dockmate®

VECTOR

TWIST

TWIN

SINGLE

USER MANUAL

Dockmate rev.G+ Wireless Remote Control

Docking Made Easy !

CONTENTS

Congratulations on your purchase of a Dockmate system!

Please read the following instructions carefully before getting started with your TWIN, SINGLE, TWIST, or VECTOR remote.

Dockmate is a wireless remote-control system that enables you to manoeuvre your ship from any place aboard. With a TWIN, SINGLE, TWIST, VECTOR you can control the engine(s), horn, 1 or 2 anchor(s)/windlass(es), a bow- and stern thruster with your fingertips.

1. WHAT'S IN THE BOX?

- This user manual
- Installation manual
- The Dockmate remote – TWIN+, SINGLE+, TWIST or VECTOR
- Lanyard
- The Dockmate Receiver
- Antenna
- Dockmate Cradle/wireless charger
- All necessary cables and wiring cut to length

Read the precautions before first use!

2. PRECAUTIONS

To avoid damage and hurting yourself or others, you should read the following safety precautions before using your Dockmate. Keep these safety instructions in an area where all users can read them.

When in doubt, contact PPA-Electronics regarding the use or operation of the unit.

PPA-Electronics is not responsible for injuries or damage caused as a result of improper use or installation by a non-qualified technician.

- Before taking command with Dockmate make sure that all levers controlling the engines and thrusters are in neutral position.

The TWIST and VECTOR joystick is sensitive to magnetic fields. **Keep it at least 1m from any device that generates magnetic fields like compasses**. Otherwise, the operation of the joystick may be disturbed.

- Your Dockmate remote has been designed to seamlessly interact with a Dockmate Cradle (wireless charger) powered by the Dockmate Receiver. If your Dockmate Cradle is not powered by the Receiver but directly by the mains or if you are using another Qi certified charger, **do not put the remote, that is switched on, onto the wireless charger**. Always switch it off first, before charging. It is highly recommended to use a wireless charger supplied by Dockmate.
- Do not disassemble the remote or Receiver. Touching the internal parts may lead to injuries. Repairs may only be performed by trained technicians.

- Do not store or place the remote for prolonged periods of time in direct sunlight (i.e. on the dashboard); temperatures can easily rise to 65°C+ or 150°F+.
  The Dockmate devices must be kept at an acceptable temperature.
  The operating temperature range for the remote is 0°C to +43°C or +32°F to +110°F
  The operation temperature range for the Receiver is -10°C to +60°C or +14°F to +140°F
- Do not use near flammable gases or liquids. This may cause an explosion or fire.
- Keep out of reach of children. The devices contain small parts which can be swallowed by children. Beware for suffocation by plastic packaging.
- The Dockmate may only be used by people who have the necessary skills to manoeuvrer a yacht.
- Be careful with the lanyard. Keep it away from small children (choking hazard).
- Do not use the Dockmate when the remote or Receiver have been immersed in water. The units may be damaged beyond repair. Test both devices with the boat in a safe environment before use. Contact your Dockmate dealer when any abnormality is detected.
- Make sure you can operate the Dockmate like an expert before actually using it in a crowded harbour.
- In very exceptional circumstances, the communication between the remote and Receiver can be disturbed by radio frequency devices in the immediate neighbourhood.
- Never use the Dockmate if you are not on the ship. Remember that the use of a wireless remote from ashore or the jetty is a criminal offense in several countries.
- Batteries should be charged as soon as the **stat** LED on the remote lights up yellow.
- Please note that when the system is in operation each involuntary push on the buttons or joystick of the remote has an action as a result.
- It's a good habit to briefly test your Dockmate when you first turn it on, before untying your ropes, lifting the anchor, or heading into the marina or port. Just like it's a good habit to test your boat's engine and thruster controls (and other systems) before heading out on the water.
- If you detect or experience any abnormal behaviour of your Dockmate system, do not use it. First verify if the controls on your fixed station and contact your dealer for support.
- The remote, Receiver and any other Dockmate device may only be opened by an authorised technician. Opening of a Dockmate device by an unauthorised person will void the warranty.

3. INSTALLATION

The installation must be done by a qualified technician.

Our system consists of two major components: a remote and a Receiver. These have already been paired so they recognise each other.

Detailed installation instructions can be found in the installation manuals supplied with the Dockmate.

3.1. INSTALLATION OF THE RECEIVER

Dimensions Rev.G+ : 23.8 x 20.5 x 8.6 cm or 9.4 x 7.9 x 3.2”

Install the Receiver in a dry, not too warm area.

Install the Receiver free of vibrations.

Place the Receiver behind or close to the dashboard, and as close as possible to the controls of the required functions (engine/motor controls, horn, anchor winch or windlass, bow- and stern thrusters).

At the same time, you need to consider placement of the Receiver so the antenna is not too close to cables and devices, which may reduce its range.

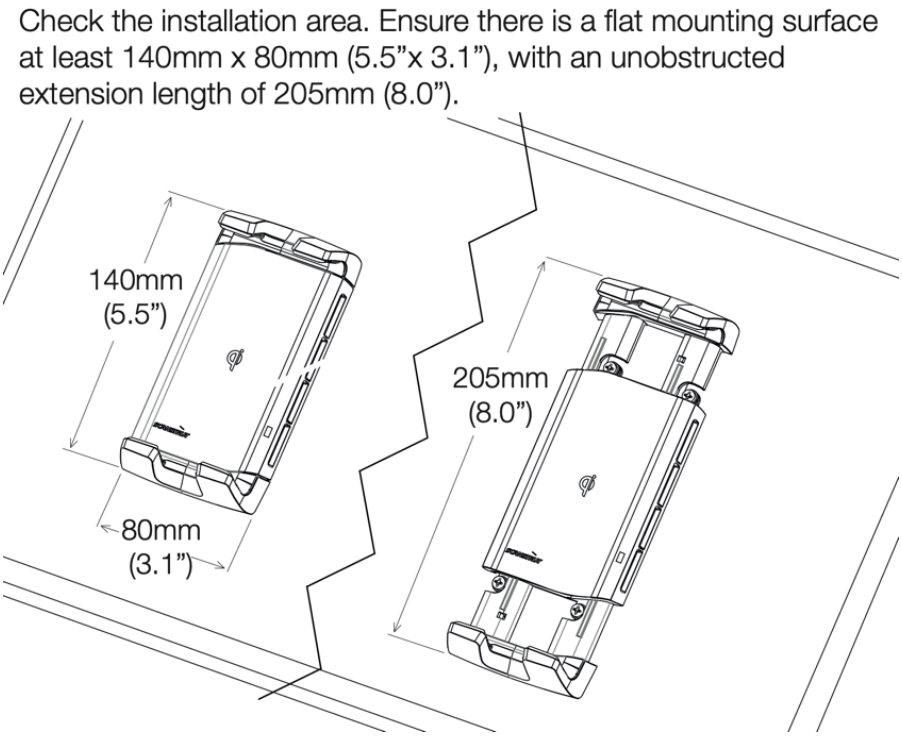
Please note that a technician may need access to the Receiver, so check if it is easily accessible by screwdriver.

3.2. INSTALLATION OF THE CRADLE

The Dockmate Cradle is designed to be plugged into the Dockmate Receiver.

A connection that bypasses the Receiver is also possible, but the automatic switching to use the remote in the Cradle is then lost.

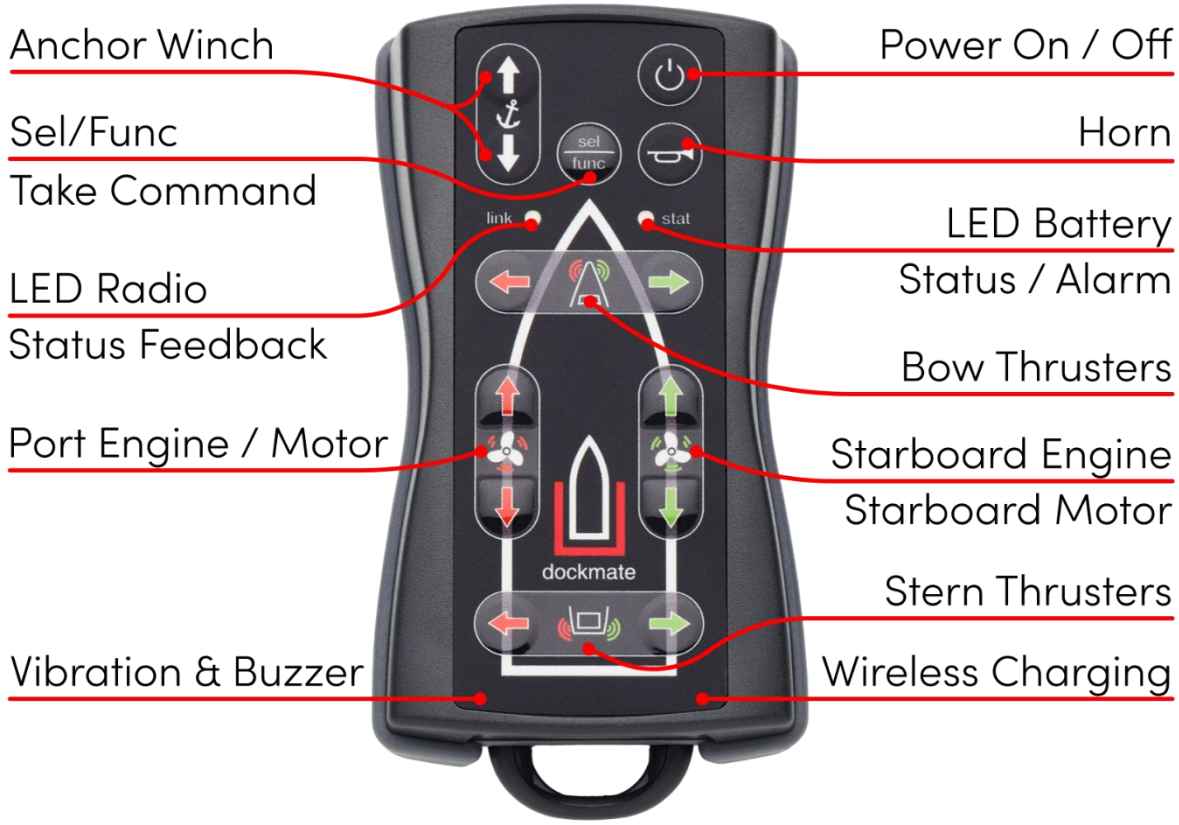
- Input voltage range: 10-30V DC (12/24V system)
- Input current max: 1.5A
- Output power: 5W (5V, 1A)
- Standby current draw: < 0.03W
- Certifications: Qi, CE, FCC, ROHS
- Waterproof rating: IPX6 front and back



4. DOCKMATE REMOTE LAYOUTS

4.1. DOCKMATE TWIN & SINGLE

4.1.1. DOCKMATE TWIN KEYPAD



We recommend that you always wear the lanyard around your neck while using the Dockmate TWIN.

4.1.2. DOCKMATE SINGLE

We recommend that you always wear the lanyard around your neck while using the Dockmate SINGLE.

4.1.3. TWIN & SINGLE FEATURES

- **On/Off button**
  Press and hold the on/off button for 2s to turn the remote on.
  Press the on/off button 3 times quickly or hold the on/off button for 3s to shut the remote off.

When this button is pressed (even shortly) while another button is pressed, all inputs are inhibited for safety, so Dockmate's outputs go to neutral, until all buttons are released again.

In case of emergency, press the On/Off button to force Dockmate's outputs to neutral.

- **Horn button**
  Pressing this button will sound the horn.

- **"sel" button**
  The "sel" button has 3 functions.
  The 1st function is Take Command.
  The 2nd function can be nothing, or "SPM" for Caterpillar.
  The 3rd function is to control Throttle+.
  - **Take Command**
    Pressing the "sel" button makes the Dockmate the active steering position.

Depending on your boat's propulsion system and Dockmate configuration, you may need to first manually activate the station the Dockmate Receiver is connected to.

  - **SPM for Caterpillar**
    Pressing and holding the "sel" button for 1s or more will (de)activate the "SPM" function on the Caterpillar MPCS CAN bus system. Note that both the boat and Dockmate need to have this feature installed. If not, this function is disabled, and pressing this button has no effect.
    When SPM is activated, the remote's "stat" LED will light white ○, and blinks the entire time this function is engaged. When the SEL button is pressed for 1s or more again, it deactivates SPM, the remote beeps twice, and the "stat" LED will stop blinking white ○.
  - **Throttle+**
    Pressing the "sel" button together with an engine button, will engage that engine or motor in Throttle+. Pressing an engine button alone, will engage that engine or motor in minimum/idle speed. More about Throttle+ in the Engine buttons part of this section of the manual

- **Anchor winch buttons**
  By pressing the upper button, you lower the anchor.
  By pressing the lower button, you raise the anchor.
  This behaviour can be switched in the Dockmate Settings, during the installation or sea trial.
  These buttons only operate an anchor winch if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect. When pressed together, you can choose between windlass 1 and 2 (2 or 4 beeps), if the Dockmate Receiver is fitted with a twin anchor winch module.
- **link**: Radio Status LED
  Shows the status of the connection with the Receiver
  It also shows warnings and errors if there are any.
- **stat**: Battery Status LED
  Shows the battery status of the remote on start-up and when the battery charge gets low. It also shows if any special options have been activated through Dockmate. While charging your TWIN or SINGLE, this LED will blink to indicate it is charging and how full the battery is.
- **Buzzer & vibrator**
  Indicates no communication, low battery, warning, or error.
- **Bow thruster buttons**
  By pressing the left button (red = port), the bow thruster will push the bow to port.
  By pressing the right button (green = starboard), the bow thruster will push the bow to starboard.
  These buttons only operate a bow thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.

When your thruster(s) are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus V-CAN, Sleipner S-Link, ABT-TRAC Link, or CMC-CANopen), the maximum output of your thrusters can be configured during the Dockmate installation or sea trial.

- **Engine button(s)**
  By pressing the upper left button (red = port), the port engine is engaged forward. By pressing the lower left button (red = port), the port engine is engaged in reverse.
  By pressing the upper right button (green = starboard), the starboard engine is engaged forward. By pressing the lower right button (green = starboard), the starboard engine is engaged in reverse.
  On the SINGLE remote there is only one set of engine buttons for a single engine or motor.
  Depending on your Dockmate configuration and settings, engaging the engine(s) can be just idle forward and reverse, or forward and reverse with a certain amount of predetermined throttle.

  By pressing the "sel" button together with an engine button (on the TWIN+ or SINGLE+), you can engage the engine in **Throttle+**. It offers predetermined throttle on every TWIN and SINGLE. This means that every Dockmate can have 2 levels of engine/motor control: minimum or idle forward/reverse and predetermined throttle forward/reverse (which is Throttle+). This predetermined amount of Throttle+ can be calibrated per direction (forward and reverse) to fit the boat's and customer's needs. With Throttle+, extra throttle can be used at any moment, immediately, just by the push of the "sel" button, while also pushing an engine button.

- Stern thruster buttons
  By pressing the left button (red = port), the stern thruster will push the stern to port.
  By pressing the right button (green = starboard), the stern thruster will push the stern to starboard. These buttons only operate a stern thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.

When your thruster(s) are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus V-CAN, Sleipner S-Link, ABT-TRAC Link, or CMC-CANopen), the maximum output of your thrusters can be configured during the Dockmate installation or sea trial.

Engine trick:
There is a special setting for boats with 2 engines and a bow thruster (but no stern thruster), where pushing a stern thruster button will engage both engines (one forward, one astern).
By pressing bow and stern thruster buttons, you can thus engage both engines/motors (1 forward and 1 reverse) and the bow thruster at the same time.
So, this setting enables you to "walk the boat sideways" by only pressing the bow- and stern thruster buttons to port or starboard.

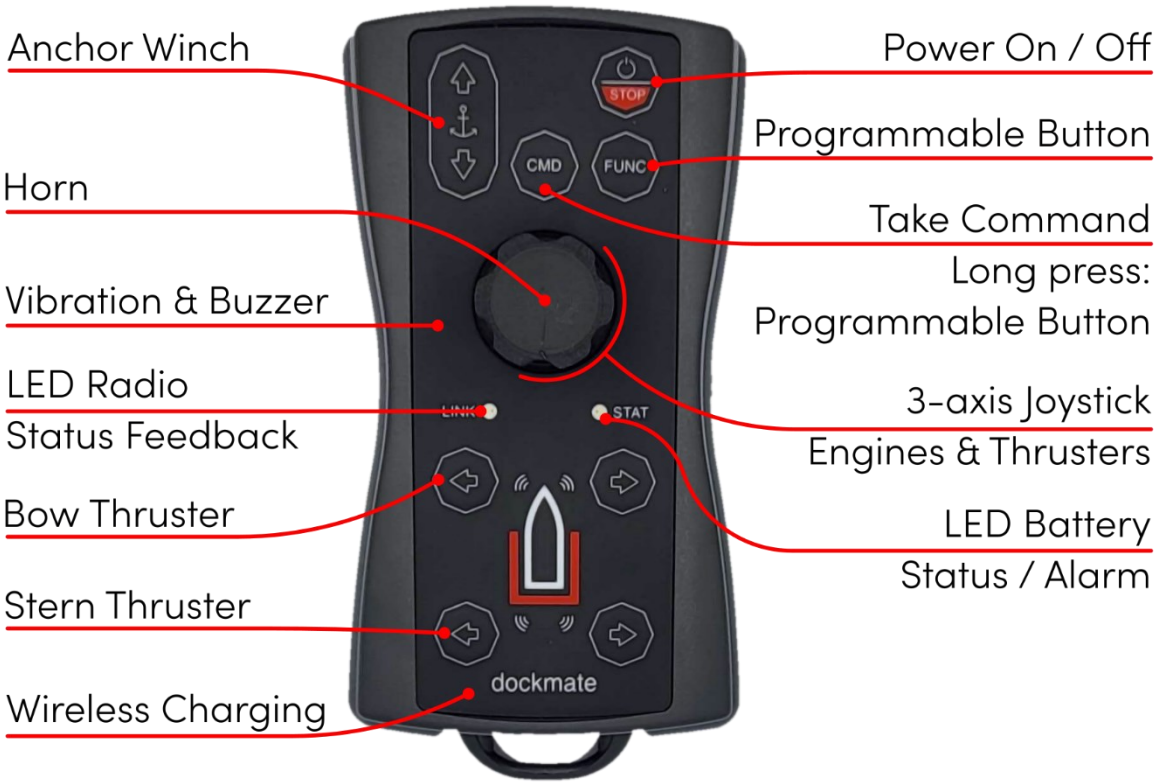
4.2. DOCKMATE TWIST

This section applies if your Dockmate TWIST is connected to a control head with levers.

If you have a Dockmate TWIST connected to a joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2), please skip to point 4.3.

If you have a Dockmate VECTOR, please skip to point 4.4.

4.2.1. DOCKMATE TWIST KEYPAD



We recommend that you always wear the lanyard around your neck while using the Dockmate TWIST.

4.2.2. DOCKMATE TWIST FEATURES

This section applies if your Dockmate TWIST is connected to a control head with levers.

If you have a Dockmate TWIST connected to a joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2), please skip to point 4.3.

If you have a Dockmate VECTOR, please skip to point 4.4.

- **On/Off button**
  Press and hold the on/off button for 2s to turn the remote on.
  Press the on/off button 3 times quickly or hold the on/off button for 3s to shut the remote off.

When this button is pressed (even shortly) while another button is pressed, all inputs are inhibited for safety, so Dockmate's outputs go to neutral, until all buttons are released again.

In case of emergency, press the On/Off button to force Dockmate's outputs to neutral.

- **"sel" (CMD) button**
  The "sel" button has 2 functions.
  The 1st function is Take Command.
  The 2nd function can be nothing, or "SPM" for Caterpillar.
  - **Take Command**
    Pressing the "sel" button makes the Dockmate the active steering position.

Depending on your boat's propulsion system and Dockmate configuration, you may need to first manually activate the station the Dockmate Receiver is connected to.

  - **SPM for Caterpillar**
    Pressing and holding the "sel" button for 1s or more will (de)activate the "SPM" function on the Caterpillar MPCS CAN bus system. Note that both the boat and Dockmate need to have this feature installed. If not, this function is disabled, and pressing this button has no effect.
    When SPM is activated, the remote's "stat" LED will light white ○, and blinks the entire time this function is engaged. When the SEL button is pressed for 1s or more again, it deactivates SPM, the remote beeps twice, and the "stat" LED will stop blinking white ○.
- **Anchor winch buttons**
  By pressing the upper button, you lower the anchor.
  By pressing the lower button, you raise the anchor.
  This behaviour can be switched in the Dockmate Settings, during the installation or sea trial.
  These buttons only operate an anchor winch if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect. When pressed together, you can choose between windlass 1 and 2 (2 or 4 beeps), if the Dockmate Receiver is fitted with a twin anchor winch module.

- **Joystick**

  The TWIST joystick is proportional and has 11 functions:
  - 4 main functions: forward, reverse, Lateral to port, and lateral to starboard
  - 4 diagonal functions: 45°; in between the 4 main functions
  - 2 "twist" functions: twisting clockwise and counter clockwise
  - Pressing the joystick down like a button

  By moving the joystick forwards, both engines (or one in single engine configuration) are engaged forward.
  By moving the joystick astern both engines are engaged in reverse.
  Moving the joystick to the left makes both thrusters (if installed) move the boat to port. Moving the joystick to the right makes both thrusters (if installed) move the boat to starboard. Dockmate can also be programmed to use **differential thruster activation**.
  When you have 2 non-proportional thrusters, one thruster is more effective than the other. This makes moving the boat sideways parallel not as straight forward as you may think. A skipper can still "walk the boat sideways parallel" by just using Dockmate's TWIST joystick and differential thruster activation.

  → When you push the joystick a little bit sideways, only the weakest thruster activates.

  → When you push the joystick completely sideways, both thrusters activate.

  → By alternating between those 2 states, the boat moves sideways parallel.

  Engine Trick: In case the boat has 2 engines and only a bow thruster (no stern thruster), moving the joystick sideways will engage the bow thruster and 2 engines to "walk the boat sideways." This will engage the boat's engines (one forward, one astern) and bow thruster simultaneously. This can also be programmed with a differential activation where either the bow thruster or the engines engage first, thus enabling you to move the boat sideways parallel.

  When your thrusters are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus CAN, S-Link, ABT TRAC-Link, or CMC-CANopen), you can proportionally control the thrusters' power by moving the joystick. The harder you push, the more thrust.

  By default, moving the joystick forwards and right in a 45º angle causes the port engine to go forward and makes the boat steer to the right.
  In single engine configuration, a 45° angle joystick movement can activate a combination of the single engine and 1 or 2 thrusters.
  The other 45º angle positions on the joystick work on the same basis.

  Twisting the joystick knob clockwise causes the boat to rotate clockwise.
  Twisting the joystick knob counter clockwise will rotate the boat counter clockwise.
  Rotation of the boat is achieved with the engines and/or thrusters, depending on the boat, and Dockmate configuration.

  The Dockmate TWIST's joystick functions can be fully programmed by your Dockmate dealer or technician to combine engines and thrusters.

Pressing down on the joystick knob will sound the horn.

Every Dockmate comes with **Throttle+**.
Throttle+ offers predetermined throttle on every TWIST. This means that every Dockmate can have 2 levels of engine/motor control: minimum or idle forward/reverse and predetermined throttle forward/reverse (which is Throttle+). This predetermined amount of Throttle+ can be calibrated per direction (forward and reverse) to fit the boat's and customer's needs. With Throttle+, extra throttle can be used at any moment, immediately, just by pushing more on the joystick forward, reverse, or diagonal. So, if you push your joystick forward a little bit, then the engine(s) will engage in minimum or idle forward. When you push the joystick further forward (over the Throttle+ threshold), then you will engage the engine(s) with Throttle+.

If Throttle+ is not sufficient for you and/or your boat, then there is also the "Proportional Engine/Motor Control" option. With this option activated, you can proportionally control the engine's or motor's throttle by moving the TWIST's proportional joystick. The harder you push, the more throttle.

The TWIST joystick's rotational axis is on-off, but if you have the "Proportional Engine/Motor Control" option, Dockmate can be programmed, during the installation, to gradually increase the throttle. Rotating the boat can for example start at 30% and gradually increase the output to 85 % in a time of 5 seconds.

- **link**: Radio Status LED
  Shows the status of the connection with the Receiver
  It also shows warnings and errors if there are any.
- **stat**: Battery Status LED
  Shows the battery status of the remote on start-up and when the battery charge gets low. It also shows if any special options have been activated through Dockmate. While charging your TWIST, this LED will blink to indicate it is charging and how full the battery is.
- **Buzzer & vibrator**
  Indicates no communication, low battery, warning, or error.
- **Bow thruster buttons**
  By pressing the left button (port), the bow thruster will push the bow to port.
  By pressing the right button (starboard), the bow thruster will push the bow to starboard.
  These buttons only operate a bow thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.
- **Stern thruster buttons**
  By pressing the left button (port), the stern thruster will push the stern to port.
  By pressing the right button (starboard), the stern thruster will push the stern to starboard.
  These buttons only operate a stern thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.

When your thruster(s) are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus V-CAN, Sleipner S-Link, ABT-TRAC Link, or CMC-CANopen), the maximum output of your thrusters can be configured during the Dockmate installation or sea trial.

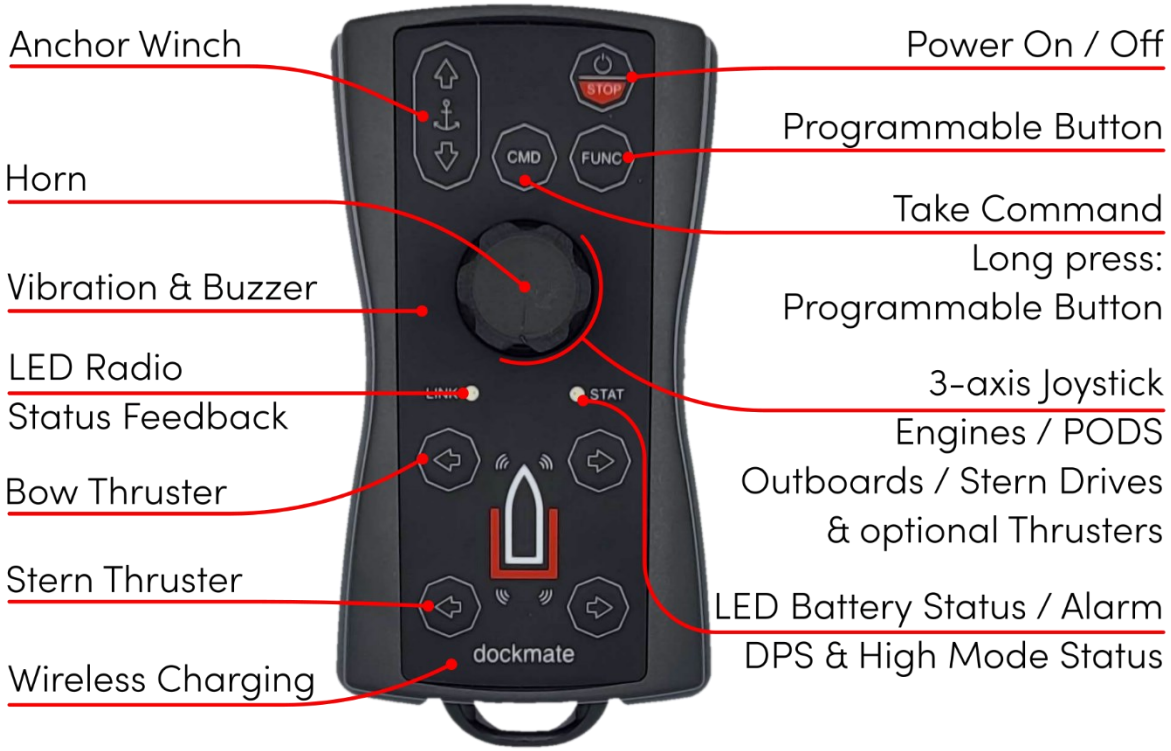
4.3. DOCKMATE TWIST FOR JOYSTICK SYSTEM + BOW AND STERN THRUSTER

This section applies if your Dockmate TWIST is connected to joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2).

If you have a Dockmate TWIST connected to a control head with levers, please return to point 4.2.

If you have a Dockmate VECTOR, please skip to point 4.4.

4.3.1. DOCKMATE TWIST KEYPAD FOR JOYSTICK SYSTEM + BOW AND STERN THRUSTER



We recommend that you always wear the lanyard around your neck while using the Dockmate TWIST.

4.3.2. DOCKMATE TWIST FEATURES FOR JOYSTICK SYSTEM + BOW AND STERN THRUSTER

This section applies if your Dockmate TWIST is connected to joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2).

If you have a Dockmate TWIST connected to a control head with levers, please return to point 4.2.

If you have a Dockmate VECTOR, please skip to point 4.4.

- **On/Off button**
  Press and hold the on/off button for 2s to turn the remote on.
  Press the on/off button 3 times quickly or hold the on/off button for 3s to shut the remote off.

When this button is pressed (even shortly) while another button is pressed, all inputs are inhibited for safety, so Dockmate's outputs go to neutral, until all buttons are released again.

In case of emergency, press the On/Off button to force Dockmate's outputs to neutral.

- **"sel" (CMD) button**
  The "sel" button has 2 functions.
  The 1st function is Take Command.
  The 2nd function can be chosen during the installation: "High Mode" or "DPS".
  - **Take Command**
    Pressing the "sel" button makes the Dockmate the active steering position.

Depending on your boat's propulsion system and Dockmate configuration, you may need to first manually activate the station the Dockmate Receiver is connected to.

  - **High Mode**
    Pressing and holding the "sel" button for 1s or more will (de)activate the "High Mode" function on the Volvo Penta joystick or Mercury/Zeus Joystick Piloting 2 system. Note that the boat needs to have this feature installed. If not, this function is disabled, and pressing this button has no effect.
    When High Mode is activated, the "stat" LED will light white ○, and blinks the entire time this function is engaged. When the "sel" button is pressed for 1s or more again, it deactivates High Mode, the remote beeps twice, and the "stat" LED will stop blinking white ○.

- **Dynamic Positioning System (DPS)**
  Pressing and holding the "sel" button for 1s or more will (de)activate the "Dynamic Positioning System" function, if your Dockmate has been configured with the Position Hold option.
  On Volvo Penta joystick systems it will (de)activate DPS, provided the boat has the Dynamic Positioning System installed.
  On Mercury/Zeus Joystick Piloting 2 systems it will (de)activate Skyhook, provided the boat has this feature installed.
  Note that if the boat and/or Dockmate does not have the Volvo Penta DPS or Skyhook feature installed, Dockmate will not be able to activate it and pressing this button will have no effect.
  When DPS is activated, the "stat" LED will light blue, and blinks the entire time this function is engaged. When the "sel" button is pressed for 1s or more again, it deactivates DPS, the remote beeps twice, and the "stat" LED will stop blinking blue

Dockmate is not responsible for active movements made by the boat, while DPS is activated. Your boat's DPS is controlled by the host system (Volvo Penta EVC, Mercury Joystick Piloting, …). Turning off your Dockmate remote does not (de)activate the DPS system. Check your boat's DPS operation manual, before using it.

- **Anchor winch buttons**
  By pressing the upper button, you lower the anchor.
  By pressing the lower button, you raise the anchor.
  This behaviour can be switched in the Dockmate Settings, during the installation or sea trial.
  These buttons only operate an anchor winch if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect. When pressed together, you can choose between windlass 1 and 2 (2 or 4 beeps), if the Dockmate Receiver is fitted with a twin anchor winch module.
- **Joystick**
  The joystick fully imitates the behaviour of the fixed joystick station, with one exception: the rotational axis is on-off, but can be programmed during the installation, to gradually increase the throttle.
  Rotating the boat can for example start at 30% and gradually increase the output to 85 % in a time of 5 seconds.
  By default, TWIST's joystick behaves the same way as the fixed joystick. Dockmate can optionally be configured to enhance the output with thruster actions when using the TWIST's joystick.
  Pressing the knob of the joystick will sound the horn.
- **link**: Radio Status LED
  Shows the status of the connection with the Receiver
  It also shows warnings and errors if there are any.
- **stat**: Battery Status LED
  Shows the battery status of the remote on start-up and when the battery charge gets low. It also shows if any special options have been activated through Dockmate. While charging your TWIST, this LED will blink to indicate it is charging and how full the battery is.

- **Buzzer & vibrator**
  Indicates no communication, low battery, warning, or error.
- **Bow thruster buttons**
  By pressing the left button (port), the bow thruster will push the bow to port.
  By pressing the right button (starboard), the bow thruster will push the bow to starboard.
  These buttons only operate a bow thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.
- **Stern thruster buttons**
  By pressing the left button (port), the stern thruster will push the stern to port.
  By pressing the right button (starboard), the stern thruster will push the stern to starboard.
  These buttons only operate a stern thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.

When your thruster(s) are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus V-CAN, Sleipner S-Link, ABT-TRAC Link, or CMC-CANopen), the maximum output of your thrusters can be configured during the Dockmate installation or sea trial.

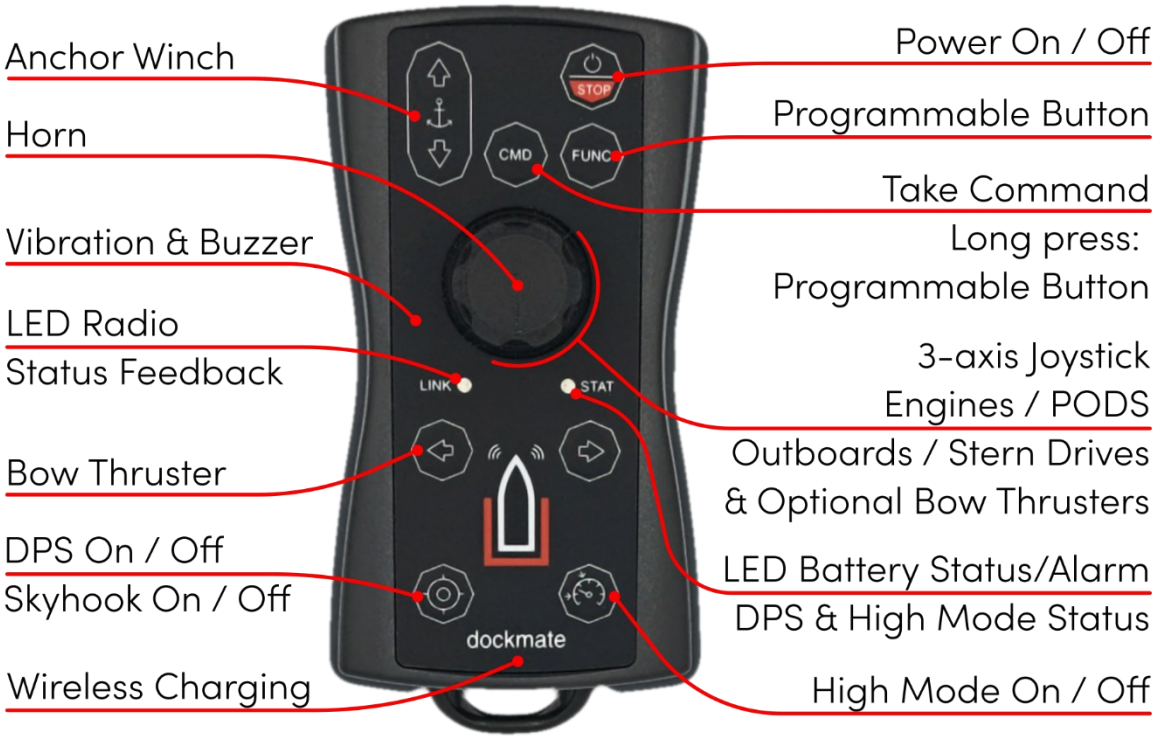
4.4. DOCKMATE VECTOR

This section applies if your Dockmate VECTOR.

If you have a Dockmate TWIST connected to a control head with levers, please return to point 4.2.

If you have a Dockmate TWIST connected to a joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2), please return to point 4.3.

4.4.1. DOCKMATE VECTOR KEYPAD



We recommend that you always wear the lanyard around your neck while using the Dockmate VECTOR.

4.4.2. DOCKMATE VECTOR FEATURES

This section applies if your Dockmate VECTOR.

If you have a Dockmate TWIST connected to a control head with levers, please return to point 4.2.

If you have a Dockmate TWIST connected to a joystick system (Volvo Penta Joystick EVC-D or EVC-E, or Mercury Joystick Piloting 1 or 2), please return to point 4.3.

- **On/Off button**
  Press and hold the on/off button for 2s to turn the remote on.
  Press the on/off button 3 times quickly or hold the on/off button for 3s to shut the remote off.

When this button is pressed (even shortly) while another button is pressed, all inputs are inhibited for safety, so Dockmate's outputs go to neutral, until all buttons are released again.

In case of emergency, press the On/Off button to force Dockmate's outputs to neutral.

- **"sel" button**
  The "sel" function is Take Command.
  Pressing the "sel" button makes the Dockmate the active steering position.

Depending on your boat's propulsion system and Dockmate configuration, you may need to first manually activate the station the Dockmate Receiver is connected to.

- **Anchor winch buttons**
  By pressing the upper button, you lower the anchor.
  By pressing the lower button, you raise the anchor.
  This behaviour can be switched in the Dockmate Settings, during the installation or sea trial.
  These buttons only operate an anchor winch if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect. When pressed together, you can choose between windlass 1 and 2 (2 or 4 beeps), if the Dockmate Receiver is fitted with a twin anchor winch module.
- **Joystick**
  The joystick fully imitates the behaviour of the fixed joystick station, with one exception: the rotational axis is on-off, but can be programmed during the installation, to gradually increase the throttle.
  Rotating the boat can for example start at 30% and gradually increase the output to 85 % in a time of 5 seconds.
  By default, VECTOR's joystick behaves the same way as the fixed joystick. Dockmate can optionally be configured to enhance the output with thruster actions when using the VECTOR's joystick.
  Pressing the knob of the joystick will sound the horn.

- **High Mode**
  Pressing and holding the "sel" button for 1s or more will (de)activate the "High Mode" function on the Volvo Penta joystick or Mercury/Zeus Joystick Piloting 2 system. Note that the boat needs to have this feature installed. If not, this function is disabled, and pressing this button has no effect.
  When High Mode is activated, the "stat" LED will light white ○, and blinks the entire time this function is engaged. When the "sel" button is pressed for 1s or more again, it deactivates High Mode, the remote beeps twice, and the "stat" LED will stop blinking white ○.
- **Dynamic Positioning System (DPS)**
  Pressing and holding the "sel" button for 1s or more will (de)activate the "Dynamic Positioning System" function, if your Dockmate has been configured with the Position Hold option.
  On Volvo Penta joystick systems it will (de)activate DPS, provided the boat has the Dynamic Positioning System installed.
  On Mercury/Zeus Joystick Piloting 2 systems it will (de)activate Skyhook, provided the boat has this feature installed.
  Note that if the boat and/or Dockmate does not have the Volvo Penta DPS or Skyhook feature installed, Dockmate will not be able to activate it and pressing this button will have no effect.
  When DPS is activated, the "stat" LED will light blue ●, and blinks the entire time this function is engaged. When the "sel" button is pressed for 1s or more again, it deactivates DPS, the remote beeps twice, and the "stat" LED will stop blinking blue ●

Dockmate is not responsible for active movements made by the boat, while DPS is activated. Your boat's DPS is controlled by the host system (Volvo Penta EVC, Mercury Joystick Piloting, …). Turning off your Dockmate remote does not (de)activate the DPS system. Check your boat's DPS operation manual, before using it.

- **link**: Radio Status LED
  Shows the status of the connection with the Receiver
  It also shows warnings and errors if there are any.
- **stat**: Battery Status LED
  Shows the battery status of the remote on start-up and when the battery charge gets low. It also shows if any special options have been activated through Dockmate. While charging your TWIST, this LED will blink to indicate it is charging and how full the battery is.
- **Buzzer & vibrator**
  Indicates no communication, low battery, warning, or error.
- **Bow thruster buttons**
  By pressing the left button (port), the bow thruster will push the bow to port.
  By pressing the right button (starboard), the bow thruster will push the bow to starboard.
  These buttons only operate a bow thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.
- **Stern thruster buttons**
  By pressing the left button (port), the stern thruster will push the stern to port.
  By pressing the right button (starboard), the stern thruster will push the stern to starboard.
  These buttons only operate a stern thruster if installed on the boat and your Dockmate Receiver is configured for it. Otherwise, this has no effect.

When your thruster(s) are proportional and the Dockmate Receiver is configured with a CAN bus thruster module (Vetus V-CAN, Sleipner S-Link, ABT-TRAC Link, or CMC-CANopen), the maximum output of your thrusters can be configured during the Dockmate installation or sea trial.

5. CHARGING THE BATTERIES

The Dockmate remotes are fitted with a Li-Ion battery that must be charged occasionally.

When the Dockmate remote is turned on, both LEDs will go white. Then the Status LED will show one of the following:

🔵	Battery fully charged	90-100%
🟢	Battery OK	26-90%
🟡	Battery Low	6-25% (charging highly recommended)
🔴	Battery Warning	1-5% (may fail at any moment)
🔴🔴	Battery Failed	0%
⚫	Battery Failed	0%

It is not possible to turn on the remote when the battery voltage drops below 3.45V. It is highly recommended to charge the remote when the "stat" LED shows yellow on start-up.

The Dockmate remote will start to charge when switched off and placed on the Dockmate Cradle or wireless charger. The LEDs on the Dockmate Cradle will change in colour form constant red to constant green, indicating the charging process.

When the indicator on the Dockmate Cradle flashes red that means a foreign metal object was placed on the charging pad, the charger is overheated, or the Cradle is supplied by a too low voltage.

Also, the "stat" LED on the remote will start to flash in different colours depending on the battery percentage (1-5%: 🔴, 6-25%: 🟡, 26-90%: 🟢, 90-100%: 🔵).

When the battery is fully charged the Dockmate remote will keep blinking blue and the charger will show a green LED.

When placing a fully charged remote in a Dockmate Cradle, the charger's LED will light up, and the remote "stat" LED will blink blue.

6. TURNING THE REMOTE ON AND OFF

Press and hold the ⏻ button for 3 seconds to turn on the remote.

If you hold the ⏻ button for more than 6 seconds on start-up, the remote will immediately shut off again.

The remote will be automatically switched off after 30 minutes of non-use. Alternatively, the remote can be switched off by pressing the ⏻ button 3 times quickly or holding it down for 3 to 5 seconds. Do not press & hold the ⏻ button for more than 6 seconds.

When turning on the remote, both LEDs will go white. Then the **link** LED will go dark, and the **stat** LED will show one of the following colours:

🔵	Battery fully charged	90-100%
🟢	Battery OK	26-90%
🟡	Battery Low	6-25% (charging highly recommended)
🔴	Battery Warning	1-5% (may fail at any moment)
🔴🔴	Battery Failed	0%
⚫	Battery Failed	0%

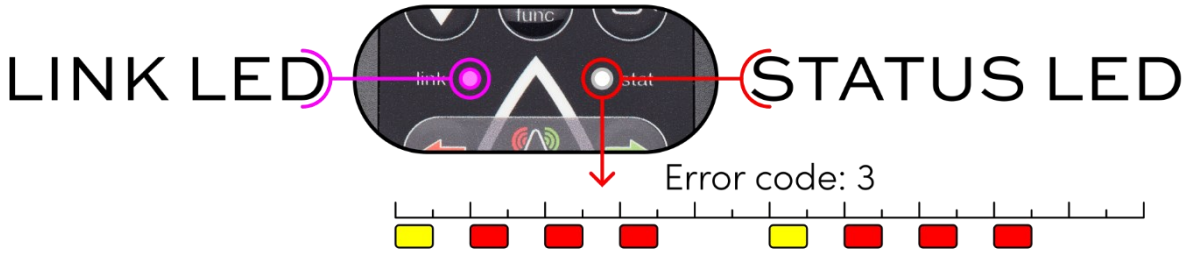
When taking the remote off the charger, while it is still charging, the remote will stay in "charging mode" for about 15s.

You can turn on the remote while it is being charged in its Cradle. For the TWIST and VECTOR this makes it possible to use Dockmate as a "fixed joystick."

7. STATIC ERROR CODES

The software of the remote has built in safety features to check upon start-up whether one of the buttons is pressed. While the **stat** LED is on, and the **link** LED is off (about 2s), the user cannot press any button. Otherwise, the software will recognise this as a fault situation (signalling a STATIC ERROR CODE) and will switch off the unit. When this happens, the remote needs to be restarted. As soon as the **stat** LED is off and the **link** LED is on, the user may start using the Dockmate remote.

If after switching on, the link LED is constantly violet, that means that the remote encountered a problem and it displays a **STATIC ERROR CODE**. The **status LED** will simultaneously display the error code: the cycle starts with one yellow blink, then followed by one or more RED blinks (+ beeps & vibrations); the cycle ends with a 0.5s break. After 10 cycles, the remote switches itself off.



Possible STATIC ERROR CODES are:

Code #1. No Communication with the joystick.
Code #2. Joystick is not in neutral during start-up.
Code #3. One or more buttons pressed during start-up. No button, except On / Off may be pressed when switching on the remote.
Code #4. Joystick stuck during operation and could not be reset.
Code #5. Joystick responded with faulty checksum.
Code #6. Remote is disabled due to previously detected fault in a joystick (code 4 or 5).
Code #7. Serial Number in remote is not set. The remote doesn't have a serial number.
Code #8. Trying to use demo remote as a normal unit. The remote has the DEMO FLAG set but the serial number is different than 1, 2, 3 or 4.
Code #9. Powered charger detected while remote is in use.

8. LED BEHAVIOUR DURING OPERATION

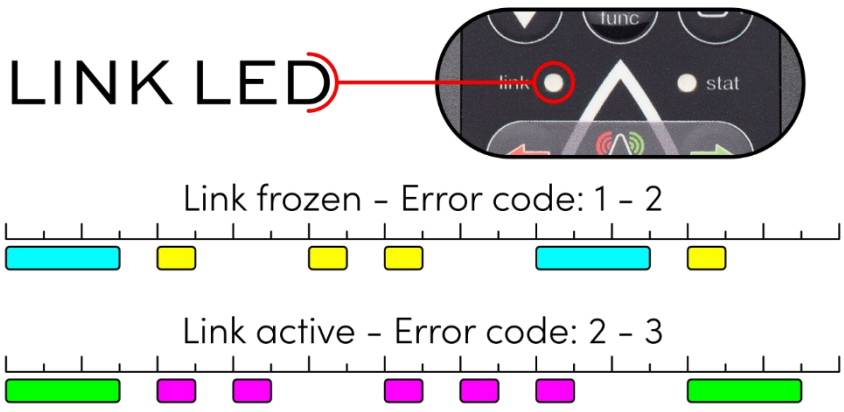
After start-up, the **stat** LED will go dark, and the **link** LED will show the communication status. The **link** LED can also show warning and error feedback from the Receiver.

Link	Meaning	Cause
🟢	Communication OK Actively transmitting data (Link active)	When pressing a button or moving the joystick.
🔵	Communication OK Standby mode (Link frozen)	When not pressing any button for more than 5s.
🔴	Communication lost	When communication could not be established or was interrupted. The remote also beeps.
🟢🟡 or 🔵🟡	Green / yellow or blue / yellow blinking. Feedback from the Receiver: warning	Receiver status warning. See below for meaning the warning code.
🟢🟣 or 🔵🟣	Green / purple or blue / purple blinking. Feedback from the Receiver: error	Receiver status error. See below for meaning the error code.

Warning & error codes (feedback from the Receiver):

1 - 1 – Thrusters: no command
1 - 2 – Engines: no command
2 - 1 – No communication with thruster system
2 - 2 – No communication with engine/motor system
2 - 3 – No communication with Thruster Interface(s)
2 - 4 – No communication with Engine Interface (s)
3 - 1 – Power Supply Fail
3 - 2 – Internal Error
3 - 3 – Configuration problem
3 - 4 – Interface(s) failed to start

Example below



Once you know the warning or error code, you can try to solve the issue, which might be very straightforward. Check point 10. Troubleshooting to learn more about solving simple issues.

If the warning or error persists, the Receiver needs to be diagnosed by a Dockmate dealer or technician with Dockmate's DockControl2™ computer software to read out the log.

When turning on the Dockmate wireless remote, it will automatically try to take command from the boat's controls. If at some point Dockmate relinquishes command because you took command on one of the boat's fixed stations for example, then you can take back command on your Dockmate remote by shortly pressing the "sel" button.

To take command, depending on your boat's control systems, all or a subset of the following conditions must be met:

- The Receiver and remote must be powered on.
- Dockmate must support take command on your engine and/or thruster control system. Ask your Dockmate dealer or technician if take command is supported on your systems.
- Control heads on all stations must be in neutral.
- Engine(s) is/are running

If Take Command is not supported on your controls, then you must manually take command on the station, where Dockmate is connected, before you can use your Dockmate remote.

9. TROUBLESHOOTING

Problem	Possible cause	Solution
The Receiver does not work.	The Dockmate remote is switched off. The Dockmate Receiver does not receive sufficient D/C Volts.	Switch the remote on (see point 6 in this manual). Check: Power on? Fuse blown?
The remote does not work.	The battery is empty.	Charge the battery (see point 5 in this manual)
The "stat" LED on the remote is on and red.	The battery is empty.	Charge the battery (see point 5 in this manual)
Receiver Status LED: dim orange light	Only the Cradle is powered or Dockmate Receiver failed.	Check if Your Receiver is powered on both feeds or Contact your Dockmate dealer.
Code 1 – 1 Remote "link" LED or Receiver Status LED: 1x followed by 1x	Thruster(s): no command.	Check if thruster system is on and operational. Can You control the thrusters from the thruster control panel on the dashboard?
Code 1 – 2 Remote "link" LED or Receiver Status LED: 1x followed by 2x	Engine(s): no command.	Check if the engine system is on and operational. Are all control head levers in neutral? Depending Your boat and Dockmate configuration You may first need to manually take command on the fixed station, where Dockmate is connected.
Code 2 – 1 Remote "link" LED: 2x followed by 1x Receiver Status LED: 2x followed by 1x	No communication with thruster system.	Check if thruster system is on and operational. Can You control the thrusters from the thruster control panel on the dashboard?
Code 2 – 2 Remote "link" LED: 2x followed by 2x Receiver Status LED: 2x followed by 2x	No communication with engine / motor system.	Check if engine system is on and operational.

Problem	Possible cause	Solution
Code 2 – 3 Remote "link" LED: 2x ● followed by 3x ● Receiver Status LED: 2x ● followed by 3x ●	No communication with Thruster Interface.	Turn your Dockmate Receiver off and on again. If the error persists, contact Your Dockmate dealer.
Code 2 – 4 Remote "link" LED: 2x ● followed by 4x ● Receiver Status LED: 2x ● followed by 4x ●	No communication with Engine Interface.	Check if the ignition is on. Turn your Dockmate Receiver off and on again. If the error persists, contact Your Dockmate dealer.
Code 3 – 1 Remote "link" LED: 3x ● followed by 1x ● Receiver Status LED: 3x ● followed by 1x ●	Power Supply Fail: Power supply to the Receiver is too low.	Check the boat's battery voltage and connection. Dockmate requires a minimum of 11.0V
Code 3 – 2 Remote "link" LED: 3x ● followed by 2x ● Receiver Status LED: 3x ● followed by 2x ●	Internal Error: Internal settings memory corrupted.	Call your Dockmate technician to setup all necessary settings.
Code 3 – 3 Remote "link" LED: 3x ● followed by 3x ● Receiver Status LED: 3x ● followed by 3x ●	Configuration Problem: Dockmate settings are not configured correctly.	Call Your Dockmate technician to setup all necessary settings.
Code 3 – 4 Remote "link" LED: 3x ● followed by 4x ● Receiver Status LED: 3x ● followed by 4x ●	Interface(s) in the Receiver failed to start: Device stuck in bootloader mode.	Call Your Dockmate dealer.

10. TECHNICAL SPECIFICATIONS

10.1. REMOTE

Dimensions:	70 x 150 x 40mm or 2.75 x 5.91 x 1.57"
Weight:	ca. 150g or 5.29oz
RF Band:	433.05MHz to 434.79MHz (US, Australia, and others) 868.00MHz to 870.00MHz (Europe)
Range:	50m or 165ft
Housing:	ABS & rubber – according to IP67 specifications
Battery:	320+mAh Li-ion, lasts 3h of docking manoeuvres and around 10-15min on very low battery level (warning) Qi-certified wireless charging
Operating temperature:	0°C to +43°C or +32°F to +110°F

10.2. RECEIVER REV.G+

Dimensions:	238 x 200 x 86mm or 9.4 x 7.9 x 3.2"
Weight:	ca. 1.95kg or 4.3lbs
RF Band:	433.05MHz to 434.79MHz (US, Australia, and others) 868.00MHz to 870.00MHz (Europe)
Range:	50m or 165ft
Housing:	Aluminium – according to IP67 specifications
Power:	12V or 24V
Operating temperature:	-10°C to +60°C or +14°F to +140°F

10.3. USING AND CHARGING YOUR TWIN OR SINGLE

When using a Dockmate remote, that was charged to 100%, it takes up to 3 hours of constant use (remote actively communicating with the Receiver) to deplete the battery.

This translates to a few very difficult and/or long docking manoeuvres, or at least 15 10min docking manoeuvres.

During our test charging a Dockmate remote from empty to completely full takes up to 1h 30min. In practice we have observed a typical charging time for a Dockmate remote of 20 to 40 min. For boaters using our latest Dockmate Cradle, their Dockmate remote is virtually always charged up and ready for use.

10.4. FCC WARNING

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 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 Dockmate technician for help.

Caution: Any changes or modifications to this device not explicitly approved by the manufacturer could void your authority to operate this 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.

This device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

11. ENVIRONMENTAL INFORMATION

The equipment that you have bought requires the extraction and use of natural resources for its production. It may contain substances that are hazardous to health and the environment.

To avoid the dissemination of those substances in our environment, and to diminish the pressure on natural resources, we encourage you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials of your end-of-life equipment in an environmentally sound way.

The crossed-bin symbol marked on your device indicates you should use these systems.

If you need more information on the collection, reuse, and recycling of this product, please contact your local or regional waste administration.

You can also contact us for more information on the environmental performance of our products.

12. WARRANTY

Each Dockmate has a 3-year warranty from the date of purchase by the first owner. The warranty covers all defects and failures that are not caused by the customer. The manufacturer will repair or replace your product free of charge on the following conditions:

- This 3-year warranty covers this Dockmate system only and not any devices or systems connected to it or devices that are mounted in or on the Dockmate Cradle. No warranty is given for users' other devices or systems, and users expose their devices and systems to hazards, known or unknown, at their own risk.
- The warranty is not valid in case of improper installation or improper use of the device. Products must have been used strictly in accordance with operating instructions supplied. Dockmate will have no liability for defects caused by accident, misuse, alteration, or neglect.
- The electrical components must remain complete. They may not be disassembled, not tampered with, nor be modified in any way. The use of non-original electronic accessories can damage the device. This is not covered by the warranty.
- Damage to the Receiver caused by water or other liquids is not covered by the warranty.
- Returns of defective equipment under this warranty:
    - Before returning, please contact the vendor of the device by phone or email.
    - Always include a brief description of the problem that occurs.
    - Do not forget to include your full contact and delivery details: name, telephone, email, complete address.
    - To avoid damage during shipment, the unit must be adequately packaged. The manufacturer will accept no liability for units lost or damaged in transit from the customer.
    - Shipment costs are always for the buyer.
- The liability of the manufacturer is limited to replacing or repairing the unit. The manufacturer decides whether the device will be repaired or replaced.
- The buyer agrees that the liability of the manufacturer is limited to the purchase price of the equipment, regardless of the circumstances. The manufacturer is not responsible for damages resulting from the use of the device. The manufacturer can never be held responsible for any accidents and / or damage caused to people and / or property.
- The repair or replacement of the equipment during the warranty period, does not extend the original warranty period.
- Without warning the manufacturer may at any time make changes to the specifications of the device, both to the hardware and the software.
- The manufacturer has taken all the necessary steps to ensure that the information in this guide is accurate and complete

13. MAINTENANCE

The installation is 100% maintenance free, except for battery charging. Occasionally the remote and Receiver can be cleaned with a damp cloth. The Receiver should not remain powered on constantly. It's good to turn it off and on again every couple of days.

14. COMPLIANCE

Dockmate is compliant with the following standards:

14.1. DOCKMATE USING 433MHZ BAND

- FCC: Part 15.231
- EMC:
  - EN 55032:2015+A1:2016
  - EN55035: 2017
- RED:
  - ETSI EN 301 489-1 V2.2.3 (2019-11)
  - ETSI EN 301 489-3 V2.1.1 (2019-03)
  - EN 55032: 2015
  - EN 55035: 2017
  - ETSI EN 300 220-1 V3.1.1 (2017-02)
  - ETSI EN 300 220-2 V3.2.1 (2018-06)
  - EN 50663: 2017
  - EN 62368-1:2014+A11:2017

14.2. DOCKMATE USING 868MHZ BAND

- EMC:
  - EN 55032:2015+A11:2020
  - EN55035: 2017
- RED:
  - ETSI EN 301 489-1 V2.2.3 (2019-11)
  - ETSI EN 301 489-3 V2.1.1 (2019-03)
  - EN 55032: 2015
  - EN 55035: 2017
  - ETSI EN 300 220-1 V3.1.1 (2017-02)
  - ETSI EN 300 220-2 V3.2.1 (2018-06)
  - EN 50663: 2017
  - EN 62368-1:2014+A11:2017

15. DECLARATION OF CONFORMITY

Declaration of Conformity

Manufacturer:	PPA Electronics
Address:	Albert Geudensstraat 4 BE-2800 Mechelen BELGIUM
VAT Number:	BE 0891.773.260

Declare under own responsibility the conformity of the product:

Trademark:	Dockmate
Description	Dockmate, remote docking system for motoryachts

With the requirements of :

- Low Voltage (LVD) 2006/95/EC
- EMC Directive 2004/108/EC
- R&TTE Directive 1995/5/EC

Following standards:

EN 60950-1:2006+A11:2009 +A1:2010+ A2:2013+A12:2011	Safety of information technology equipment, including electrical business equipment.
EN 60945:2012	Maritime navigation and radio communication equipment and systems – General requirements – Methods of testing and required test results
ETSI EN300 220-1 V2.4.1:2012- 05; ETSI EN300 220-2 V2.4.1:2012- 05	ETSI EN 300 220-1 V2.4.1 (2012-05): Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods. ETSI EN 300 220-2 V2.4.1 (2012-05): Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.
EN61000-3-2:2006/A1:2009/A2:2009; EN 61000-3-3:2013; EN301 489-1 V1.9.2; EN301 489-9 V1.4.1; EN55022:2010; EN55024:2010.	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

CE

Mechelen, 5.10.2015

Dirk Illegems, Owner

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dockmate®