

# WHEN PUBLIC SAFETY IS AT STAKE

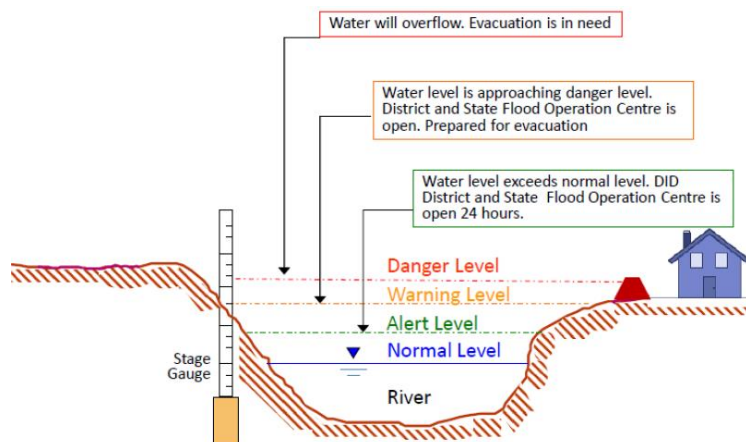
## The Solution....

We are Technology provider that allows governments to provide public safety alerts and citizen communication to hundreds of people in their time of needs.

Nowadays, the flood monitoring system in Philippines are still using manual monitoring ( Using Stage Gauge ) that need a number of people to standby near to the catchment area. For instance, If there is a sign of flood will hit that area, the monitoring people will ask the local residents to evacuate to the safer place. However this method would be a problem if there is a lack of resource in term of people to monitor all the catchment area and also the limited accessibility to the place. Limited monitoring view will take a lot of time to monitor each catchment area. Thus, the only way to counter the problem is by setting up early warning flood monitoring system.

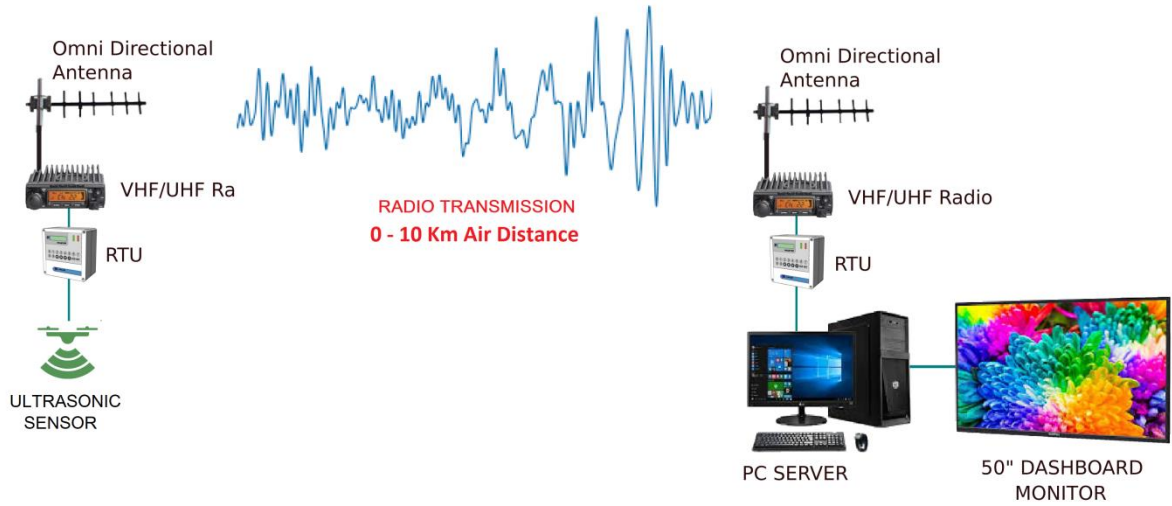
In order to monitor and predict the flooding situation, a radio telemetry early warning water level monitoring system with reliable water level sensor connected to remote terminal unit is needed. The flood measurement data is to be sent as a packet burst using 2 meter VHF/UHF radio mobile transmitter to the monitoring station via dedicated channel frequency.

The monitoring station are equip with real-time monitoring GUI (graphical user interface) and condition modelling for decision making.



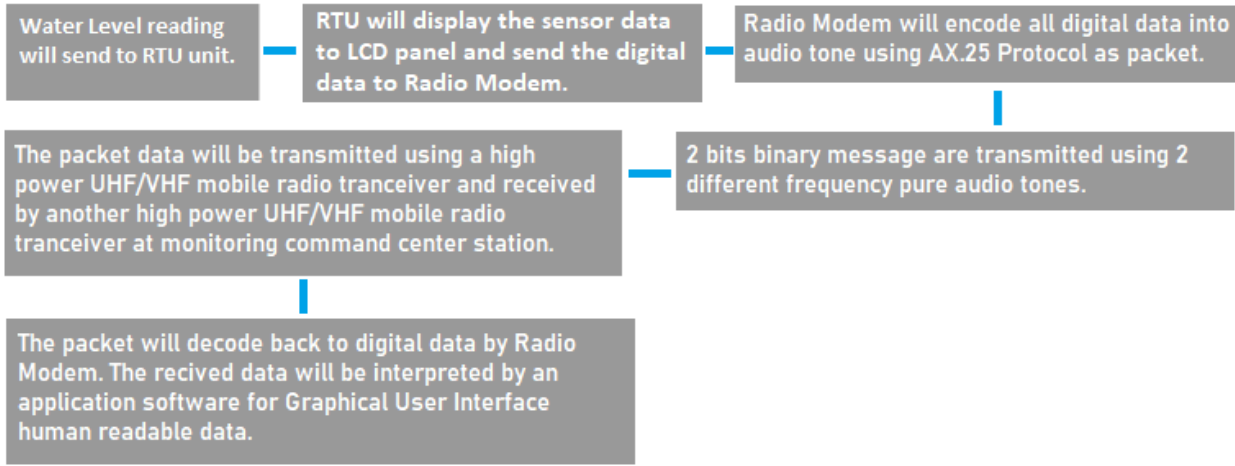
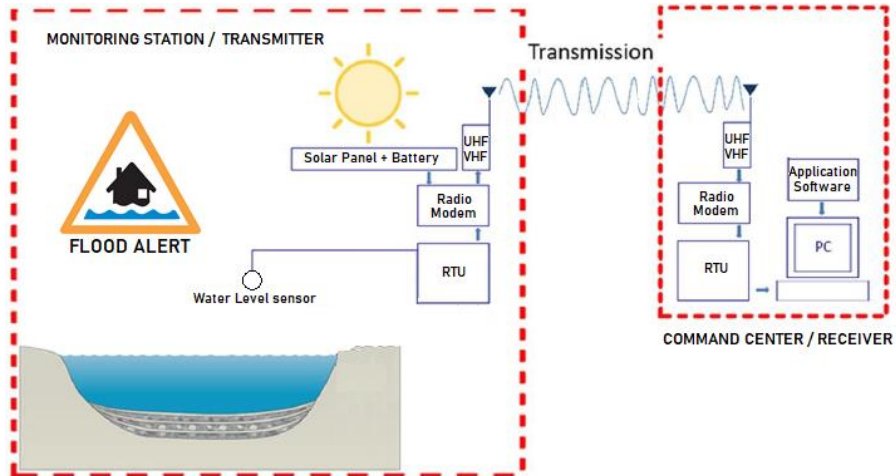
**Conventional Stage gauge water level Monitoring  
( OLD SYSTEM )**

# 1. RADIO TELEMETRY Water Level MONITORING SYSTEM



MONITORING STATION

COMMAND CENTER



MODEL DIAGRAM

### Connectivity

Radio technology sends weather information thru radio waves.



Weather information is recorded on program interval up to **5** years or more.



Instant alerts and larger buffer times helps communities manage flooding.

### Climate solutions

Off the shelf, Radio / Cellular Telemetry weather stations aid municipal officials, communities and farmers in flood reduction and flood risk preparation.



### Adaptable weather sensing

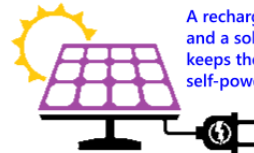
An easy-to-modify system means that users can measure information like :

- \* Rainfall
- \* Pressure, Humidity and Temperature.
- \* Wind Speed and Direction
- \* Water Level.
- \* Other

Another feature :

Local Forecast capable w/o connecting to internet.

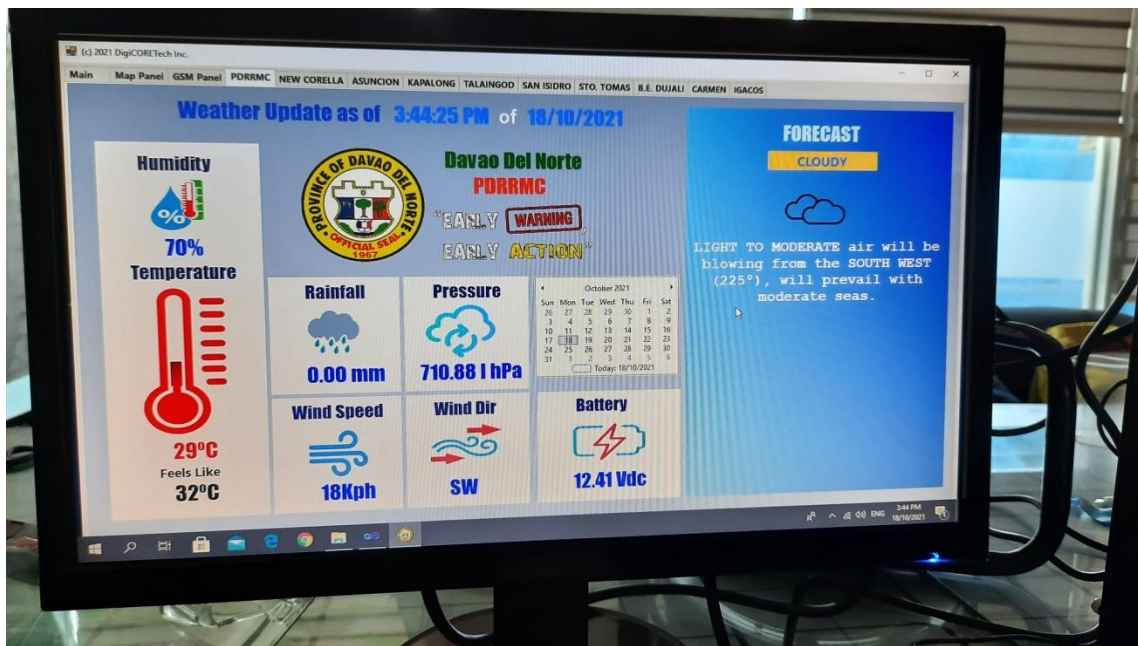
### Solar and Wind powered



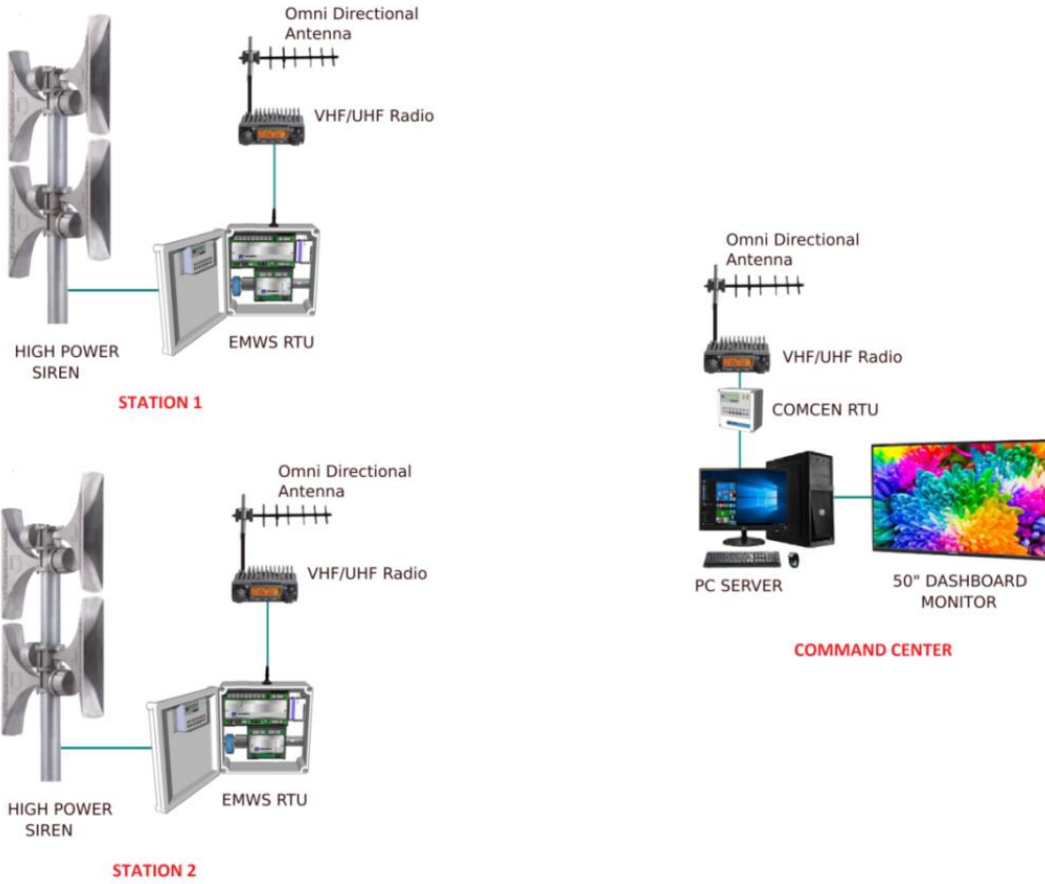
A rechargeable battery and a solar panel/wind turbine keeps the weather station self-powered and low-maintenance.

### Cost-effective

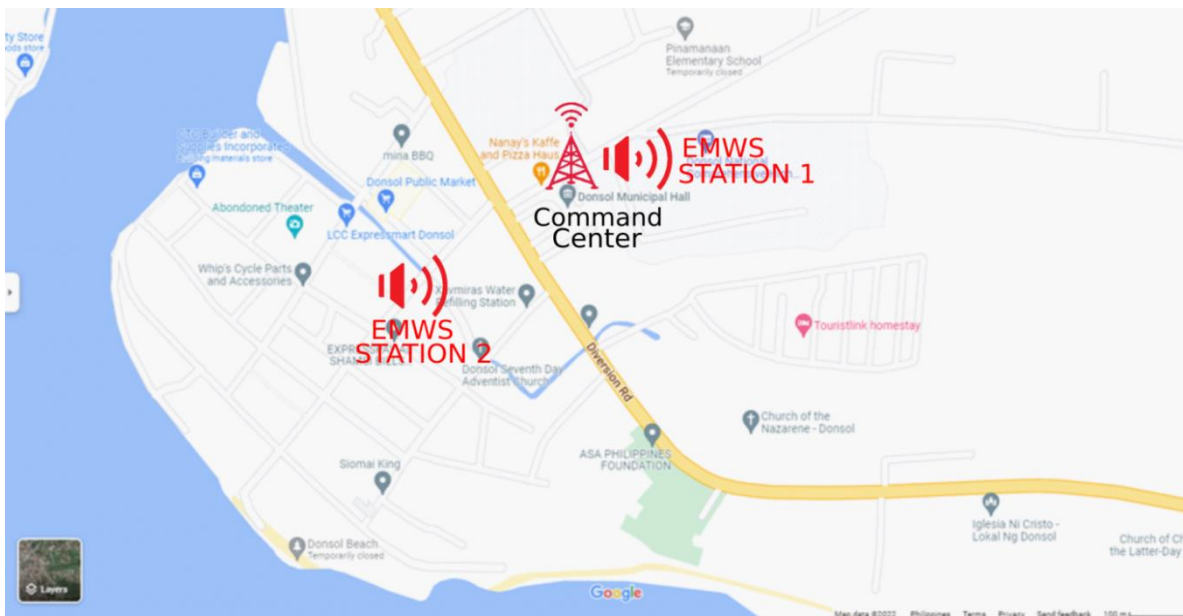
Flood management can contribute to significant savings in post-disaster recovery expense.



## 2. RADIO TELEMETRY Environment monitoring system with Real-Time Forecast



### 3. EMERGENCY MASS WARNING SYSTEM



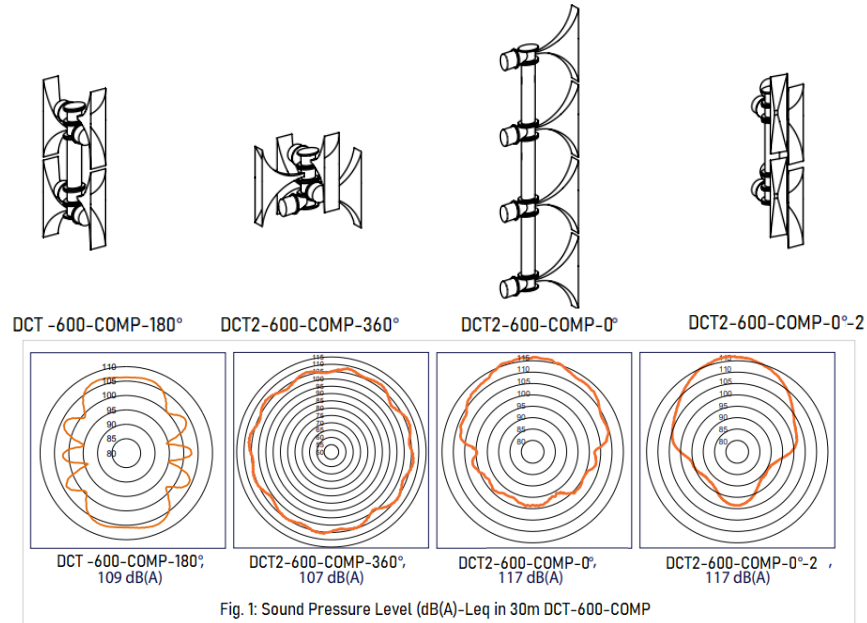
EMWS STRATEGIC LOCATION MAP



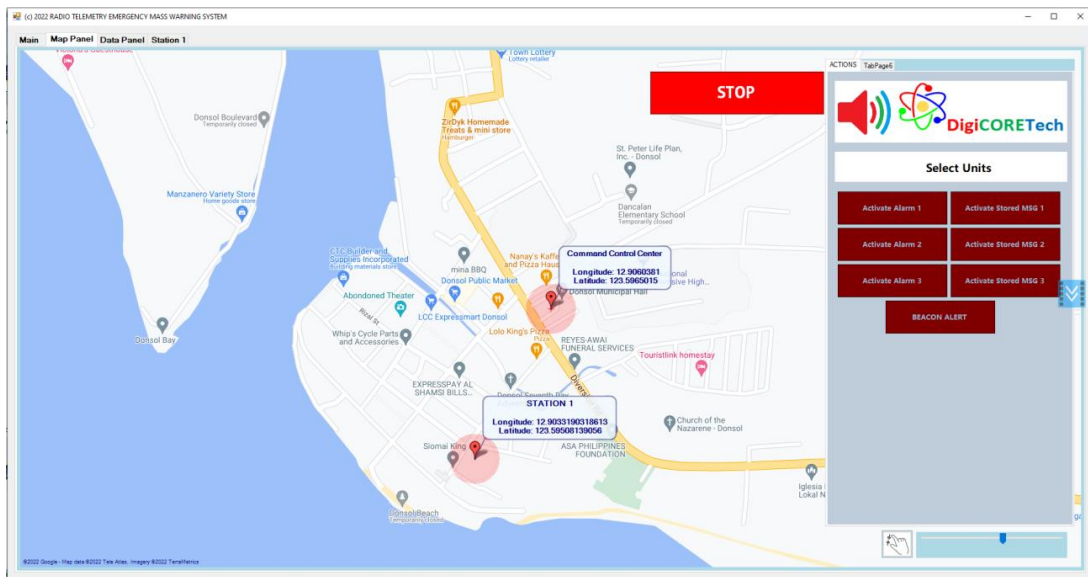
## EMWS (Emergency Mass Warning System ) Configuration

The EMWS Radio Telemetry electronic siren consists of :

The modular siren head (speaker array), the controller, housed in a steel, stainless steel or aluminum cabinet. The controller incorporates all the necessary electronics. A local control and test panel, Radio Telemetry communication and power supply equipment.



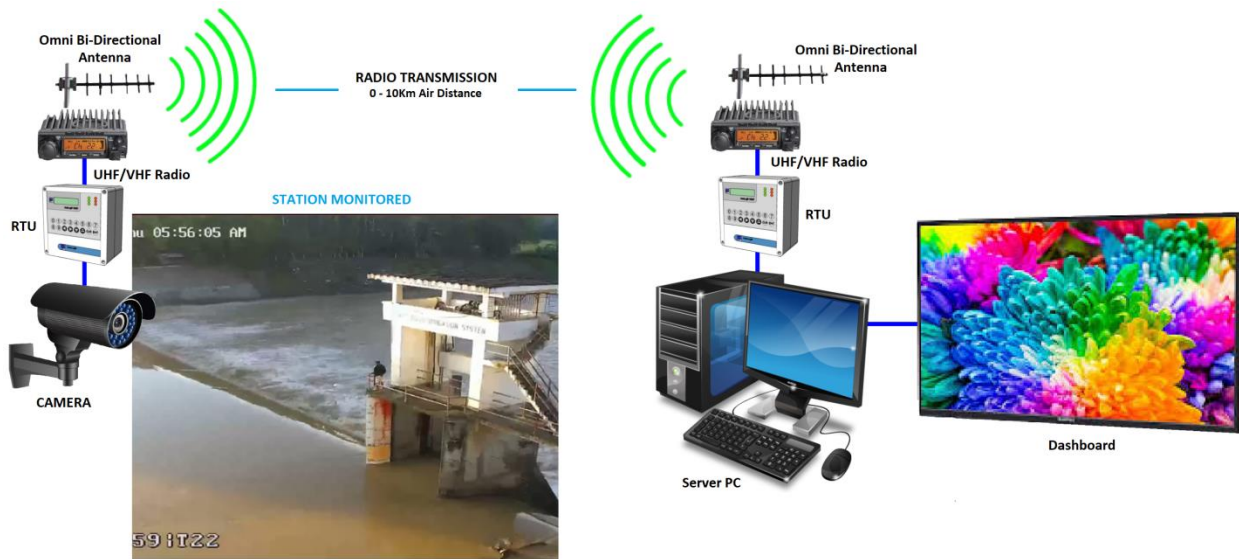
## SIREN CONFIGURATION



## 4. SMART ALERT Application Software For Environment Monitoring and Emergency Mass Warning System

The SA software is the adaptation of what a command & control system is supposed to be. A fast, user friendly, visually appealing system that is robust and scalable.

- Fast: waste no time in an emergency where every second counts
  - Reliable: 99.9% up-time guaranteed, with over the air updates that are seamless
  - Satellite Maps: Offline/Online, beautiful, detailed satellite maps that give you the clearest picture possible
  - Zone-able: Broadcast to a single unit, several units, or to zones / sectors of units easily
- Graphical User Interface.
  - Inter-active virtual instrument.
  - Mathematical function to receive readings via radio link.
  - Real time sensor data measurement.
  - Ability to acquire data via request.
  - Artificial Intelligence (AI) Weather forecasting.
    - Rainfall forecast and color codes.
    - Wind forecasting and alert status.
    - Flood level forecasting.
  - Station map location and street view capability. (Internet Connection require)
  - Zoom and pinch feature.
  - Auto alert / alarm feature.
  - Real time data logging.



## 5. IMAGE LINK

### Remote Still Image monitoring solution

A quick and effective way to set up a 24/7 remote monitoring system at virtually any location with Digital radio systems coverage. Provides the "last mile" link when no other is available. Simple installation, easy operation, wide coverage. By Integrating ImageLink and Analog / Digital Radios, image monitoring are possible.

This innovative system consists of a monitor station and a base station, linked via Digital transceivers. Still images are transmitted from the remote site to the base station computer, which serves as the control monitoring center. Several sites can be monitored simultaneously

## SPECIFICATION

DISPLAY	Graphical Color LCD ( for easy operation )
PROCESSOR	32-bit high speed Microcontroller
MEMORY	4GB Micro SD or USB STICK
COMMUNICATION	Radio Telemetry
OPERATING VOLTAGE	12 VDC, 2W power consumption (Stand-By)
BATTERY	150 Ah Deep Cycle Re-Chargeable Battery
SOLAR PANEL	200 Watts Mono Crystalline
AMPLIFIER	Class D Amplifier
SOUND POWER OUTPUT	1200 Watts RMS, Bridge-able 20-20khz 1%THD
SPEAKER SYSTEM	4 x 300 Watts Horn Type Speaker
SPEAKER SELECTION	2ohms to 8ohms
NUMBER OF ACOUSTIC RADIATOR	4
SOUND LEVEL IN dB(A) in 30m Distance	107 -117dB(A)
REAL TIME CLOCK	Date time with Lithium Ion battery backup
OPERATING TEMPERATURE	0 - 55 degree Celsius
ENCLOSURE	500mm (L) x 800mm(H) x 300mm (D)
PROTECTION	Industrial standard Nema Box housing IP-65
COOLING SYSTEM	Convection type / Exhaust fan
CONFIGURABLE ALARM MESSAGE	3 Warning Sounds, 6 Custom Alarm or messages
	8 Time Programmable Alarms or Messages
REMOTE COMMAND	3 Alarm Operation / 6 Custom / Live Broadcast
SOUND RADIATION	optional omni-directional (180° or 360°) or directed (0° or 0°-2-line)

## HARDWARE SPECIFICATION:

### Station RTU

- Remote operation via logic expression.
- Smart monitoring controller that provides 24/7 monitoring which sends an update thru conventional UHF/VHF Radio, anytime anywhere.
- Support Auto recovery mechanism thru watchdog.  
It also support links disconnection when time out.
- Improve data transmission by Digicoretech radio telemetry technology.
- Support multi-sleep and trigger mode to save power consumption.
- Convenient configuration and maintenance interface.
- With reverse voltage and over voltage protection.
- On Board Radio modem.

## PC Interface RTU

- USB 2.0, USB 3.0 Compatible.
- Send and Receive radio telemetry data from AWS/CEMWS station.
- Small Form factor.
- 16bit MCU@ 4MHz (2KB RAM/ 8KB flash)
- Powered from USB
- 51mA idle power consumption
- Operating range: -20°C to 70°C (non-condensing)
- Great demodulator performance, decodes ~900 Modulated analog output level adjustable from approximately 15mV to 1.5V peak-to-peak
- Minimum analog input level for good decode is about 100mV peak-to-peak
- ADC running on 3.3v reference
- Connectors:
  - USB B (USB-powered)
  - Audio out (modulator output)
  - Audio in (demodulator input)
  - Ground x2
  - VCC (5V) x2
  - UART - RX/TX

## Communication Radio

### Frequency Range

- VHF : 136 ~ 174Mhz
- UHF : 400 ~ 440Mhz, 430-470MHz, 450-490Mhz.
- Channel Spacing : 12.5khz/24khz
- Channel Capacity : 16 Channels.
- Operating Voltage : 13.8VDC.
- Temperature Range : -30 °C ~ 65°C

### Transmitter

- Output Power : 10, 25, 50W (Programmable)
- Current : 10W RF Power, 12V 3A
- Standby (Muted) Current : 65mA
- Frequency Deviation : <math>\pm 5\text{KHz}</math> (25KHz), <math>\pm 2.5\text{KHz}</math> (12.5KHz).
- Audio Response : 300Hz ~ 3KHz +1/-3dB (25KHz).

### Receiver

- Adj. Channel Power : <math>\leq -70\text{dBc}</math> (25KHz), <math>\leq -65\text{dBc}</math> (12.5KHz)
- TX SNR : >45dB (25Hz), >40dB (12.5KHz)
- RX Sensitivity (12 dB Sinad) : <math>\leq -119\text{dBm}</math>, Extreme : <math>\leq -115\text{dBm}</math>



- Audio Output Power : 5W# 8 Ohms.
- RX Audio Distortion : < 5%
- Image Rejection : >70dB
- Spurious Rejection : >70dB

#### Receiver Antenna

- Horizontal Pattern : Omni-Directional.
- Frequency Band : 136 ~ 480MHz.
- Gain : At least 20dBi

#### Others

- Galvanized monopole antenna mast, guy wires, turnbuckles, brackets, lightning protector.

## System Enclosure

- Powder coated NEMA compliant Box.
- Dimension : HxLxW(800 x 600 x 250mm)
- Protection Type : IP65

## Solar Charge Controller

- Rated Voltage : 12V10A
- Charging mode : MPPT / PWM
- Display : Remarks, Voltage, Charge Current, Battery capacity, Load).

## Solar Panel

- Maximum Power (pmax) : 200 Watts
- Maximum Power voltage : 24V -36V
- Maximum Power Current : 5.56A
- Open Circuit Voltage : 45V
- Short Circuit Current : 6A
- Power Tolerance : +5%
- Type : Monocrystalline

## Battery

- Battery type : AGM, GEL, Lead acid.
- Rated voltage : 13.8VDC
- Rated current : 150A

## Computer/Server

- Operating System : Windows 10.
- Processor : i5 or higher
- Memory : 4GB min.
- Storage : 1TB HDD or Higher.
- Display : 27inch LCD / LED Display
- Audio : 20W speaker system.
- Power System : UPS

## Dashboard Monitor

- Screen size : 50 inch Frameless
- Screen ratio : 16:9
- Screen resolution : 1920(H) x 1080(V)
- Viewing angle : 178 °
- Brightness : 250 cd/m<sup>2</sup>
- Contrast ratio : 1900/3/23 8:01:00
- Response time : 4ms
- Network port : RJ45
- Type : LED

The Communication Solution is flexible and depends on the available infrastructure, operational requirements and overall system structure needs. We offers customized solutions for any available line- or wireless- based infrastructure. From a single Control Room for a local siren control, to Municipality-wide multi-path communication system, by all different means can be implemented.

Today highly available data-services allow a wide range of operational features where we takes care of it's availability and data security to ensure secure siren-control and performance at any time and under any circumstances. Knowing that the system is in perfect condition at stand-by or in-operation is our aim.

**Telemetry** is a technology which allows the remote measurement and also reporting of information of interest to the system designer. This word is derived from Greek where tele means remote, and metron means measure.

Telemetry can be applied to Agriculture, Environment monitoring etc. For example, in agriculture, to get healthy crops and a good yield, the farmers need to make decisions about timely availability of weather and soil data. Wireless weather stations, that use telemetry, play a major role in this. These stations transmit to a base station the major parameters or data needed for decisions such as: air temperature, relative humidity, solar radiation, wind speed, water level etc. By analysing this data, the farmers can make informed decisions about the crops and they can predict in advance about the yield also.

**For Details and Proof of Concept demo**