OIZOM
REDEFINING RESOURCES

Weathercom®
Online Weather Station

Weathercom measures meteorological parameters such as wind speed & direction, rainfall, visibility, UV-radiation, light intensity, temperature, humidity, pressure, etc. Through Weathercom, hyper-local meteorological parameters can be monitored in real-time which can help to take on-time decisions in case of any natural hazard. Weather forecasting and predictions is possible through historical data and trend analysis which can aid in timely warning/alert broadcasting. The equipment is easily installed with our plug-and-play feature, and solar panel makes it independent of any power source. It can withstand extreme weather conditions from tropical heat to arctic cold as well as extreme wind and rains. These features make Weathercom an ideal choice for comprehensive meteorological monitoring.

Product Variants

Product Variant	Application	Parameter
Weathercom Lite	General Purpose	Wind Speed & Direction, Rainfall, Light, UV Radiation, Temperature, Humidity, Pressure
Weathercom Smart	Agricultural Monitoring	Wind Speed & Direction, Rainfall, Soil Humidity, Light, UV Radiation, Temperature, Humidity, Pressure
Weathercom Pro	Road Safety Monitoring	Wind Speed & Direction, Rainfall, Road Visibility, Road Surface Condition, Light, UV Radiation, Temperature, Humidity, Pressure
External Modules	Optional	Ambient Noise, Flood Monitor (integrable for all the 3 variants)

Agriculture
Monitoring the hyper-local climatic parameters can help the farmers to take optimized farming decisions and take preventive measures for saving their crops against any imminent hazard.

Disaster Prevention
Real-time monitoring and historical data can help in predicting any forthcoming natural hazard. This can assist in taking precautionary measures to save lives and infrastructure damage.

Road Safety
Major road accidents are caused due to poor weather conditions. This can be prevented by cautioning drivers about the situation and setting up a dynamic speed limit as per the weather conditions.

Air Ports/Sea Ports
Observing meteorological parameters at ports can help in making data-driven operational decisions. The acquired data can help to detect approaching storms or high winds and take the required decisions beforehand.

Product Features

Solar Powered: Capable of running independently on solar power

Retrofit Design: Plug and play design for ease of implementation

Compact: Light-weight and compact system installed at 12-15 feet (4-5 m) height

Ultimate Durability: Made of high-grade engineering-metal and composite polymers for long-lifecycle

Identity & Configuration: Each equipment carries its unique identity with geotagging through wireless configurable sensor

Weather Resistant: IP65 grade enclosure for endurance against harsh weather conditions

Tamper Proof: Comes with an optional security system to avoid tampering

Over-The-Air Update: Automatically upgradeable from a central server without any onsite visit

Network Agnostic: Supports a wide range of connectivity options like GSM / GPRS / WiFi / LoRa / NBIoT/ Ethernet

Real-Time Data: Continuous real-time-data transfer possible through various connectivity options

Levels of Calibration

Factory Calibration: The sensors are bump tested at Oizom factory to check their proper functioning against meteorological parameters.

Collocation Calibration: The sensors are calibrated against a reference station before installation to test their performance in the ambient meteorological conditions.

Windspeed : Weathercom vs Reference station
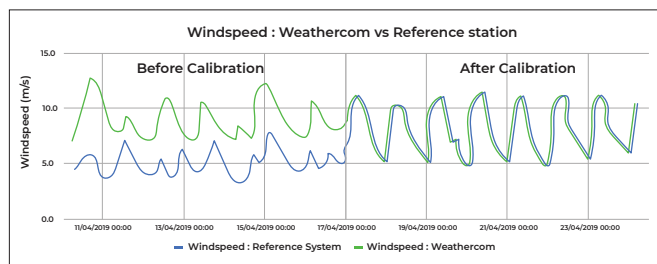
General Specifications

Size	360mm (H) x 328mm (W) x 200mm (D)
Weight	9.8 Kg
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE & FCC Certified, PTCRB Certified Communication Module

Communication

Data Interval	2-30 minutes (configurable)
Data-push Protocol	HTTP post request to host-server
Data-pull	HTTP request on device IP
Firmware Updates	Over the Air
Standby Connectivity	GSM (2G/3G) for remote diagnosis, FOTA updates and cloud calibration

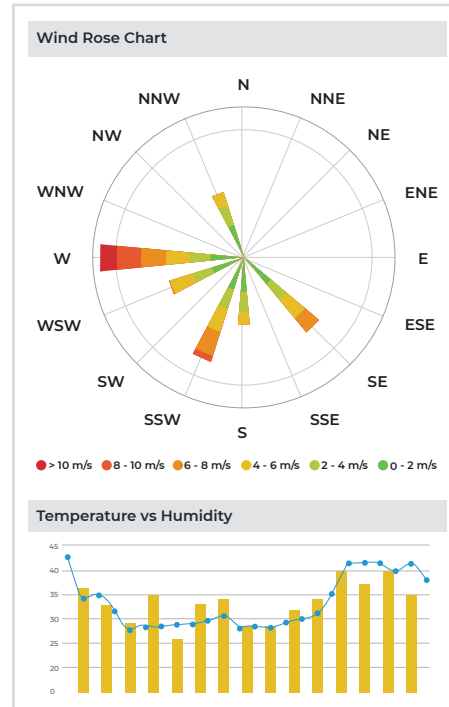|	Connectivity Options	Specification
Wireless	GSM	Global 2G / 3G
	LORA	868 MHz, 915 MHz
	LTE	CAT-M1
	NB-Iot	CAT-NB1
	Sigfox	868 to 869 MHz, 902 to 928 MHz
	Wifi	802.11 b/g/n
Wired	Ethernet	10BaseT/100BaseTx
	Modbus	RS485 RTU

Power

Avg. Power Consumption	2.5 Watt (Actual consumption depends upon the number of parameters)
Power Input Options	External 110-230V AC 50-60Hz, 40Watt Monocrystal Solar Panel
SMPS Specs	24V, 2Amps output from either of the power inputs
Battery Backup Time	Up to 48 Hours
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Environmental Performance

Operating Temperature	-20 °C to 60 °C
Optimum Temperature	25 °C to 35 °C
Optimum Humidity	0-95%
Weather Protection	IP65

Wind Rose Chart

● > 10 m/s ● 8 - 10 m/s ● 6 - 8 m/s ● 4 - 6 m/s ● 2 - 4 m/s ● 0 - 2 m/s

Temperature vs Humidity

Parameters

ID	Parameter	Range	Resolution	Min. Detection	Working Principle	Expected Sensor Life
Ws	Wind Speed	0-40 m/s	0.1 m/s	0.1 m/s	Ultrasonic	3 years
Wd	Wind Direction	0-359°	1°	1°		
Fl	Flood Monitoring	Upto 765 cm	1 cm	1 cm		2 years
Rm	Rainfall Monitoring	N.A.	0.5 mm	0.5 mm	Tipping Bucket	
Vis	Road Visibility	10-3000 m	±20%	N.A.	Light Scattering	
Rst	Road Surface Temperature	-40 °C to +60 °C	0.1°C	N.A.	Infrared Emission Sensing	
Noise	Ambient Noise	Up to 140 dB	1 dB	30 dB	Capacitance	3 years
Li	Light Intensity	Up to 1,00,000 Lux	1 Lux	1 Lux	Photoconductivity	
UV	UV Radiation	0.1-100,000 uW/cm²	0.1 uW/cm²	0.1 uW/cm²		
Lv	Visible Light Intensity	Upto 5000 Lux	0.1 Lux	0.1 Lux		
Temp	Temperature	-20 °C to +85 °C	0.01 °C	-20 °C	Solid State Semiconductor Sensing	
Hum	Humidity	Up to 100% Rh	0.10%	0.10%		
Bmp	Barometric Pressure	300-1100 hPa	0.18 Pa	300 hPa		

External Modules

①

Flood Sensor:
- Ultrasonic sensor
- 765 cm

②

Soil Moisture Sensor:
- Capacitive Sensing Technology
- 0-100% Volumetric Moisture Content
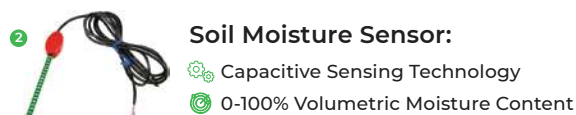
Functional Specification

Strategic Location Selection:

EPA's Meteorological guidelines for regulatory modelling mentions the following distance/height from the ground level for strategic sensor location:

Wind Speed & Direction: Wind sensor should be at least 10 m above the surface to avoid hindrance by buildings.

Temperature & Humidity: This sensor should be located 2 m above the surface.

Rain Gauge: It should be placed on the ground level such that its mouth faces horizontally towards the sky.

Solar Radiation: Pyranometer should be placed such that it has unrestricted incoming radiations from all directions.

Installation:

Preferred Mounting	Pole / Wall (preferably 270° open surrounding)
Installation Height	Equipment : 2 meters Wind Sensor : 10 meters
Direction	As per maximum direct sunlight exposure (if ambient-light monitoring is a preference)
Power Availability	Constant AC supply within a 5-meter range from the unit or solar panel
Network Availability	Uninterrupted network connection

No Obstacle in 10m Radius

10m

10 meters From the Ground level

270° Open surrounding
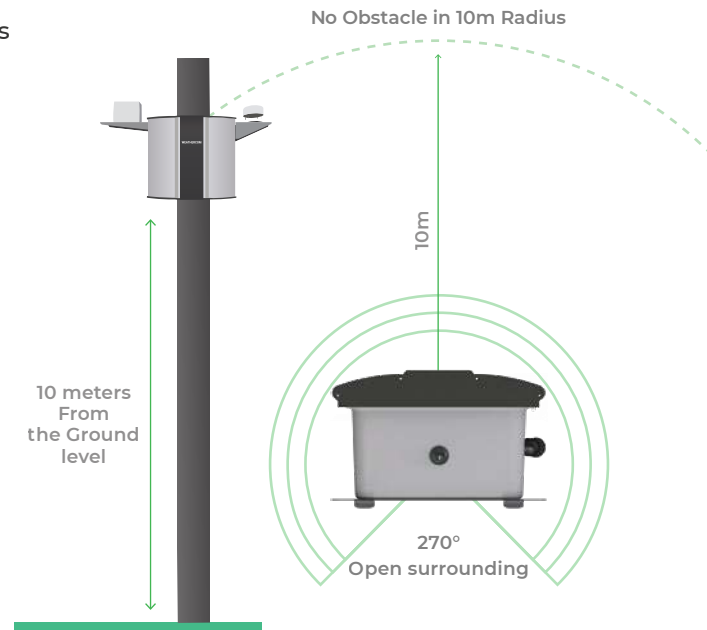
Operation:

Weathercom uses different measurement principle for each parameter.

Wind Speed & Direction: It is measured as the time taken by an ultrasound to travel through the wind.

Temperature, Humidity & Pressure: These parameters are measured by a proportional change in the corresponding resistance within the sensor.

Rainfall: Rainwater monitoring gauge consists of a tilted tipping bucket mechanism. The bucket has a capacity of each tip 0.01" ~ 0.25mm, beyond which it tilts.

Solar Radiation: Radiation is measured by converting sunlight received into electric energy by the semiconductors.

Maintenance:

Spot-Calibration: The frequency of calibration is decided based on the atmospheric conditions and individual sensor drift (mentioned in the parameter table) to ensure data accuracy. Spot calibration can be performed using reference equipment which can be a recently calibrated Oizom device.

Diagnosis/Debugging: Power and network availability are the prime check in case of equipment failure. If the issue is still unresolved after remote diagnosis, on-site troubleshooting can be planned by an engineer.