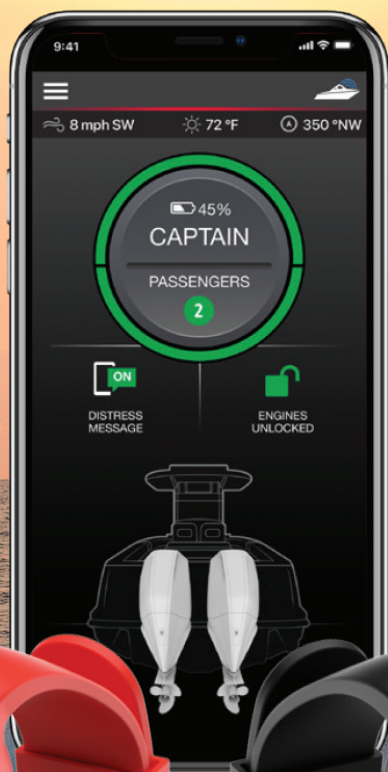




1st Mate

Marine Safety & Security System



Declaration of Conformity

Mercury Marine declares that under our sole responsibility the following products to which this declaration relates are in conformity with the requirements of the following EU Directives:

Directives

2014/35/EU	The Low Voltage Directive
2014/53/EU	Radio Equipment Directive (RED)
2011/65/EU	RoHS Directive

Equipment - MOB Link Safety HUB

Marketed as	1st Mate HUB
Model number	F3501
FCC ID	2AFOZF3501
IC	2AFOZ-F3501

Equipment - MOB Safety FOB

Marketed as	1st Mate FOB
Model number	F3502
FCC ID	2AFOZF3502
IC	2AFOZ-F3502

The following harmonized standards and normative documents are those to which the products conformance is declared, and by specific reference to the essential requirements of the referenced directives.

EU / EMEA

Health & Safety (Article 3.1(a) of the RED)	EN 60950-1:2006 + A11:2009 + A1:2010+ A12:2011 + A2:2013 EN 62368-1: 2014/A11:2017 EN 62311: 2008
EMC (Article 3.1(b) of the RED)	EN 301 489-1 v2.2.0 EN 301 489-17 v3.2.0 EN 55032:2015 + AC:2016 EN 55024:2010 EN 61000-3-2:2014 EN 61000-3-3:2013
Spectrum (Article 3.2 of the RED)	EN 300 328 v2.1.1 EN 301 893 v2.1.1
Equipment within Certain Categories or Classes (Article 3.3 of the RED)	N/A
RoHS Directive, 2011/65/EU	EN 50581:2012

United States / Canada

FCC Rules and Regulations	Part 15 Subpart C Section 15.247
ANSI	C63.10: 2013
RSS-247	Issue 2: February 2017
RSS-Gen	Issue 5 April 2018
American Boat and Yacht Council (ABYC)	A-33

Authorized Representative in the EU:

Name of authorized representative: Brunswick Marine in EMEA Inc.		
Address: Parc Industriel de Petit-Rechain		
Town: Verviers	Post Code: B-4800	Country: Belgium

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive and standards for CE Marking for sale in the European Community.

Name / function:

Christopher D. Drees, President,
Mercury Marine

**Date and place of issue:**

June 03, 2020
Fond du Lac, Wisconsin, USA

Welcome

You have selected one of the finest marine accessories available. It incorporates numerous design features to ensure operating ease and durability. This manual contains specific instructions for using and maintaining your product.

Thank you for purchasing one of our products. We sincerely hope your boating will be pleasant!

Mercury Marine

Fond du Lac, Wisconsin, U.S.A.

Read This Manual Thoroughly

IMPORTANT: If you do not understand any portion of this manual, contact the 1st Mate support team using the link provided in the Help section of this manual.

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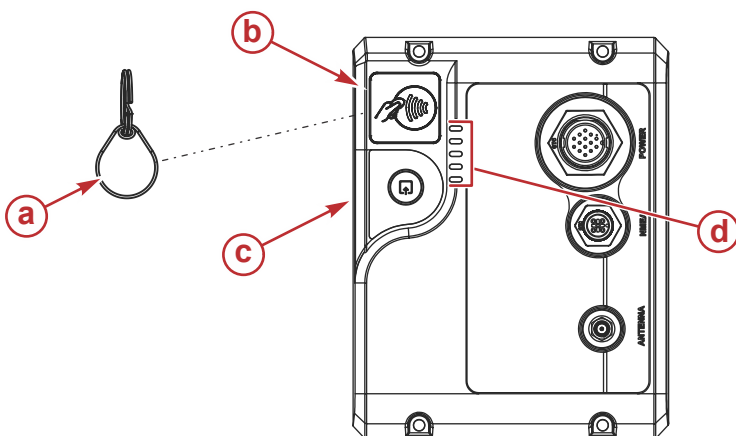
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COMPONENTS

The 1st Mate Hub

The 1st Mate hub is mounted in the vessel's console or in an interior compartment that is protected from the elements. NMEA network, power, and remote antenna connections are located on the hub. The 1st Mate hub is powered by battery power from the vessel's key switch circuit. A NMEA network is not required for operation. The hub uses a dedicated marine wireless protocol to communicate with wearable devices (fobs) that are worn by the driver and each passenger.



71012

- a** - NFC chip
- b** - RFID sensor
- c** - Reset button
- d** - Hub indicator lights

Indicator Lights

Hub lights provide a visual indication of the 1st Mate system status. A flashing red light on any of the five systems indicates that there is a fault in the corresponding system.

TDS - If the vessel is equipped with an enabled security system. The TDS light will be green when the system is unlocked and blue when the system is locked.

Fob - When fobs are paired with the hub, the fob light will be green. The fob light will turn solid red and the warning horn will beep if a **MOB** incident occurs.



















NMEA - If the vessel is equipped with a connected National Marine Electronics Association (NMEA) network the NMEA light will be green.

SmartCraft - If the vessel is equipped with a connected Mercury SmartCraft network the SmartCraft light will be green.

COMPONENTS

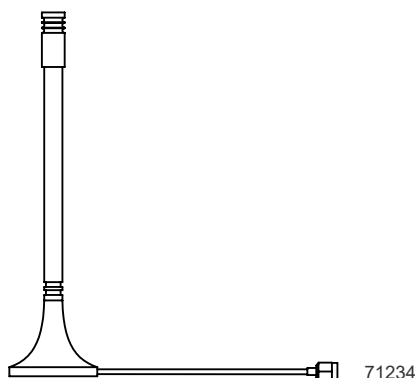
Wireless - A green light indicates that the 1st Mate wireless network is enabled. A flashing green light indicates that the wireless network is waiting to pair with a fob.

Hub Indicator Light Table

Indicator Light	Off/No Data	Waiting	On	Status Change			Fault
TDS		> > > >		>		>	
Fob		> > > >		>		>	
NMEA		> > > >		> > > >			
SmartCraft		> > > >		> > > >			
Wireless				> > > >			

1st Mate Antenna

The 1st Mate system is equipped with a small antenna for wireless communication with 1st Mate devices. The antenna is connected to the 1st Mate hub and is usually located in an interior compartment or console. In some cases it may be necessary to reorient or relocate the antenna to improve performance. Refer to **IMPORTANT INFORMATION** and the **1st Mate Kit** installation instructions for more information about antenna installations.



1st Mate antenna

NFC Chip and RFID Sensor

Tap the radio-frequency identification (RFID) sensor with the near-field communication (NFC) chip to unlock the theft-deterrent system (TDS) if an active fob or the app is not available. The NFC chip is used for anti-theft authentication and system override functions.

COMPONENTS

Reset button

The reset button located on the front of the hub can be used to reset the system after a man overboard event or to simultaneously stop all engines (hold for 3 seconds).

Fobs



69454

- a - On/Off/Reset** button
- b - MOB** light
- c - On** light
- d - Fob battery** status

CAPTAIN'S FOB

A small wearable wireless device for the vessel operator that can be worn on a wristband or on a carabiner clip. **MOB** and **ON** lights indicate connection status. The **Captain's fob** includes an **On/Off/Reset** button that will turn the system off, activate the system, or reset the system after an overboard event. The engine(s) will immediately stop if the driver wearing the fob is ejected into the water. If present, connected passengers are notified and recovery coordinates are provided on their personal mobile displays.

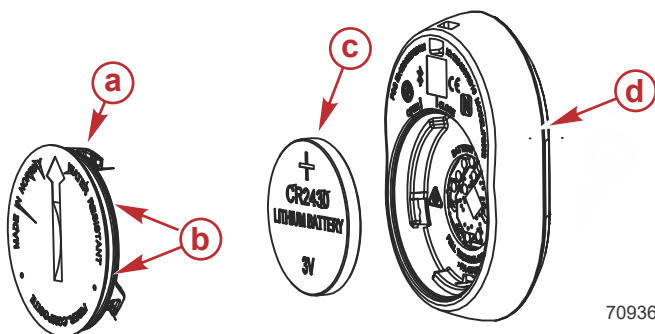
PASSENGER FOB

The passenger fob is a small wearable device for the vessel passengers. It can be worn on a wristband or on a carabiner clip. The system will support one fob per passenger, for up to seven. **MOB** and **ON** lights indicate connection status. When an overboard event occurs, the position is marked, the captain and other connected passengers are notified, and are provided with recovery coordinates on their personal mobile displays.

COMPONENTS

Insert Battery in FOB/S

1. Use a coin to turn the fob battery cover counterclockwise and remove the cover.



- a** - Cover with coin slot
- b** - O-ring
- c** - CR2430 battery
- d** - Fob assembly

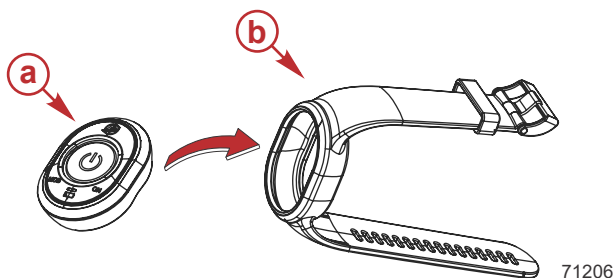
2. Install the fob battery with the + positive side of the battery facing the cover.
3. Inspect the fob battery cover to ensure that an O-ring is installed and turn the cover clockwise to install the battery and seal the fob.

Wearables

Insert each fob into a wrist strap or carabiner clip.

WRIST STRAP

Secure the wrist strap.

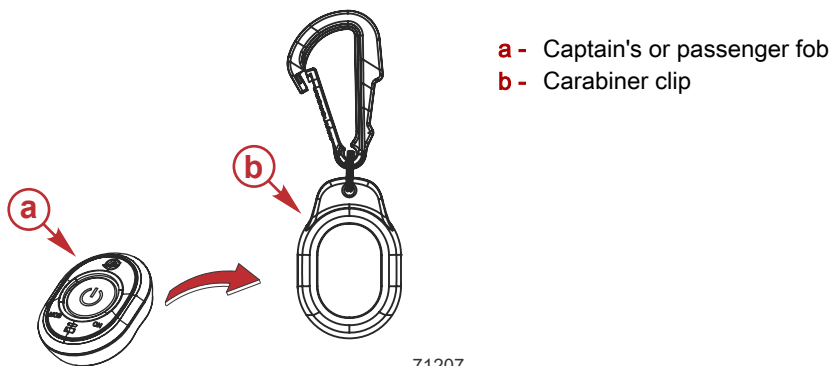


- a** - Captain's or passenger fob
- b** - Wrist strap

COMPONENTS

CARABINER CLIP

Fasten the carabiner clip to a belt loop or personal flotation device.



71207

Important Safety Information

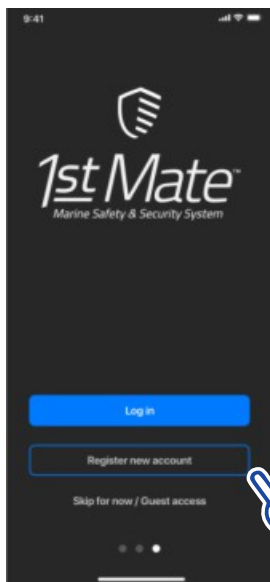
Refer to the engine's Operation and Maintenance Manual for important information about the vessel's lanyard stop switch and other safe boating recommendations. 1st Mate is not a replacement for safety lanyards or personal flotation devices.

App Download

Download the **1st Mate** app from a preferred app store and follow the instructions for new account registration. The app is required to setup the 1st Mate system.

SETUP

Register New Account



70916

IMPORTANT: Verify that the **Wireless** green indicator light on the hub is **flashing**.

If the **Wireless** green indicator light is not flashing, check the power harness connections. Use the app's onscreen touchpoint feature to access the hub Installation Instructions for more information.

Vessel Setup

- Enter vessel name and picture.
- Select boat type.
- Select engine manufacturer.
- Select engine type.
- Select Horse Power rating.
- Select number of engines.
- Save

Pair Devices

Refer to the pairing instructions provided in the 1st Mate app for initial device pairing.

1. Pair each device:
 - 1st Mate hub
 - Captain's fob

SETUP

- Passenger fob/s
2. Accept any available device updates.

System Test

To test the system, go to **Vessel Settings**.

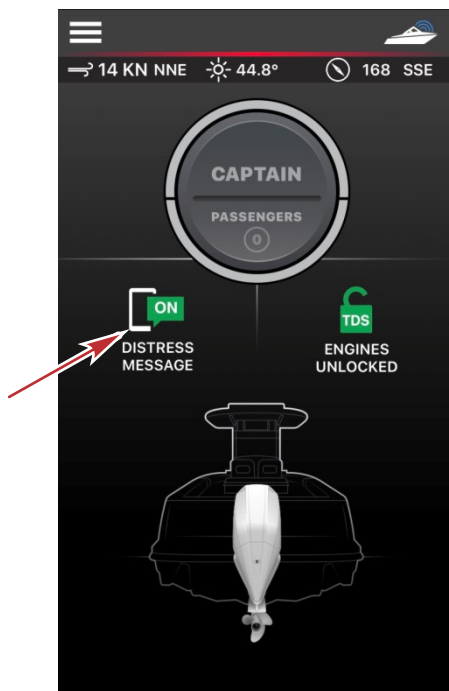
- Test Wireless Connection
- Test E-Stop

Optional Distress Messaging

Distress messaging can be enabled or disabled in the **App Settings** menu.

Open the **Emergency Contacts** tile located in the main **menu** to manually enter or import the contact information for contacts that should be notified in the event of an emergency.

Tap the Distress Message icon to enable distress messaging. This feature notifies contacts if a man overboard event occurs.



71247

Optional Theft-Deterrent System

1. Select a four digit PIN or Face ID located below the main menu in the **My Account** dropdown.
 - TDS PIN/Face ID

SETUP

- Enable Face ID
 - Change TDS App PIN
2. Tap the TDS lock icon to lock or unlock the engine(s) and prevent unauthorized use. Engine RPM will be limited to idle speed when TDS is enabled.



3. Turn the TDS system on or off in the **App Settings** menu.

FEATURES AND OPERATION

Connecting

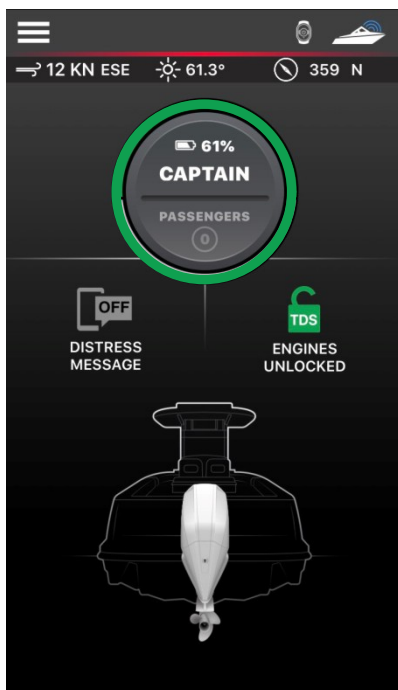
One short beep accompanied by a green blinking fob light indicates that the fob is paired and connected.

IMPORTANT: Turn on Fob Auto Connect in the fob settings menu.

1. Press the power button on the **Captain's fob**.
 - A single beep indicates that the **Captain's fob** is connected and ready for use.
 - The green **Fob Status Icon** on the app screen indicates that the **Captain's fob** is connected.
 - All paired **Passenger fobs** will automatically connect.
 - A full green **Fob Status Icon** indicates that the **Captain's fob** and one or more **Passenger fobs** are connected



Green semi circle



Full green circle

71246

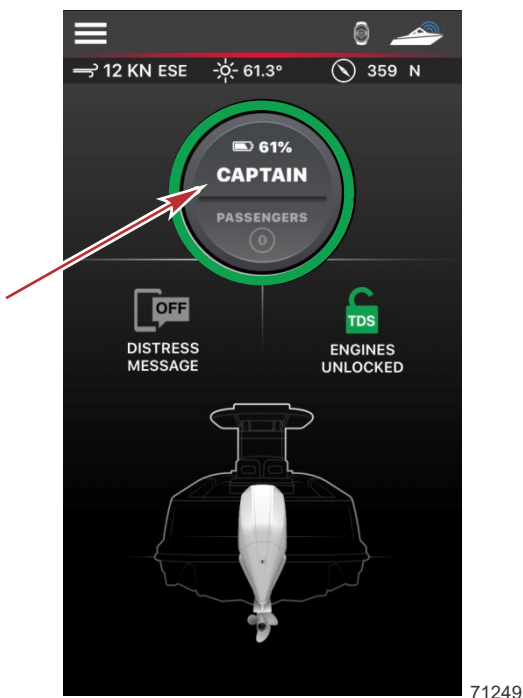
2. Operate the boat.
3. Exit Boat/Disconnect.
 - Press the power button on the **Captain's fob** to disconnect after boating activities are finished, i.e. when trailering or leaving the vessel at the end of the day.

FEATURES AND OPERATION

IMPORTANT: Pressing the power button on the Captain's fob while operating the boat will activate ESTOP and immediately turn the engine(s) off.

Operation

1. After boarding the vessel, firmly press the **On/Off/Reset** button on the **Captain's fob** to turn the 1st Mate system on or off.
2. Tap the **Captain** half of the **Fob Status Icon** to open the fob settings menu and adjust **FOB LED Brightness**.



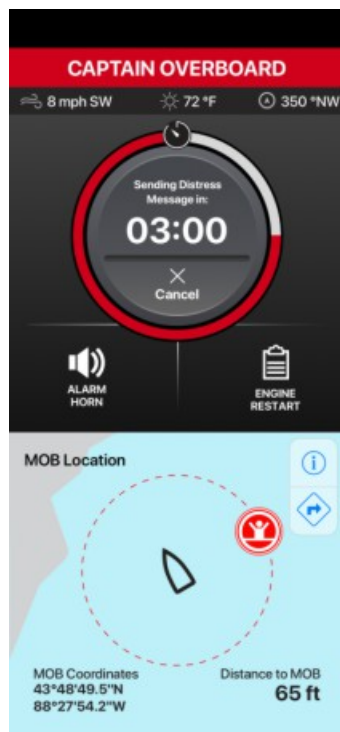
Man Overboard (MOB)

If the Captain wearing a fob falls overboard:

1. The engine(s) stop when the fob is submerged in the water.
2. An audible horn from the mobile device app and the vessel's hub will sound.
3. The location is marked on the app's GPS screen.
4. Alerts are sent to the contacts on the app's emergency contact list, and fobs of connected passengers.

FEATURES AND OPERATION

- Coordinates are only sent to emergency contacts in the form of a text message. Devices with the app that are within Bluetooth range will receive a notification from the app.



70948

Captain overboard screen

If a Passenger wearing a fob falls overboard:

- An audible horn from the mobile device app and the vessel's hub will sound.
- The location is marked on the app's GPS screen.
- Alerts are sent to the contacts on the app's emergency contact list, the captain's fob, and fobs of connected passengers.
- Coordinates are only sent to emergency contacts in the form of a text message. Devices with the app that are within Bluetooth range will receive a notification from the app.

MAN OVERBOARD (MOB) MONITORING

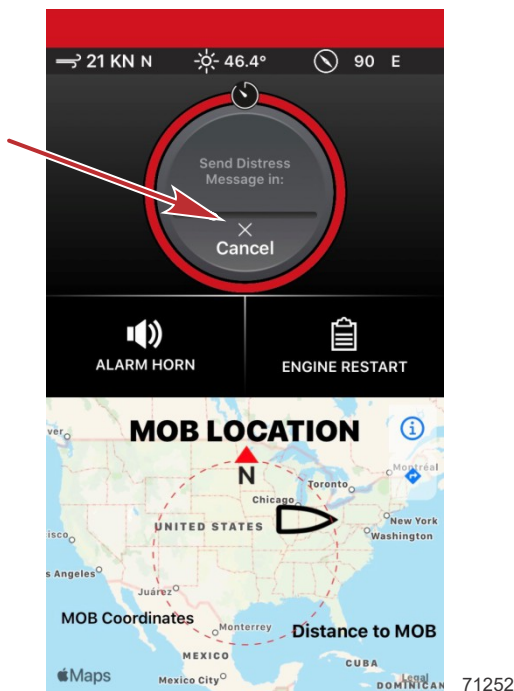
IMPORTANT: MOB with Gear in Neutral is enabled/disabled in the Vessel Settings Menu.

If a man overboard event occurs:

- Recover the passenger or driver.

FEATURES AND OPERATION

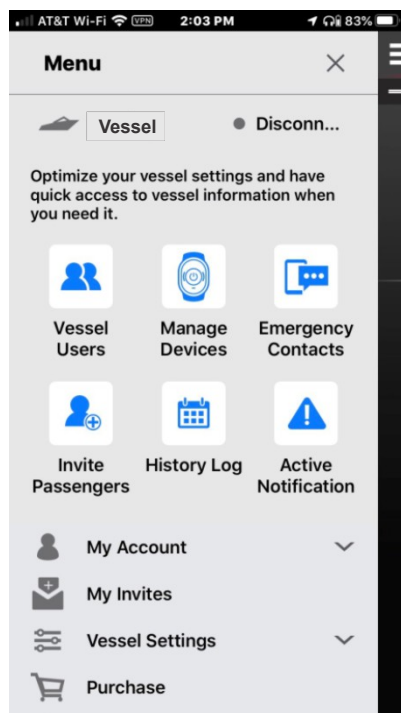
2. Tap the **Cancel** button and cancel the distress message after passenger recovery.
3. Tap **Cancel Man Overboard**.



4. A man overboard event can also be canceled by pressing the power button on the **Captain's fob** or by pressing the **On/Off/Reset** on the **1st Mate Hub**.

FEATURES AND OPERATION

App Menu



71243

1st Mate app menu

Vessel Users - Add vessel users to give others control and access to the vessel. Control when and how you want them to use your vessel when you are not around.

Manage Devices - Add, update, and delete your devices including passengers fobs and Captain's fobs here.

Emergency Contacts - With distress messaging turned **ON**, contacts will be notified if a man overboard event occurs.

Invite Passengers - Share the app with passengers so they are notified if someone falls overboard. All passengers on the invited passenger list will be notified no matter where they are located on the vessel.

History Log - TDS, battery, MOB events, and system faults are logged here.

Active Notifications - View active notifications, warnings, and faults.

MENU LISTS

Use the **Menu** drop down arrows to manage the 1st Mate app.

My Account

FEATURES AND OPERATION

- My Account Information
- TDS PIN/Face ID
- Log Out of Account

My Invites

- Manage invitations

Vessel Settings

- MOB with Gear in Neutral (**ON/OFF**)
- Test Wireless Connection
- Test E-Stop

Purchase

- Order additional accessories

Help Center

- Send Feedback to Developers
- Support Center
- App Diagnostics

App settings

- Push notifications **ON/OFF**

About

- App information
- Privacy Policy
- Terms of Use





Product Tour

FOB LIGHT AND HUB HORN TABLES



Fob Light and Hub Horn Tables

All blinks are 0.5 seconds long



Fob Light Table

Fob Light	State	MOB/ON Lights
	Warning A man overboard event has occurred involving the person wearing this fob.	MOB and ON lights are illuminated red – continuous rapid blinking, alternating sides on fob. Indicates: Captain's fob has gone overboard
	Warning A man overboard event has occurred involving a person wearing a different fob.	MOB light is illuminated red, continuous rapid blinking on left side of fob Indicates: passenger fob has gone overboard
	Warning Pairing failed	ON light – 4 red rapid blinks, followed by green blink, repeating Indicates: Fob pairing to hub was unsuccessful
	Warning Fault	ON is illuminated red, 3 rapid blinks, repeating at 2.5 second intervals Indicates: a fault has occurred in either the fob or the hub
	Warning SOS	MOB light – <i>3 long, 3 short, and 3 long</i> , red - blinking SOS pattern; followed by, ON light – <i>3 long, 3 short, and 3 long</i> , white- blinking SOS pattern, repeating Indicates: SOS Morse International Distress Signal has been activated (by pressing the Captain's fob power button for 3 seconds)

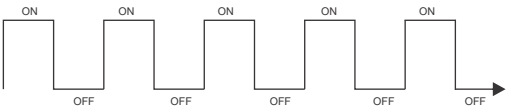
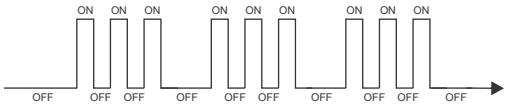
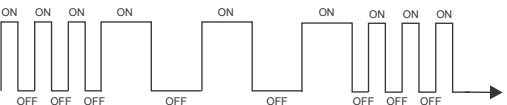
FOB LIGHT AND HUB HORN TABLES

Fob Light	State	MOB/ON Lights
	Ready Continuously connected	ON light – 1 green rapid blink, repeating (2.5 second intervals) Indicates: Fob continuously connected to hub
	Ready Connected	ON light – fade-in green, followed by 1 green rapid blink, repeating Indicates: Fob connected to hub via auto connect or by user
	Ready Pairing successful	ON light – 5 green rapid blinks, repeating Indicates: Fob and hub pairing was successful
	Ready TDS unlock	ON light – fade-in green, followed by 2 green rapid blinks, repeating Indicates: Fob connected to hub
	Set-up/pairing Connect failed	ON light – fade-in orange, followed by 3 red blinks, repeating Indicates: Fob connected to hub failed
	Set-up/pairing Disconnected	ON light – 2 orange blinks followed by orange fade-out, repeating Indicates: Fob disconnected from hub
	Set-up/pairing Pairing	ON light – orange blink, repeating (1 second intervals) Indicates: Fob is in pairing mode and ready to pair with hub
	Set-up/pairing Ping fob	ON light – green blink, repeating (1 second intervals) Indicates: user making configuration changes; or, pinged fob using the app/ VesselView

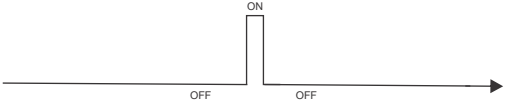
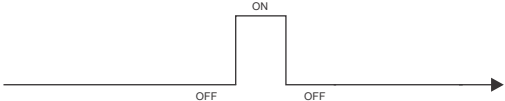
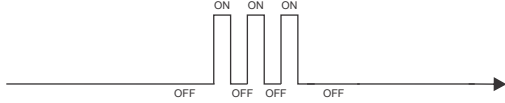
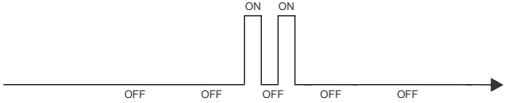
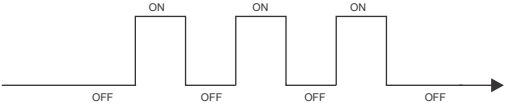
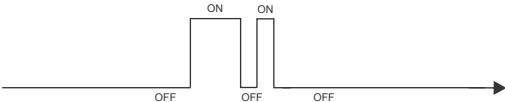
FOB LIGHT AND HUB HORN TABLES

Fob Light	State	MOB/ON Lights
	TDS Warning TDS unlocked failed	ON light – fade-in blue, followed by 3 red blinks, repeating Indicates: user unlocked TDS from the app/VesselView or by double-clicking the Captain's fob power button
	TDS Warning TDS locked	ON light – 2 blue blinks, followed by blue fade-out, repeating Indicates: user locked TDS from the app/VesselView or by double-clicking the Captain's fob power button
	Battery Warning Low battery	3 consecutive red blinks (repeating at 2.5 second intervals) Indicates: Fob battery is below 10% charge

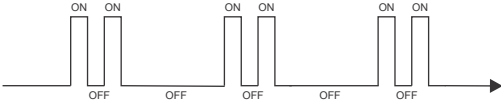
Hub Horn Tables

Hub Horn	Mode
<p>Continuous long beep at 0.5 second intervals until cleared</p>  <p>71208</p>	MOB
<p>3 consecutive short beeps at 0.5 second intervals</p>  <p>71217</p>	Fault
<p>3 short beeps, followed by 3 long beeps, then 3 short beeps until cleared</p>  <p>71209</p>	SOS

FOB LIGHT AND HUB HORN TABLES

Hub Horn	Mode
<p>1 short beep</p>  <p>71210</p>	Connected
<p>1 long beep</p>  <p>71213</p>	TDS unlocked
<p>3 short beeps</p>  <p>71211</p>	Connect failed
<p>2 beeps</p>  <p>71212</p>	Disconnected
<p>3 consecutive long beeps</p>  <p>71214</p>	TDS Unlock failed
<p>One long beep followed by one short</p>  <p>71215</p>	TDS locked

FOB LIGHT AND HUB HORN TABLES

Hub Horn	Mode
<div>2 consecutive short beeps at 30 second intervals</div> <div></div> <div>71216</div>	<div>Low battery</div>

IMPORTANT INFORMATION

Help

Visit www.1stMate.net for product information and support.

Technical Specifications

Hub

General		Hub
Operating temperature range		-10 –70 °C (14 –158 °F)
Storage temperature range		-40 –85 °C (-40 –185 °F)
Operating humidity range		0–100%
Voltage source		13.8 V Nominal
Power consumption		10 mA in sleep (0.138 mW) 150 mA in active mode (2 W)
Frequencies	WiMEA	915 MHz FCC (US/CAN)
		868 MHz RED (EU)
		915 MHz ACMA (AU)
	Bluetooth	2.4 GHz
	NFC	13.56 MHz
RF Signal	WiMEA	10 dBm max.
	Bluetooth	5 dBm max.
	WiFi	20 dBm max.
	NFC	100 mW max.
Wireless peripherals		WiMEA, Bluetooth, WiFi, NFC
Hardware peripherals		NMEA2000
		SmartCraft

IMPORTANT INFORMATION

Antenna

Item		Specifications
Antenna	Frequency Range	824–960 MHz
	Polarization	Linear
	Gain	2.0 dBi (Zentih)
	V.S.W.R.	< 2.0
	Impedance	50Ω
Mechanical	Cable	RG174
	Cable Length	2 Meters
	Connector	RP-SMA
	Mounting method	Magnet / 3M-tape
Environmental	Operating Temperature	-40 –85 °C (-40 –185 °F)
	Vibration	10–55 Hz with 1.5 mm amplitude 2 hours
	Environmentally Friendly	ROHS Compliant

Certifications and Compliance	Hub
Radio - hub	US: FCC Part 15c EU: R&TTE, EN 300 328, Maritime/CE
EMC - hub	US: CISPR 16-1 EU: EN 301 489-01 (V1.9.2), Class A
Flammability - fob	IEC 60950 1&22, CE-UL94
Imersion - fob	IEC 60945 IP68, Maritime/CE - 3 m (10 ft.) water resistant
Compliant materials	RoHS (2002/95/EC)
Compliant	ABYC A-33

ABYC A33 & E-11 Compliant. US Compliant (US Emergency engine/propulsion cut-off devices standard)

For Products Sold in the US/CAN

Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

IMPORTANT INFORMATION

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.

1st Mate Hub: This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

1st Mate Fob: This device has been tested and meets applicable limits for radio frequency (RF) exposure.

Radiation Exposure Statement: This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm (7.87 in.) between the radiator and your body.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Déclaration d'exposition aux radiations: Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm (7.87 in.) de distance entre la source de rayonnement et votre corps.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

