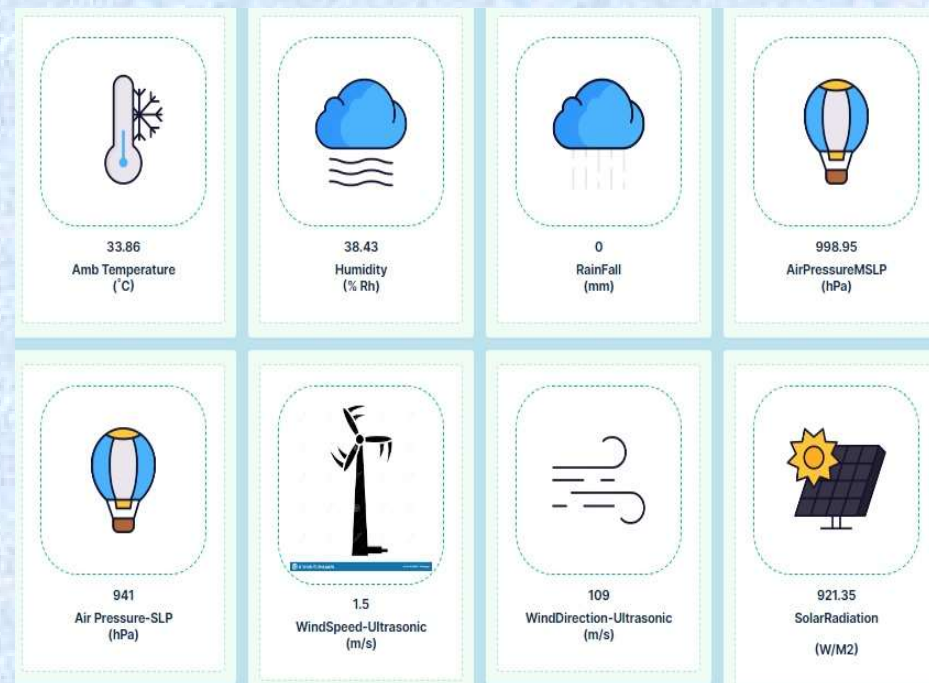


Automatic Weather Station

KS/COMPACT/AWS



Designed & Manufactured by:
Kalpana Scientific Pvt.Ltd.
Konnagar, West Bengal-712235, India
Tel. 7679774297 website: www.kalpanascientific.com
Email id : kalpanascientifickolkata@gmail.com

DATALOGGER

KS/COMPACT/AWS

- Minimum Scan Rate of 10Hz
- Analog Inputs: 6 , Pulse Inputs : 2 , SDI Inputs : 2
- Switched Excitation Voltage Channels : at least 1
- Communication Ports: RS232 , USB , 10/100 Ethernet RJ45
- Input Voltage Range : -100 mV to +2500 mV
- Analog / Digital Bits : 24 Bit
- Sampling Interval: User programmable from 100ms to 1minute
- Recording Interval: User programmable from 1 second, 1minute, 15 minute and 1 hour. Multiple data tables shall be created for data storage.
- Analog Resolution : 0.23 Micro Voltage
- Idle Current Drain, Average 1.5 mA (@ 12 Vdc)
- Inbuilt Data storage for Two years with 1 Minute duration
- Temperature Range: -40 to 70 Deg C
- Power Requirements: 10 to 18 Vdc
- Real-Time Clock Accuracy: ± 1 min. per month
- Inbuilt Charge Regulator for Charging the battery from Solar Panel
- Telemetry: Dual SIM telemetry modem 3G/4G

DATALOGGER

- Data over FTP, Email
- System shall be accessible using cell phone application (IOS and android)
- Logger shall be programmed remotely without the need of static IP connection.
- Real time data shall be accessible using laptop/PC having internet connection



Air Temperature Sensor

KS/AWS/AIRTS

- Range: -40 °C to + 60 °C
- Accuracy: +/- 0.2 °C or better
- Resolution: 0.01°C
- Housing Classification IP65
- Output: Compatible with data logger



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Relative Humidity Sensor

KS/AWS/RHUMS

- Range: 0 to 100% RH
- Output Compatible with data logger
- Accuracy: +/- 1% or better
- Housing Classification IP65
- Operating Temp Range: -40 °C to +60 °C A naturally aspirated radiation shield should be provided with the sensor.



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- Sensor type: Tipping bucket/ magnetic reed switch
- Material: Anodized aluminium
- Temperature: 0° to +50°C
- Rainfall per tip: 0.1 mm
- Accuracy: ± 1 percent at rates up to 1 in./hr



Soil Moisture Profiler

KS/AWS/SOILMP

- Measure Parameters: VWC, permittivity, EC, and temperature
- Measurement Depth: 5, 10, 20, 30, 40, 50, 60, 75, and 100 cm
- Soil Moisture Measurement Range: 0 to 100%
- Soil Moisture Measurement Accuracy: $\pm 1.5\%$
- Soil Temperature Measurement Range: -40°C to $+60^{\circ}\text{C}$
- Soil Temperature Measurement Accuracy: $\pm 0.15^{\circ}\text{C}$
- Soil Conductivity Range: 0 to 10 dS/m
- Soil Conductivity Accuracy: $\pm 5\%$
- Relative dielectric permittivity range: 1 to 80
- Output: SDI12



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- Soil Moisture Measurement Range: 0 to 100%
- Soil Moisture Measurement Accuracy: $\pm 3\%$
- Soil Temperature Measurement Range: -40°C to $+60^{\circ}\text{C}$
- Soil Temperature Measurement Accuracy: $\pm 0.5^{\circ}\text{C}$
- Soil Conductivity Range: 0 to 8 dS/m
- Soil Conductivity Accuracy: $\pm 6\%$
- Output: SDI12



Snow Depth Sensor

KS/AWS/SNOWDS

- Power Requirements 12 Vdc
- Quiescent Current <3300 μ A
- Active Current Consumption 210 mA (peak) 14 mA (average at 20°C)
- Measurement Time 5 sec typical
- Warm-up Time 2 sec
- Output SDI-12
- Measurement Range 0.5 to 10 m distance from sensor
- Snow Depth 0 to 9.6 m
- Resolution 0.1 mm
- Required beam angle 30 degrees
- Operating Temperature -45 °C to +50 °C



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- Response time 95% < 1 msec
- Non-stability ± 2 %
- Non-linearity (100 to 1000W/m²) < 0.2 %
- Spectral Error ± 3.07 %
- Temperature Response (-20°C to 50°C) < 0.15 %
- Wavelength Range (nm) 400 to 1100
- Irradiance range (W/m²) 0 to 2000
- Operating temperature -30 to 70°C



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Wind Speed and Direction Sensor

KS/AWS/WINDS&DS

- Operating Temperature -40° to $+65^{\circ}\text{C}$
- Sensor Type Wind Speed Solid state magnetic sensor
- Speed Range 0.5 to 85 m/s
- Resolution 0.1 m/s
- Wind Direction Wind vane and potentiometer
- Range 0 to 360 degrees
- Accuracy $\pm 3^{\circ}$



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Technical Compliance Sheet of Automatic Weather Station

Sl. No.	Specifications	Make & Model No.	Compliance (Yes/No)
1	DATALOGGER <ul style="list-style-type: none"> Minimum Scan Rate of 10Hz Analog Inputs: 6 , Pulse Inputs : 2 , SDI Inputs : 2 Switched Excitation Voltage Channels : at least 1 Communication Ports: RS232 , USB , 10/100 Ethernet RJ45 Input Voltage Range : -100 mV to +2500 mV Analog / Digital Bits : 24 Bit Sampling Interval: User programmable from 100ms to 1minute Recording Interval: User programmable from 1 second, 1minute, 15 minute and 1 hour. Multiple data tables shall be created for data storage. Analog Resolution : 0.23 Micro Voltage Idle Current Drain, Average 1.5 mA (@ 12 Vdc) Inbuilt Data storage for Two years with 1 Minute duration Temperature Range: -40 to 70 Deg C Power Requirements: 10 to 18 Vdc Real-Time Clock Accuracy: ± 1 min. per month Inbuilt Charge Regulator for Charging the battery from Solar Panel Telemetry: Dual SIM telemetry modem 3G/4G Data over FTP, Email System shall be accessible using cell phone application (IOS and android) Logger should be programmed remotely without the need of static IP connection. Real time data shall be accessible using laptop/PC having internet connection 	Make: KALPANA SCIENTIFIC Model No.: KS/COMPACT/AWS	Yes

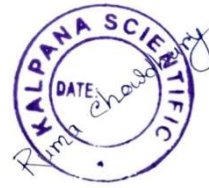
2	<p style="text-align: center;">Air Temperature Sensor</p> <ul style="list-style-type: none"> ● Range: -40°C to + 60°C ● Accuracy: +/- 0.2°C or better ● Resolution: 0.01°C ● Housing Classification IP65 ● Output: Compatible with data logger 	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/AIRTS</p>	Yes
3	<p style="text-align: center;">Relative Humidity Sensor</p> <ul style="list-style-type: none"> ● Range: 0 to 100% RH ● Output Compatible with data logger ● Accuracy: +/- 1% or better ● Housing Classification IP65 ● Operating Temp Range: -40°C to +60°C <p>A naturally aspirated radiation shield shall be provided with the sensor.</p>	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/RHUMS</p>	Yes
4	<p style="text-align: center;">Rain Fall Sensor</p> <ul style="list-style-type: none"> ● Sensor type: Tipping bucket/ magnetic reed switch ● Material: Anodized aluminium ● Temperature: 0° to +50°C ● Rainfall per tip: 0.1 mm ● Accuracy: ±1 percent at rates up to 1 in./hr 	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/RAINFS</p>	Yes
5	<p style="text-align: center;">Soil Moisture Profiler</p> <ul style="list-style-type: none"> ● Measure Parameters: VWC, permittivity, EC, and temperature ● Measurement Depth: 5, 10, 20, 30, 40, 50, 60, 75, and 100 cm ● Soil Moisture Measurement Range: 0 to 100% ● Soil Moisture Measurement Accuracy: ± 1.5% ● Soil Temperature Measurement Range: -40 °C to +60°C ● Soil Temperature Measurement Accuracy: ± 0.15°C ● Soil Conductivity Range: 0 to 10 dS/m ● Soil Conductivity Accuracy: ±5% ● Relative dielectric permittivity range: 1 to 80 ● Output: SDI12 	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/SOILMP</p>	Yes
6	<p style="text-align: center;">Soil Moisture Sensors</p> <ul style="list-style-type: none"> ● Soil Moisture Measurement Range: 0 to 100% ● Soil Moisture Measurement Accuracy: ± 3% ● Soil Temperature Measurement Range: -40 °C 	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/SOILMS</p>	Yes

	<div>to</div> <div>+60°C</div> <div><ul style="list-style-type: none">• Soil Temperature Measurement Accuracy: ± 0.5°C• Soil Conductivity Range: 0 to 8 dS/m• Soil Conductivity Accuracy: ±6%• Output: SDI12</div>		
7	<div>Snow Depth Sensor</div> <div><div>Power Requirements</div><div>12 Vdc</div></div> <div><div>Quiescent Current</div><div><3300 µA</div></div> <div><div>Active Current Consumption</div><div>210 mA</div></div> <div><div>(peak)</div><div>14 mA (average at 20°C)</div></div> <div><div>Measurement Time</div><div>5 sec typical</div></div> <div><div>Warm-up Time</div><div>2 sec</div></div> <div><div>Output</div><div>SDI-12</div></div> <div><div>Measurement Range distance from sensor</div><div>0.5 to 10 m</div></div> <div><div>Snow Depth</div><div>0 to 9.6 m</div></div> <div><div>Resolution</div><div>0.1 mm</div></div> <div><div>Required beam angle</div><div>30 degrees</div></div> <div><div>Operating Temperature</div><div>-45 °C to +50°C</div></div>	<div>Make: KALPANA SCIENTIFIC</div> <div>Model No.: KS/AWS/SNOWDS</div>	Yes
8	<div>Solar Radiation Sensor</div> <div><div>Response time 95%</div><div>< 1 msec</div></div> <div><div>Non-stability</div><div>± 2 %</div></div> <div><div>Non-linearity (100 to 1000W/m²)</div><div>< 0.2</div></div> <div><div>% Spectral Error</div><div>± 3.07 %</div></div> <div><div>Temperature Response (-20°C to 50°C)</div><div>< 0.15 %</div></div>	<div>Make: KALPANA SCIENTIFIC</div> <div>Model No.: KS/AWS/SOLRAD</div>	Yes

	<p>Wavelength Range (nm) 400 to 1100</p> <p>Irradiance range (W/m²) 0 to 2000</p> <p>Operating temperature -30 to 70°C</p>		
9	<p>Wind Speed and Direction Sensor</p> <p>Operating Temperature -40° to +65°C</p> <p>Sensor Type Wind Speed Solid state magnetic sensor</p> <p>Speed Range 0.5 to 85 m/s</p> <p>Resolution 0.1 m/s</p> <p>Wind Direction Wind vane and potentiometer</p> <p>Range 0 to 360 degrees</p> <p>Accuracy ±3°</p>	<p>Make: KALPANA SCIENTIFIC Model No.: KS/AWS/WINDS&DS</p>	Yes
10	<p>ENCLOSURE</p> <ol style="list-style-type: none"> 1. Enclosure suitable for data logger with a power supply and one or more peripherals. 2. NEMA 4X Enclosures. 3. Non-Corrosive, fiberglass. 4. Cable entry options: Two sealable conduit ports. <p>BATTERY & CHARGING SYSTEM</p> <ol style="list-style-type: none"> 1. We shall provide power budget calculations 2. We shall provide Sealed Maintenance Free Lead Acid (VRLA) Batteries 3. A suitable in-built charge controller having over and under voltage protection shall be provided. <p>MOUNTING STAND</p> <p>2 Meter or more Mounting Tripod for fixing all the above</p>		Yes

	instruments in outdoor		
11	SCOPE OF WORK 1. Vendor required to carry out complete integration, installation & commissioning of the weather monitoring system. Demonstration and training on data downloading and other necessary functionalities of the system shall be provided by the supplier.		Yes

For KALPANA SCIENTIFIC

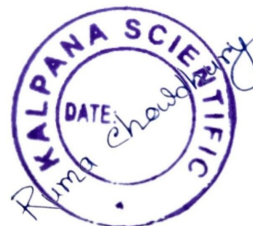


RUMA CHOWDHURY, PROPRIETOR
CALL: 7679774297
PLACE: KONNAGAR, DATE: 22.10.2024

LIST OF SERVICE CENTRE

SL NO	LOCATION	ADDRESS
1	KOLKATA	A-33/2 BIDISHA HOUSING KONNAGAR , HOOGLY , WEST BENGAL-712235 MOB:7029894454
2	PUNE	A-104, NATURES BLESSINGS, GORHE BK, PUNE-411025 MOB:7679774297
4	AMBALA	BENGALI MOHALLA NEAR POST OFFICE AMBALA CANTT, HARYANA-133001
Name of application specialist /Service Engineer who have the technical competency to handle and Support the quoted product during the warranty period.		
Name of the organization	Name of Contact Person	Contact No.
KALPANA SCIENTIFIC	DR. S.NEOGI, M.SC, M.TECH, Ph.D	7679774297
KALPANA SCIENTIFIC	DR. U.CHOWDHURY, M.SC, M.TECH, Ph.D	7029894454
KALPANA SCIENTIFIC	MRS. POUSHALI ROY, B.TECH, M.TECH	7718610048
KALPANA SCIENTIFIC	MR. SUSHOBHON PAL, BSc, MCA	9883267817
KALPANA SCIENTIFIC	MR. BHOLANATH SUTRADHAR, BSc	9064134925

Now we have three service centre in INDIA. During the warranty period, I/we shall provide free ,after sale service, and the replacement of any part(s) of the Equipment /Item or rectification of defects of work of the Equipment /Item will be free of cost. The replacement of the parts shall be arranged by us, at our own cost and responsibility during warranty period.

For KALPANASCIENTIFIC**RUMACHOWDHURY,
PROPRIETOR
CALL: 7679774297
PLACE: KONNAGAR,
DATE:12.07.2024**