

SPECIFICATION FOR PORTABLE AUTOMATIC WEATHER STATION

An Automatic Weather Station (AWS) is an intelligent device that continuously and automatically monitors various meteorological parameters in an unmanned environment. By integrating weather sensors, data loggers, communication modules, and power systems, AWS can operate around the clock, collecting key weather data such as wind speed, wind direction, temperature, humidity, rainfall, atmospheric pressure & radiation. The data is automatically uploaded to a data center using GSM & remote data display using radio waves for analysis and application.



Parts of the AWS

1. Meteorological Sensors
2. Data Logger
3. Power Supply (Solar)

Sensors

TEMPERATURE

Sensor	Pt100 Thermocouple
Accuracy	±0.5 °C
Temperature range	-50°C to +400°C
Resolution	0.1°C
Sensing length	90mm
Enclosure	Outdoor Shelter (Metallic/Plastic)

HUMIDITY

Sensor	SHT30
Accuracy	±2% RH
Measuring range	0% to 100%
Resolution	1%
Output signal	I2C Communication
Working Temperature	≤125°C
Material	Plastic
Water resistance	Waterproof
Enclosure	Outdoor Shelter (Metallic/Plastic)

PRESSURE

Sensor	Bosch BMP085
Accuracy	±0.5hpa
Measuring range	300hpa to 1100hpa
Resolution	0.1hpa
Output signal	I2C Communication

Response time	7.5ms
Install type	Indoor (Data logger)

WIND SPEED

Sensor	Cup type (SN-3000-FSJT-V10)
Accuracy	$\pm(0.2+0.03V)$ m/s
Measuring range	0 – 70m/s
Resolution	0.1 m/s
Response time	$\leq 0.5s$
Starting threshold	$\leq 0.2m/s$
Output signal	analog 0-10V
Working Temperature	-20°C - 60°C

WIND DIRECTION

Sensor	Wane type
Accuracy	$\pm 1^\circ$
Measuring range	0° – 359°
Resolution	1°
Response time	$\leq 0.5s$
Starting threshold	$\leq 0.2m/s$
Output signal	analog 0-5V
Working Temperature	-20°C - 60°C

RAINFALL

Sensor	Tipping Bucket Rain Gauge
Accuracy	$\leq \pm 3\%$
Measuring range	Unlimited

Resolution	0.2mm
Collector diameter	200mm
Output signal	Pulse
Working Temperature	0°C to 70°C

RADIATION

Sensor	Thermopile
Measuring range	0 – 2000W/m ²
Resolution	1W/m ²
Wavelength Range	400-1100nm
Output signal	0-2V (Voltage)
Protection Level	IP66

Data logger

Processor	16bit low power
Inputs	8 Analog, 2 Serial (RS232/RS485) 4 X I2C, 2 X Pulse
Display	128 X 64 LCD Display
AD Converter	12 bit
Data Storage	1minute average & 10minute average of all the parameters stored Data storage capacity for more than 2years (Micro SD card)
Outputs (Communication)	GSM (2G,3G,4G), 433Mhz Radio wave
Real time clock	Internal real time clock with battery backup

Power supply

12V DC

Operating conditions

-40°C to 70°C

External Data visualize system

Working Distance

≤ 1000m (Without barriers)

≤ 200m (With barriers)

Display

128 X 64 LCD Color display

Update interval

1 minute

Data Storage

1 Minute sensor data (Micro SD)

Power Supply

5V/1A DC (USB power supply)

Power supply

Solar panel

50W/18V

Solar charge controller

10A PWM

Battery

12V/6Ah

