



**SPECIALIST
MANUFACTURERS OF
ENVIRONMENTAL ANALYSIS
AND MONITORING
EQUIPMENT**

TRACEMET®

AUTOMATIC WEATHER STATIONS

WAGTECH PROJECTS - TRACE20



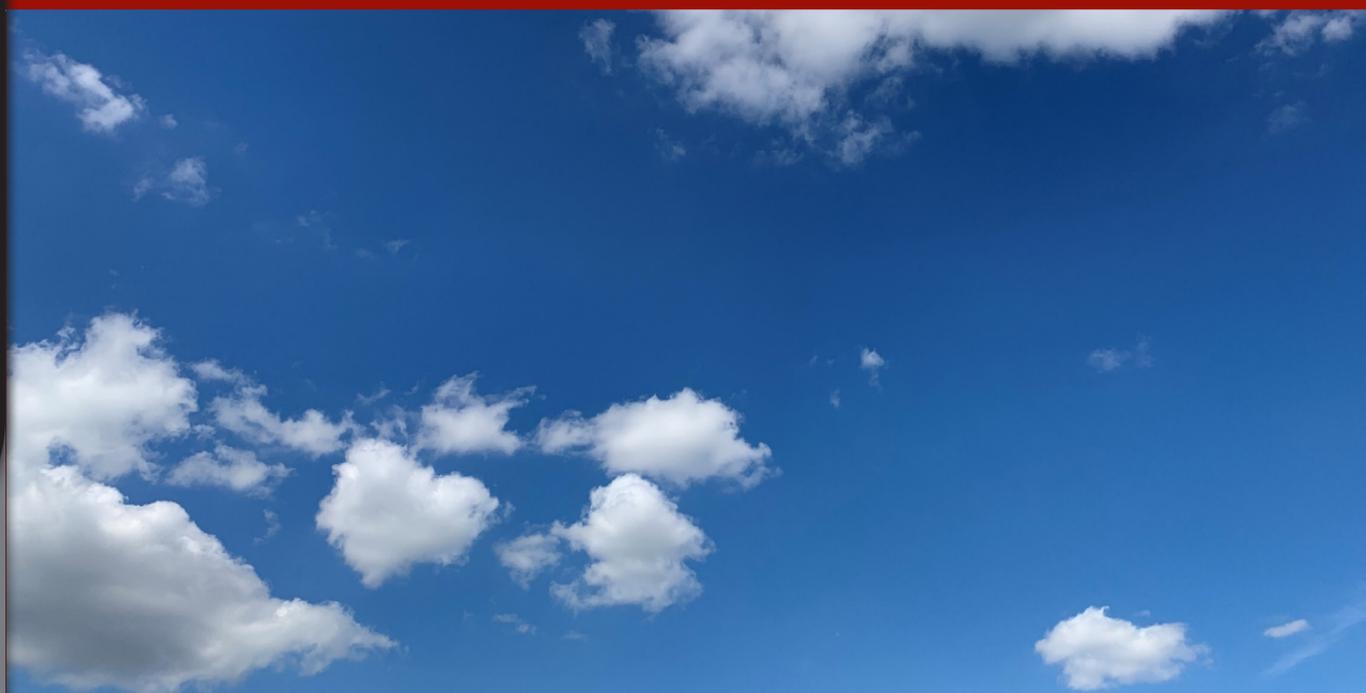
AUTOMATIC WEATHER STATIONS

TRACEMET®

TraceMet is a range of Automatic Weather Stations (AWS) that have been carefully designed for the collection of accurate and reliable data on atmospheric, soil, plant and surface water conditions. With a choice of 6 models, there is a weather station for every situation. Whether you need an entry-level system for just meteorological parameters, or a premium AWS for measuring agrometeorological conditions, there is a model for you.

Each system has been created to be fully self-sufficient in order to minimise the amount of physical interaction needed after installation and commissioning. This has been achieved by the integration of our unique TraceLogger for data collection and transmission, an 18Ah battery with protective heat shield and a 30W solar charging system.

While standard models have been created for measuring the most common parameters, bespoke systems are also available for more specific requirements. Please contact us if you require a custom solution and we will work with you to create an AWS tailored to your needs. As well as supplying high-quality hardware, we also provide our own TraceMet software for visualising your data and managing your network. Full installation, commissioning and training (ICT) of these systems is available through our global network of trained engineers.



TRACEMET® BENEFITS

AERODYNAMIC RAIN GAUGES

The unique design of the TraceMet Tipping Bucket rain gauge increases measurement accuracy by capturing more rainfall than traditionally shaped cylindrical gauges. The precision-engineered UV-resistant gauges minimise out-splash and reduce rainfall losses caused by evaporation. The depth, diameter, and angle of the funnels have all been extensively tested and researched to give optimum accuracy in the field.



TRACELOGGER®

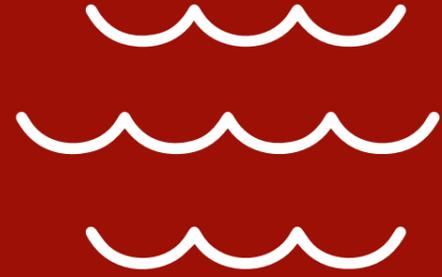
The TraceLogger is a complete high-capacity data logger with 10 universal logging channels which can also be configured as triggers or alarms. It features rapid data transmission over local mobile networks and can be configured to output data to either an FTP or HTTP server. In the event of a network failure, your data would not be lost, thanks to the Tracelogger's on-board storage capabilities. An optional integrated LCD screen allows site engineers to ensure system functionality on-site.

SOLAR POWER SYSTEM

A high-capacity Li-ion 18Ah battery powers the TraceMet systems, including the data logger and associated sensors. However, as Li-ion batteries lose functionality at temperatures exceeding 26°C, the TraceMet systems incorporate a dedicated heat shield. This reduces the damaging effect of excessive heat on the battery and preserves its lifespan. A 30W solar panel is included to provide power, however even in prolonged periods without sunlight the AWS can still function as normal thanks to the high-capacity battery and efficient TraceLogger.



THE RANGE



METEOROLOGICAL ONLY

AGROMETEOROLOGICAL

HYDROMETEOROLOGICAL

ENTRY-LEVEL

PREMIUM

ENTRY-LEVEL

PREMIUM

ENTRY-LEVEL

PREMIUM





TRACEMET® COMPARISON CHART

ALL STATIONS INCLUDE:

- ⦿ Advanced 10-channel TraceLogger
- ⦿ Solar charging system
- ⦿ 18Ah battery with heat shield
- ⦿ Ability to output data to the TraceMet AWS Management System
- ⦿ Data output to FTP or HTTPS server
- ⦿ Ability to record 7 key meteorological parameters:
 - Solar Radiation
 - Barometric Pressure
 - Wind Speed
 - Wind Direction
 - Relative Humidity
 - Air Temperature
 - Rainfall Intensity

In addition to the classic meteorological AWS, we also provide systems for agronomical and hydrological needs:

- ⦿ TM AGRO adds: soil moisture, soil temperature and leaf wetness
- ⦿ TM HYDRO adds: water level and temperature

Premium model advantages include:

- ⦿ WMO compliance
- ⦿ 10m mast for more reliable data
- ⦿ Advanced sensors give more accurate measurements

| | METEOROLOGICAL | | AGROMETEOROLOGICAL | | HYDROMETEOROLOGICAL | |
|---|----------------|---------|--------------------|------------|---------------------|-------------|
| | ENTRY-LEVEL | PREMIUM | ENTRY-LEVEL | PREMIUM | ENTRY-LEVEL | PREMIUM |
| | TM50 | TM100 | TM50 AGRO | TM100 AGRO | TM50 HYDRO | TM100 HYDRO |
| Number of Parameters Measured | 7 | 7 | 10 | 10 | 9 | 9 |
| World Meteorological Organization (WMO) Compliant | | ✓ | | ✓ | | ✓ |
| Transfer of Data to Local Server (FTP or HTTP) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| TraceMet AWS Management Software | * | * | * | * | * | * |
| System Components | | | | | | |
| TraceLogger | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Battery, Heat Shield & Solar Charging System | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2m Portable Mast | ✓ | | ✓ | | ✓ | |
| 10m Retractable Mast | | ✓ | | ✓ | | ✓ |
| Sensors | | | | | | |
| Meteorological | | | | | | |
| ARG-127 Aerodynamic Rain Gauge with Baseplate | ✓ | | ✓ | | ✓ | |
| ARG-314 Aerodynamic Rain Gauge** | | ✓ | | ✓ | | ✓ |
| RHT1 Relative Humidity & Temperature with Sensor Shield | ✓ | | ✓ | | ✓ | |
| RHT2 Relative Humidity & Temperature with Sensor Shield | | ✓ | | ✓ | | ✓ |
| WSD Wind Speed & Direction | ✓ | | ✓ | | ✓ | |
| U-WSD Ultrasonic Wind Speed & Direction | | ✓ | | ✓ | | ✓ |
| SCP Pyranometer (Solar Radiation) | ✓ | | ✓ | | ✓ | |
| SMP3 Pyranometer (Solar Radiation) | | ✓ | | ✓ | | ✓ |
| BP1 Barometric Pressure | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Agrometeorological | | | | | | |
| SM150T Soil Moisture & Temperature | | | ✓ | ✓ | | |
| PHYTOS 31 Leaf Wetness | | | ✓ | ✓ | | |
| Hydrometeorological | | | | | | |
| LL-MINI Water Level & Temperature | | | | | ✓ | ✓ |

*Available as an optional extra.

**Concrete pedestal required: to be sourced locally or included if Wagtech Projects is providing the ICT.





METEOROLOGICAL STATIONS

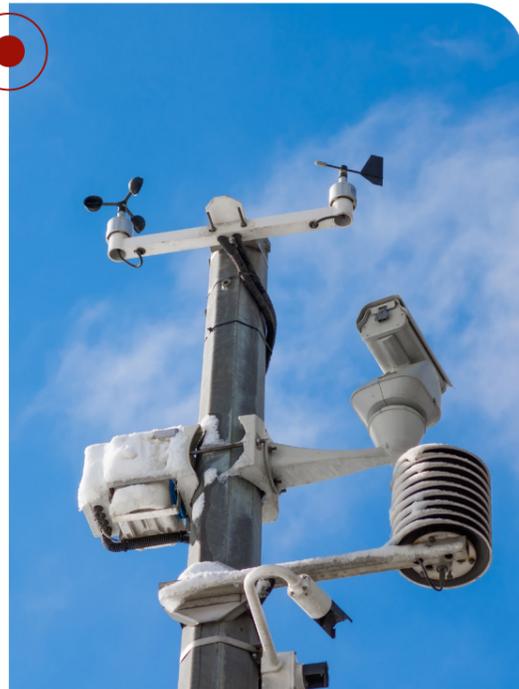


Meteorology is the branch of science concerned with the processes and phenomena of the atmosphere, especially as a means of forecasting the weather. These stations have been designed to measure the key meteorological parameters only – ideal for general weather forecasting and climate monitoring.

TM50

A compact, low-cost AWS suited to local businesses, institutions or individuals who want quality meteorological data but are not concerned with being WMO compliant. Comprises 5 sensors mounted on a 2m mast for measuring 7 meteorological parameters:

- ⦿ Air Temperature
- ⦿ Barometric Pressure
- ⦿ Rainfall Intensity
- ⦿ Relative Humidity
- ⦿ Solar Radiation
- ⦿ Wind Direction
- ⦿ Wind Speed



TM100

A premium, full-scale, WMO compliant AWS ideal for building national meteorological network capacity. This station provides highly accurate meteorological data and is very low maintenance due to the absence of moving parts. Comprises 5 sensors mounted on a 10m mast for measuring 7 key weather parameters:

- ⦿ Air Temperature
- ⦿ Barometric Pressure
- ⦿ Rainfall Intensity
- ⦿ Relative Humidity
- ⦿ Solar Radiation
- ⦿ Wind Direction
- ⦿ Wind Speed

For technical specifications, see pages 14 to 20.



AGROMETEOROLOGICAL STATIONS



Agrometeorology is the study of weather and climate information, and its use in enhancing or expanding agricultural crops and/or to increase crop production. These stations enable better agricultural planning and provide up-to-date information on the latest weather conditions which affect plant health.

TM50 AGRO

A compact, low-cost agronomical AWS which builds on the TM50 by adding sensors for leaf wetness and soil moisture and temperature. The TM50 AGRO is suited to local farmers and businesses who want to monitor the key factors affecting the health of their crops to improve yields. Comprises 7 sensors mounted on a 2m mast for measuring 10 parameters:

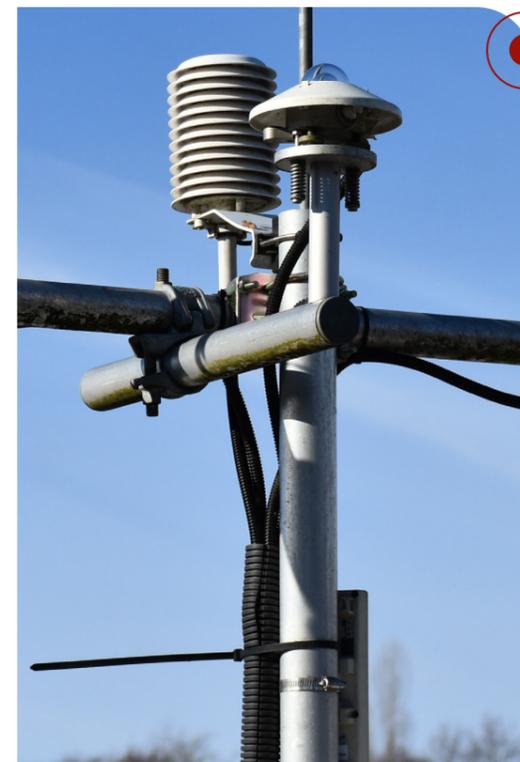
- ⦿ Air Temperature
- ⦿ Barometric Pressure
- ⦿ Rainfall Intensity
- ⦿ Relative Humidity
- ⦿ Solar Radiation
- ⦿ Wind Direction
- ⦿ Wind Speed
- ⦿ Leaf Wetness
- ⦿ Soil Moisture
- ⦿ Soil Temperature



TM100 AGRO

A premium, WMO compliant agronomical AWS which builds on the TM100 by adding sensors for leaf wetness and soil moisture and temperature. This station is ideal for national government agencies who want to build capacity and identify regional variations in agricultural potential. Comprises 7 sensors mounted on a 10m mast for measuring 10 parameters:

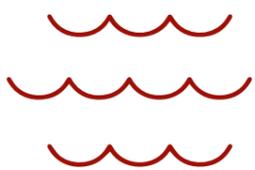
- ⦿ Air Temperature
- ⦿ Barometric Pressure
- ⦿ Rainfall Intensity
- ⦿ Relative Humidity
- ⦿ Solar Radiation
- ⦿ Wind Direction
- ⦿ Wind Speed
- ⦿ Leaf Wetness
- ⦿ Soil Moisture
- ⦿ Soil Temperature



For technical specifications, see pages 14 to 20.



HYDROMETEOROLOGICAL STATIONS



Hydrometeorology studies the transfer of water between the land surface and the lower atmosphere, which affects agriculture, water supply, flood control and power generation. These stations therefore offer vital information which can be used for better community planning and early warning for hydrometeorological hazards.

TM50 HYDRO

A compact, low-cost hydrological AWS which builds on the TM50 with the addition of a water level and temperature sensor. This makes it perfect for small-scale community-based projects, such as flood early warning or reservoir monitoring. Comprises 6 sensors mounted on a 2m mast for measuring 9 parameters:

- ⊙ Air Temperature
- ⊙ Barometric Pressure
- ⊙ Rainfall Intensity
- ⊙ Relative Humidity
- ⊙ Solar Radiation
- ⊙ Wind Direction
- ⊙ Wind Speed
- ⊙ Water Temperature
- ⊙ Water Level



TM100 HYDRO

A premium, WMO compliant hydrometeorological AWS which builds on the TM100 with the addition of a water level and temperature sensor. This configuration is suited to government agencies who want a full-scale AWS tied in with a system for monitoring water levels around the country. Comprises 6 sensors mounted on a 10m mast for measuring 9 parameters:

- ⊙ Air Temperature
- ⊙ Barometric Pressure
- ⊙ Rainfall Intensity
- ⊙ Relative Humidity
- ⊙ Solar Radiation
- ⊙ Wind Direction
- ⊙ Wind Speed
- ⊙ Water Temperature
- ⊙ Water Level



For technical specifications, see pages 14 to 20.



TM50 ASSEMBLY

WSD WIND SPEED & DIRECTION SENSOR

2M MAST

ARG-127 AERODYNAMIC RAIN GAUGE WITH BASEPLATE

SENSOR SHIELD FOR RHT1

RHT1 RELATIVE HUMIDITY & TEMPERATURE

ANTENNA

TRACELOGGER

18Ah BATTERY & HEAT SHIELD

SCP PYRANOMETER

BP1 BAROMETRIC PRESSURE

30W SOLAR PANEL

GUY ROPES

TM100 ASSEMBLY

10M RETRACTABLE MAST

SENSOR SHIELD FOR RHT2

RHT2 RELATIVE HUMIDITY & TEMPERATURE

TRACELOGGER

18Ah BATTERY WITH HEAT SHIELD

ANTENNA

CMP3 PYRANOMETER

BP1 BAROMETRIC PRESSURE

30W SOLAR PANEL

ARG-314 AERODYNAMIC RAIN GAUGE

U-WSD ULTRASONIC WIND SPEED & DIRECTION

*AGROMET AND HYDROMET STATIONS BUILD ON THE TM50 AND TM100 WITH THE ADDITION OF SPECIALISED SENSORS.

TM50 SENSORS

ARG-127 RAIN GAUGE WITH BASEPLATE

| | |
|------------------------------|--|
| Resolution | 0.2mm |
| WMO compliant | No |
| Output | Contact closure (reed switch) |
| Accuracy | 99% up to 120 mm/hr |
| Rainfall Intensity | 0 to 2000 mm/hr |
| Operating temperature | 1°C to 70°C |
| Funnel diameter, mm | 127 |
| Funnel area, cm ² | 127 |
| Height, mm | 225 (245 w/ baseplate) |
| Weight, g | 700 (1000 w/ baseplate) |
| Colour | White (or green if requested) |
| Material | Robust UV-stabilised plastic (injection moulded) |



The ARG-127 is our recommended cost-effective solution for meteorologists and hobbyists or for project work on a budget, but still require scientific standard rain data. The gauge is based on the physical size of the traditional 5" UK Met Office rain gauge with the added benefit of an aerodynamic profile. The ARG127 is a compact solution and an ideal rain measuring instrument for anyone who cares about the quality of their data.

SCP PYRANOMETER (SOLAR RADIATION)

| | |
|-------------------------|--|
| ISO 9060:2018 | Class C (previously known as second class) |
| Power supply | 3.3 to 24V DC |
| Current draw | 10 μ A |
| Sensitivity | 1.25 mV per W m ⁻² |
| Output type | 0 to 2.5 V |
| Calibration factor | 0.8W m ⁻² per mV |
| Calibration uncertainty | \pm 5% |
| Repeatability | < 1% |
| Long-term drift | < 2 % per year |
| Non-linearity | < 1% up to 2000W m ⁻² |
| Response time | < 1ms |
| Field of view | 180° |
| Spectral range | 360 to 1120 nm |
| Directional response | \pm 5 % at 75° zenith angle |
| Temperature response | 0.04 \pm 0.04 % per °C |
| Operating environment | -40 to 70 C; 0 to 100 % RH |
| Dimensions, mm | \varnothing 30.5 x 37 |
| Weight, g | 140 |



The SCP is a silicon-cell pyranometer featuring a silicon-cell detector. It provides accurate and stable global shortwave radiation measurements in a cost-effective package – the result of continual refinement of design.

The sensor incorporates a silicon-cell photodiode with a rugged, self-cleaning sensor housing design, and high-quality cable terminating in pre-tinned pigtail leads for easy connection to dataloggers and controllers. Sensor includes IP68 marine-grade stainless-steel cable connector to simplify sensor removal and replacement for maintenance and recalibration.

WSD WIND SPEED + DIRECTION

WIND SPEED

| | |
|----------------|---|
| Calibration | 1 contact closure / 1.493m |
| Reed detector | Bench tested to a minimum speed of 90m/s. |
| Start-up | 1 m/s typically |
| Accuracy | 2% |
| Linearity | 2% |
| Contact rating | 50 Watts |
| Supply voltage | 100V DC max. |
| Supply current | 1A max. |

WIND DIRECTION

| | |
|---------------------------------|------------------|
| Mechanical travel | 360° (endless) |
| Electrical travel | 355° \pm 2 |
| Application range | Up to 60 m/s |
| Accuracy | \pm 3% |
| Start up | <1 m/s typically |
| Resistance tolerance | \pm 3% |
| Linearity tolerance | \pm 0.5% |
| Temperature coefficient of wire | \pm 20ppm/°C |
| Temperature range | -20°C to 70°C |
| Supply voltage max | 80V DC |
| Recommended max voltage | 24V DC |
| Height, mm | 280 |
| Max arc, mm | 120 |
| Weight, g | 500 |

RHT1 HUMIDITY + TEMPERATURE

| | |
|-----------------------------|----------------------------|
| Dimensions, mm | \varnothing 22 x 180 |
| Dimensions (probe only), mm | \varnothing 12 x 71 |
| Housing classification | IP65 |
| Supply voltage | 7.28 VDC |
| Operating voltage | 5 to 28 VDC |
| Outputs | Analogue or RS485 |
| Power Consumption | 1mA average, max. peak 5mA |

RELATIVE HUMIDITY

| | |
|----------------------------|---------------|
| Range | 0 to 100% |
| Accuracy (at 23 \pm 5°C) | \pm 5.0% RH |

TEMPERATURE

| | |
|----------------------------|--------------|
| Range | -40 to +60°C |
| Accuracy (at 23 \pm 5°C) | \pm 0.6°C |



The wind speed and direction sensor consists of a low-inertia ABS cup assembly for fast response mounted on a dual ballrace-supported stainless steel shaft. The wind direction component of the sensor consists of a dynamically balanced wind vane operating a triple ballrace supported shaft and micro-torque potentiometer.

The WSD produces a contact-closure pulse signal output, which means that most modern data capture units are compatible with these sensors with little or no interfacing. The benefit of this is precise and accurate measurements in all environments.



The RHT1 is a product comprising of a temperature and humidity probe and a robust machined acetal body to house the probe within. This combination provides a robust and cost-effective solution for your needs. Using this interchangeable probe allows the sensor to be changed in the field, eliminating down-time. It also means field re-calibration is a thing of the past with the RHT1. The probe also comes with a shield which protects the sensor from the effects of solar radiation, rain and snow.





The SMP3 is a thermopile pyranometer, which differs from the technology used in the SCP which is a silicon-cell pyranometer. The difference is that silicon-cell pyranometers have high errors in cloudy conditions, whereas thermopile pyranometers have a much broader and more uniform spectral response, meaning they perform well in all weather conditions.

The SMP3 is a smart thermopile pyranometer with low maintenance and industry standard digital and analogue amplified outputs. Based on proven technology, the SMP3 includes a Modbus® interface, excellent response time and temperature corrected measurement data.



The RHT2 is a digital humidity-temperature probe which is most suited to field applications requiring high precision, Class A accuracy. These probes offer versatility by providing either analogue or digital outputs. They are therefore equipped with a high-speed sensor and a new filter technology which offers significantly better protection against the growth of a bio-film.

As with the RHT1, this probe is interchangeable allowing the sensor to be changed in the field, eliminating down-time. This also means that field re-calibration is a thing of the past with the RHT2.

TM100 SENSORS

ARG-314 RAIN GAUGE

| | |
|-----------------------|---|
| Resolution | 0.2mm |
| WMO compliant | Yes |
| Output | Contact closure (reed switch) – dual reed switch upgrade available |
| Accuracy | 99% up to 120 mm/hr |
| Rainfall Intensity | 0 to 1000 mm/hr |
| Operating temperature | 1°C to 70°C |
| Funnel diameter, mm | 200 |
| Funnel area, cm2 | 314 |
| Height, mm | 435 |
| Weight, g | 2000 |
| Colour | White |
| Material | Robust UV-stabilised plastic (injection moulded) |



The unique aerodynamic shape and profile of the ARG-314 tipping bucket rain gauge increases measurement accuracy by capturing more rainfall than traditionally shaped cylindrical gauges. It is precision-engineered to minimise out-splash and reduce rainfall losses caused by evaporation.

The added benefit of the ARG-314 over the ARG-127 is that it has been extensively researched and tested to give optimum accuracy in the field, resulting in full compliance with WMO standard. This makes it the rain gauge of choice for professional meteorological agencies.

U-WSD ULTRASONIC WIND SPEED + DIRECTION

| | |
|----------------|-----------|
| Dimensions, mm | 142 x 163 |
| Weight, g | 500 |

WIND SPEED

| | |
|---------------|--------------|
| Range | 0 to 60 m/s |
| Accuracy | ±2% @ 12m/s |
| Resolution | 0.01m/s |
| Response Time | 0.25 seconds |
| Threshold | 0.01 m/s |

WIND DIRECTION

| | |
|---------------|--------------------------|
| Range | 0 to 359° (no dead band) |
| Accuracy | ±2% @ 12m/s |
| Resolution | 1° |
| Response Time | 0.25 seconds |



The Ultrasonic Wind Sensor is robust and low cost with no moving parts. This 2-axis ultrasonic wind sensor offers maintenance-free wind speed and direction monitoring for true 'fit and forget' wind sensing. The U-WSD is a genuine low cost alternative to conventional cup and vane or propeller wind sensors, with all of the advantages of solid-state ultrasonic technology. With no moving parts to jam, break or wear out, this ultrasonic wind sensor is ideal for use in harsh weather conditions. It is the ideal 2-axis ultrasonic wind sensor, which provides data via one serial or two analogue outputs.

SMP3 PYRANOMETER (SOLAR RADIATION)

| | |
|---------------------------------------|--|
| ISO 9060:2018 | Class C (previously known as second class) |
| Maximum operation irradiance | 2000 W/m2 |
| Analogue output | 0 to 1 V |
| Serial output | RS-485 Modbus RTU |
| Serial output range | -400 to 2000 W/m2 |
| Response time (63%) | <1.5 s |
| Response time (95%) | <12 s |
| Spectral range (20% points) | 285 to 3000 nm |
| Spectral range (50% points) | 300 to 2800 nm |
| Zero offset A | <15 W/m2 |
| Zero offset B | <5 W/m2 |
| Non-stability (change/yr) | <1% |
| Non-linearity (100 to 1000 W/m2) | <1.5% |
| Directional response | <20 W/m2 |
| Spectral selectivity (350 to 1500 nm) | <3% |
| Tilt response (0 to 90° at 10000W/m2) | <1% |
| Temperature response | <2% (-20°C to 50°C) <4% (-40°C to 70°C) |
| Field of view | 180° |
| Accuracy of bubble level | <0.2° |
| Power consumption | 55mW |
| Supply voltage | 5 to 30V DC |
| Operating conditions | -40°C to 80°C, 0 to 100% RH |
| Environmental rating | IP67 |

RHT2 HUMIDITY + TEMPERATURE

| | |
|------------------------|---------------------------|
| Dimensions, mm | ∅ 15 x 140 |
| Housing classification | IP65 |
| Supply voltage | 5 to 24 VDC / 5 to 16 VAC |
| Outputs | Analogue or Digital |
| Standard Configuration | 0 to 1V |

RELATIVE HUMIDITY

| | |
|-------------------------|--------------|
| Range | 0 to 100% RH |
| Accuracy (at 23 ±0.5°C) | ±1.0% RH |

TEMPERATURE

| | |
|----------|----------------|
| Range | -50°C to 100°C |
| Accuracy | ±0.2 K |





UNIVERSAL SENSORS

BP1 BAROMETRIC PRESSURE

| | |
|---------------------------|--|
| Measurement range | 15 to 115 kPa (approx.) |
| Maximum pressure exposure | 400 kPa |
| Sensitivity | 45.9 mV per kPa; 0.459 mV per 0.01 kPa |
| Calibration Factor | 0.0218 kPa |
| Measurement uncertainty | ±1.5% |
| Measurement repeatability | < 0.1% |
| Non-linearity | < 1% |
| Warm-up time | 20 ms |
| Response time | 1 ms |
| Temperature response | < 0.002% per C (approx.) |
| Operating environment | -40 to 80°C; 0 to 100% RH |
| Input voltage requirement | 5V DC |
| Output voltage range | 0 to 5 V DC |
| Current draw | 7mA DC |
| Dimensions, mm | ∅ 16 x 120 |
| Weight, g | 5 |



The BP1 is a compact and affordable barometric pressure sensor, which provides excellent performance in all environments – this is why it has been selected for both the entry-level and premium TraceMet stations. It works well as a stand-alone product or combined with sensors affected by barometric pressure. Typical applications include pressure measurement in weather networks, often for weather forecasting and to correct the output of sensors that are sensitive to pressure changes.

AGRONOMICAL SENSORS

The TM50 AGRO and TM100 AGRO are made up of the same sensors as the TM50 and TM100, respectively. However they add the following agronomical sensors:

SM150T SOIL MOISTURE + TEMPERATURE

| | |
|----------------------|---|
| Operating conditions | 50 to 500mS.m-1 (salinity) -40°C to 70°C (temperature) |
| Output | 0 to 1V differential |
| Rating | IP68 |
| Sample volume, mm | ∅ 70 x 55 |
| Dimensions, mm | ∅ 40 x 143 (overall) |
| Weight, g | 100 |

SOIL MOISTURE

| | |
|----------|--|
| Range | 0 to 1 m ³ /m ³ (100%) |
| Accuracy | 0.03m ³ /m ³ (±3%) |

SOIL TEMPERATURE

| | |
|----------|--|
| Range | -20°C to 60°C |
| Accuracy | ±0.5°C (0 to 40°C), ±0.75°C (-20 to 60°C) |



The SM150T measures soil moisture and temperature with research-grade accuracy. It offers stable, robust and reliable performance at a great price. The advanced patented electronics and tough build quality produce a highly reliable soil moisture sensor with exceptional salinity and temperature stability. The SM150T is engineered to withstand long term burial – the sensor, connectors and cable are all environmentally protected to IP68.

PHYTOS 31 LEAF WETNESS

| | |
|-----------------------|--|
| Measurement Speed | 10 mS |
| Sensor Type | Frequency domain |
| Output | 320-1000 mV @ 3V excitation |
| Operating Environment | -40°C to +50°C |
| Power | 2.5VDC @ 2mA, to 5 VDC @ 7mA |
| Cable Length | 5 m, custom lengths available upon request |
| Cable Connector Types | 3.5 mm "stereo" plug or stripped and tinned lead wires (3) |
| Dimensions, mm | 120 x 58 x 8 |
| Expected Lifetime | 2 + years of continuous use |
| Warranty | One year, parts and labour |



The PHYTOS 31 measures leaf surface wetness by measuring the dielectric constant of the sensor's upper surface. It is standardized, calibrated, and designed to detect wetness (presence and duration) and ice formation on the leaf surface. The sensor surface coating is non-hygroscopic, eliminating false wetness detection. The sensor's thin (0.65 mm) fiberglass construction closely approximates the overall radiation balance of a healthy leaf, so moisture will condense and evaporate from the sensor at the same rate.

The PHYTOS 31 is ideal for predicting when to spray crops, quantifying water storage in a plant canopy, and in studying and monitoring crops for foliar diseases including rust and blight.

HYDROLOGICAL SENSORS

The TM50 HYDRO and TM100 HYDRO are made up of the same sensors as the TM50 and TM100, respectively. However they add the following hydrological sensor:

LL-MINI WATER LEVEL + TEMPERATURE

| | |
|-------------------------------|---|
| Dimensions, mm | ∅ 22 x 87 |
| Weight, g | 120 |
| Materials | Stainless steel body, Delrin nose cone |
| Output | Modbus/RS485, SDI-12 |
| External power | 6 to 24 VDC |
| Fastest logging & Modbus rate | 10 per second |
| Fastest SDI-12 output rate | 1 per second |

LEVEL

| | |
|------------|---|
| Range | 0 to 10m |
| Accuracy | ±0.05% FS |
| Resolution | 0.002% FS or 1mm, whichever is greater |

TEMPERATURE

| | |
|------------|---------------|
| Range | -20°C to 80°C |
| Accuracy | ±0.1°C |
| Resolution | 0.01°C |



The LL-MINI is a water level and temperature sensor that provides accurate and reliable data with minimal maintenance. It is constructed using titanium and features sensitive pressure and temperature sensors. It outputs directly in SDI-12 or Modbus (RS-485) meaning you can connect it to any SDI-12 ready logging device. It has no internal power or memory, it's simply a sensor that will send data to your chosen logging device.





TRACELOGGER®

The Tracelogger provides an efficient and economical method of remotely logging meteorological, agromet and hydromet sensors.

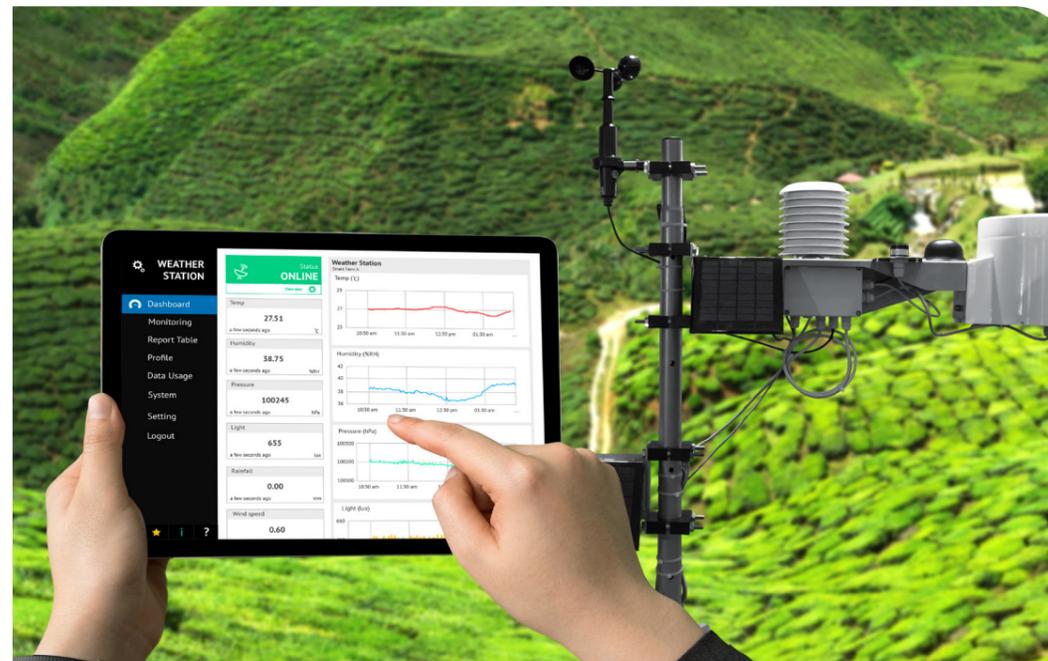
The Tracelogger is not a standard logger – it has been designed as a convenient way of getting real-time data fast from a remote location to either an HTTP or FTP server. It also saves data to an internal SD-Card for local or back up use.

All the configurations of the Tracelogger are taken care of from text files on the SD Card. This allows easy changes in the field without the need of expensive and complicated equipment or dedicated software.

| | |
|----------------------------------|---|
| Operating Range | -40° to 60°C (-40° to 140°F) |
| Sampling Interval | Individually set for each channel/sensor: 3secs – 24 hr |
| Reporting Interval (HTTP or FTP) | 1 minute up to 24 hours at set intervals |
| Memory | Internal 2GB or 4GB SD Card provided (SD Card limit of 4GB) |
| Channels | Ch1: Fixed SDI-12 channel (for certain approved devices) (Note: can log 10 fields of SDI12 data into Ch11 to 20) Ch2: Reserved for internal use Ch3 to 10: Eight mixed use (analogue or digital) channels. (Note: Channels 8, 9 and 10 can measure high frequency pulses). Ch11: Dedicated battery channel Note: certain sensors will need to use one analogue channel for measuring the reference voltage for more accurate measurements. i.e. Wind Direction. |
| Time Accuracy | ±8 seconds per month in 0° to 40°C (32°F to 104°F) range; ±30 seconds per month in -40° to 60°C (-40° to 140°F) range |
| Power Supply | 12V DC |
| Operating Voltage Range | 9-15V range |
| Internal Modem | Quectel UC20 |
| CPU | 16-Bit PIC24E |
| ADC | 12-Bit |
| Dimensions, mm | 180 x 200 x 90 |
| Environmental Rating | IP65 |



TRACEMET® AWS SOFTWARE



The optional TraceMet AWS Management Software is the complete solution for retrieving, recording and analysing meteorological data collected by your weather stations. The software is packed with useful features from viewing trends through automatically generated graphs to managing your network in map view. Although the hardware is able to collect and push data manually, the addition of software which processes and displays your data automatically enhances your ability to forecast and predict weather patterns.

FULL FEATURES INCLUDE

- Data retrieval from locally based server (stand-alone system) or cloud based system
- Auto-updating graphical snapshot display of all main meteorological parameters
- Charts to provide a graphical tool for monitoring the trend of multiple parameters
- Summary window providing an auto-updating daily text summary of conditions with highs and lows
- Monthly and Yearly summaries with calculated statistics
- Ability to push data to a website for public use
- Settings on the AWS console can be controlled from the in-house based workstations
- Logged data may be exported in a variety of text formats for easy compatibility with other programmes
- Alert system with SMS, email, messaging capabilities
- Stations assigned with ID numbers and GPS locations enabling individual system statuses to be determined
- Drill down capabilities with individual stations or clusters

Exact software functionality may be customised according to individual needs; please contact Wagtech Projects or Trace2o for more information.



PRODUCTS

| DESCRIPTION | PART NUMBER |
|---|-------------|
| TraceMet TM50 | EN45-100 |
| TraceMet TM100 | EN45-110 |
| TraceMet TM50 AGRO | EN45-200 |
| TraceMet TM100 AGRO | EN45-210 |
| TraceMet TM50 HYDRO | EN45-300 |
| TraceMet TM100 HYDRO | EN45-310 |
| SYSTEM COMPONENTS | |
| TraceLogger | EN45-400 |
| 2m Portable Mast with Guylines, Base & Pegs | EN45-500 |
| 10m Retractable Mast with Guylines, Base & Pegs | EN45-502 |
| SENSORS | |
| ARG-127 Aerodynamic Rain Gauge with Baseplate | EN45-600 |
| ARG-314 Aerodynamic Rain Gauge | EN45-602 |
| RHT1 Humidity & Temperature with Sensor Shield | EN45-604 |
| RHT2 Humidity & Temperature with Sensor Shield | EN45-606 |
| WSD Wind Speed & Direction | EN45-608 |
| U-WSD Ultrasonic Wind Speed & Direction | EN45-610 |
| SCP Pyranometer (Solar Radiation) | EN45-612 |
| SMP3 Pyranometer (Solar Radiation) | EN45-614 |
| BP1 Barometric Pressure | EN45-616 |
| PHYTOS 31 Leaf Wetness | EN45-618 |
| SM150T Soil Moisture & Temperature | EN45-620 |
| LL-MINI Water Level & Temperature | EN45-622 |
| SERVICES | |
| TraceMet AWS Software | EN45-700 |
| Installation, Commissioning & Training (ICT)* | POA |

*Includes sourcing of local items such as SIM card for data transmission and ARG-314 pedestal.



ASSOCIATED SPECIALITIES

WATER QUALITY



- Highly accurate portable laboratories which allow for testing in remote locations
- Wide range of parameters can be measured including microbiological, physiochemical and heavy metals
- Wide range of different kits available for different applications and budgets
- Data management software available (ASMS)

HYDROMET



- A complete range of HydroMet systems catering for a wide range of requirements
- The latest technologies covering meteorology, water level, water quality flood warning, water flow and sea / lake buoys
- Proven experience installing and integrating HydroMet systems through a global network of Wagtech Projects engineers

MOBILE LABORATORIES



- Allows for fixed laboratory quality testing in remote locations
- Mobile box, van, 4x4 and trailer options
- Eliminates the need to send samples back to a central laboratory
- Non-portable equipment can be used in the field, allowing a greater range of tests

INSTALLATION, COMMISSIONING & TRAINING (ICT)



- Fully qualified and trained engineers carry out a pre site survey, installation, commissioning and training
- Provision and supply of local materials
- Policy of "training the trainer"
- Network of local Wagtech Projects offices and agents for aftersales support



YOUR LOCAL CONTACT:

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