YachtAlert®
MARINE SOLUTIONS

xg01
REMOTE SHIP MONITORING

User Manual

Read this manual carefully before installing or using your xg01 device.

v1.1

IMPORTANT

Working with electricity can be hazardous. Although your xg01 only uses low voltage and minimum current, connecting the unit might involve coming in contact with your ships (higher voltage) wiring or even AC voltage. If you're unfamiliar with your ships electrical installation or lack the required technical experience, please involve a professional for the installation.

Make sure you don't accidentally drill holes in the hull of your ship.

Before connecting the device, read this manual carefully.

For our terms and conditions and privacy policy, visit https://yachtalert.eu

Table of Contents

Product Details

Name	xg01
Brand	YachtAlert
Manufacturer	Questis B.V. - The Netherlands
Reference	2502024 (rev. 0.15)
Dimensions	193 x 91 x 60 mm
Weight	323 g
Color	Black
Box content	1x YachtAlert xg01
	2x Power terminal cable
	2x Power extenstion cable
	1x Multi-sensor probe cable
	1x Multi-sensor extension cable
	1x Mounting components
	1x Instruction manual
Protection standard	IP61
Sensor	4-in-1 sensor
	Battery voltage:
	• Measuring range: 6-30V
	• Accuracy: 0.05V
	• Resolution: 0.01V
	Location:
	• Method: GNSS (GPS, BDS)
	• Accuracy: 5m
	Bilge water detection:
	• Method: Conductivitity
	Temperature measurement:
	• Internal sensor
	• External sensor
	• Measuring range: -20°C to 60°C
Power supply	12-24V DC Battery (not included)
Power consumption (idle)	0.00084 W (0.84 milliwatt)
Reverse polarity protection	Yes
Connectivity	Sigfox®
Sigfox radio configuration	RC1 868 Mhz
Warranties	2 years
Operating system (application)	iOS, Android

Location

Selecting the ideal spot for your xg01

For optimal operation, your xg01 device should be positioned in a location with minimal obstructions to ensure continuous reception of data from GPS satellites and regular transmission of updates to the YachtAlert app. Ideally, place it as high as possible on your ship. Materials like wood or polyester walls or footpaths won't hinder the signal, but steel or aluminium will obstruct reception.

The device is IP61 protected, so it can withstand condensation or some watersplashes. It is however not completely waterproof and must not be placed outdoors.

Signal

You should see the first update for all other metrics in the app within 4 minutes after powering up your xg01. If updates are not appearing, it is likely that the unit is not placed in an area with adequate radio reception.

The initial GPS fix may take several hours due to the ultra-low energy design of the device.
If no GPS position is reported in the YachtAlert App after 24 hours, relocate your xg01 to a spot with a clearer view of the sky. Generally, GPS signals penetrate wood and polyester walls and footpaths without issue.

For your convenience, make sure you can receive a GPS signal reliably on the location you intent to place the xg01 unit. This will save you the effort of having to relocate the device after you've already placed the wiring.

Sensors

The xg01 device uses a separate temperature sensor and water sensor, which are both connected to a single cable, leading to the main xg01 unit.

Both sensors must be placed in a lower part of the ship, where bilge water can be detected if present. The lower part of the water sensor contains 2 contacts, which must be placed on the desired height for water detection. Placing it too low, might generate false positive notifications in the YachtAlert App, placing it too high won't allow for notifying you timely, in case of high bilge water levels.

The temperature sensor (although waterproof) should not be placed too close to any present bilge water, as its purpose is to measure air temperature in the lower part of your ship, to notify you timely about critical temperatures.

Power

Energy Efficiency

The xg01 is powered by the ship's house battery and deliberately is not equipped with an internal rechargeable battery to prevent a fire hazard.

Although your xg01 unit is powered from the ship's house battery (not starter battery) it will not drain it in any significant way. The device is designed in such a way that it uses an extremely low amount of energy that uses a very modest 70 microamps (µA) at 12V when idle.

The capacity of an average ship's house battery should sustain the unit for multiple years without charging it. In practice however, your ship's batteries will always be susceptible to a certain level of self-discharge which will drain the battery much sooner than that, regardless of having an xg01 connected to it or not. The self-discharge can be monitored through the YachtAlert app.

Accuracy

Voltage measurement accuracy is dependent on several factors, such as cable layout (induction) and current battery drain from your ship's equipment. Additionally, lengthening the supplied power cables to the xg01, will also reduce measurement accuracy due to voltage drop (circuit impedance).

Your xg01 shares its negative terminal connection with your house battery. If your starter battery does not share the same negative terminal, the voltage readout could be less accurate.

When you're present on your ship and several loads are connected to the battery, the measured voltage will most likely fluctuate as a result. When charging (either on shore power or running engine), the same is true. The most useful readings are made when the voltage is stable, ideally when the master switch/circuit breaker is turned off and the battery is at rest.

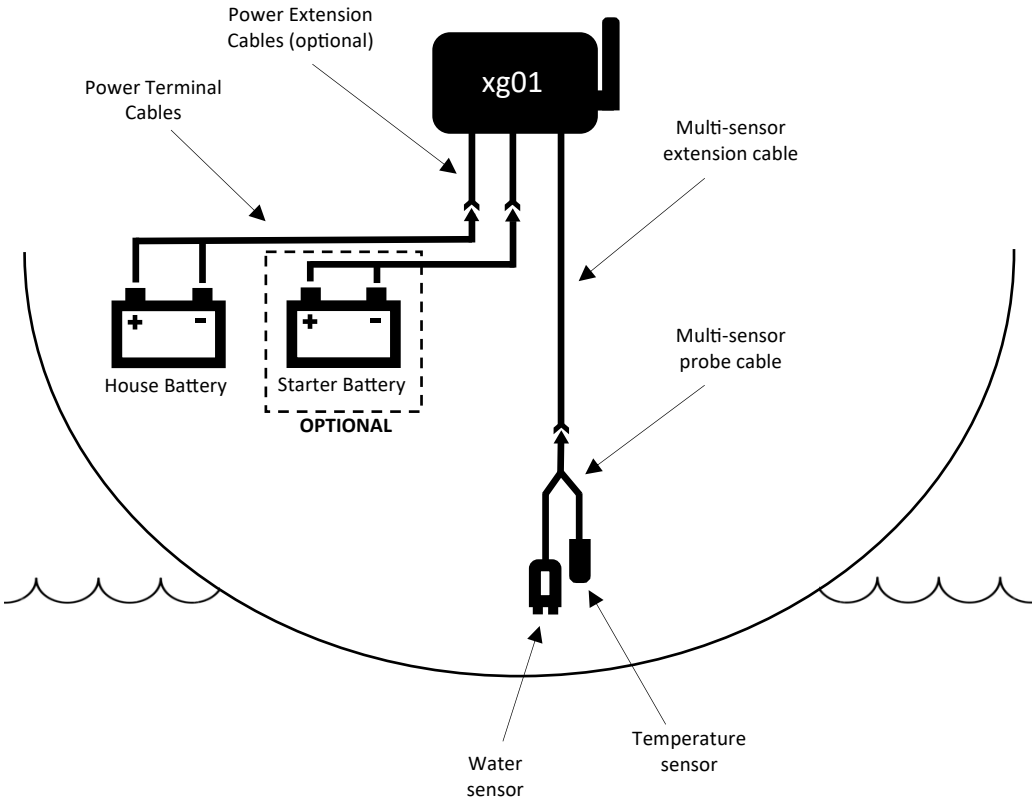
In this 'rest' situation, your YachtAlert app tries to determine the remaining capacity for your batteries. Meanwhile (can be several hours), the app will display the message "Pattern learning in effect".

Installation

Testing GPS and data communication

Before fixing your xg01 device in its permanent location, attach the battery cabling according to the instructions below. You should see the first update in the app within 4 minutes after powering up your xg01. If this is not the case, relocate the device. See chapter “Location” for details.

Connection Overview



Battery cabling

Single battery

If your ship only uses a single battery, use the following instructions:

1. On the battery side, connect one of the supplied O-ring cables to the battery as follows:
   - Attach the O-ring of the black cable to the negative (-) terminal of the battery
   - Attach the O-ring of the red cable to the positive (+) terminal of the battery
2. On the opposite side of the cable, connect it to the “MAIN BATTERY” socket of your xg01
   a. If the length of the power cable is insufficient, use one of the supplied extension cords

House Battery & Starter Battery

If your ship uses a separate house and starter battery, use the following instructions:

House Battery

1. On the house battery side, connect one of the supplied O-ring cables to the battery as follows:
   - Attach the O-ring of the black cable to the negative (-) terminal of the house battery
   - Attach the O-ring of the red cable to the positive (+) terminal of the house battery
2. On the opposite side of the cable, connect it to the “MAIN BATTERY” socket of your xg01
   a. If the length of the power cable is insufficient, use one of the supplied extension cords

Starter Battery

3. On the starter battery side, connect one of the supplied O-ring cables to the battery as follows:
   - Attach the O-ring of the black cable to the negative (-) terminal of the starter battery
   - Attach the O-ring of the red cable to the positive (+) terminal of the starter battery
4. On the opposite side of the cable, connect it to the “STARTER BATTERY” socket of your xg01
   a. If the length of the power cable is insufficient, use one of the supplied extension cords

IMPORTANT:

Never connect your starter battery to the "MAIN BATTERY" socket of the xg01 device. Even though the device's energy consumption is minimal, any unnecessary drain on your starter battery should be avoided.

Multi-sensor cabling

The multi-sensor cable connects an external temperature sensor and water sensor to your xg01 device. It consists of 2 parts:

- A sensor cable (with mounting bracket), to which the temperature sensor and the water sensor are connected
- An extension cord to connect the sensor cable to the xg01

1. Place both the temperature sensor and the water sensor in the desired location (see chapter “Location” for details).
2. Secure the water sensor (white) to a surface with either the provided 3M adhesive, the supplied tie-wraps, or, if present, carefully attach it to a wooden/polyester/metal structure with a screw or bolt and nut. Be sure NOT to drill holes in the hull of your ship.
3. The temperature sensor can be fastened to any object present via the supplied tie-wraps

PLEASE NOTE:

When the multi-sensor cable is NOT connected:

- Bilge water detection is not possible.
- External temperature measurements are not possible.
  Instead, the xg01 device measures and reports the temperature local to the device itself.

Mounting Instructions

xg01 Unit

It's important to mount the XG01 unit vertically, with the antenna pointing upwards. For the most suitable location, see the chapter "Location".

The XG01 unit is equipped with both 3M adhesive pads and mounting holes. Using the adhesive pads is recommended to avoid any potential damage to the ship. Screws are optional and can be used at your own risk. Since the type of screws needed may vary depending on the mounting surface material, no screws are included in the package.

Before attaching the unit with the adhesive pads, use the provided cleaning pads to thoroughly clean and degrease the mounting surface. Allow the surface to dry briefly for maximum adhesive strength.

Remove the protective film from the adhesive pads, carefully position the unit on the mounting surface, and apply moderate pressure to ensure full contact and optimal adhesion.

Multi-Sensor Mounting Bracket

The multi-sensor mounting bracket consists of two parts that can be easily connected or disconnected. This allows the water sensor (at the end of the white cable) to be placed in a different location from the temperature sensor (at the end of the black cable) if needed. If there are no specific requirements for separating these sensors, it is advisable to keep their brackets connected via the sliding mechanism and mount them as a single unit.

The multi-sensor bracket can be mounted in any direction, but it is recommended to position it with the probing side (metal extrusions) downwards.

The multi-sensor bracket is equipped with both 3M adhesive pads and mounting holes. Using the adhesive pads is recommended to avoid any potential damage to the ship. Screws are optional and can be used at your own risk. Since the type of screws needed may vary depending on the mounting surface material, no screws are included in the package.

Before attaching the bracket with the adhesive pads, use the provided cleaning pads to thoroughly clean and degrease the mounting surface. Allow the surface to dry briefly for maximum adhesive strength.

Remove the protective film from the adhesive pads, carefully position the bracket on the mounting surface, and apply moderate pressure to ensure full contact and optimal adhesion.

Cabling

The battery- and multi-sensor cables can be fixed to the relevant conduits, bulkheads, pipework, etc., using the supplied cable ties and/or Velcro strips for your convenience.

Starting the xg01 device

The xg01 device has no power button or switches and starts automatically when it receives power via the battery cable attached to the “MAIN BATTERY” connector of the device.

When powered, the unit will beep twice, and the LED on the front of the device will flicker, indicating that the unit is now active.

Within 4 minutes (shorter if GPS reception is optimal), the first data will be visible in the YachtAlert App. See chapter “Using the YachtAlert App” for details.

Using the YachtAlert App

Permissions

NOTE: After starting the app, it will ask permission to access the camera and to receive notifications. Both permissions are optional and therefore NOT mandatory to use the app.

For your convenience however, allowing access to the camera, allows for you to scan the xg01 QR code to sync the app to your device. Alternatively, a code can be typed in manually.

Without allowing the notification permission, the app will function, but you will NOT be able to receive important alarms and updates from your device (e.g. water detection, low battery or theft).

Installation

1. Download the “YachtAlert” app from the app store (available for both Apple and Android)
2. Optional:
    a. Allow the app permissions to access to the camera (only used for scanning the xg01 QR code)
    b. Alternatively, you can enter the device ID manually
3. Scan the QR code on the side of your xg01 device (or manually enter the ID underneath the QR code)
4. Allow permission to receive push notifications (optional, but important. See above for details)
5. The device is now synced to your xg01 device. As soon as the first data has been received from the xg01, it’s now visible in the app.

App usage

The YachtAlert app has 6 different screen to display the various details about your ship.

Home

The Home screen display a central overview of current metrics, including:

- Health status
- Water detection
- Temperature
- Current Main battery level
- Current Starter battery level (if applicable)
- GPS coordinates
- Time since last update from your ship
- Time since last successful GPS positioning

Map

The Map screen features:

- Time since last successful GPS positioning
- Your ship's position on a map (as accurate as the latest GPS reading received)
- Whether the Geofence feature is enabled
- Geofence button that will enable or disable the Geofence feature

Geofence

When the Geofence feature is enabled, you will receive a push notification when your ship has moved more than 200m since the last GPS reading.

This feature is intended for theft detection, not as an anchor drift/drag alarm, as this requires high-frequency positioning updates.

Bilge

The Bilge screen shows:

- Current water detection status
- Graphs for historical water detection
  - Week view
  - Month view
  - Year view

Battery

The Battery screen shows:

- Current Main battery level
- Current Starter battery level (if applicable)
- Battery health
- Battery percentage
- Graphs for historical water detection
  - Week view
  - Month view
  - Year view

Alerts

The Alerts screen shows:

- List of last 10 alert messages
- Test Alert button

Test Alert

If at any moment you'd like to ensure, you're able to receive push notifications from your ships monitoring data, press the "Test Alert" button on the Alerts screen. Within approx. 5 seconds, you should receive a test notification.

Optionally, to ensure your phones background process works accordingly, you can press the "Test Alert" button and immediately close the app or lock your phone. Within a few seconds you should receive a test notification without the app running in the foreground.

Details

The Details screen shows:

- App version
- The xg01 device ID
- Your contract (subscription) start date
- Your contract (subscription) end date
- Contract status

Troubleshooting

Symptoms	Possible causes
The xg01 device does not beep and blink when powered on	- Power cable not connected to “MAIN BATTERY” connector - Reversed polarity on the battery terminals
The device beeps and blinks at power on, but no data is received by the YachtAlert app	- There can be a (maximum) delay of 4 minutes between powering on the device and receiving date in the app - Close and start the YachtAlert app (or simply go to your phone’s home screen and reopen the app) to see the most recent data - If after more than 4 minutes, no data is visible in the app, and generic troubleshooting (see above) has been performed, it’s likely that your xg01 is place in a location without cellular data coverage. Relocate the device to a higher position and away from any metal shielding.
The YachtAlert app periodically receives measurement data, but no GPS location	Depending on the location of you xg01 device, it’s possible that it has cellular data coverage, but no GPS coverage. Relocate the device to a higher position and away from any metal shielding.
During testing the water sensor by submerging it, no immediate push notification is received	Your xg01 device remains in a “deep sleep” state most of the time. All device readings (battery levels, temperature, location, bilge water detection etc.), is done on an hourly interval for which the device briefly wakes up. Therefore, push notifications for water detection can be delayed for a maximum of 1 hour.
When geofence is enabled and the ship moves, no push notification is received	Ship movement is only reported for distances higher than 200 meters per hourly positioning interval.
Battery voltage for my 36 Volt battery is not reported accurately	The xg01 only works with 12V and 24V batteries. Your house battery and starter battery type or voltage does not have to be the same.
The voltage levels of my batteries decrease over time	Regardless of having your xg01 device connected or not, all batteries (lead acid, AGM, etc.) are susceptible to a level of “self-discharge” which slowly depletes your batteries over time. The self-discharge rate can vary per battery type, and is dependent on battery age, maintenance, and temperature. Although your xg01 device is powered by your house battery (not the starter battery), it should not cause any measurable depletion due to its extremely low power consumption. It is however possible to monitor your battery’s self-discharge over time in the app.
The YachtAlert app reports that no active subscription can be found for my device ID	Your subscription may have expired. Extend your subscription via www.yachtalert.nl or contact YachtAlert support via support@yachtalert.nl if you feel this to be in error.

