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User Manual

Mobilarm Crewsafe® Network

MOBILARM
ALWAYS ON WATCH

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1   Warnings & Safety Information

Note: This installation and operation guide contains important information that must be adhered to for reliable use of the product. It is the owner's sole responsibility to make the effort to read this documentation, ensure that the installation is carried out to specification and understand the equipment's operation and limitations.

Location and recovery of a man overboard is beyond the product's capability and if necessary must be accomplished by alternative means. Mobilarm recommends that all crew members carry a Mobilarm V100 VPIRB (or Personal Locator Beacon) that can be activated as an aid for post-MOB location.

WARNING: No system can be 100% fail-safe. Installation faults and operator error will always introduce the possibility of undetected man overboard (MOB) events, as can circumstances and events beyond the equipment's design criteria. Crewsafe should never be relied upon as the only source of man overboard notification. The skipper and crew must exercise common prudence and good seamanship. Installation and operation of a Crewsafe system in no way reduces the responsibility of the skipper and crew who have the primary responsibility for safety on board a vessel.

WARNING: Global Positioning System. (GPS) Crewsafe systems can be integrated with an external GPS receiver to define the location of a man overboard and provide track-back information to the user. This configuration can only be as accurate as the positional data it receives. The Global Positioning System is managed and maintained by the US Government who can from time to time alter its effective accuracy. In addition, equipment errors or faults and operator errors can also result in misleading information being displayed by Crewsafe systems. Mariners must always use alternative means to confirm the location of a man overboard if the accuracy of the system is ever in doubt.

WARNING: Crewsafe systems can only facilitate the recording of the initial position of where a man overboard event occurred into third party devices. In some areas, drift will take a man overboard away from the location of the original position indicated by the Crewsafe system.

WARNING: The Crewsafe system uses a small amount of low voltage DC power. However, accidental short-circuiting of any of the product's cabling system's may cause sparks which in turn could ignite combustible gases or petrol vapors. Make sure that electrical circuits are isolated before making any changes to the system's cables.

RADIO INTERFERENCE WARNINGS:
The Crewsafe system emits radio waves that can affect the operation of nearby electronics, including cardiac pacemakers. Do not wear Crewsafe Tags within 9 inches of a pacemaker. If you have a pacemaker or other

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implanted medical device, please do not wear a Crewsafe Tag without first consulting your physician, or the manufacturer of your medical device. Observe and follow all regulations and rules regarding the use of wireless devices in locations such as hospitals and on aircraft. Operation in those locations may interfere with, or cause malfunctions of equipment, with resulting injuries to persons or damage to property.

WARNING:

1. Never attempt to charge a Tag using any device other than a Mobilarm Power Dock.
2. A new rechargeable battery's full performance is achieved after 2-3 complete charge and discharge cycles.
3. A Tag will not recharge if the battery temperature is greater than 45 degrees. If a Tag is hot because of environmental factors, let it cool down and reinsert it into the charger.
4. Never short-circuit a Power Dock bay by placing metallic objects in the bays (e.g. paper clips, coins or pens).
5. Never use a Power Dock or battery that is damaged.
6. Do not place Crewsafe Tags near a radar set or expose them to radiation or damage may occur. Please do not clean them with detergents or solvents that may damage the integrity of the device. Seals may be damaged by many cleaning devices. If the components require cleaning, use warm soapy water and wipe with a damp, not wet, cloth. Be sure to clean a Tag when it is switched off, or it may be activated by the moisture.

CAUTION: The high intensity strobe light on a Crewsafe Tag or router may cause discomfort if viewed - avoid staring directly at the strobe when it is operational.

Regular Testing

Your Crewsafe system should be checked regularly. We recommend testing the system on a regular basis to ensure that alarms are audible and that the system is in good working order generally.

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2   Manual Conventions

	Very important warnings are accompanied by the "Stop" sign symbol. Please read these sections very carefully.
	Caution notes are accompanied by the "Exclamation Mark" symbol. They emphasize a particular point that is worth noting.
	Technical tips are displayed next to the "Tools" symbol.

Typographic Conventions

Crewsafe hardware operational features are in uppercase letters.

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3   Quick Start Guide

System Startup

1. Press the Display Console POWER
   button to turn the system on.

2. Remove fully charged Tags from the
   Power Dock.

3. Press the button on each Tag to turn it on.

4. Check that each Tag's LED on the Display
   Console is displayed as solid green.
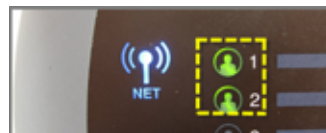
5. Check that the network LED on the
   Display Console and any Internal or
   External Routers are solid blue.
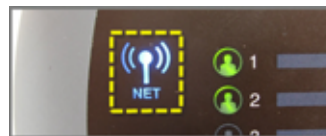
System Shutdown

1. Press and hold the power button on the Display Console for 5 seconds.

2. Return Tags to the Power Dock for charging. Charging continues after system
   shutdown as long as power is supplied to the Power Dock.

4 Overview of Mobilarm Crewsafe

Mobilarm Crewsafe is a wireless safety network designed to improve the workplace safety of commercial mariners by keeping track of the crew at work at all times. A 'meshed' series of wireless routers automatically detects emergencies involving personnel and can initiate a full-scale alert within seconds of an incident such as a man overboard event occurring.

Each employee carries a small transceiver Tag, which remains connected to the network via Crewsafe wireless routers. The network immediately detects any break in the signal and automatically raises an alarm if the connection is not re-established within a few seconds. Therefore, if a crew member goes overboard, the signal is lost and an alarm is raised. Each Tag also features a duress button that can be manually activated if an employee is in distress onboard a vessel.
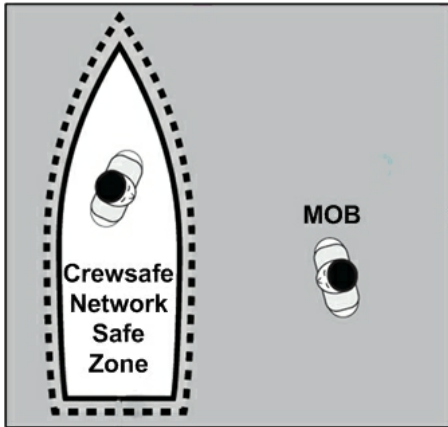
Any break in a Tag's signal, for any reason, raises an alarm. If a Tag is damaged, its battery dies or if a person moves out of range of the network, an alarm is raised. This ensures that co-workers are immediately aware of a possible emergency and employees are not be left unprotected.

When installed on vessels, Crewsafe can interface with existing chart plotter navigation systems and GPS devices. In a man overboard (MOB) emergency, your Crewsafe system can automatically send a waypoint position of where an incident occurs to your vessel's chart plotter. This provides essential track back navigation data. The system can report and track multiple events, but will always prioritise the more serious risk of man overboard over other emergencies.

Following is an introduction to the various elements of the Crewsafe system.

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Display Console

Every Crewsafe network requires a Display Console, which is responsible for the management and control of the Crewsafe system. The Display Console can be used to configure and control the system and it displays the status of all Tags connected to it. The Display Console has a high-intensity STROBE warning light, an inbuilt PIEZO and a ROUTER STATUS LED for displaying its wireless network connection status. It also has 12 TAG STATUS LEDs for monitoring the safety of crew members on a vessel.

A Display Console can:

- Monitor crew Tag status (up to 12 Tags);
- Monitor system network status;
- Monitor GPS/chart plotter connection status;
- Provide audible and visual alarms for man overboard events, duress alarms, manual and general network alarms;
- Be attached to external alarms and other warning devices; and
- Initiate general network alarms.

Internal Router

The purpose of the Internal Router is to expand the wireless network footprint to cover all internal areas on a vessel. Additional Internal Routers can be added to a network as required. Each Internal Router has a high-intensity STROBE warning light, an inbuilt PIEZO and a ROUTER STATUS LED for displaying its wireless network connection status.

An Internal Router can:

- Provide audible and visual alarms for man overboard events, duress alarms, manual and general network alarms;
- Accept signals from an external warning device via its input (e.g. emergency button or bilge alarm);
- Send signals to an external warning device (e.g. emergency light or siren); and
- Initiate manual network alarms.

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External Router

An External Router is installed on the exterior of a vessel and as such it is designed to be exposed to the full force of nature at sea. An External Router has no built-in manual network alarm function, but it has one relay output that can be connected to the External Router's switched input if required. Each External Router has a high intensity STROBE warning light and a ROUTER STATUS LED for displaying its wireless network connection status.

An External Router can:

- Provide visual alarms for man overboard events, duress alarms, manual and general network alarms;
- Accept signals from an external warning device via its input (e.g. emergency button or bilge alarm); and
- Send signals to an external warning device (e.g. emergency light or siren).

Tags

Crew members wear a small Crewsafe Tag (a personal transceiver) which, if disconnected from the network through submersion in water or distance from the network, will set off the Crewsafe alarm enabling a speedy recovery. A manually activated duress alarm can also be initiated by pressing and holding the button on a Tag.

Each Tag vibrates during each system alarm or paging state. It also has a high intensity STROBE warning light and a TAG STATUS LED for displaying its wireless network connection status.

Tags can be used to configure other Tags or routers when they are used in 'wand' mode. In wand mode a Tag sends serial infrared data to another Tag or router to configure it for the system.

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Power Dock

The Power Dock is an essential element of Crewsafe, providing both stowage and charging capabilities for Crewsafe Tags.

Crew members place the Tags into Power Dock charging bays after use to recharge them; the Tag status LED provides the current charge state of the Tag. The charge status of all active Tags in charging bays is relayed wirelessly to the Display Console, and the Crewsafe Management System if it is installed.

Each Power Dock is capable of charging up to four Tags simultaneously and Tags that have been fully discharged will be recharged within four hours.

If more than four Tags need to be charged and stowed on a vessel then the design of the Power Dock allows them to be mounted next to each other, either horizontally or vertically.

Crewsafe Management System

Mobilarm Crewsafe is best managed using the Windows®-based Crewsafe Management System. This provides an enhanced level of personnel safety and security through crew location monitoring and management, system alarms, individual paging and individual duress alarms. In addition, the system provides database management of rescue assets, safety equipment and personnel.

The Crewsafe Management System is a multi-function program that runs on a dedicated Mobilarm touch-screen tablet. It controls all aspects of the Crewsafe network from a single point of command. Smaller vessels can use the stand-alone Crewsafe Display Console. Please see the Crewsafe Management System User Manual for more information.

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4.1   How it Works

1. Onboard monitoring is provided by each crew member wearing a robust, compact and lightweight Tag, which is individually registered to a reliable and dependable wireless network installed on the boat. Tags continuously transmit a 'safe' signal to the network, which consists of one or more wireless routers 'meshed' together to provide a wireless onboard monitoring system. A Display Console displays the status of all Tags on a vessel at all times.

2. A Tag is unable to transmit through water and an alarm is automatically triggered if a person falls off a vessel and a Tag's connection to the network is broken. This may be the result of a flat battery, a Tag going out of range or being damaged - or a man overboard event. This provides peace of mind that the system is working properly at all times and won't let you down should you come to rely on it in an emergency*.

3. Within four seconds of a person going overboard and their Tag being disconnected from the network, the system automatically logs a waypoint. The Display Console can send this waypoint to a NMEA 0183 compatible chart plotter or GPS. If connected, the boat's chart plotter or GPS can display essential track back information to the man overboard waypoint to enable a quick and effective rescue. Multiple man overboard events can be tracked simultaneously.

4. A man overboard alarm sounds four seconds later if a Tag's signal is not re-established. (This ensures that the occasional rogue wave washing over the deck does not inadvertently set off the alarm.) Unlike some other Personal Locator Beacons and Emergency Position Indicating Radio Beacons (EPIRBs), Crewsafe Tags automatically activate an alarm. This is important in the event that a person is knocked unconscious, incapacitated or incapable of activating an alarm when they go overboard. When an alarm sounds all Tags connected to the network vibrate and flash and all internal and external routers flash. The Display Console and any other Internal Routers also sound an audible alarm.

5. The other benefit of all Mobilarm man overboard systems over other Personal Locator Beacons is the immediate notification to crew on a vessel of a man overboard emergency as soon as it occurs. EPIRB signals, for example, are routed to onshore locations and these distress signals need to be confirmed before the information is then relayed to vessels in the vicinity. This can add precious minutes or hours to the length of time a man overboard is in the water before a rescue is initiated.

6. With Crewsafe, after a man overboard has been recovered and is back onboard the vessel, the system automatically detects the signal from the retrieved mariner's Tag. This automatically cancels the alarm and the system resumes normal operation.

7. A duress alarm can be manually triggered by a person pressing and holding the button on a Tag for 3 seconds. The Tag sending an alarm is identified on the Display Console and a system-wide alert is sent to warn that this crew member is in distress. Duress alarms provide the ability for a crew member to manually initiate an alarm if they are in distress for some reason.

8. A general alarm can be initiated by pressing the alarm button on the Display Console

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for 3 seconds. When an alarm sounds all Tags connected to the network vibrate and flash and all internal and external routers flash. The Display Console and any other Internal Routers also sound an audible alarm.

> **CAUTION:** No system can be 100% fail-safe. Installation faults and operator error will always introduce the possibility of undetected man overboard (MOB) events as can circumstances and events beyond the equipment's design criteria. Mobilarm man overboard systems should never be relied on as the only source of man overboard notification. The skipper and crew must exercise common prudence and good seamanship. Installation and operation of a Mobilarm man overboard system in no way reduces the responsibility of the skipper and crew, who have the primary responsibility for safety onboard a vessel.

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5   Getting Started

The following sections describe how to:

1. [Turn the system on](#),
2. [Turn system off](#), and
3. [Turn tags on and off](#).

5.1   Turn the System On

When the ship's power is turned on all LEDs on each installed router illuminate briefly. This places each router into standby mode.

Turning the System On

1. Ensure the ship's power is turned on.
2. Press the POWER button on the Display Console. This will turn it on and turn on all other routers connected to it.

Display Console Indications

When the POWER button is pressed:

- All LEDs on the router illuminate briefly and it emits ascending tones.
- The blue NETWORK STATUS LED flashes on all routers while the network is being established.
- Once the network is established, the NETWORK STATUS LED stops flashing and turns solid blue.

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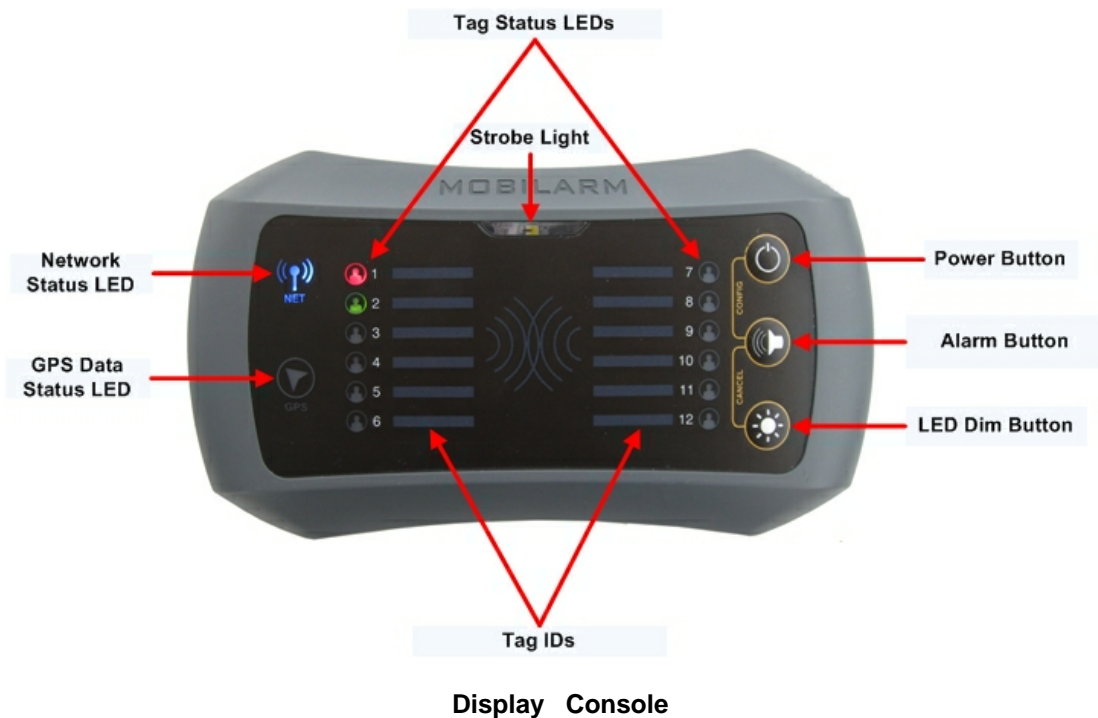
Display   Console

Note: A network comprises a Display Console and at least one other active device (Tag or router). If only a Display Console is installed on a vessel, the NETWORK STATUS LED will display long blue flashes until a Tag is switched on.

Display Console and Router Network Status

When the Display Console POWER button is pressed, the NETWORK STATUS INDICATOR LED on it and any Internal and External Routers will:

1. Flash blue while the network is being established, and
2. Display as solid blue once the network is established.

If a router's NETWORK STATUS LED does not remain solid blue 20 seconds after being switched on and starts to flash, please see the troubleshooting guide to diagnose the problem.

5.2   Turning Tags On/Off

Turning Tags On

Press the Tag BUTTON once.

As the Tag turns on:

*   The STROBE light flashes twice.

- The Tag STATUS INDICATOR LED displays fast red flashes briefly.

Once the Tag has joined the network successfully, the Tag's STATUS INDICATOR LED flashes green every two seconds. If the Tag's status LED does not turn green after several seconds it may not be correctly configured for the network. Please see the troubleshooting guide for help.

Turning Tags Off

Tags are automatically turned OFF during a system shutdown, but they can also be turned off in the following ways:

1. Place Tags into a Power Dock and then press and hold the BUTTON on the Tag for 3 seconds.
2. If a Tag has triggered a false man overboard alarm, press and hold the Tag BUTTON for 10 seconds to turn it OFF.

As the Tag turns off, it vibrates and the strobe light flashes for several seconds.

See False Alarms for ways to cancel a variety of false alarms.

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5.3   Turn the System Off

Press and hold the POWER button on the Display Console for 5 seconds. This will turn the Display Console off and turn off all routers and Tags connected to it.

Display Console Indications

When the POWER button is pressed:

- The Display Console will produce down-ramping audio tones.
- TAG STATUS LEDs flash sequentially and the strobe light will flash.
- All LED and strobe indications cease when the Display Console has been switched off.
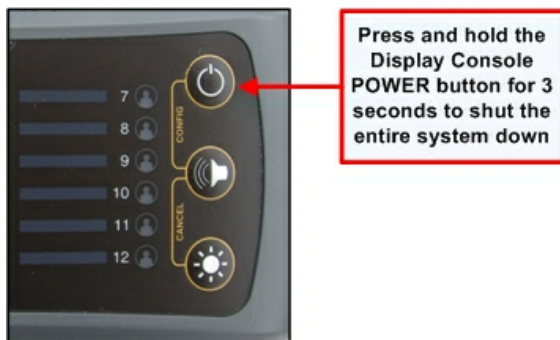
CAUTION: Please ensure the system is turned off before power to the system is disconnected - otherwise Tags may go into an alarm state. If the system loses power briefly and unintentionally for some reason, once power is returned to the system it should operate again normally.

Tag Indications

A Tag is turned off during a normal system shutdown. During this process it vibrates and the strobe light flashes for several seconds.

6   Routine System Tasks

The following sections explain basic Crewsafe system functionality in relation to:

- Monitoring the status of tags.
- Wearing tags.
- Recharging tags and replacing batteries.
- Dimming LEDs on the Display Console, and
- Confirming GPS Chart Plotter Data Status.

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6.1   Monitoring Tag Status

A Tag's status is monitored by the Display Console and displayed by the TAG STATUS LEDs. Following is a list of the TAG STATUS LED states that can appear on the Display Console:

TAG STATUS LED display	
No Illumination	Tag is OFF; no Tag is assigned to the TAG STATUS LED on the display console; or a Tag has been removed by canceling a man overboard alarm.
Solid Green	Tag is ON and is safe
Short Orange Flashes	A factory reset is in Progress
Long Orange Flashes	Tag is ON and the battery is low
Solid Orange	Tag is being charged in a Power Dock
Short Fast Red Flashes	Tag has entered the man overboard warning state prior to an alarm and a man overboard waypoint is logged
Long Red Flashes	A man overboard or duress alarm has been muted
Solid Red	Tag has entered an active man overboard alarm state, or a duress alarm has been activated
Illuminated Red for 5 Seconds	Signifies canceling of any active alarms

Example of Tags in Safe and Alarm States

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Tag LED States

A Tag's status is also displayed on the Tag itself. The following table describes the possible states of the LED on a Tag when it is in use or being charged.

Tag LED display when in use	
No Illumination	Tag is switched off or battery is flat
Green Flashes	Tag is ON and safe.
Orange Flashes	Tag is connected to the network and the battery is low
Short Red Flashes	Tag is not configured with a network ID
Long Red Flashes	Tag is switched on and configured with an incorrect network ID
Short Fast Red Flashes	Tag has been switched on and is attempting to join the network
Tag LED display when charging in Power Dock and turned on	
Solid Green	Tag is fully charged
Solid Orange	Tag is charging
Solid Red	Tag charging fault

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6.2   Attaching a Tag

Crewsafe Tags are small enough to be worn at all times in all marine environments. Tags are designed to be attached to clothing, lifejackets or harnesses that include:

- Belts.
- Harnesses or webbing.
- Life jacket straps.
- Pockets/lanyards*/safety chains to avoid the loss of a Tag over the side of a vessel.

*Lanyards are **not** recommended as the best method of attachment.

Mobilarm recommends that Tags are worn at waist level, both for comfort and to ensure a man overboard alarm is activated in an emergency.

Attaching a Tag

There are two different clips that can be used to attach a Tag. To attach a Tag with a mini-clip to a crew member it is necessary to thread a harness or webbing through the gap between the Tag and clip. The large Tag clip is able to slide directly onto a belt or strap and is much simpler to attach.

Attaching a Clip

To attach either of the two different Tag clips to a Tag, slide it onto the Tag until it locks firmly into place. To remove it from the Tag, push the TAG LOCKING CLIP away from body of the Tag and then slide it upwards to remove it. Note: If you are using the large Tag clip then it needs to be removed before placing the Tag into a Power Dock for charging.

1 → Push the TAG LOCKING CLIP away from the TAG

2 → Slide the CLIP up the TAG to remove it

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6.3   Charging a Tag

Crewsafe Tags are factory fitted with rechargeable batteries that have been fully charged prior to shipping. However, Tags should be placed in the Power Dock and charged for at least 4 hours prior to first use.

A fully charged Tag should last for up to 48 hours of normal operation in a non-alarm state. The STATUS LED on a Tag flashes orange when the battery charge is getting low. If the battery is in good condition it should last in a non-alarm state for approximately 10 hours after the low battery warning is first indicated.

Charged Tag in Power Dock

Charging a Tag

A Tag can be fully recharged in four hours.

1. Place the Tag into an empty Power Dock bay so that the button is facing outwards. Note: If a large Tag clip is attached to a Tag then it needs to be removed before placing it into the Power Dock.

2. Check that the TAG STATUS LED indicates that it is charging. If a Tag's battery charge level has dropped below 90 percent, the TAG STATUS LED while charging is solid orange.

3. When a Tag's battery is 90 percent charged or higher its TAG STATUS LED turns solid green. A Tag will continue to trickle charge after turning green until it is 100 percent charged.

During normal daily use it is not necessary to turn Tags off when they are charging in the Power Dock. However, you may wish to turn off a Tag in the Power Dock if it is a spare Tag. If a Tag is switched off and placed into the Power Dock the Tag's LED will illuminate green briefly to confirm charging has commenced. The Tag must be turned on before next use.

Tags continue to be charged when the system is turned off via the Display Console, as long the Power Dock is still connected to ship's power.

Technical   Tip: Tags should always be recharged after use, so ensure that power docks remain connected to a power supply even if the vessel is docked. Regular charging will ensure there is adequate charge in the Tag battery if there is a man overboard event. It also extends the life of the battery.

Long-term Tag Storage

If a Tag is likely to be stored for a long period, charge it fully and then turn it off.

1. Place the Tag into a Power Dock bay with the button facing outwards.
2. Press and hold the BUTTON on the Tag for 3 seconds.

An unused Tag battery will discharge itself slowly over time so each stored Tag should be recharged once a month to ensure the battery does not go completely flat. This will also maximize long-term battery life.

6.4   Dimming LED Display Intensity

If routers are installed in sleeping areas or if the brightness of the LEDs is interfering with other equipment in the vicinity, the brightness of the LED displays can be dimmed.

Press the DIM button on a Display Console or Internal Router to cycle through the four brightness settings - ranging from low to high intensity.

Dim Button on Display Console

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6.5   Confirm GPS Chart Plotter Data Status

If your Crewsafe system is connected to a GPS chart-plotter, you can check the data connection between the two systems by viewing the GPS STATUS LED on the Display Console.

GPS Data Status States

The possible states of the GPS STATUS LED on the Display Console are listed in the following table to assist in troubleshooting GPS connections.

GPS/Chart Plotter LED Display	
No Illumination	No GPS or chart plotter is connected at powerup
Solid Green	GPS or chart plotter data is good
Long Red Flashes	Receiving chart plotter data but it is not valid (chart plotter is likely to be acquiring GPS data)
Solid Red	No data is being received from the GPS chart plotter (likely to be a cable/wiring issue, or GPS chart plotter is turned off)

7   Managing Alarms

Mobilarm Crewsafe raises a vessel-wide alarm to notify crew of an emergency situation. The following sections explain the management of:

- Man Overboard (MOB) alarms, which are automatically activated during man overboard events.
- Duress alarms, which are manually activated by crew members in distress.
- General alarms, which are manually activated from a system's Display Console.
- Manual alarms, which can be manually activated from internal and external routers.
- False alarms, and
- Multiple Alarms.

7.1   Man Overboard Alarms

A system-wide man overboard alarm is raised automatically if a Tag either goes out of range of the wireless network, or if the Tag is submerged in water during an emergency. When a man overboard is recovered and the Tag's signal reconnects to the network, the alarm will automatically stand down and both the system and Tag default back to normal operation.

Man Overboard Alarms

When a Tag is immersed in water it blocks the signal to the network and the following events occur:

1. After 4 seconds it goes into a man overboard warning state and:
    - The man overboard Tag starts to vibrate.
    - The STROBE on the Tag starts to flash.
    - The Display Console LED displays fast red flashes.
    - If the Crewsafe system is connected to a GPS chart plotter, the Display Console stores a way point for the position of the man overboard Tag at this point.
2. After 8 seconds the system goes into a man overboard alarm state and:
    - The man overboard Tag's STROBE flashes continuously until either the alarm is canceled, or the Tag comes back within range of the network.
    - The man overboard Tag vibrates initially for 60 seconds and then stops to conserve battery power.
    - The STROBE on all other active Tags starts to flash and the Tags start to vibrate.
    - The Display Console and any Internal Routers emit loud repetitive tones and the strobe on them starts to flash.
    - The Display Console LED turns red.
    - The STROBE on all External Routers starts to flash.
    - Any external safety or alarm warning systems that are attached to a router will also be activated when a network-wide alarm is activated (when using factory default relay settings).

- Way point data is sent from the Display Console to a compatible chart plotter.
- If you have the Crewsafe Management System connected to your system then this system will show an alert state.

> **CAUTION:** If a crew member moves out of range while carrying a tag then connection to the network will be broken and Crewsafe will raise a man overboard alarm. This will cause the same sequence of events to occur within the Crewsafe system as for a man overboard event (See False Alarms for information on canceling alarms).

Network Mute/Acknowledgement of a Man Overboard Alarm

Press the ALARM button on the Display Console. This mute the man overboard alarm across the Crewsafe network .

Once muted:

- The audio alarm is reduced to a single beep every 5 seconds on the Display Console and Internal Routers.
- Active Tags continue to vibrate.
- The STROBE light on all routers and Tags will stop flashing, so that night vision is not affected.

Note: If a new man overboard, duress, general or manual network alarm is activated after an earlier alarm has been muted, the system will restart loud repetitive tones and the STROBE will start flashing again.

Local Internal Router Mute/Acknowledgement of an Alarm

Press the ALARM button on an Internal Router. This only mutes the man overboard alarm locally.

Alarm Button

Once muted, the audio alarm is reduced to a single beep every 5 seconds on the local Internal Router router only. The STROBE on this device will also stop flashing, so that night vision is not affected.

Canceling an Man Overboard Alarm

WARNING: Never cancel an alarm unless you are sure that everyone is accounted for.

You may wish to cancel a man overboard alarm if:

- A person leaves the vessel carrying an active Tag and disconnects from the network, or
- An active Tag is lost overboard and cannot be retrieved, or
- A Tag's battery runs flat.

To cancel the alarm using the Display Console:

Press and hold the DIM and ALARM buttons simultaneously for 5 seconds.

This will cancel the alarm across the network, except for the man overboard Tag that has disconnected (moved out of range of the wireless network). This temporarily removes the Tag from the Display Console and effectively places it into standby mode. The next time the Tag is turned on within range of the Display Console it will rejoin the network automatically.

To cancel the alarm on the disconnected Tag:

1. Press and hold the button on a Tag for 10 seconds, or
2. Bring the Tag back within range of the network.

Press and hold the DIM and ALARM buttons for 5 seconds to cancel a MOB alarm

7.2   Duress Alarm: Raise, Cancel, Mute

If a crew member finds themself in distress but still connected to the network, they can initiate a manual duress alarm from their Tag.

Raising a Duress Alarm

Press and hold the BUTTON on a Tag for 3 seconds. During this process the Tag vibrates continuously and its STROBE flashes.

After a duress alarm is raised:

- The Tag initiating the alarm vibrates intermittently and the STROBE on it flashes.
- The STROBE on all other active Tags starts to flash and the Tags start to vibrate.
- The Display Console and any Internal Routers emit loud repetitive tones and the strobe on them starts to flash.
- The Display Console LED turns red.
- The STROBE on all External Routers starts to flash.
- Any external safety or alarm warning systems that are attached to a router will also be activated when a duress alarm is activated (when using factory default relay settings).
- Way point data is sent from the Display Console to a compatible chart plotter once the alarm is activated.
- If the Crewsafe Management System is connected to your Display Console then this will display an alert state.

Note: If you are not using the Crewsafe Management System, which can distinguish between a man overboard and duress alarm, it is best to initially assume that an alarm from a Tag on the Display Console is a man overboard alarm.

Network Mute/Acknowledgement of a Duress Alarm

Press the ALARM button on the Display Console. This mutes the duress alarm

across the Crewsafe network.

Alarm Button

Once muted:

- The audio alarm is reduced to a single beep every 5 seconds on the Display Console and Internal Routers.
- Active Tags continue to vibrate.
- The STROBE light on all routers and Tags will stop flashing, so that night vision is not affected.

Note: If a new man overboard, duress, general or manual network alarm is activated after an earlier alarm has been muted, the system will restart loud repetitive tones and the STROBE will start flashing again.

Local Internal Router Mute/Acknowledgement of a Duress Alarm

Press the ALARM button on an Internal Router. This only mutes the duress alarm locally.

Alarm Button

Once muted:

- The audio alarm is reduced to a single beep every 5 seconds on the local Internal Router only.
- Active tags continue to vibrate.
- The STROBE will stop flashing, so that night vision is not affected.

Canceling a Duress Alarm

 WARNING: Never cancel an alarm unless you are sure that everyone is accounted for.

There are two ways to cancel a duress alarm:

1. Press and hold the BUTTON on the Tag that the alarm originated from for 3 seconds. This sends a message to the network to cancel the duress alarm.
2. Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds.

7.3   General Network Alarm: Raise, Cancel, Mute

A general network alarm can be initiated from a Display Console and may be used to alert the crew that there is a problem onboard a vessel.

Raising a General Alarm

1. Press and hold the ALARM button on the Display Console for 3 seconds. While the button is being pressed the router emits up ramping tones and the STROBE flashes quickly; or
2. Activate an external alarm system that has been wired to the Display Console's switch input (i.e. press an emergency button).

When a general network alarm is activated the following events occur:

- The STROBE on all active Tags starts to flash and the Tags start to vibrate.
- The STROBE on the Display Console and any Internal Routers starts to flash twice per second and the routers emit loud repetitive tones.
- The STROBE on all External Routers starts to flash.
- Any external safety or alarm warning systems that are attached to a router will also be activated (when using factory default relay settings).

Network Mute/Acknowledgement of a General Alarm

Press the ALARM button on the Display Console. This mutes the general alarm across the Crewsafe network.

Once muted:

- The audio alarm is reduced to a single beep every 5 seconds on the Display Console and Internal Routers.
- Active Tags continue to vibrate.
- The STROBE light on all routers and Tags will stop flashing, so that night vision is not affected.

Note: If a new man overboard, duress, general or manual network alarm is activated after an earlier alarm has been muted, the system will restart loud repetitive tones and the STROBE will start flashing again.

Local Internal Router Mute/Acknowledgement of a General Alarm

Press the ALARM button on an Internal Router. This only mutes the general alarm locally.

Alarm Button

Once muted:

- The audio alarm on the Internal Router is reduced to a single beep every 5 seconds.
- Active tags continue to vibrate.
- The STROBE light on the Internal Router will stop flashing, so that night vision is not affected.

Canceling a General Alarm

WARNING: Never cancel an alarm unless you are sure that everyone is accounted for.

1. Press and hold the ALARM button on the Display Console for 3 seconds, or
2. To cancel an alarm activated by a warning system wired to the Display Console's switch input, reverse the switch or repress the button used to initiate the alarm.

After cancellation, all network routers and Tags return to their normal operational state.

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7.4   Manual Network Alarm: Raise, Cancel, Mute

A manual network alarm can be initiated across the Crewsafe network from either an Internal Router or External Router, to alert the crew to an emergency.

Raising a Manual Alarm

1. Press and hold the ALARM button on an Internal Router for three seconds. While the button is being pressed the router emits up ramping tones and the STROBE flashes quickly; or
2. Activate an external alarm system that has been wired to an Internal or External Router's switch input (i.e. press an emergency button).

When a manual network alarm is activated the following events occur:

- The STROBE on all active Tags starts to flash and the Tags start to vibrate.
- The STROBE on the Display Console and any Internal Routers starts to flash twice per second and the routers emit loud repetitive tones.
- The STROBE on all External Routers starts to flash.
- Any external safety or alarm warning systems that are attached to a router will also be activated (when using factory default relay settings).

Network Mute/Acknowledgement of a Manual Alarm

Press the ALARM button on the Display Console.

This mutes the manual alarm across the Crewsafe network, except for the Internal Router that the alarm originated from. This device continues to emit loud repetitive tones and/or strobe to enable the crew to identify the source of the alarm.

Once muted:

- The audio alarm is reduced to a single beep every 5 seconds on the Display Console and Internal Routers (except for the router from which the alarm originated).
- Active Tags continue to vibrate.

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- The STROBE light on all routers and Tags will stop flashing, so that night vision is not affected (except for the router from which the alarm originated).

Note: If a new man overboard, duress, general or manual network alarm is activated after an earlier alarm has been muted, the system will restart loud repetitive tones and the STROBE will start flashing again.

Local Internal Router Mute/Acknowledgement of a Manual Alarm

Press the ALARM button on the Internal Router. This only mutes the manual alarm locally.

Once muted:

- The audio alarm on the Internal Router is reduced to a single beep every 5 seconds.
- Active Tags continue to vibrate.
- The STROBE light stops flashing, so that night vision is not affected.

Note: It is not possible to mute the alarm on the Internal Router that has raised a manual alarm.

Canceling a Manual Alarm

WARNING: Never cancel an alarm unless you are sure that everyone is accounted for.

There are three ways to cancel a manual alarm:

1. To cancel a manual alarm using the Internal Router that raised the alarm, press the ALARM button on that device for 3 seconds.
2. To cancel a manual alarm using the Display Console, press and hold the DIM and ALARM buttons simultaneously on that device for 5 seconds. Note: This

cancels the manual alarm and all other active general and manual alarms within the system.
3. To cancel an alarm activated by an external warning system wired to an Internal or External router's switch input, reverse the switch or re-press the button used to raise the alarm.

After cancellation, all network routers and Tags return to their normal operational state unless another alarm is active.

7.5 False Alarms

WARNING: Never cancel an alarm unless you are sure that everyone is accounted for.

A false man overboard alarm may occur on the Crewsafe system if:

a. A person leaves the vessel carrying an active Tag and disconnects from the network.
b. An active Tag is lost overboard and cannot be retrieved.
c. A Tag's battery runs flat.

A false duress alarm may occur if:

a. Someone unintentionally presses the Tag BUTTON for 3 seconds.

A false manual or general alarm may occur if:

a. Someone unintentionally presses the ALARM BUTTON on a Display Console or Internal Router, or
b. Someone unintentionally activates an external alarm system that has been wired to an Internal or External Router's switch input (i.e. presses an emergency button).

To cancel alarms raised in error, please see the relevant section:

- Cancelling a Man Overboard Alarm
- Cancelling a Duress Alarm
- Cancelling a General Alarm
- Cancelling a Manual Alarm

7.6   Managing Multiple Alarms

WARNING: Although it is possible that multiple alarms will occur as a result of several people activating an alarm for the same reason or incident, it is important to ensure that each alarm is investigated before it is canceled, or before multiple alarms are canceled from the system simultaneously.

Muting Multiple Alarms

If more than one alarm has been initiated across the network (i.e. more than one person has initiated an alarm from a router, or multiple Tag alarms are active), press the ALARM button on the Display Console to mute all current alarms across the system. It is also possible to locally mute multiple alarms at an Internal Router by pressing the ALARM button on this router. Any new alarm activated after muting will restart an audio alarm across the network and reactivate the strobe on Tags.

Canceling Multiple Man Overboard Alarms

If you want to cancel multiple man overboard alarms you need to perform the cancel function once for each Tag. The earliest man overboard alarm is canceled first and any other man overboard or duress alarms are canceled in the order in which they occurred.

Canceling Multiple Duress Alarms

If you want to cancel multiple duress alarms you need to perform the cancel function once for each Tag. The original duress alarm is canceled first and any subsequent duress or man overboard alarms are canceled in the order in which they occurred.

Canceling Multiple Manual/General Alarms

Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds to cancel all current general and manual alarms in the system.

Canceling Simultaneous Man Overboard, Duress & General/Manual Alarms

If both a man overboard or duress alarm and either general and/or manual alarms are activated simultaneously then they need to be canceled separately.

1. Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds to cancel all current general and manual alarms in the system.
2. Repeat this process to cancel the active man overboard or Duress alarm.

Note: If you have to cancel multiple man overboard or duress alarms then you need repeat this process for each Tag in an alarm state. The earliest Tag alarm is canceled first and any subsequent Tag alarms are canceled in the order in which

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they occurred.

Simultaneous Man Overboard & Duress Alarms from the Same Tag

It is possible that a duress alarm could be initiated by a person wearing a Tag and then they could subsequently fall overboard and the same Tag would then initiate a man overboard alarm. There are two possible Crewsafe scenarios in this situation:

1. If you are using the Crewsafe Management System it is possible to discern between the two alarm states and see that both have occurred.
2. If you are:

   a. Not using the Crewsafe Management System; and
   b. Have not acknowledged the first alarm from the Tag at the Display Console.

Then the same STROBE, PIEZO and LED alarm states will be displayed on the Display Console because there is no discernable difference between the two alarm states.

Important note: If you are not using the Crewsafe Management System, which can distinguish between a man overboard and duress alarm, it is best to initially assume that an alarm from a Tag is a man overboard alarm.

Canceling a Man Overboard and Duress Alarm from the Same Tag

If both a duress and man overboard alarm are activated at the same time from the same Tag, it is only necessary to perform a single cancel function on the Display Console to clear the two system alarm states. Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds to cancel the alarms and remove the Tag from being in an active monitoring state on the Display Console.

Cancel all System Alarms

As a last resort, it is possible to clear all alarms from the system by turning the system off at the Display Console.

WARNING: If you turn the system off at the Display Console then it will be unable to monitor crew on the vessel. The Display Console shuts down all network components in range. A man overboard, duress, general or manual alarm cannot be raised while the system is shut down and any man overboard or duress situation that may occur will not be recorded. All Tags need to be individually switched on again if the system is temporarily shut down using the POWER BUTTON on the Display Console.

> ***Important note:*** *It is important to turn the system off using the POWER button on the Display Console, rather than disconnecting the supply of power to the unit. Otherwise, the Display Console will retain all previous alarm states. In addition, all Tags will go into a man overboard alarm state and all other routers will lose network connectivity.*

8   System Maintenance

The following system maintenance tasks may affect the performance of your Crewsafe system if not carried out correctly. If in any doubt, Mobilarm recommends that you contact your authorised Mobilarm service agent.

- Adding a new router to the system,
- Adding a new tag to the system,
- Removing a tag from the system,
- Replacing Tag batteries,
- Update system firmware, or
- Factory reset to assign tags to a Display Console.

8.1   Removing a Tag from the System

You may need to remove a Tag from the Crewsafe system if:

- A person leaves the vessel carrying an active Tag, or
- An active Tag is lost overboard and cannot be retrieved, or
- An active Tag has been damaged.

All of the preceding scenarios will result in the Tag disconnecting from the network and raising a Crewsafe alarm.

If a person leaves the vessel carrying an active Tag:

Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds.

This will cancel the alarm across the network, except for the Tag that has disconnected (moved out of range of the wireless network). This temporarily removes the Tag from the Display Console and effectively places it into standby mode. The next time the Tag is turned on within range of the Display Console it will rejoin the network automatically.

If an active Tag is lost overboard and cannot be retrieved, or has been damaged:

Reset the Display Console back to its factory default settings. This removes all active tags from the system and should only be done if you want to permanently remove a lost or damaged Tag.

To reset a Display Console to its factory defaults please see the section titled Factory Reset: Reassign Tags & Routers.

Note: When a Display Console is set back to its factory default settings, it does not totally reset Tags. Tags retain their previous registration information and simply need to be reconnected to the network to be reassigned to the Display Console.

8.2   Adding a Tag to the System

New Tags may be added to the Crewsafe network as replacements for lost tags or to accommodate an increase in crew members.

New Tags may be supplied:

    a. Pre-configured with the correct Network ID, or
    b. Pre-configured with an incorrect Network ID.

If a Tag is pre-configured with the correct Network ID then it should automatically connect to the network once it is turned on.

When a Tag that is pre-configured with an incorrect Network ID is turned on and tries to connect to the existing network, its TAG STATUS LED will flash red.

If a Tag is pre-configured with an incorrect Network ID it needs to be reconfigured with the correct Network ID for the existing network

Adding a Tag with the Correct Network ID

1. Press the Display Console POWER button to turn the Crewsafe system on.
2. Press the Tag BUTTON.

When a configured Tag is turned on:

- The STROBE light flashes twice and the Tag STATUS LED flashes red briefly.
- The TAG STATUS LED flashes green once it has been registered to the network successfully.
- The next available TAG STATUS LED on the Display Console is allocated to the new Tag and illuminates solid green.

Reconfigure a Tag to the Correct Network ID

Reconfiguration of a Tag to the correct Network ID can be performed using the Display Console, or a configured Tag, i.e. one that has connected to the network previously.

Reconfiguration using a Display Console

This is the simplest way to reconfigure a Tag to the existing network.

1. Press the Display Console POWER button to turn the Crewsafe system on.
2. Press the POWER and ALARM buttons simultaneously for 5 seconds. This places the Display Console into configuration mode and the unused Tag LEDs on the router cycle green. The Display Console remains in configuration mode for 60 seconds.

3. Align the Tag lens to within 150 mm (6 in) of the strobe lens on the Display Console. This enables infrared data transfer of the Network ID.
4. While the Display Console is in configuration mode, press the button on the Tag. The Tag STROBE flashes twice followed by short red LED flashes until it has acquired the Network ID.
5. Once the Tag has acquired the Network ID it enters 'acquisition mode'. The TAG STATUS LED turns solid green and the STROBE flashes.
6. Within 20 seconds of the Tag entering this 'acquisition mode', press the Tag button to confirm reconfiguration of the Tag.

The Tag should now connect to the network and the Tag's LED should flash green. The next available TAG STATUS LED on the Display Console is allocated to the new Tag and illuminates solid green.

Note: If a Tag is not successfully programmed with the Network ID it will continue to flash red until the Network ID acquisition process times out.

If a Tag does not connect to the network after several attempts, please see the Tag section of the troubleshooting guide to diagnose the problem.

Reconfiguration using a Tag

Reconfiguration of a Tag can be performed using a configured tag in wand mode. A Tag remains in wand mode for 2 minutes from wand mode activation.

1. Turn on the Display Console.
2. Ensure that the configured Tag you are using as the 'wand' Tag is turned off.
3. Press and hold the button on the configured Tag for 10 seconds. This places the Tag into wand mode and its LED will flash alternately red and

green.
4. While the configured Tag is in wand mode, press the BUTTON of the Tag to be reconfigured to turn it on. The STROBE on this Tag flashes twice and then its LED displays short red flashes.
5. Align the lenses of both tags so that they face each other. This enables infrared data transfer of the Network ID. The Tag being reconfigured should:
   - Flash its STROBE twice alternately with a green LED indication.
   - Display a sequence of fast red flashes as it is reprogrammed.
5. When the Network ID data is sent successfully the Tag will display green LED flashes.
6. Check the Display Console for a new green Tag LED. This confirms that the Tag has been successfully added to the network.
7. The wand Tag will automatically time-out after two minutes and turn itself off. Placing the Tag into a Power Dock will also turn wand mode off.

8.3   Replacing Tag Batteries

WARNING: Crewsafe Tags are factory fitted with high-performance 3.6 volt CR2 Lithium-ion rechargeable batteries and these **must only be replaced by an approved Mobilarm service agent** or the warranty is voided. Non-rechargeable batteries cannot be used in Tags and if installed they may rupture, leak or explode causing personal injury.

Rechargeable batteries can be charged and discharged hundreds of times but they will eventually wear out. If a Tag's operation time appears to be significantly lower than it should be after charging, the battery most likely needs replacing. Mobilarm recommends using only high-performance 3.6 volt CR2 Lithium-ion rechargeable batteries in Crewsafe Tags. To replace a battery in a Tag please return it to an authorized Mobilarm dealer for servicing.

8.4   Adding a Router to the System

Internal or External Routers can be added to a Crewsafe network to increase the footprint, reliability and redundancy of the system, or to replace an existing device.

New routers may be supplied:

a. Pre-configured with the correct Network ID, or
b. Pre-configured with an incorrect Network ID.

If an Internal or External Router is pre-configured with the correct Network ID then it should automatically connect to the network once it is turned on.

When an Internal or External Router that is pre-configured with an incorrect Network ID is turned on and tries to connect to the existing network, it will display as follows:

a. The NETWORK STATUS LED will flash purple when turned on and then go into standby mode where no LEDs are illuminated, or

b. The NETWORK STATUS LED will flash purple when turned on and then flash blue in the 'unsuccessful network connection' error state.

If an Internal or External Router is pre-configured with an incorrect Network ID it needs to be reconfigured with the correct Network ID for the existing network.

Adding a Router with a Correct Network ID

1. Install the new router and attach ship's power to it.
2. Turn the Crewsafe system on by pressing the Display Console POWER button.

The router will:

- Automatically search for a network that matches its internally programmed Network ID.
- Display a flashing blue NETWORK STATUS INDICATOR LED while it is being added to the network.
- Display a solid blue NETWORK STATUS INDICATOR LED once it has connected to the network.

Reconfigure a Router to the Correct Network ID

Reconfiguration of a router to the correct Network ID requires a configured Tag, i.e. one that has connected to the network previously.

1. Turn the Crewsafe system on by pressing the Display Console POWER button.
2. Ensure the configured Tag is turned off.

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3. Press and hold the button on the configured Tag for 10 seconds. This places the Tag into wand mode and its LED will flash alternately red and green.
4. While the configured Tag is in wand mode, align the Tag lens to within 150 mm (6 in) of the strobe lens on the router to be reconfigured. This enables infrared data transfer of the Network ID.
5. When the Network ID data is sent successfully then the router's STROBE will flash twice and the NETWORK STATUS LED will turn solid blue when it connects successfully to the network.
6. The Tag will automatically time-out after two minutes and turn itself off. Placing the Tag into a Power Dock will also turn wand mode off.

If a router does not connect to the network after several attempts, please see the router section of the troubleshooting guide to diagnose the problem.

8.5 Updating Crewsafe Firmware

It may be necessary to upgrade firmware in order to update or expand the capability of your Crewsafe system. Upgrades to firmware can only be performed by Mobilarm or your Mobilarm dealer. Please contact your dealer if you need to upgrade your system.

8.6   Factory Reset: Reassign Tags & Routers

Tags are initially assigned to a Display Console panel in the order in which they are registered to the network. It is possible to change the order of Tags on a Display Console, or remove Tags from the system, by performing a factory reset on the Display Console. The system is limited to 12 Tags if a Display Console is used without the Crewsafe Management System because there is a maximum of 12 TAG STATUS LEDs on the Console.

Technical Tip: A factory reset can only be performed if the system is turned off and the Display Console has ship's power connected to it. Once you have performed a factory reset you must turn off power to all Internal and External Routers, or the routers will not rejoin the network. The only way to do this is to briefly turn off ship's power to all Internal and External Routers.

Initiating a Factory Reset

To initiate a factory reset of a Crewsafe system, simultaneously press and hold the ALARM, DIM and POWER buttons for 5 seconds.

During initialization:

1. The Display Console NETWORK STATUS LED flashes red and all lights on the front panel flash orange 8 times.
2. All lights go out for a couple of seconds.
3. All lights on the front panel illuminate orange and the NETWORK STATUS LED illuminates purple for a couple of seconds.
4. The NETWORK STATUS LED flashes blue as it attempts to reconnect the network of installed routers.

After performing the factory reset:

- All routers in range are automatically rejoined to the network.
- All Tags are reassigned to the Display Console when they are switched on (in the order that information is received from them).

Note: When a Display Console is set back to its factory default settings, it does not totally reset Tags. Tags retain their previous registration information and simply need to be reconnected to the network to be reassigned to the Display Console.

Managing the Registration Order of Tags on the Display Console

To manage the order in which Tags are reassigned to the Display Console, simply switch on each Tag in the order that you want them to be listed on the Display Console front panel. Wait for each Tag to be registered and then turn the next Tag on and so forth.

Naming Tags

The name of the person wearing a Tag can be written on the pre-printed stickers supplied with each system and placed next to the LED for their Tag to identify them. If you are using the Crewsafe Management System you can assign alpha-numeric names to your crew and view their Tag status on a PC (see the Crewsafe Management System User Manual).

9   Maintaining System Components

Mobilarm Crewsafe systems are extremely robust and designed for operating in the harshest conditions encountered when at sea. Despite this, we recommend that the unit is looked after as carefully as possible when in use. Please try to avoid:

- Dropping any component;
- Leaving components like Tags exposed to the elements unnecessarily when not in use; and
- Leaving Tags or other components unnecessarily in full sun on an instrument panel or dashboard, which may expose the components to excessively high temperatures.

Carefully inspect your Crewsafe system over time for any visible cracks as a result of misuse, or system components being dropped and taking heavy knocks. Any cracking could lead to moisture being admitted to the components - rendering the system unreliable or unusable. If cracking is observed, or if you suspect that a component has been damaged in some way, please return it to your place of purchase for it to be assessed and replaced if required.

Battery

The shelf life for Tag batteries is 2 years. The battery charge state is indicated on the Display Console, or by the Crewsafe Management System. A low battery warning indication indicates that a Tag should be recharged. If a Tag's operation time appears to be lower than it should be after charging, the battery most likely needs replacing by an authorized Mobilarm dealer.

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Cleaning Tags & Power Dock Charger Bays

> **Important Note:** *Do not paint your Crewsafe system components, or clean them with detergents or solvents that may damage the integrity of the device. Seals may be damaged by many cleaning devices. If the components require cleaning, use warm soapy water and wipe with a damp, not wet, cloth.*

System Checks

If your system has failed a system test, or you doubt the integrity of the device for some reason, please return it to your place of purchase or an approved Mobilarm dealer. Contact Mobilarm at support@mobilert.com, or call +61 08 9315 3511, for the nearest approved dealer in your area.

10   Integrating Mobilarm Technologies

Mobilarm highly recommends the use of an integrated man overboard solution that includes the use of both Crewsafe and VPIRB technologies. For more information on the Mobilarm V100 VPIRB please visit www.vpirb.com or http://www.mobilarm.com/page/about_mobilarm_v100_vpirb.html.

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11   Reference

Product support for Mobilarm Crewsafe systems is provided in various forms. This user manual should provide all the information required to get you up and running with any installed system. If you are having problems please consult the troubleshooting and FAQ sections that follow or your place of purchase for advice.

If you require further technical information about Crewsafe or other Mobilarm products, please visit Mobilarm online at www.mobilarm.com and visit the support section. Here you will find the latest software, troubleshooting and FAQ updates. Other downloadable manuals and materials are also available.

> **Please note:** If you cannot find the information you require in this manual, or on our web-site, please e-mail support@mobilarm.com

Replacing Faulty or Damaged Components

If you suspect the system has a technical fault, please contact your place of purchase to arrange to have system components assessed and repaired, or replaced if required.

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11.1   Troubleshooting Guide

ALARMS	
PROBLEM	*SOLUTION*
Someone has set of a duress alarm by mistake, how do I turn it off?	There are two ways to turn off a false duress alarm: 1. Press and hold the BUTTON on the Tag that the alarm originated from for three seconds. This sends a message to the network to cancel the duress alarm state. Once canceled, the Tag and all system components return to the active monitoring state. 2. Press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds. This removes the Tag from being in an active monitoring state on the Display Console.
Someone has dropped a Tag overboard and lost it, how do I turn off the alarm?	To cancel a false man overboard alarm across the Crewsafe network, press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds. This removes the Tag from being in an active monitoring state on the Display Console - effectively placing it into standby mode. To remove a permanently lost Tag, perform a factory reset and switch all remaining Tags on so that they rejoin the network.
Someone has walked off the vessel while wearing an active Tag, the man overboard alarm is sounding so how can I turn it off?	The crew member has caused a false man overboard alarm. To cancel a false man overboard alarm across the Crewsafe network, press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds. This removes the Tag from being in an active monitoring state on the Display Console - effectively placing it into standby mode.
Someone has set off a false alarm using an Internal Router, how do I cancel it?	A false manual alarm can be cleared across the network by pressing and holding the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds.
If someone sets off a manual alarm, how can I identify where the alarm has originated from?	If you are not sure who has set the alarm off, you can mute the entire system, except for the Internal Router that the alarm originated from, by pressing the ALARM button on the Display Console. The router that initiated the alarm continues to emit loud repetitive tones and strobe to enable the crew on a vessel to identify the source of the alarm.
Every time someone goes to one section of the vessel an man overboard alarm is activated, even though nobody	If the network is not providing sufficient coverage over all areas of the boat a man overboard alarm may be activated. This occurs because the Tag loses contact with the network and the system thinks the person has fallen overboard. This can be solved by adding another router to the section or sections of the boat that are causing problems.

has fallen overboard?	
Every time we sail past a particular spot a man overboard alarm is activated, what could be causing this?	If the system is operational and becomes swamped by radio frequency signals, it may lose contact with active Tags and go into a man overboard state. This could be caused by very high-energy RF transmissions, or a device in the vicinity transmitting on the same channel as the Crewsafe system.To get around this, you could turn the system off and then on again in the vicinity of the interfering transmissions. The Display Console will automatically attempt to connect the system to an interference-free channel on system power up. There is an excellent chance it will connect to a channel that is unaffected by the RF signals that previously caused problems.

ROUTERS	
PROBLEM	*SOLUTION*
My router's NETWORK STATUS LED Flashes Red when it is Switched On	If your router flashes red when it is switched on then it has not been configured with a compatible Network ID for the system. Network IDs are usually factory or dealer configured for each network. Check the Network ID (PAN ID) displayed on any internal or external router against the one displayed on the Display Console to ensure they match. If it doesn't match you will need to reprogram your router.
My router's NETWORK STATUS LED continues with long blue flashes after power up	Configured routers display long blue flashes initially on power up while all network routers join the network. The NETWORK STATUS LED is solid blue once a router joins the network. If your router continues to display long blue flashes then it is probably programmed with an incorrect Network ID and won't join the network until it is reconfigured.
My router's NETWORK STATUS LED flashes purple on power up and then isn't illuminated	If a router has been used previously and was correctly powered down before being removed from its previous network, the NETWORK STATUS LED will flash purple on power up and then go into standby mode where no LEDs are illuminated. The router needs to be reconfigured with a correct Network ID.
After the network is powered up, the NETWORK STATUS LED on one of the routers is orange	If any of the routers on the network fail a self test when power is applied to them an orange fault LED is displayed. The faulty router should be returned to your Mobilarm dealer for evaluation.
When I power up the Display Console the NETWORK STATUS LED flashes blue and	There could be RF interference in the vicinity. If the network experiences radio frequency interference on power up, the Display Console automatically searches for a new channel that is free of interference. Normally, the Display Console connects to a "quiet" channel unless it is completely "swamped" by RF in the vicinity. If it is unable to find an interference-free channel, the Display Console

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then turns off	and the network goes into a standby state and the router NETWORK STATUS INDICATOR LEDs will be off.
My router's NETWORK STATUS LED is flashing blue very quickly	If a router flashes blue very quickly then it has a problem and has lost connection with the network, or has not been configured for the ship's network. Other routers on the network display long blue flashes to signify that one or more of the routers on the network have lost network connectivity. A faulty router should be returned to your Mobilarm dealer for evaluation and a non-configured router can be reprogrammed on the vessel.
My Display Console is faulty and I need to replace it, can I use the same Network ID to avoid reprogramming the network?	Absolutely. In the unlikely event that an Display Console fails, simple contact your nearest Mobilarm dealer and supply the serial number and PAN ID (Network ID) displayed on your faulty router. A new Display Console with the same settings can be supplied to avoid having to reprogram your entire network.

TAGS	
PROBLEM	SOLUTION
My Tag STATUS LED Flashes Red when it is Switched On	If a Tag's STATUS INDICATOR LED displays short red flashes on power up then it is not configured for the network. If a Tag's status LED displays long red flashes on power up then it is not configured with a correct Network ID. Network IDs are factory or dealer configured. Check the Network ID (PAN ID) displayed on any non-configured Tag against the one displayed on your Display Console to ensure they match.
My Tag STATUS LED is flashing orange and the Tag is vibrating intermittently, what does this mean?	The battery is getting low so it should be put on charge if possible. If the battery in the Tag is in good condition then it should last for around 10 hours from when the low battery indication commences. A man overboard alarm will occur if the battery runs flat.
My Tag has been charged but the battery is not lasting very long	All rechargeable batteries have a limited life. This will vary a little depending on the operating environment of the Tag. If a Tag's operation time is significantly lower than it should be after charging, the battery most likely needs replacing.
My Tag was charging in the Power Dock and the Tag's LED is solid red - is there a problem?	If a fault occurs during charging then the LED on a Tag turns solid red. This may occur if the Tag and battery get too hot (let it cool down and try to charge it again). It may also occur if a battery or a Tag is faulty. If this is the case, the Tag should be returned to your Crewsafe system dealer.
We lost a Tag overboard, how	If a Tag is lost, clear any alarm from the system using the cancel alarm function on your Display Console.

do I remove it from the system?	There is no need to reprogram the system if a Tag is lost, as long as you have enough spare Tag STATUS LEDs available on your Display Console.
I can't seem to reconfigure a new Tag for my existing Crewsafe network, what can I check?	If a Tag does not successfully become registered to the system, please ensure that your Tag lens is within 150mm (6 in) of the Display Console's strobe lens.

POWER DOCKS	
PROBLEM	SOLUTION
	If a fault occurs during charging, the LED on a Tag displays as solid red. If a Power Dock bay is short-circuited by either a Tag or something placed into the bay, the Power Dock will shut down and the green LED on the dock will go out.

ROUTERS	
PROBLEM	SOLUTION
I have powered up the system and the buttons on my Display Console (or Internal Router) don't seem to be working	Please return the router to your Mobilarm dealer.
Link from section "Adding a Router", at bottom of page	Was the wand tag lens lined up correctly with the router lens? Faulty router? Unconfigured tag used?

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11.2 FAQs

System Configuration & Operation

Q: I seem to be having trouble connecting my new Tag to the network?

A: *You probably need to configure your new Tag for the network. Tags need to be registered to the network before they can connect to it. Tags also need to be programmed with the Network ID for the current network in order to connect. The correct Network ID can be sent to a Tag by placing the Display Console into configuration mode (press and hold the POWER and ALARM buttons) and placing the non-programmed Tag in close proximity to the Display Console. Turn the Tag on, wait for it to recognize the network (LED is solid green) and then press the Tag button to confirm programming of the Tag. The Tag should appear as the next available TAG STATUS LED on the Display Console when successfully programmed. (The section of the Crewsafe manual titled* [Adding a Tag to the System](#) *explains this procedure in detail.)*

Q: My internal and external routers don't seem to be connecting to the network?

A: *If a router is not configured for a network, or it is pre-configured with the Network ID for a different network, it needs to be configured with the current Network ID in order to be registered. If your routers' NETWORK STATUS LEDs are flashing red then they haven't been configured with a Network ID. If the NETWORK STATUS LED on a router flashes purple on power up and subsequently doesn't illuminate or flashes blue, then it is probably programmed with an incorrect Network ID.*

To configure a router please perform the following:

1. *Turn the system on, including the router to be programmed, by pressing the Display Console POWER button.*
2. *Press and hold the button on a configured Tag (one that has connected to the network previously) while it is switched off for 10 seconds. When the Tag enters wand mode the LED on it alternately flashes red and green.*
3. *While the configured Tag is in wand mode, place the Tag in close proximity to the router being programmed and press the wand Tag's POWER button. This initiates programming of the router with a new Network ID for the new network.*
4. *If the Network ID data is sent successfully then the router's STROBE will flash twice and the NETWORK STATUS LED will turn blue when it connects successfully to the network.*
5. *To exit wand mode, press and hold the button on the wand Tag for a few seconds until the LED stops flashing and it enters standby mode.*

Q: When I power up the Display Console the NETWORK STATUS LED flashes blue and then turns off, what's going on?

It's possible that the network is experiencing radio frequency interference on power up. Normally the Display Console automatically searches for a new channel that is free of interference when it is switched on and it connects to a "quiet" channel - unless it is

completely "swamped" by RF in the vicinity. If it is unable to find an interference-free channel, the Display Console and the network goes into a standby state and the router NETWORK STATUS INDICATOR LEDs will be off. If you are in an area with lots of RF around, try to power the system up again when you have shifted position slightly.

False Alarms & Operational Issues

Q: If someone accidentally loses a Tag overboard or walks off the boat with a Tag, how do I cancel the alarm?

A: *The simplest way to cancel any false alarm is to press and hold the DIM and ALARM buttons simultaneously on the Display Console for 5 seconds. This removes the affected Tag from the Display Console front panel and effectively places it into standby mode.*

Q: If someone accidentally loses a Tag or damages it, how do I remove it from the system?

A: *If a Tag is lost, clear any alarm from the system using the cancel alarm function on your Display Console.*
There is no need to reprogram the system if a Tag is lost, as long as you have enough spare TAG STATUS LEDs available on your Display Console.

For more information on resetting an Display Console to its factory defaults please see the section titled Factory Reset: Reassign Routers & Tags.

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11.3   Glossary of Terms & Acronyms

ACMA	Australian Communications and Media Authority
AMSA	Australian Maritime Safety Authority
DSC	Digital Selective Calling – technology used to automate calling on terrestrial marine radio systems.
EPIRB	Emergency Position Indicating Radio Beacon.
FCC	US Federal Communications Commission
GMDSS	Global Maritime Distress and Safety System.
GRT	Gross Registered Tons – statutory measurement of a vessel's size.
IEC	International Electrotechnical Commission
IMO	International Maritime Organization.
ITU	International Telecommunications Union
kHz	Kilo Hertz – measurement unit of radio frequency (1 thousand Hertz).
MHz	Mega Hertz – measurement unit of radio frequency (1 million Hertz).
MAYDAY	Radio pro-word indicating a voice distress priority message
MID	Maritime Identification Digits
MMSI	Maritime Mobile Service Identity (DSC identity number)
MRCC	Maritime Rescue Coordination Centre.
MSLS	Marine Survivor Locating System
PAN	Personal Area Network
PLB	Personal Locator Beacon (a small personal radio locating beacon, normally operating through the COSPAS-SARSAT system on 121.5 and/or 406 MHz)
RCC	Rescue Coordination Centre
RTCM	Radio Technical Commission for Maritime Services
SAR	Search and Rescue
SOLAS	International Convention for the Safety of Life At Sea. Applies to vessels of 300 GRT and over, engaged on an international voyage.
USCG	US Coast Guard
VHF	Very High Frequency radio band – 30 to 300 MHz.
VPIRB	VHF Position Indicating Radio Beacon

12 Technical Specifications

General	
Personal Area Network	2.4GHz ISM band
Wireless Network Protocol	IEEE 802.15.4
System Nodes Supported	Release v.1.0: supports 32 nodes including routers, with up to 24 Tags.
Programming Interface	Infrared serial communications for firmware upgrades & device configuration
Programming Range	500mm
Compass Safe Distance	All system components Safe when inactive at close range (500mm - tested as per IEC 60945 safe distance test); low EMF prior to unit activation
Storage Temperature	-20° to +70°C (-4° to +158°F).
System Alarms	
Man Overboard Alarm	10 seconds (nominal) after a Tag's signal is disconnected from the system
Duress Alarm	Within 4 (nominal)seconds of activation
General/Manual Alarm	Immediately (nominal) after activation via the Alarm button
Paging Alert	Within 4 (nominal)seconds of activation using the Crewsafe Management System
Router Network Status LED States	(visible on a Display Console, Internal Router and External Router)
No Illumination	The router is switched off; disconnected from the network
Long Blue Flashes	*On start up:* The router is trying to join the network
	During operation: There is a fault somewhere on the network
Short Blue Flashes	A network is being created
Solid Blue	The router has joined the network and is operating normally
Flashing Blue Fast	The router has lost connectivity with the network
Solid Red	The router has failed a self test and is not connected to the network
Long Red Flashes	The router is not configured for the network (no Network ID)
Short Red Flashes	A factory Reset is in Progress

Display Console	
Power Supply	11-30V DC
Typical Power Consumption	5W maximum
Operating Temperature	-15° to +70°C (5° to +158°F).
Dimensions	184 x 103.6 x 40mm (7.24 x 4.08 x 1.57in)
Weight	301 g (10.62 oz)
Case	Ingress sealed, UV stabilized, impact resistant housing
Mounting Options	Surface/flush or bracket mounting options
Environmental Resistance	IP56
Strobe Light	120 degree dispersion at 5 candela
Audible Alarm	Bracket mounted: 70dB at 30cm (1ft) with 24V supply
Relay Outputs	2 optically-isolated relay outputs for activation of additional alerting devices; supports a switching current of 1.5 A at the supplied voltage, switched to ground.
Switched Input	100mA switched to ground with a 5K input impedance.
Serial Communications	2 x 4 wire interfaces supporting NMEA 0183 specifications. System is compatible with the following NMEA sentences: RMC; RMA; GGA; GLL; DSC/DSE; WPL; BWC; BWR.
Tag LEDs	12 x bi-colour Tag status LEDs
Router/Network Status LED	One red and one blue router/network status LED display
GPS/Chart Plotter LED	1 bi-colour GPS/chart plotter status LED
Controls & Operation	
Power Button	Turns the entire system on and off; clears all alarms when switched off
Dim Button	Dims the LEDs on the router; 4 stage dimming.
Alarm Button: Mute function	Press momentarily to mute a man overboard, general, duress or manual alarm
Alarm Button: General Alarm On	Press for 3 seconds to initiate a general alarm
Alarm Button: General Alarm Off	Press for 3 seconds to cancel a general alarm
TAG STATUS LED Operation States	
No Illumination	Tag is OFF; no Tag is assigned to the TAG STATUS LED on the display console; or a Tag has been deactivated by canceling a man overboard alarm.
Solid Green	Tag is ON and is safe
Long Orange Flashes	Tag is ON and the battery is low
Solid Orange	Tag is being charged in a Power Dock
Short Fast Red Flashes	Tag has entered the man overboard warning state prior to an alarm and a man overboard waypoint is logged

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Long Red Flashes	A man overboard or duress alarm has been muted
Solid Red	Tag has entered an active man overboard alarm state, or a duress alarm has been activated
GPS/Chart Plotter LED States	
No Illumination	No GPS or chart plotter is connected at powerup
Solid Green	GPS or chart plotter data is good
Long Red Flashes	Receiving invalid chart plotter data (chart plotter is likely to be acquiring GPS data)
Solid Red	No data is being received from the GPS chart plotter (likely to be a cable/wiring issue, or GPS chart plotter is turned off)
Illuminated Red for 5 Seconds	Signifies canceling of any active alarms
Strobe/Piezo Operation States	
General Alarm Initiated	Very fast flashes on the Display Console with up-ramping tones when initiated
General Alarm Active	Fast flashes accompanied by high level, repetitive tones
General Alarm Canceled	Very fast flashes with down-ramping tones when the alarm is canceled
Duress Alarm Active	After manual activation from a Tag, fast flashes on the Display Console accompanied by high level, repetitive tones
Man Overboard Alarm Active	After man overboard activation from a Tag, fast flashes on the Display Console accompanied by high level, repetitive tones
Manual Alarm Active	After activation by an Internal Router, fast flashes on the Display Console accompanied by high level, repetitive tones
Mute Alarm	Long, infrequent flashes when any alarm is muted
Relay 1 Output States	(used for devices attached to the router and network mute)
Open	Open during normal operation or if Display Console mute has been activated
Closed	Closes when any alarm is activated
Relay 2 Output States	
Open	Open during normal operation
Closed	Closes when any alarm is activated until the system is restored to normal operation

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Internal Router	
Power Supply	11-30V DC
Typical Power Consumption	3W maximum
Operating Temperature	-15° to +70°C (5° to +158°F).
Dimensions	184 x 103.6 x 40mm (7.24 x 4.08 x 1.57in)
Weight	247 g (8.7oz)
Case	Ingress sealed, UV stabilized, impact resistant housing
Mounting Options	Surface/flush or bracket mounting options
Environmental Resistance	IP56
Strobe Light	120 degree dispersion at 5 candela.
Audible Alarm	Bracket mounted: 70dB at 30cm (1ft) with 24V supply
Relay Outputs	2 optically-isolated relay outputs for activation of additional alerting devices; supports a switching current of 1.5 A at the supplied voltage, switched to ground.
Switched Input	100mA switched to ground with a 5K input impedance.
Router/Network Status LED	One red and one blue router/network status LED
Controls & Operation	
Dim Button	Dims the LEDs on the router; 4 stage dimming
Alarm Button: Mute function	Press momentarily to mute a man overboard, general, duress or manual alarm
Alarm Button: Manual Alarm On	Press for 3 seconds to initiate a manual alarm
Alarm Button: Manual Alarm Off	Press for 3 seconds to cancel a manual alarm
Strobe/Piezo Operation States	
General Alarm Active	Fast flashes accompanied by high level, repetitive tones
Duress Alarm Active	After manual activation from a Tag, fast flashes on the Internal Router accompanied by high level, repetitive tones
Man Overboard Alarm Active	After man overboard activation from a Tag, fast flashes on the Internal Router accompanied by high level, repetitive tones
Manual Alarm Initiated	Very fast flashes on the Internal Router with up-ramping tones when initiated
Manual Alarm Active	Fast flashes on the Internal Router accompanied by high level, repetitive tones
Manual Alarm Canceled	Very fast flashes with down-ramping tones when the alarm is canceled
Mute Alarm	Long, infrequent flashes when any alarm is muted
Relay 1 Output States	(used for devices attached to the router)
Open	Open during normal operation or if Internal Router or Display Console mute has been activated
Closed	Closes when any alarm is activated

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Relay 2 Output States	
Open	Open during normal operation
Closed	Closes when any alarm is activated until the system is restored to normal operation

External Router	
Power Supply	11-30V DC
Typical Power Consumption	3W
Operating Temperature	-20° to +70°C (-4° to +158°F)
Dimensions	168 x 140 x 45.7mm (6.61 x 5.51 x 1.80in)
Weight	736 g (26 oz) including supplied cable
Case	Ingress sealed, UV stabilized, impact resistant housing
Mounting Options	Surface/flush, bracket, pole/railing mounting options
Environmental Resistance	IP67
Strobe Light	120 degree dispersion at 5 candela
Relay Output	1 optically-isolated relay output for activation of additional alerting devices; supports a switching current of 1.5 A at the supplied voltage, switched to ground.
Switched Input	100mA switched to ground with a 5K input impedance.
Router/Network Status LED	One red and one blue router/network status LED
Strobe Operation States	
General Alarm Active	Strobe flashes fast after activation
Duress Alarm Active	Strobe flashes fast after activation
Man Overboard Alarm Active	Strobe flashes fast after activation
Manual Alarm Active	Strobe flashes fast after activation
Relay 1 Output States	(used for devices attached to the router)
Open	Open during normal operation or if Display Console mute has been activated across the network
Closed	Closes when any alarm is activated

Tag	
Battery	1 x rechargeable 3.6 volt CR2 battery
Battery Shelf Life	1 year
Battery Life - full charge	up to 48 hours of normal operation
Man overboard alarm Battery Life	up to 4 hours in an alarm state when fully charged
Man overboard alarm Battery Life - low battery indicated	10 hours from low battery indication
Operating Temperature	-20° to +70°C (-4° to +158°F).

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Dimensions	95.4 x 50.2 x 37.3mm (3.76 x 1.98 x 1.47in)
Weight	78 g (2.75 oz)
Environmental Resistance	IP68; 2 metres for 1 minute
Case	Impact resistant, UV stabilised polycarbonate shell with TPE overmould
Buoyancy	Positive buoyancy
Strobe Light	RTCM standard-compatible for in-water tracking
LED	One red/green Bi-LED
Controls & Operation	
System On/Off	Press button momentarily to turn a Tag on
Duress Alarm On	Press and hold Tag button for 3 seconds
Duress Alarm Off	Press and hold Tag button for 3 seconds
Man overboard Alarm	Man overboard warning after 4 (nominal) seconds, MOB alarm after 10 seconds (nominal)
Man overboard Warning Alarm	Man overboard warning after 4 (nominal) seconds, man overboard alarm after 10 seconds (nominal)
Turn off Tag in man overboard State	Press and hold Tag button for 10 seconds (nominal)

Tag LED Operation States	
No Illumination	Tag is switched off or battery is flat
Green Flashes	Tag is ON and safe.
Orange Flashes	Tag is connected to the network and the battery is low
Short Red Flashes	Tag is not configured with a network ID
Long Red Flashes	Tag is switched on and configured with an incorrect network ID
Short Fast Red Flashes	Tag has been switched on and is attempting to join the network
Tag LED Charge States when in Power Dock and Turned On	
Solid Green	Tag is fully charged
Solid Orange	Tag is charging
Solid Red	Tag charging fault

Strobe Operation States	
Power On/Startup	Strobe flashes twice
Man overboard Warning	Strobe flashes fast once a man overboard warning is activated
Man overboard Device Alarm	Strobe double-flash occurs every 2 seconds when man overboard alarm is activated
Duress Alarm Initiated	Strobe flashes fast after a duress alarm is initiated
Duress Alarm Activated	Strobe flashes fast after a duress alarm is activated

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Duress Alarm Canceled	Strobe flashes fast while the alarm is being canceled
General Network Alarm Active	Strobe flashes once each half-second when activated
Duress Network Alarm Active	Strobe flashes once each half-second when activated
Man overboard Network Alarm Active	Strobe flashes once each half-second when activated
Manual Network Alarm Active	Strobe flashes once each half-second when activated
Paging	No flash in paging mode
Network Shutdown	Strobe flashes for five seconds prior to shutdown
Tag Shutdown (in charger)	Strobe flashes for three seconds prior to shutdown
Tag Vibration During Operation	
Man overboard Alarm: Tag Initiating Alarm	Tag vibrates for 60 seconds after a man overboard alarm is activated, or until it comes back within range of the network
Man overboard Alarm: Tags not initiating alarm	Other Tags not in man overboard alarm state vibrate initially when an alarm is activated over the network
Duress Alarm: Tag Initiating Alarm	Tag vibrates after a duress alarm is activated until the alarm is either muted on the Display Console or deactivated
Duress Alarm: Tags not initiating alarm	Other Tags not in a duress alarm state vibrate when a duress alarm is activated over the network
General Alarm	All active Tags vibrate after the alarm is activated by the Display Console
Manual Alarm	All active Tags vibrate after the alarm is activated by the Display Console
Paging	Tags vibrate when paged by the Crewsafe Management System
Low Battery Warning	A Tag vibrates for one second every 20 seconds (nominal) to indicate the battery is low
Network Shutdown	A Tag vibrates for five seconds before during network shutdown

Powerdock	
Power Supply	11-30V
Maximum Power Consumption	22W
Operating Temperature	-10° to +55°C (-14° to +131°F).
Charge Time	4 fully discharged Tags in 4 hours maximum
Dimensions	380 x 115 x 54mm (14.96 x 4.53 x 2.13in)
Weight	0.5 kg (17.64 oz)
Case	Impact and water resistant.
Mounting Options	Mount vertically or horizontally up to 4 power docks together
Environmental Resistance	IP56

LED Indication	Green power indication LED

12.1 Trademarks

The following names, and/or the logos and symbols associated with them, are trademarks of Mobilarm Limited in Australia and/or other countries: Always on Watch; Crewsafe; Mobilarm; Mobilert; Onix; Sitesafe

The absence of a product or service name or logo from those listed does not constitute a waiver of Mobilarm's trademark or other intellectual property rights concerning that name or logo. Please contact Mobilarm Limited at info@mobilarm.com for a copy of our trademark policy before referencing or using any trademark or product name.

Other Product Trademarks in this Document

1. Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
2. Other product names mentioned within this document may be trademarks or registered trademarks, or a trade name of their respective owner.

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13   Warranty

LIMITED WARRANTY

1. MOBILARM warrants, to the original purchaser only, each Marine Employee Safety Monitoring Product ("Product") manufactured and/or supplied by MOBILARM against defects in materials and workmanship under normal use and service, and against non-conformity to its technical specifications for a period of 24 months from the date of purchase. Software products are warranted as per the End User License Agreement applicable to that software.

2. MOBILARM warrants Software products against failure of programming instructions due to defects in materials and workmanship when properly installed and used on the hardware designated by MOBILARM. MOBILARM cannot be responsible in any way for ancillary equipment, hardware or software not furnished by MOBILARM which is attached to or used in connection with MOBILARM's Products, or for the operation of the Product with any ancillary equipment, hardware or software and all such equipment, hardware or software is expressly excluded from this warranty. Mobilarm further warrants that Mobilarm owned standard Software will substantially conform to Specifications.

In the event of a defect, malfunction or failure of the Product during the warranty period, MOBILARM's liability for any breach of contract or any breach of express or implied warranties in connection with the sale of Products shall be limited solely to repair or replacement, at its option, of the Product or part(s) therein which, upon examination by MOBILARM, appear to be defective or not up to factory specifications. MOBILARM may, at its option, repair or replace parts or subassemblies with new or reconditioned parts and subassemblies. Parts thus repaired or replaced are warranted for the balance of the original applicable warranty.

3. MOBILARM will pay all labour to repair the product and replacement parts charges incurred in providing the warranty service except where purchaser abuse or other qualifying exceptions exist. The purchaser must pay any transportation expenses incurred in returning the Product to MOBILARM for service.

4. MOBILARM disclaims liability for range, coverage, or operation of the Product and ancillary equipment as a whole under this warranty. MOBILARM reserves the right to make changes or improvements in Products, during subsequent production, without incurring the obligation to install such changes or improvements on previously manufactured Products.

5. MOBILARM will not warrant installation, maintenance or service of the Products. In all instances, MOBILARM's liability for damages shall not exceed the purchase price of the defective Product.

6. This limited warranty does not extend to any Product which has been subjected to misuse, neglect, accident, incorrect service repair or maintenance by anyone other than MOBILARM or its Authorized Service Agent(s), improper installation, unauthorised modification, loss or damage in transit, or subjected to use in violation of instructions furnished by MOBILARM, nor does this warranty extend to Products on which the serial number has been removed, defaced, or changed.

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7. The implied warranties which the law imposes on the sale of this Product are expressly LIMITED, in duration, to the time period specified above. MOBILARM shall not be liable under any circumstances for consequential damages resulting from the use and operation of this Product, or from the breach of this LIMITED WARRANTY, any implied warranties, or any contract with MOBILARM.

IN CONNECTION WITH THE SALE OF ITS PRODUCTS, MOBILARM MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, EXCEPT AS EXPRESSLY SET FORTH HEREIN.

Some states and territories do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply. This warranty gives specific legal rights, and there may be other rights which may vary from state to state, or between territories.

Warranty Period

The standard warranty on Mobilarm Crewsafe systems is 24 (twenty four) months.

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13.1 Exclusions

The law implies terms, conditions and warranties ('prescribed terms') into contracts for the supply of goods and services and prohibits the exclusion, restriction or modification of certain terms, conditions and warranties. Some prescribed terms permit a supplier to limit its liability for a breach of the prescribed terms. Except as provided by prescribed terms:

(1) the liability of the seller in respect of a breach of a prescribed term relating to the products or any part of the products is limited at the option of the seller to the replacement or repair of the products part thereof or payment of the cost of repairing or replacing the products or any part of the products;

(2) in these conditions the buyer does not have under any circumstances any cause of action against or right to claim or recover from the seller for, or in respect of, any loss or damage of any kind whatsoever, caused directly or indirectly by:

(a) any defect in material or workmanship of, or any other defect whatsoever in, or unsuitability for, any purpose of the products or any part of the products; or

(b) by default or negligence on the part of the seller or of any employee, contractor or agent of the seller or of any person for whom the seller has legal responsibility relating to the supply of, or otherwise concerning products or any part of the products. Mobilarm Limited is not liable to the buyer in contract or in tort arising out of, or in connection with, or relating to:

(a) the performance of the products or any breach of these conditions; or

(b) any fact, matter or thing relating to the products; or

(c) any error (whether negligent or in breach of contract or not) in information supplied to the buyer or a user before or after the date of the purchaser's or user's use of the products.

Mobilarm Limited is not liable to the buyer in contract or in tort arising out of, or in connection with, or relating to:

(a) the performance of the products or any breach of these conditions; or

(b) any fact, matter or thing relating to the products; or

(c) any error (whether negligent or in breach of contract or not) in information supplied to the buyer or a user before or after the date of the
purchaser's or user's use of the products.

The total liability of Mobilarm Limited for loss or damage of every kind:

(a) whether arising pursuant to this agreement; or

(b) out of or in relation to the goods, their sale, delivery or the way they behave, in tort or contract or in any other cause of action; or in any other way whatsoever,is limited to:

(c) the amount paid by the buyer to the seller under this agreement at the date when such liability arises; or

The buyer indemnifies on a continuing basis on a fully indemnity basis Mobilarm Limited from and against any liability, loss, expense or demand for or arising from any false, misleading, deceptive or misdescriptive representation or statement made by the buyer in respect of the products, or their intended use to any person. This indemnity survives termination of this agreement by either party for any reason.

The failure of any party to enforce the provisions of this agreement or to exercise any

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rights expressed in this agreement is not be a waiver of such provisions or rights and does not affect the enforcement of this agreement.

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13.2 Declaration of Conformity

EC Declaration of Conformity

In accordance with EN 17050-1:2004

We, Mobilarm Limited
Of, 768 Canning Highway, APPLECROSS WA 6153
Declare that:
Equipment, Crewsafe 8000 Man Overboard Monitoring Systems
Model name / number:

- Display Console MOA-0130
- Internal Router MOA-0120
- External Router MOA-0110
- Tag MOA-0140
- Power Dock MOA-0150

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 Electromagnetic compatibility and radio spectrum matters (ERM); Short range services (SRD); 25MHz to 1000 MHz with power levels ranging up to 500mw Part 1.
- ETSI EN 300 220- 3 Electromagnetic compatibility and radio spectrum matters (ERM); Short range services (SRD); 25MHz to 1000 MHz with power levels ranging up to 500mw Part 3.
- ETSI EN 301 489 – 1 Electromagnetic compatibility and radio spectrum matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services Part 1.
- ETSI EN 301 489 – 3: Electromagnetic compatibility and radio spectrum matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services Part 3.
- ETSI EN 301 843 – 1: Electromagnetic compatibility and radio spectrum matters (ERM); Electromagnetic compatibility (EMC) standard for Marine radio equipment and services; Part 1.
- ·ETSI EN 300 328: Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- EN61000-6-4:2001: Electromagnetic compatibility (EMC). Generic standards.

Emission standard for industrial environments
- EN61000-6-1:2001: Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments
- EN 60945:2002 : Maritime navigation and radiocommunication equipment and systems. General requirements. Methods of testing and required test results
- EN 60950-1:2002: 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:

Address: 768 Canning Highway

APPLECROSS WA 6153

Position:

at MOBILARM
768 Canning Highway
APPLECROSS, PERTH, WESTERN AUSTRALIA 6153

On   day of   2009

Technical documentation required by the conformity assessment procedure is kept at the aforementioned address.

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13.3 Compliances & Certifications

FCC Compliance Information Statement

Mobilarm Crewsafe 8000 systems comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices 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.

Properly shielded and grounded cables and connectors must be used to meet FCC emission limits. Mobilarm is not responsible for any radio or television interference caused by using other than recommended cables or connectors.

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

Other Compliances & Certifications

Certifications	
USA	USCG; RTCM standard 11901.0
Australia	C✓; ACMA; IEC; AMSA;
Europe	CE; IEC;
Compliances	
All Crewsafe 8000 Products	FCC; C✓; CE; WEEE
Special Purpose Life Jacket	Complies with ISO standard 12402-6:2006 relating to the safety requirements and additional test methods for special purpose lifejackets and buoyancy aids

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