Contact Information
For help with this device, please contact Coral Detection Systems at:

Website
www.coraldrowningdetection.com

E-mail
info@coraldrowningdetection.com

Facebook
www.facebook.com/CoralDrowningDetection
Preface

Safety Instructions

- **CORAL MANTA does not replace adult supervision.**
- The connection to the pool unit should be consistent with the local and national wiring rules (electrical code).
- Only use the pool unit charger supplied with the system.
- CORAL MANTA requires a direct line-of-sight to the entire pool, and has a maximum view angle of 90°.
- CORAL MANTA operation is optimal in pools of up to 10 yards long.
- Keep the pool water as clear as possible according to best practice (consult with a pool service professional).
- Verify that the images retrieved from the camera are clear and that details on the far end of the pool can be viewed clearly.
- CORAL MANTA requires direct sunlight in order to charge its battery using the built-in solar panels.
- CORAL MANTA is another layer of safety and does not replace other pool safety means or devices required by local city/state/country laws.
- CORAL MANTA uses computer vision technology to detect drowning. Depending on various factors, some drowning events might not be detected.
CORAL MANTA uses cellular (GSM) communication to transfer alerts, warnings, and notifications as well as images from the pool unit to your paired devices using secured servers in the cloud.

Communication to the paired devices depends on the quality of the cellular network and might sometimes be degraded or slowed down based on signal quality.

The drowning detection function is not dependent on cellular communication. It works locally, without cellular communication, by sounding the alarms in the pool unit and home unit.

The home unit must be plugged into a power outlet inside the house, as close as possible to the pool unit. Make sure the home unit can be clearly seen and heard inside the home at all times (e.g. when there is background noise, music, people talking, or working electrical appliances).

ADULT SUPERVISION IS REQUIRED AT ALL TIMES.

NOTE:
Do not install the pool unit in a shady location. The solar panels must be exposed at all times. Remove any foreign objects covering the solar panels.
Disclaimers

- Using CORAL MANTA is subject to the acceptance of the “Terms of Use” and “Privacy Policy”.
- Setting up and installing CORAL MANTA indicates your acceptance of the “Terms of Use” and “Privacy Policy”.
- If you do NOT accept the “Terms of Use” and “Privacy Policy” please contact us to arrange a refund and return shipment.
- Activating CORAL MANTA requires pairing it with a the Coral Drowning Detection app (using the app is mandatory only for activating the system).

**NOTE:**
The shape and position of the pool may effect system performances. Verify that the pool shape is suitable [see Selecting Mounting Position on page 21](#) and that the pool unit is installed in the proper place [see Mounting the Docking Station on page 23](#).
Introduction
This chapter provides an overview of the system and includes:

- System Layout
- Pool Unit
- Home Unit
System Layout

CORAL MANTA is programmed to detect people in the pool, their position and motion. It constantly analyzes the images that are captured by the underwater camera. Whenever it detects a near-drowning event it generates an alarm. CORAL MANTA also learns based on the image analysis and attempts to automatically ignore alerts which are false alarms.

CORAL MANTA includes the following:

- **Pool Unit** (2) – mounted on a corner of the pool, includes a video camera, and generates alerts according to the scenario identified in the pool [see Detection Scenarios on page 31]. The pool unit transmits alerts to the home unit (1) and to the mobile device (3) as needed.

- **Home Unit** (1) – connected to a power outlet in the house, communicates with the pool unit over RF (direct) communication, and provides audio and visual indication of the alerts received from the pool unit.

- **Mobile Application** – Coral Drowning Detection mobile application, installed on a mobile device (3), provides alerts, system status notifications and allows for remote monitoring.
Pool Unit

OVERVIEW

The pool unit includes the following:

- Underwater Tube (1)
- Indicators (2)
- Solar panel (3)
- Docking station (4)
- Connectors (5)
- Battery (6)
UNDERWATER TUBE
A folding tube holds the camera and the activity sensor under the water.
The underwater tube includes the following:

- **Underwater camera (6)** – a built-in underwater video camera that captures real-time video and has a maximum view angle of 90°
- **Activity sensor (4)** – provides indication of the water level in the pool and senses activity in the pool
- **Camera illumination (5)**

**NOTE:**
The underwater tube is folded and unfolded using an axle (1). When folded, a magnet (3) connects to a metal plate (2) to secure the folded tube.
INDICATORS

The pool unit includes the following indicators:

Pool Activity Indicator

The pool activity indicators (4, 5) provide visual indication of the different scenarios in the pool (see Detection Scenarios on page 31).

Water visibility indicator

The water visibility indicator (1) provides the following indications of water clarity:

- **Off** – clear water
- **Steady yellow** – there is some visibility degradation
- **Steady red** – there is a significant visibility degradation

Battery Level Indicator

The pool unit battery level indicator (2) provides the following indications:

- **Steady green** – battery is fully charged
- **Blinking green** – battery is partially charged
- **Steady red** – battery charge is below critical level - charge immediately
- **Blinking yellow** – battery is charging
Communication Indicator

The communication indicator (3) provides the following indications of connectivity:

- **Steady blue** – the pool unit is connected to the Internet
- **Blinking blue** – no Internet connection in the pool unit
DISMISS BUTTON

When the alarm is on, the dismiss button (1) is used to silence the alarm.
CONNECTORS

The pool unit includes the following connectors:

- **DC IN (3)** – for charging the battery

**NOTE:**
When no DC power is connected, the protection cap (2) must cover the socket.

- System reset button (1)
- **SIM card slot (4)** – enables communication with the mobile application (applicable only for users who purchased CORAL MANTA without an integrated SIM card)
SOLAR PANEL
The pool unit is charged by a set of solar cells (1).

NOTE:
Do not install the pool unit in a shady location. The solar panels must be exposed at all times. Remove any foreign objects covering the solar panels.
BATTERY

The battery (1) is located in the pool unit and is charged using the Solar panel or using the pool unit charger [see Charging the Battery on page 28]. The connector (2) of the battery connects to the battery port in the pool unit. The battery handle (3) is used to pull the battery out of its socket. The battery level is indicated by the Battery Level Indicator on the pool unit as well as on the home unit.
DOCKING STATION

The docking station is mounted on a corner of the pool (see Selecting Mounting Position on page 21) and serves as a base for the pool unit. After first installation of the docking station, the pool unit can be installed or removed quickly. The docking station includes the following:

- **Docking station base (3)**
- **Screws (1) and nuts (5)** – two sets of screws and nuts to secure the docking station to the selected corner of the pool
- **Docking posts (2)** – two posts that support the pool unit
- **Metal plate (4)** – attached to the magnet (6) to secure the pool unit when docked
Home Unit

The home unit is plugged into a power outlet inside the user's house and includes the following:

- **Pool Activity Indicator (2)** – provides visual indication of the different scenarios in the pool [see Detection Scenarios on page 31].

- **LED Indicators (3)** – provide indication of the system operation (connectivity, battery level and visibility). The LED indicators on the home unit function the same as the LEDs located on the pool unit.

- **Buzzer (4)** – produces a sound in the following cases:
  - **Short high pitch buzz** – presence in the pool.
  - **Short loud alarm** – first indication of a possible drowning danger.
  - **Longer loud alarm** – drowning danger is apparent.
  - **Continuous loud alarm** – high drowning danger. You must get to the pool immediately to pull the person out of the water.

- **Plug (1)** – connects to a power outlet inside the house

**NOTE:**
See section Indicators for a more detailed description of the LED indicators on the pool unit and the home unit.
Mobile Application

Coral Drowning Detection mobile application is available on Google Play Store and on Apple App Store. The mobile application receives alerts from the CORAL MANTA device and produces notifications on the mobile device. The mobile application also enables the user to retrieve images of the pool, dismiss alerts, and receive notifications of visibility, connectivity, and battery statuses.
First Installation

This chapter provides installation instructions and includes:

- Opening the box
- Selecting Mounting Position
- Mounting the Docking Station
- Placing the Pool Unit
- Inserting the SIM Card (Optional)
- Inserting the Battery
- Charging the Battery
- Connecting the Home Unit
- Downloading Coral Drowning Detection Application
Opening the box

The CORAL MANTA package includes the following:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool unit (folded with a tip protective cover)</td>
<td>1</td>
</tr>
<tr>
<td>Docking station</td>
<td>1</td>
</tr>
<tr>
<td>Battery pack</td>
<td>1</td>
</tr>
<tr>
<td>Home unit</td>
<td>1</td>
</tr>
<tr>
<td>Pool unit charger</td>
<td>1</td>
</tr>
<tr>
<td>Docking station mounting guide sheet</td>
<td>1</td>
</tr>
<tr>
<td>Accessories pack</td>
<td>1</td>
</tr>
<tr>
<td>Quick Start Guide</td>
<td>1</td>
</tr>
</tbody>
</table>
Selecting Mounting Position

Select the position of CORAL MANTA mounting according to the following guidelines:

- Pool size and dimensions comply with system requirements (see CORAL MANTA website).
- The camera line of sight covers the entire pool area (the underwater camera has a maximum view angle of 90°).
- Shortest distance between the home unit and the pool unit (distance should not exceed 50 yards).
- Mount the pool unit to allow full exposure to sunlight during all or most of the day.
- The docking station mounting screws should be anchored (see Mounting the Docking Station on page 23).
Mounting position enables dipping the underwater tube in the water and having the pool water level within the minimum and maximum limits, based on the minimum and maximum marks on the tube.

NOTE:
The water level in the pool must reach between the top and the bottom marks of the pool activity sensor (1) (see Underwater Tube on page 9).
Mounting the Docking Station

After choosing the optimal location for the pool unit, install the docking station:

1. Place the provided mounting guide (1) in the chosen corner of the pool.
2. Verify that the inner corner (2) of the mounting guide sheet is exactly in line with the corner of the pool (3).
3. Mark the two spots (5) for drilling holes for the screw anchors.
4. Remove the mounting guide (1).
5. Drill (4) two 8mm (\(\frac{5}{16}\)”) holes.
6. Place two screw anchors (4) in the holes (5).
7. Attach the docking station (3) using two screws (1) and washers (2).
Placing the Pool Unit

To mount the pool unit on the installed docking station:

1. Take the pool unit out of the package.
2. Unfold the underwater tube (2).
3. Remove the tip protective cover.
4. Align the docking posts (3) on the docking station with the receptors on the bottom of the pool unit.
5. Gently press the pool unit down onto the docking station. The magnet (1) in the pool unit secures the connection.
Inserting the SIM Card (Optional)

NOTE:
CORAL MANTA includes an integrated SIM card. This procedure is needed only for customers who purchased CORAL MANTA without a SIM card.

Verify correct orientation and push the card (2) into the slot (1).
Inserting the Battery

To insert the battery into the mounted pool unit:

1. Remove battery pack protection.
2. Verify correct orientation of the battery and insert the battery into the pool unit. Use the handle (1) to push the battery in.

Once the battery is inserted, a short alarm sounds and all LED indicators blink.
Charging the Battery

The pool unit battery can be charged using the pool unit charger. When the battery level is low, the battery level indicators on the home unit and the pool unit indicate low battery (see Battery Level Indicator on page 10) and a notification is received on the paired mobile device.

To charge the pool unit, plug the pool unit charger to the DC IN port (1) on the pool unit and plug the other end to a power outlet.

**NOTE:**
It is recommended to fully charge the battery before first use.

**WARNING:**
The 110V/220V AC outlet should be as far from the pool as required by your state/local laws.
Connecting the Home Unit

To install the home unit, plug it into a power outlet inside the house, as close as possible to the pool unit. The distance between the two units should not exceed 50 yards.

Once the home unit is plugged in and the pool unit is operational, the following indications occur:

1. System starting – all LEDs blink in all colors and the buzzer (2) emits a short beep.
2. Pool unit and home unit are in handshaking process – all LEDs blink green.
3. Pool unit and home unit are connected, analytics are up, no presence in the pool – pool activity indicator (1) blinks green slowly.

Downloading Coral Drowning Detection Application

Download Coral Drowning Detection mobile application from Google Play Store or Apple App Store.
Routine Operation

This section reviews the tasks associated with operating the Coral Detection System, and includes:

- Detection Scenarios
- Mobile Application Operation

**NOTES:**

- Alerts on the mobile device depend on cellular communication. When the carrier signal is not steady or weak, you might not receive timely alerts and notifications.
- Never rely solely on alerts on the mobile device.
Detection Scenarios

This section reviews the indications provided by CORAL MANTA throughout the scenarios that might happen in the pool. The system uses the following indications to report the identified pool activity:

- Pool activity indicator on the pool unit (4, 5) and on the home unit (1)
- Buzzer on the pool unit (6) and on the home unit (2)
- Mobile app (3)

When CORAL MANTA is operational, it might identify one of the following scenarios:

- Pool is Unoccupied
- Entrance to the Pool
- Normal Pool Use
- Drowning Suspicion
- Drowning Alert
- Drowning Critical Alert
POOL IS UNOCCUPIED

- **Scenario description** – CORAL MANTA is operational and detects no presence of people in the pool.
- **Indications** – pool activity indicator blinks green slowly and the buzzer is silent.

ENTRANCE TO THE POOL

- **Scenario description** – CORAL MANTA detects entrance to the pool.
- **Indications** – pool activity indicator blinks green quickly, buzzers emit a single beep, and a notification with image of the pool is sent to the mobile device. The pool activity indicator continues to blink as long as there is someone in the pool.

NORMAL POOL USE

- **Scenario description** – CORAL MANTA detects presence of at least one person in the pool. No detection of drowning signs. After the last person leaves the pool, the status changes to Pool is Unoccupied. If a person returns to the pool shortly after the pool was cleared, CORAL MANTA skips the Entrance to the Pool state and does not send an alert of the pool entry.
- **Indications** – pool activity indicator blinks green quickly.
DROWNING SUSPICION

- **Scenario description** – CORAL MANTA detects a person at risk of drowning for about 10 seconds. If signs of drowning disappear, status changes to [Normal Pool Use](#).
- **Indications** – pool activity indicator blinks red quickly, buzzers sound a single loud alarm.
- **Alert Dismiss options** – the Dismiss button on the pool unit ([see Dismiss Button on page 12](#)) and via the mobile app.

DROWNING ALERT

- **Scenario description** – CORAL MANTA detects a person at risk of drowning for an additional 10 seconds. If signs of drowning disappear, status changes to [Normal Pool Use](#).
- **Indications** – pool activity indicator blinks red quickly, buzzers sound a loud siren.
- **Alert Dismiss options** – the Dismiss button on the pool unit ([see Dismiss Button on page 12](#)) and via the mobile app.

DROWNING CRITICAL ALERT

- **Scenario description** – CORAL MANTA detects a person at risk of drowning for an additional 10 seconds.
- **Indications** – pool activity indicator blinks red quickly, buzzer sound a continuous loud siren.
- **Alert Dismiss options** – the Dismiss button on the pool unit ([see Dismiss Button on page 12](#)) and via the mobile app.
Mobile Application Operation

This section provides an overview of the Coral Drowning Detection mobile application, and includes:

- Downloading the App
- First Operation
- Screen Overview
- Notifications and Alerts
- Teaching the System

DOWNLOADING THE APP

1. Using a mobile device, search for the Coral Drowning Detection app in the Google Play store or the Apple App Store.
2. Press Install.
3. Allow the app to send notifications. Otherwise, alerts will not be received on the mobile device.
4. Allow the app to access the camera in order to scan the QR-code (see QR-code on page 36). Otherwise, the CORAL ID will need to be entered manually.
5. Follow the installation instructions.
FIRST OPERATION

1. Launch the Coral Drowning Detection app.
2. Tap NEXT (1) on the first introductory screen after viewing the content.
3. To connect to the device, tap **SCAN** (1).

4. Scan the QR-code on the side of the CORAL MANTA package or on the back of the home unit.
5. Confirm reading all terms and disclaimers (1).
6. Tap **AGREE** (2).

**NOTE:**
CORAL MANTA will not start working until all terms and disclaimers are acknowledged via the mobile app.
SCREEN OVERVIEW
The main screen of the app includes the following:

- **Menu button (1)**
- **Visibility (2)** – displays the status of the pool water clarity
- **Battery level indicator (3)** – displays the pool unit battery level
- **Refresh button (4)** – refreshes the app to display most current underwater image
APPLICATION SETTINGS

To access the Settings screen:

1. Tap the **Menu button** (1).
2. Tap **Settings** (2).

The Settings screen includes the following options:

- **Alarms on entrance (3)** – by activating this option, the mobile device provides a long continuous alarm (and not just a short loud alarm) when the pool unit detects entrance to the pool (see Entrance to the Pool on page 32).

- **Notification restrict (4)** – activating this option enables selecting a daily time frame during which no notifications are received.

**NOTE:**

Notification restriction refers to non-drowning notifications. Drowning alarms can not be restricted and are received at all times.
NOTIFICATIONS AND ALERTS

When the pool unit detects a drowning scenario (see Detection Scenarios on page 31), the mobile device provides an alert and footage from the pool is displayed on the screen.

- Tap the **False Alarm** button (1) to dismiss the alarm.
- Tap the **Mute** button (2) to silence the buzzer sound.

**WARNING:**

- Do not dismiss or mute an alarm before verifying that there is no danger of drowning.
- Never tap the **False Alarm** button (1) unless you are absolutely sure that there is no person in danger.
TEACHING THE SYSTEM

CORAL MANTA is programmed to detect almost any drowning situation and ignore detections of objects and other non-drowning scenarios. Each pool has unique elements and CORAL MANTA can learn and adjust to the specific elements of the pool it is installed in. During the first few weeks of system operation, CORAL MANTA might be confused by such elements and generate more false alarms or false Entrance to the Pool alerts (see Entrance to the Pool on page 32). These false alarms are quickly reduced and nearly disappear thanks to the ability of the system to learn what triggers false alarms.

How it Works

When getting an alarm or an Entrance to the Pool alert, the image that generated the alarm is displayed in the mobile application along with the following buttons:

- **Mute (3)** – tap to silence the alarm and not teach the system to ignore similar images in the future. Use this option when there is a person in the marked square (1) but you are absolutely sure that there is no drowning risk (e.g., someone is diving and appears to be drowning but you are certain that they are not at risk).

- **False Alarm (2)** – tap to dismiss the alarm. Use this option ONLY if you are sure there is no person or body part in the marked square (1).
Once tapping the False Alarm button, a confirmation message appears on the screen with the following buttons:

- **I'M NOT SURE, ABORT** (1) – tap if you are unsure this image is a false alarm, and you do not want the system to learn to ignore similar images in the future.
- **I'M SURE, DISMISS** (2) – tap if you are sure this image is a false alarm. This action teaches CORAL MANTA to ignore any alarms generated from similar images in the future.
Maintenance

Pool Water Clarity

Make sure the water in the pool is as clear as possible. To check the clarity of the water, check the camera image or go into the pool with goggles to spot objects in the other end of the pool.

<table>
<thead>
<tr>
<th>CAUTION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep the water in the pool as clear as possible according to best practice instructions.</td>
</tr>
<tr>
<td>Verify that the camera video footage is clear and that details on the far end of the pool can be viewed clearly.</td>
</tr>
</tbody>
</table>
Battery Replacement

To replace the battery:

1. Remove the old battery from the pool unit.
2. Insert the new battery into the pool unit (see Inserting the Battery on page 27).
3. Fully charge the battery using the pool unit charger (see Charging the Battery on page 28).

CAUTION:

Replace with a battery supplied by the manufacturer only.
Storing the System

To store the pool unit:

1. Disconnect the pool unit charger and remove the battery.
2. Lift the pool unit off the docking station by holding both sides with both hands.
3. Verify that the pool unit is dry and clean.
4. Cover the underwater tube end with the provided protective cover.
5. Fold the underwater tube.
6. Place the folded pool unit in the original package.
SIM Replacement

To remove the SIM card:

1. Pull out the batter pack.
2. Gently press on the SIM card.
3. Pull the SIM card out.

To place a new SIM card, verify correct orientation and push the card (2) into the slot (1).

NOTE:

CORAL MANTA includes an integrated SIM card. This procedure is applicable only for customers who purchased CORAL MANTA without an integrated SIM card.
# Troubleshooting

<table>
<thead>
<tr>
<th>INDICATION</th>
<th>DESCRIPTION</th>
<th>RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water visibility indicator (3) is steady yellow.</td>
<td>There is some degradation in visibility that can be caused by a water clarity issue or from something partly obscuring the camera view.</td>
<td>Check water clarity (<a href="#">See Pool Water Clarity on page 43</a>).</td>
</tr>
<tr>
<td>Water visibility indicator (3) is steady red.</td>
<td>There is a significant visibility problem caused by water clarity issue or by something obscuring the camera view.</td>
<td>Check water clarity (<a href="#">See Pool Water Clarity on page 43</a>).</td>
</tr>
<tr>
<td>Battery level indicator is blinking green.</td>
<td>Battery is partially charged.</td>
<td>Charge the battery (<a href="#">See Charging the Battery on page 28</a>).</td>
</tr>
<tr>
<td>Battery level indicator (2) is steady red.</td>
<td>Battery charge is below critical level.</td>
<td>Charge the battery (<a href="#">See Charging the Battery on page 28</a>).</td>
</tr>
<tr>
<td>Communication indicator (1) blinks blue quickly.</td>
<td>Communication Issue.</td>
<td>Check SIM card Internet package. Verify communication to mobile device.</td>
</tr>
<tr>
<td>All LED indicators blink red.</td>
<td>Operation fault, such as analytics fault or the system cannot start.</td>
<td>Press the reset button (4). If the issue reoccurs, contact customer support.</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>POOL UNIT</th>
<th>HOME UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>Open: 690x450x500 [mm]</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Folded: 690x450x200 [mm]</td>
<td>115x80x45 [mm]</td>
</tr>
<tr>
<td>Weight</td>
<td>5.8 [Kg] (13 lbs)</td>
<td>0.2 [Kg] (0.4 lbs)</td>
</tr>
<tr>
<td>Solar system</td>
<td>Operational at fully sunny days</td>
<td>N/A</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>12V external power supply (backup)</td>
<td>100-240 VAC</td>
</tr>
<tr>
<td>Connectivity</td>
<td>G3 Data MODEM</td>
<td>RF Point to Point &gt; 200 ft.</td>
</tr>
<tr>
<td>LED indicators</td>
<td>Pool activity indicator</td>
<td>Communication indicator (full/medium/low)</td>
</tr>
<tr>
<td></td>
<td>Communication indicator (full/medium/low)</td>
<td>Battery level indicator (full/medium/low)</td>
</tr>
<tr>
<td></td>
<td>Water visibility indicator (yes/no)</td>
<td>Water visibility indicator (yes/no)</td>
</tr>
<tr>
<td>Alerts</td>
<td>Siren (low, medium, high)</td>
<td>Siren (low, medium, high)</td>
</tr>
<tr>
<td>Controls</td>
<td>Dismiss alarm</td>
<td></td>
</tr>
<tr>
<td>IP level</td>
<td>IP65 for out of water parts</td>
<td>IP67 for underwater tube</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>10~40 deg</td>
<td>10~40 deg</td>
</tr>
</tbody>
</table>
## Revision History

<table>
<thead>
<tr>
<th>REVISION</th>
<th>DESCRIPTION OF REVISIONS</th>
<th>CHANGED BY</th>
<th>DATE/SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev A</td>
<td>Initial Release.</td>
<td></td>
<td>06/19/18</td>
</tr>
<tr>
<td>Rev B</td>
<td>Teaching the System section added.</td>
<td></td>
<td>07/09/18</td>
</tr>
</tbody>
</table>
THANK YOU!