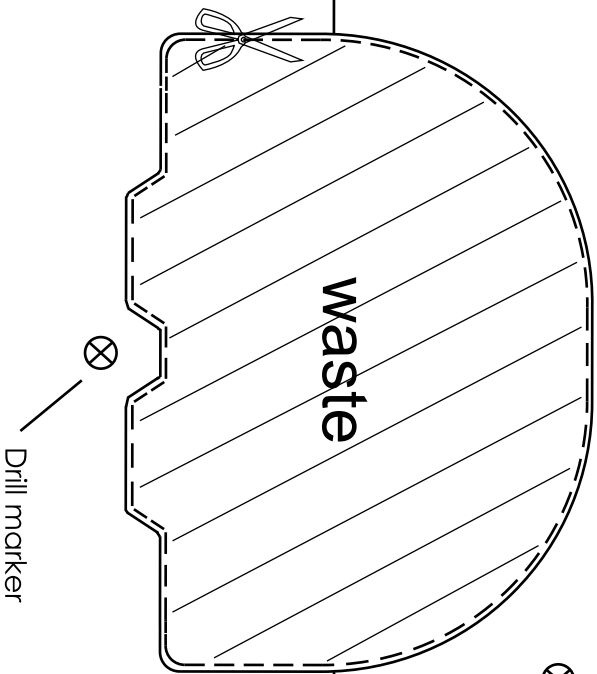


5.1

Console Bulkhead mounting template

Drill marker — ⊗

level line

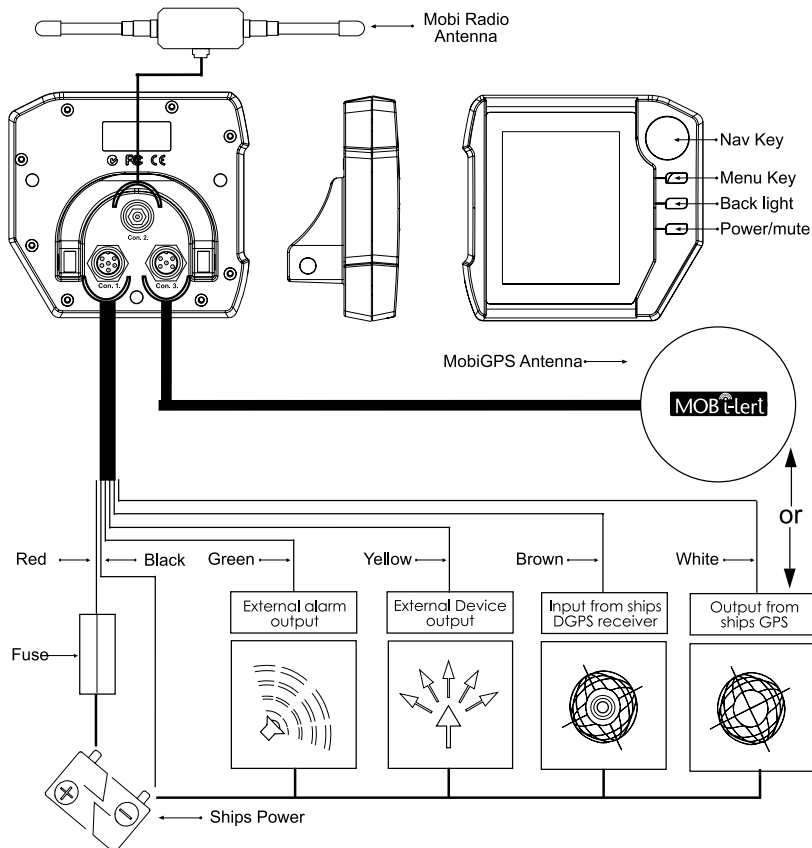


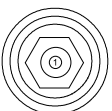
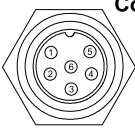
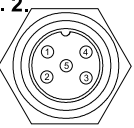
⊗ — Drill marker

level line

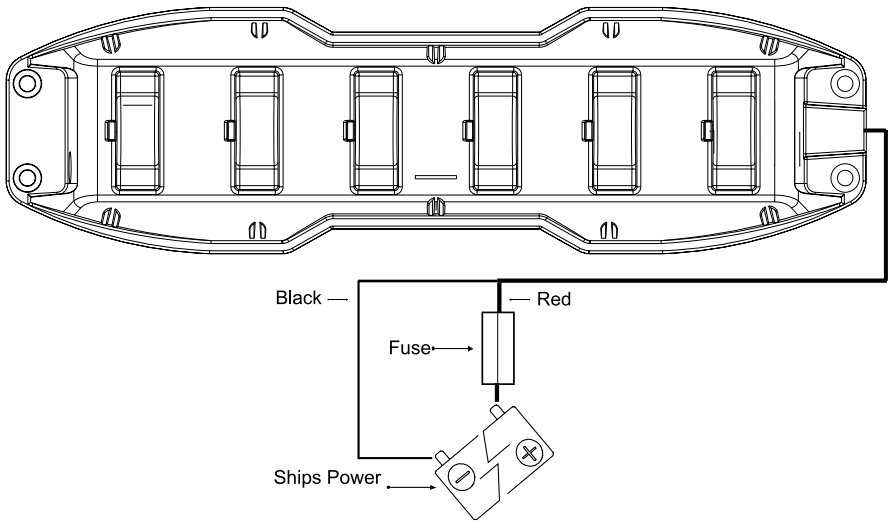
Drill marker

5.2 Console connection diagram



Connections		Con 1- POWER AND DATA		
veiw from rear of console 		Wire	Pin#	Descriptor
		Black	1	Ground wire - Power and signal
		Red	2	Positive Supply IN - 11 to 30 VDC
		Green	3	External Alarm Output (100mA @ supply voltage)
		Yellow	4	External Output Output (100mA @ supply voltage)
		Brown	5	Differential GPS Input to GPS active antenna
		White	6	NMEA Input from Ships GPS
		Con 2- EXT. ANTENNA		
		Plug	Descriptor	
Con. 1. Con. 3.		1 RP SMA Connector for External Antenna		
		Con 3- GPS ACTIVE ANTENNA CONNECTOR		
		Wire	Pin#	Descriptor
		Shield	1	Ground wire - Power and signal
		Red	2	Positive Supply OUT to GPS- 11 to 30 VDC
Green	3	NMEA Input to MOBiLert		
White	4	Differential GPS Output to GPS active antenna		
Brown	5	NMEA Data Output for GPS active antennae control		

5.3 Charger connection diagram



5.4 MFP 0012 Console - Technical Specifications

Power supply:	11-30 V DC
Typical power consumption:	70 mA (at 12 V DC) Max (With backlight on full)
Screen	320 x 240 pixels with 16 grey scales
Backlight settings	5 Levels plus automatic on event
Frequency of operation	434MHz FSK (Dual channel)
Antennas	Internal ceramic patch, External dipole (Plus other options)
Audible response	Key press, Low Pendant battery, Alarm mute, MOB
Pendant condition reporting	Safe, Charging, Low battery, Link Warning, MOB, Off
Event Log	Records Waypoint, Pendant event, Time and Date - 450 Events - FIFO
Configuration storage	EEPROM Non volatile
Output: 1 - External Alarm	100mA at supply voltage into supplied Waterproof Piezo alarm
Output: 2 - Secondary output	100mA at supply voltage
Output: NMEA	NMEA 0183 (ver 2) GPWPL
Input NMEA from GPS	NMEA 0183 (ver 2) GPRMC, PGRME,
Input NMEA from Differential Receiver	NMEA 0183 (ver 2) Signal fed directly to GPS
Operating temperature:	0 to 50°C (32 to 122°F)
Dimensions	120 x 115 x 60 (without bracket)
Weight (without cable):	310 g (13 oz)
Case:	UV stabilised ABS with polycarbonate screen
Mounting Options	Surface mount with bracket or flush mount with gasket kit
Environment:	IP67.

5.5 MFP 0013 Charger Technical Specifications

Power supply:	11-30 V DC
Typical power consumption:	140 mA (at 12 V DC)
LED Status	Slow green flash, Quick green/red flash 5 seconds, Quick green/red flash Continuous
Charge current – Boost Charge	14mA
Boost Charge Time (Max)	15 Hours
Charge current – Trickle Charge	3mA
Trickle Charge Time	Continuous
Operating temperature:	0 to 50°C (32 to 122°F)
Dimensions	333 x 94 x 70
Weight (with cable):	1000 g (35 oz)
Case:	UV stabilised ABS
Mounting Options	Surface mount
Environment:	IP66.

5.6 MFP 0015 Pendant Technical Specifications

Power supply:	3.6v Nominal
Typical power consumption:	<1 mA
LED Status	Off, Quick flash green, Quick flash red, Slow flash orange, red on hard
Batteries	3 x 1.2v 100mAH NiMH button cells
Operating temperature:	0 to 60°C (32 to 140°F)
Battery life – Battery Full	48 Hrs Minimum (- De rating for temperature extremes)
Battery life – Battery Indicating Low	Typically 8 Hrs (Temperature dependant)
RF Transmission Frequency	Chan A – 433.93MHz, Chan B – 434.33 MHz,
RF Transmission Power	< 1mW FSK
Weight:	46 g (1.6 oz)
Case:	Ultrasonically sealed Polycarbonate.
Environment:	IP68.

5.7 EC Declaration of conformity



EC Declaration of Conformity

In accordance with EN 45014:1998

We MOBi-larm
Of 768 Canning Highway, APPLECROSS WA 6153

Declare that:

Equipment	Mobilert Crewsafe 7200 & 7600 Man Overboard Monitoring Systems
Model name / number	MOA 0010 & MOA 0011
Serial number 5	MOA 0010 - 00050 to MOA 0010 - 99999 MOA 0011 - 00050 to MOA 0011 - 99999

In accordance with the following Directives:

73 / 23 EEC	The Low Voltage Directive
89 / 336 / EEC	The Electromagnetic Compatibility Directive and its amending directives
98 / 37 EC	The Machinery Directive and its amending directives
99 / 5 / EC	The Radio and Telecommunications Terminal equipment directive

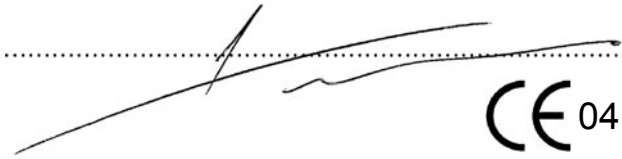

has been designed and manufactured to the following specifications:

ETSI EN 300 220 -1 (ERM);	Electromagnetic compatibility & radio spectrum matters Short range services (SRD); 25MHz to 1000 MHz with power levels ranging up to 500mw Part 1.
ETSI EN 300 220- 3 (ERM);	Electromagnetic compatibility & radio spectrum matters Short range services (SRD); 25MHz to 1000 MHz with power levels ranging up to 500mw Part 3.
ETSI EN 301 489 – 1 (ERM);	Electromagnetic compatibility & radio spectrum matters Electromagnetic compatibility (EMC) standard for radio equipment & services Part 1.

- ETSI EN 301 489 - 3 Electromagnetic compatibility & radio spectrum matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment & services Part 3.
- ETSI EN 301 843 - 1 Electromagnetic compatibility & radio spectrum matters (ERM); Electromagnetic compatibility (EMC) standard for Marine radio equipment & services; Part 1.
- EN 60950 Safety of Information Technology Equipment Including Electrical Business Equipment.
- EN 50364: 2001 Limitations of human exposure to electromagnetic fields from devices operating in the frequency range 10Hz to 10GHz, and in radio frequency identification (RFID) and similar applications.

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

Signed by:

Name: Irwin Tollman
 Address: 768 Canning Highway
 APPECROSS WA 6153

Position: Chief Financial Officer

Done at MOBILARM
 768 Canning Highway
 APPECROSS, PERTH, WESTERN AUSTRALIA 6153

On Friday 30th day of July 2004

