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MOB+™ WIRELESS KILL SWITCH

REV100-0617

Thank you for choosing MOB+!

If this is the first time you use the MOB+, visit
www.fellmarine.com/explore

To see install videos, demos, FAQs, online user manual
and other support material, visit:
www.fellmarine.com/support



WARNING

Disconnect battery cables at battery before attempting to install this product

Read all instructions carefully before use of this product.

FELL Marine equipment and accessories are designed to the best industry standards for use in the recreational marine environment. Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) regulations, but correct installation is required to ensure that performance is not compromised. Please see section EMC Installation Guidelines in the User Manual for optimum EMC conditions.



CAUTION

Within the wireless range MOB+ will not shut down the engine automatically e.g. if you fall in your boat within the wireless range the engine will not stop automatically. In this event, you can shut down the engine by pressing the button on your MOB+ xFOB or on the MOB+ xHUB. Always check your wireless range before use.

IMPORTANT INFORMATION

The xFOB is waterproof down to 10 ft./3m and can be reused after MOB event. After an MOB-event, the engine can easily be restarted by;

- dStart - 6 seconds after a MOB Event the system lets passenger restart the engine to pick up the missing person in the water. The engine can be started without reconnecting the xFOB. No interaction with xHUB necessary.
- Reconnect with the xFOB by clicking once on the xFOB to deactivate dStart and once more to connect.

ONE CLICK USER INTERFACE

MOBP17002

To enable the MOB+ before starting your engine, click once on the xFOB button. To disable the MOB+, click once more on the xFOB button. First time xFOB use, see section "Pairing and Connecting" in this user manual.



CONNECT

Click the button on your xFOB to connect.



The xHUB will give a sound signal and a green light to indicate a successful connection.



DISCONNECT

Click the button on your xFOB to disconnect.



The xHUB will give a sound signal and a red light to indicate Disconnect.

MOB MODE

MOBP17003

MOB Mode (Man Overboard Mode) is the safety mode of the system. MOB+ will automatically activate shut down of the engine when the xFOB is submersed in 4 inches (10 cm) of water or travels out of range from the xHUB. After 6 seconds, the system automatically activates Override Mode. In Override Mode any passenger or crew on board can restart the engine without the need to interact with the MOB+ system. This allows for a quick recovery of the missing person in the water and enhances safety.



MAN OVERBOARD

NO CONNECTION

MAN OVERBOARD

AUTOMATIC ENGINE STOP

VERRIDE MODE

MOBP17004

In the event that you forget your xFOB or if it's out of battery - don't worry. You can easily override MOB+ by holding the button on the xHUB for 10 seconds. The xHUB will give a sound and a yellow light signal to indicate Override Mode is activated so you can start boating.



dStart™

MOBP17005

dStart is the direct restart feature in the MOB+ system. 6 seconds after a MOB-Event the MOB+ lets any remaining passengers in the boat restart the engine to pick you up in the water should a MOB event occur. When you get back on board you can reconnect by one click on the xFOB.



TIME-OUT FUNCTIONS



Connected: 20h Time-Out: The normal xFOB to xHUB connection will automatically time-out after 20h. This is to prevent unnecessary battery drainage of the xFOB battery. Click xFOB again to reconnect.

Override Mode: 8h Time-Out: Override Mode automatically times out after 8h to prevent engine start if the boat is left unobserved.

MOB Mode: 2h Time-Out: MOB Mode automatically times out after 2h. This is to prevent engine start if the boat is left unobserved after leaving the boat without disconnecting the xFOB.

MOBP17006

MAN OVER BOARD SEQUENCE

dStart™

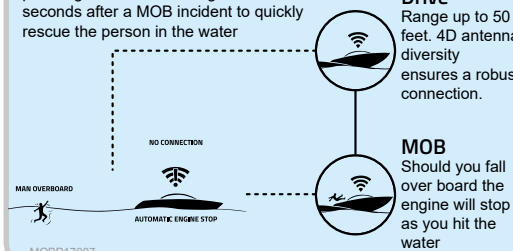
Makes it possible for passengers to start the engine 6 seconds after a MOB incident to quickly rescue the person in the water

Drive

Range up to 50 feet. 4D antenna diversity ensures a robust connection.

MOB

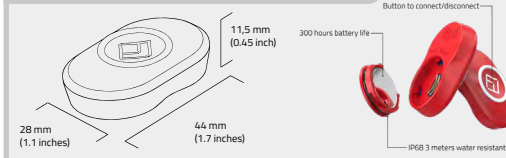
Should you fall over board the engine will stop as you hit the water



MOBP17007

TECHNICAL SPECIFICATIONS - xFOB™

MOBP17008



Measurements and performance

Weight	10g / 0.35oz.	
Housing material	ASA / TPU / POM	
Temperature range	From -15°C / 5°F to 55°C / 131°F	
Voltage Source	Coin Cell Battery - 3V nominal	
Power consumption	0.3 µA in sleep (0.00033 W) 30 mA in active mode (0.098W)	
Battery life	300 hours continuous usage	

Wireless performance

Frequency area	EU: 868 MHz	US: 915 MHz
RF signal (in)	10 dBm max.	
RF signal (out)	10 dBm max.	
4D Antenna diversity	✓	

Battery xFOB

Battery type	CR2032	
Battery voltage	3V lithium battery	

Certifications and compliance

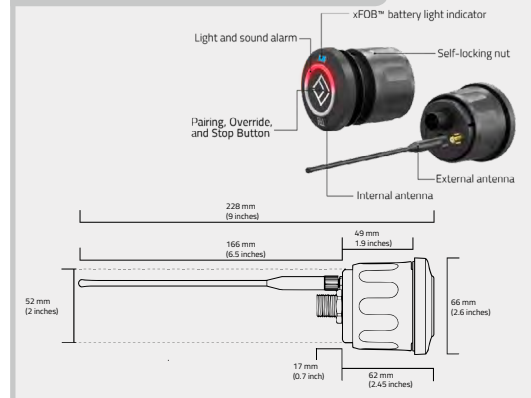
Radio - xFOB	EU: R&TTE, EN 300 328, Maritime/CE	US: FCC Part 15C
EMC - xFOB	EU: EN 301 489-01 (V1.9.2), Class A	US: CISPR 16-1
Flammability - xFOB	IEC 60950 1&22, CE-UL94	
Immersion xFOB	IEC 60945, IP68, Maritime/CE - 3m / 10ft. water resistant	
RoHS (2002/95/EC) compliant materials	✓	
ABYC A-33 compliant	✓	

FAQs

- How can I override the system if the system fails or if I have lost the xFOB?**
 - If the system fails use the End Cap Connector attached to the main xHUB cable to mechanically override the system.
 - If you have lost your xFOB press and hold the button on the xHUB for 10 seconds to put the system in Override Mode.
- I already have an existing kill switch. Can I install MOB+?**
 - Yes. MOB+ is installed using wires from your existing kill switch. Please see installation guide for instructions
- I have a boat made from metal. Can I install MOB+?**
 - Actual signal reduction, if any, will vary from boat to boat. Should the signal be noticeably worse, we recommend using an external antenna to put on the top side of the helm, supplied from FELL Marine.
- Can passengers start the boat if I were to fall over board?**
 - Yes, this is one of the main features of MOB+. 6 seconds after a MOB Event the system lets passenger restart the engine to pick up the missing person in the water.

TECHNICAL SPECIFICATIONS - xHUB™

MOBP17009



Measurements and performance

Weight	164g / 5.8oz.	
Housing material	ASA / TPU / PBT / POM - RoHS	
Temperature range	From -15°C / 5°F to 55°C / 131°F	
Voltage Source	10-32Vdc	
Power consumption	Active Mode: 180mA (2.5W max. at 13.8Vdc); Standby: <30mA, <0.4W max. at 13.8V	
Fuse	1A-3A	
Alarm decibel level	>85db	
Kill Switch Relay Max Current Tolerance	5A continuously	

Wireless performance

Frequency area	EU: 868 MHz	US: 915 MHz
RF signal (in)	10 dBm max.	
RF signal (out)	10 dBm max.	
4D Antenna diversity	✓	

Certifications and compliance

Radio - xHUB	EU: R&TTE, EN 300 328, Maritime/CE	US: FCC Part 15C
EMC - xHUB	EU: EN 301 489-01 (V1.9.2), Class A	US: CISPR 16-1
Flammability - xFOB	IEC 60950 1&22, CE-UL94	
Immersion xFOB	IEC 60945, IP68, Maritime/CE - 3m / 10ft. water resistant	
RoHS (2002/95/EC) compliant materials	✓	
ABYC A-33 compliant	✓	

INSTALLATION

MOBP17010

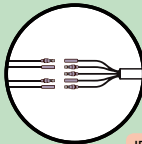
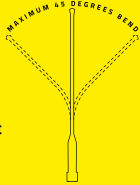
- 1** The installation is simple and below you will find a quick guide. See next page for wiring instructions.
For more information, visit our website www.fellmarine.com/support



YOUR ENGINE

Visit: www.fellmarine.com/support to find wire diagram for your engine.

Place the xHUB with the antenna at least ~ 10" / 30cm from other electronics equipment transmitting EMI. The antenna should be in as free space as possible, but where necessary it can be bent up to 45 degrees.



YOUR ENGINE

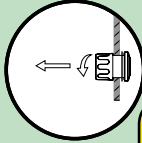
Connect the signal wires to the existing kill switch wires and the power wires to power.

IF YOU HAVE MULTIPLE ENGINES: SEE BELOW



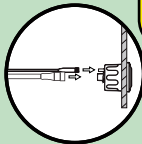
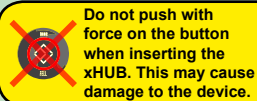
2-1/16" / 52MM HOLE

Drill a 2-1/16" / 52mm hole in a suitable place adjacent to the drivers position.



MOUNT xHUB

Insert the xHUB to the pre-drilled hole and tighten the nut.



CABLE & ANTENNA

Connect the cables and the antenna to the xHUB.

IMPORTANT

We recommend that the installation of the MOB+ in your boat is performed by skilled personnel familiar with electric wiring, or by a professional mechanic or electrician. This is to prevent any malfunction of the device related to installation.

PAIRING AND CONNECTING

MOBP17011

- 2** After proper installation, pair the xFOB and the xHUB as described below. The xHUB remembers the 20 last paired xFOBs. Pairing saves the ID of xFOBs in the memory of the xHUB. Pairing is only done the first time you use an xFOB with an xHUB. Remember, only one xFOB can be connected to an xHUB at the time acting as a kill switch.



HOLD 3 SEC

Pairing is only necessary the first time you use your MOB+. Press and hold the button on your xHUB.



BLUE LIGHT

Release the button when the xHUB starts flashing blue and gives a sound signal indicating Pairing Mode.



HOLD 3 SEC

Immediately after releasing the button on the xHUB, press and hold the button on your xFOB.



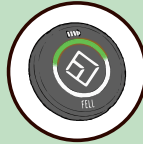
GREEN LIGHT

The xHUB will give a sound signal and a green light to indicate a successful pairing.



CONNECT

Click the button on your xFOB to connect.



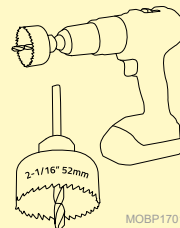
CONNECTED

The xHUB will give a sound signal and a green light to indicate a successful connection.

DRILLING THE HOLE

The xHUB measures: Ø=51,5mm / 2.03 in
Drill a 52mm / 2-1/16" hole

Be sure not to drill through any existing cables or equipment mounted or situated on the backside of your intended xHUB position!



MOBP17013

VERIFY INSTALLATION

MOBP17012

- 3** After installation test the system as described below to ensure installation is done correctly. Always make sure the system is working properly before operating your vessel.



CONNECT

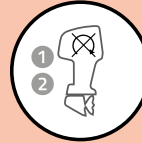
Click the button on your xFOB to connect.

The xHUB will give a sound signal and a GREEN light to indicate a successful connection.



START ENGINE

Start your engine.



TEST THE MOB+

Test the MOB+ by disconnecting with the xFOB or by submerging the xFOB.

Both described methods are equal in terms of testing stop functionality.



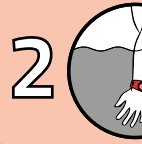
1

DISCONNECT

Click the xFOB to stop the engine

-The system will now shut down the engine and disconnect the wireless system.

RECONNECT AND RESTART THE ENGINE BEFORE TESTING SUBMERSION



2

SUBMERSION

Submerge the xFOB in the sea or the ocean more than 4 inches.

-The system will now go into Man Over Board mode and shut down the engine. After 6 seconds the xHUB will go into override mode. Press the xHUB or xFOB to disconnect the wireless system.

INSTALLING MOB+ IN A METAL BOAT

If your helm is made out of conducting materials the wireless signals from MOB+ may be degraded. The amount of signal degradation experienced may vary from across boats and must be tested for each case. If the signal is very poor you can install a separate external antenna outside of your helm to increase the signal strength. Please contact FELL support at www.fellmarine.com/support for more information.

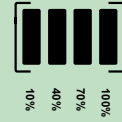
xFOB BATTERY

MOBP17014

xHUB battery symbol displays the battery status of the connected xFOB. Each bar respectively indicates 10 %, 40 %, 70 % and 100 % of battery life. xFOB battery life: 300h active use. Change the battery within 15 hours when the last bar blinks on the battery indicator.

FELL recommends using Panasonic or Sony CR2032 coin cell batteries.

Battery Life: 300h Active Use



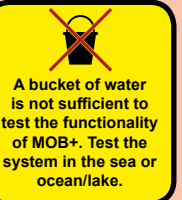
EMC GUIDELINES



The guidelines given here describe the conditions for optimum EMC performance, but it is recognized that it may not be possible to meet all of these conditions in all situations. To ensure the best possible conditions for EMC performance within the constraints imposed by any location, always ensure the maximum separation possible between different items of electrical equipment. For optimum EMC performance, it is recommended that wherever possible:

FELL equipment and the cables connected to it are:

- At least 3 ft. (1 m) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft. (2 m).
- More than 7 ft. (2 m) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- If possible the product is supplied from a separate battery from that used for engine start. Power supply voltages below the minimum specified 7V power source, and starter motor transients, can cause the product to reset. This will not damage the product, but may cause inability to start the engine.
- FELL specified cables are used. Cutting and rejoining these cables can compromise EMC performance and must be avoided unless doing so is detailed in the installation manual.



MOBP17015

SUPPORT



WATCH VIDEOS!

On www.fellmarine.com/videos you will find installation and user guide videos.



WE ARE HERE TO HELP YOU

Please feel free to contact us with any inquiry.

Customer care: www.fellmarine.com/customer-care
Business hours: Monday-Friday 08:00am – 04:00 pm
Email: support@fellmarine.com
Web support: <https://www.fellmarine.com/support/>
Social Media: facebook.com/fellmarine
Web: <https://www.fellmarine.com>

CONNECTING KILL SWITCH SIGNAL WIRES

MOBP17016

MOB+ xHUB has three kill switch signal wires. Only two of the three wires should be used. Connect the two signal wires to the existing kill switch wires in your boat. Most outboard engines have **Close to Stop (CS)** kill switch system and use **Gray and Orange** wire for connection. See wiring diagram below.

POWER WIRES (+/-)

- 1 CMN (Common)
- 2 CS (Close to Stop)
- 3 OS (Open to Stop)

1 Common (CMN) - Grey Wire
Use with Orange or Blue wire

2 Close to Stop (CS) - Orange Wire
Use with Grey Wire

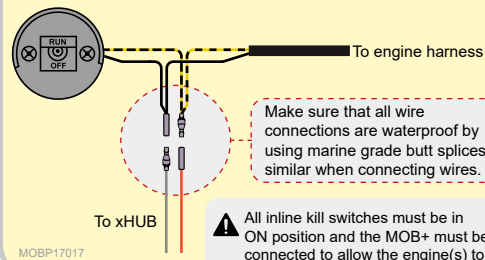
3 Open to Stop (OS) - Blue Wire
Use with Grey Wire

Kill Switch Relay Max Current Tolerance: 5A continuously

! Before connecting the xHUB Signal Wires, you must verify which kill switch principle is used by your engine manufacturer. See section "CLOSE TO STOP / OPEN TO STOP" below in this manual if applicable. **After installation, verify functionality as in step 3 "Verify Installation" above.**

KEEP EXISTING OR MULTIPLE KILL SWITCH

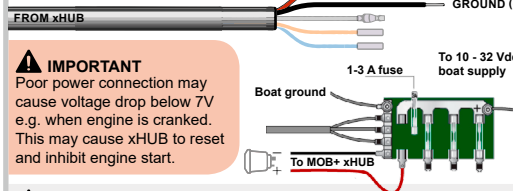
Install the MOB+ inline with your existing kill switch or inline with multiple kill switches by connecting it in parallel (e.g. multiple helm positions with separate kill switches). The below picture shows an example with Close to Stop connection as on Mercury engines.



MOBP17017

CONNECTING POWER (+/-)

MOBP17018



! IMPORTANT
Poor power connection may cause voltage drop below 7V e.g. when engine is cranked. This may cause xHUB to reset and inhibit engine start.

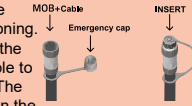
! RECOMMENDED
Wire the xHUB to a circuit with a power switch to avoid battery drainage. The xHUB has a power draw of 30mA in idle mode while connected to a power source.

! **Min. Voltage: 7V** - Below this voltage the unit will turn off and you will not be able to start your engine.
Max. Voltage: 32V Do not exceed this voltage because this can damage the MOB+ xHUB and void the warranty.

MECHANICAL SYSTEM OVERRIDE

MOBP17019

In the unlikely event that the MOB+ System stops functioning. Unplug the xHUB and plug the emergency cap into the cable to be able to drive your boat. The emergency cap is located on the cable supplied with the MOB+ xHUB.



WATERPROOF CONNECTIONS

MOBP17020

Make sure that all wire connections are waterproof by using marine grade butt splices or similar when connecting wires.



Splice Wire Dimension:
20-16 AWG / 0.5 - 1.5 mm²

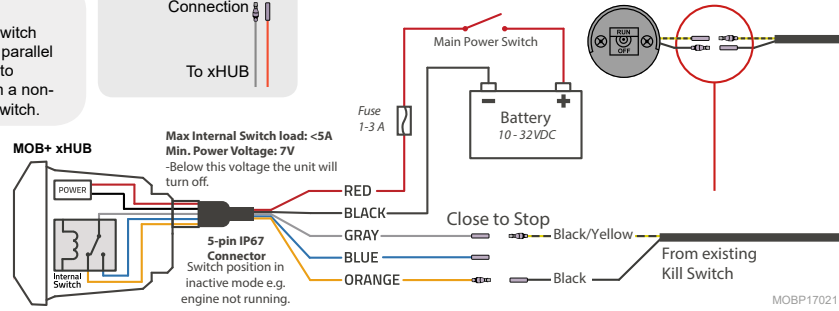
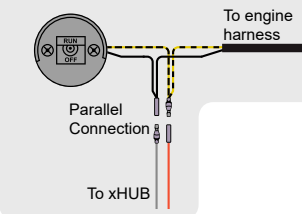
MERCURY

! IMPORTANT
Avoid cutting or modifying original kill switch wiring

! RECOMMENDED
If keeping mechanical kill switch in place, connect MOB+ in parallel with mechanical kill switch to avoid potential danger from a non-functional mechanical kill switch.

! RECOMMENDED
Make sure that all wire connections are waterproof by using marine grade butt splices or similar when connecting wires.

Inline with existing kill switch:



MOBP17021

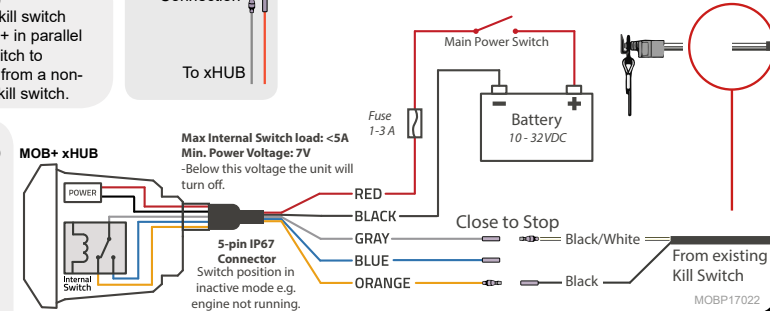
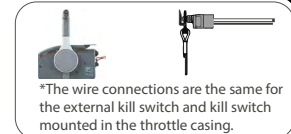
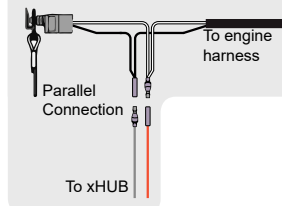
YAMAHA

! IMPORTANT
Avoid cutting or modifying original kill switch wiring

! RECOMMENDED
If keeping mechanical kill switch in place, connect MOB+ in parallel with mechanical kill switch to avoid potential danger from a non-functional mechanical kill switch.

! RECOMMENDED
Make sure that all wire connections are waterproof by using marine grade butt splices or similar when connecting wires.

Inline with existing kill switch:



MOBP17022

FOR OTHER ENGINE BRANDS SEE WWW.FELLMARINE.COM/SUPPORT

MOB+ MULTIPLE ENGINE HARNESS (MOB+ MEH)

Part name: MOB+ Multiple Engine Harness
P/N: (F-A/N): 72.380.401
Availability: FELL Marine dealers and buy.fellmarine.com

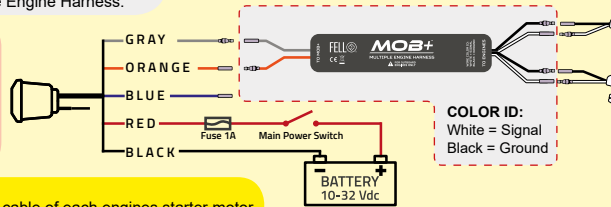
MOBP17023

This product is designed to be used in conjunction with the MOB+ xHUB to stop multiple engines simultaneously for multiple outboard installations. The MOB+ xHUB should be installed prior to installation of this Multiple Engine Harness.

! IMPORTANT

- WHITE wire on MOB+ MEH is signal wire; each engines signal wire must be connected to the WHITE wire on the MOB+ MEH.
- BLACK wire on the MOB+ MEH is GND wire; each engines GND wire must be connected to the BLACK wire on the MOB+ MEH.
- Connect WHITE and BLACK wires in pairs as bundled on the MEH kit.

! CAUTION
For multiple outboard installations, the black (-) battery cable of each engines starter motor ground circuit, **MUST BE** connected to each other by a common circuit (cable) capable of carrying the starting current of each engines starter motor. (i.e. A locally obtained battery cable connected between the negative (-) terminal of each outboards cranking battery.)



*Multiple Engine Harness kit includes User Manual, please read this carefully before installing this product.

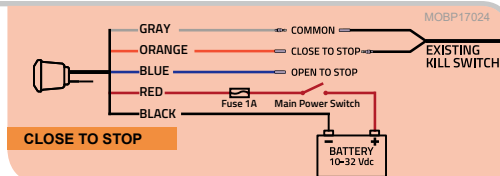
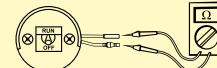
CLOSE TO STOP / OPEN TO STOP

General wiring diagrams showing wiring connections for Close to Stop and Open to Stop kill switch principle.

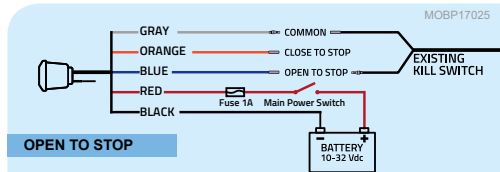
Testing your kill switch principle
Test the kill switch principle by connecting a multimeter to both cables from the existing mechanical kill switch. Set multimeter to measure resistance and the kill switch is in the position which the engine will not run (cord is not inserted in the mechanical kill switch).

Close to 0 (zero) resistance: Close to stop (CS)

Infinite resistance measured: Open to stop (OS)



MOBP17024



MOBP17025

