REAL TIME WATER QUALITY MEASUREMENT SYSTEM
USER MANUAL

Amila Indika (E/14/142)

Nethmal Warusamana (E/14/364)

Erantha Welikala (E/14/380)

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1. IMPORTANT SAFEGUARDS AND WARNINGS

Before your operation please read the following instructions carefully and thoroughly through this booklet as it contains important safeguards and warnings that will prevent potential damages to the product.

1) **Electrical safety**
   - All installation and operation here should conform to your local electrical safety codes.
   - The product must be installed near a water source so that only sensing part is submerged in water to prevent the risk of electric short circuit.
   - We assume no liability or responsibility for all the fires or electric shock caused by improper handling or installation.
   - The device should be operated from type of power source indicated on the user manual.

2) **Transportation security**
   - Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.

3) **Installation.**
   - Keep upwards. Handle with care.
   - Do not apply power to the product before completing installation.
   - Do not place objects on the product

4) **Qualified engineers needed**
   - All the examination and repair work should be done by the qualified service engineers.
   - We are not liable for any problems caused by unauthorized modifications or attempted repair.

5) **Environment**
   - The product should be installed near a water resource such that the product is not entirely submerged in water. Only the sensing parts should be submerged in water.
   - Environment which needs to comply with the following conditions:
     - o The product should be fixed firmly to a support to prevent floating of the device or changing of its position.
     - o It is advised to set up the product in places where there is no rapid change in water flow. If the device is installed in such location that may damage the device.
     - o The device is recommended to be installed in a location with a good network connectivity (2G, 3G, & 4G) to maintain a proper communication with the server.

6) **Accessories**
   - Be sure to use all the accessories recommended by manufacturer.
   - Before installation, please open the package and check all the components are included.
   - Contact your local retailer ASAP if something is broken in your package.

7) **Battery**
   - Improper battery use may result in fire, explosion, or personal injury!
   - When replacing the battery, please make sure you are using the same model or models with similar power ratings and specifications!

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

2. INTRODUCTION

2.a. GENERAL INFORMATION

Welcome!!

Thank you for purchasing our Real Time Water Quality Measurement System (RTWQMS)!
This user's manual is designed to be a reference tool for your system.
Please open the accessory bag to check the items one by one in accordance with the list below.
Contact your local retailer ASAP if something is missing or damaged in the bag.

We encourage users to read this user manual before operating and retain the user manual for future reference to get the most out of this product.

2.b. FEATURES

- Accurate and precise water quality parameters communication with end-to-end security between the server and the device
- 3.5/4G GSM network connection to establish and maintain a solid network connection through any potential network soft spots.
- Waterproof packaging to prevent electrical shortages.
- Low power consumption and efficient power management.
- Device authentication with the server.

2.c. CHECKLIST

Before using the device, please make sure that all the items/ components listed below are present.

- A desktop or a laptop.
- Good network connection.
- Battery is installed properly.
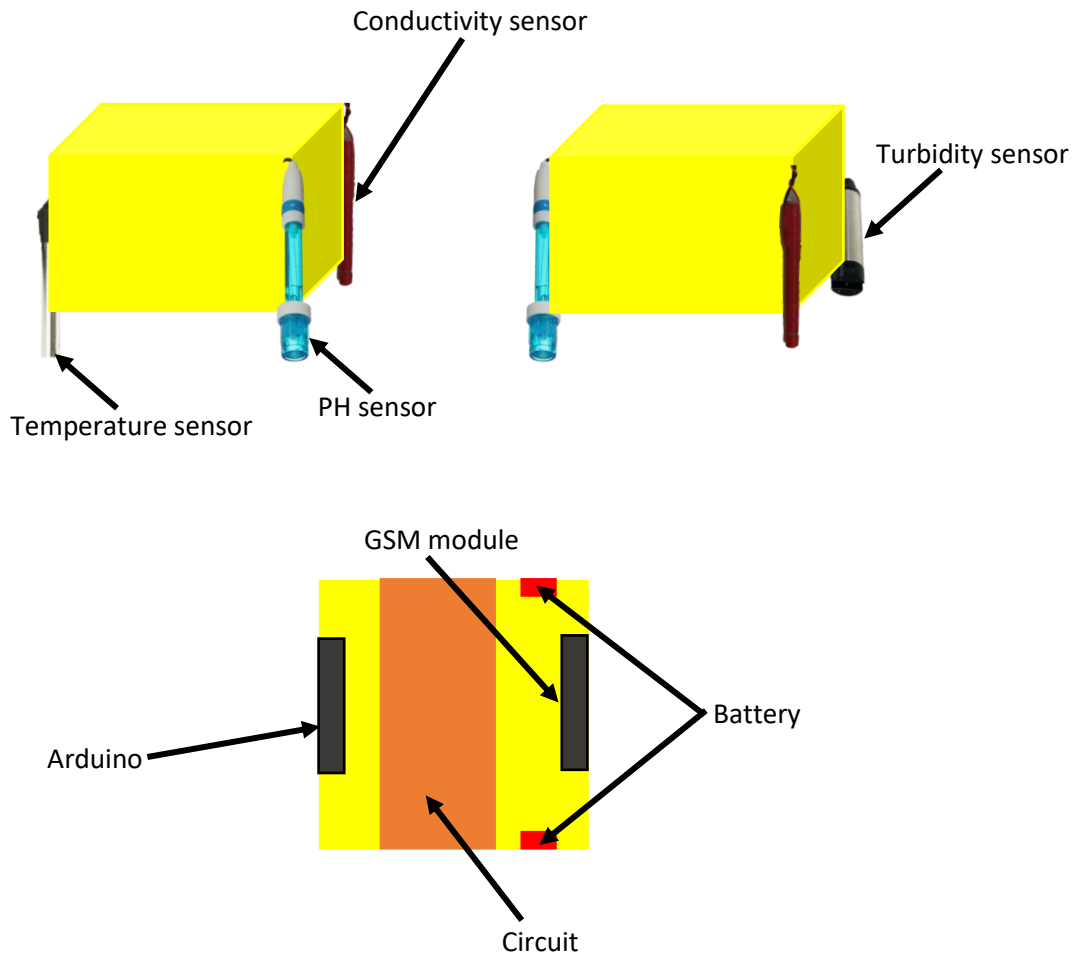- SIM card

3. IDENTIFICATION OF COMPONENTS

Body:

Figure: Outside layout and the inside layout of the device

4. INSTALLATION

4.a. HARDWARE INSTALLATION

- Open up the top cover of the device.
- Power on the device by powering up the Arduino.
- Wait for the indicator lights on the Arduino to confirm proper powering on of the Arduino.
- Remove the GSM module from its slot and insert the SIM card into the GSM module.
- Power on the GSM module and wait for indicator lights for proper powering on.
- Enable the usage of SIM card by pressing the sim card enable button for several seconds and confirm the enabling by indicator lights.
- Close the top cover firmly ensuring there are no spaces so that there won't be any water leakages.
- Place the device in a proper location as described above ensuring the satisfaction of requirements of the location of the device.

4.b. WEB USER ACC INSTALLATION

4.b.i. SERVER INSTALLATION

Server initialization will be created by the developers and you doesn't need to be aware of that. When the system is handing over those backgrounds will be installed.

4.b.ii. SINGUP

There are two access levels, admin and users. All of the users will be considered as viewers.

**Creating Admin Account

To Create an Admin Account you will need at least one working node to placed correctly. Adding further nodes can be done later. Enter the following details when you are creating the admin account.

Admin Username   : \<a unique name\>

Admin Password   : \<**********\>

Default node id   : \<node number should be entered here (for now it should be "1")\>

Default node name   : \<search id for the node\>

Default node latitude : \<latitude of the place where the node is placed\>

Default node Longitude: \<longitude of the place where the node is placed\>

Admin account has only authority of adding nodes

When you load the homepage of the System you will be seen the login form. If you don't have an account you can click the link "Create your Account ->"
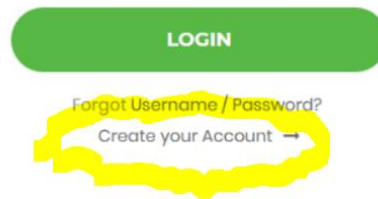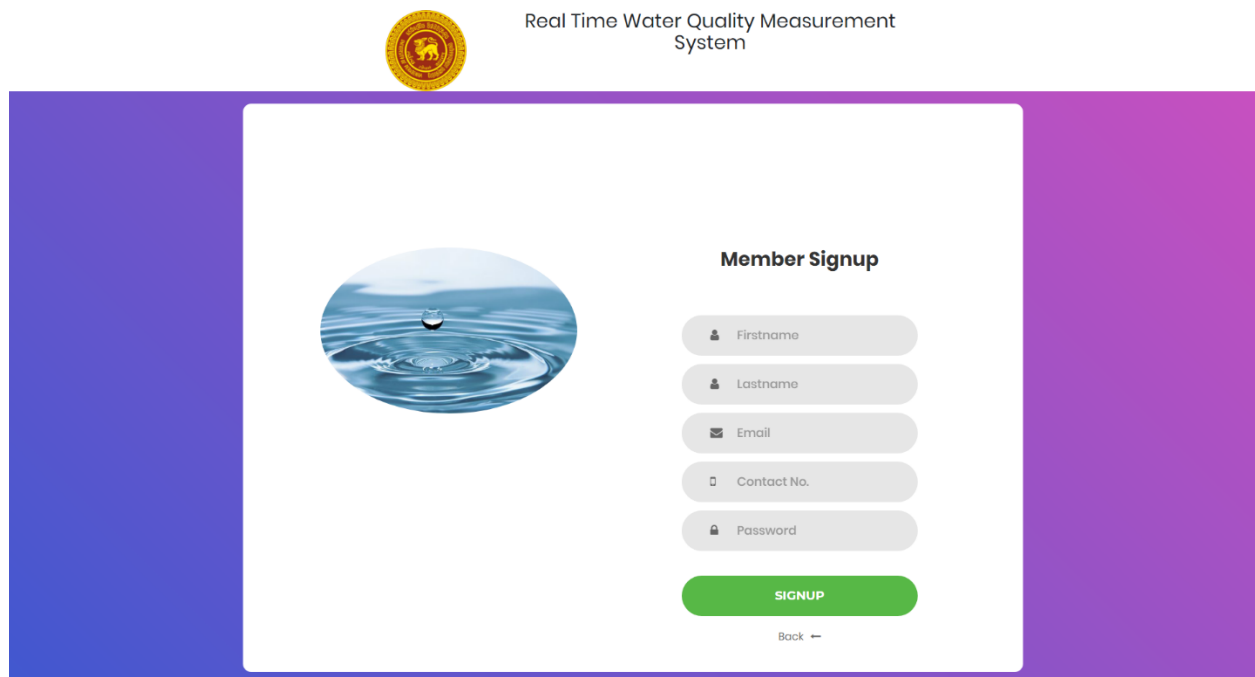

**Creating a User Account

Enter the following details when creating a user account.

Firstname   :   \<User's Firstname>

Lastname   :   \<User's Lastname>

Email   : \<example@abc.com>

Contact no.   : \<0XX-XXXXXXX>

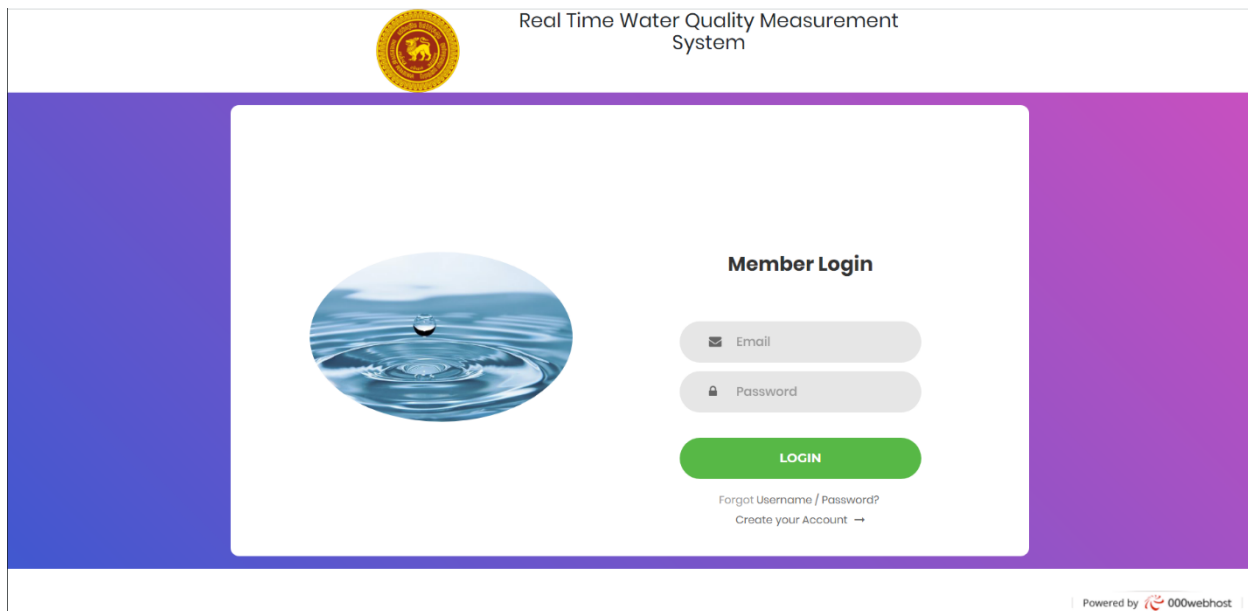Password   :   \<**********>

**Users will be considered as viewers

5. OPERATING THE SYSTEM

5.a. HARDWARE OPERATING

- Send data to the central server via the GSM module.
- Monitor obtained data at the central server.

5.b.WEB USER ACC OPERATING

5.b.i. LOGIN

Enter the relevant account details and click "LOGIN".

5.b.ii. CHECKING A SPECIFIC QUALITY

Select the quality from the dropdown

click the generated button

5.b.iii. CHECKING A SPECIFIC DATE

select the date

select the generated date button

5.b.iv. CHECKING A SPECIFIC NODE

01.type the node name

02.click the genearated button

5.b.v. CHECKING ALL DETAILS SPECIFICALLY
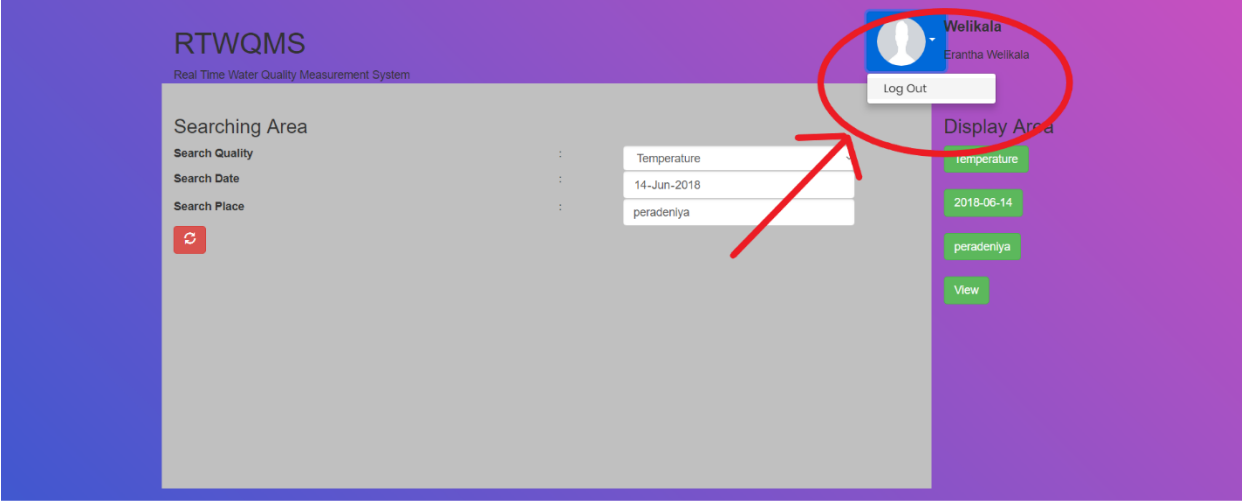
enter the all the details and click view

5.b.vi. LOGOUT

6. BATTERY REPLACING

- Replace the batteries with the batteries with same specifications, and incorrect type of battery may result in explosion, fire or injury.
- Remove the device from the location where it is fixed and power off Arduino and GSM module
- Replace the batteries with appropriate batteries and restart the device again by setting up the device again.

7. TROUBLESHOOTING

- Upon network connectivity errors;
    - Check for SIM card validity
    - Check for SIM card data balance/credit balance
    - Check for signal strength of the location for the particular service provider of the SIM
    - Check the connectivity for the Laptop, desktop

- Upon power failures;
    - Check for the connectivity of batteries.
    - Check whether the SIM functionality of the GSM module turns off automatically after SIM functionality is enabled. If so, replace the battery for the GSM module
    - If Arduino power indicator light is blinking/ switched off replace the battery.
- Batteries used are usually 9V carbon-zinc batteries
- If you are still having troubles, contact the local retailer ASAP for assistance.

8. APPENDIX: SPECIFICATIONS

Quality	Specification
Height	10cm
Width	18cm
Length	18cm
Weight	500g
Battery capacity	9V