



**Delta-T Devices**

## Compact, portable, all-in-one research-grade weather station

The WS-GP1 is an affordable weather station supplied as a ready-to-use package.

The carefully matched, high grade sensors make the WS-GP1 a good choice for research, agricultural and environmental applications.

### Easy to use:

- **Highly portable**
- **Pre-wired for rapid set-up**
- **Compatible with DeltaLINK-Cloud online data viewing and sharing platform**

### Complete package:

- **Dependable, accurate sensors**
- **2m tripod mast**
- **Cellular modem download options**

**Applications** include meteorology, climate change monitoring, environmental compliance, eco-physiology, water resource studies, waste management, crop trials and agro-meteorology.



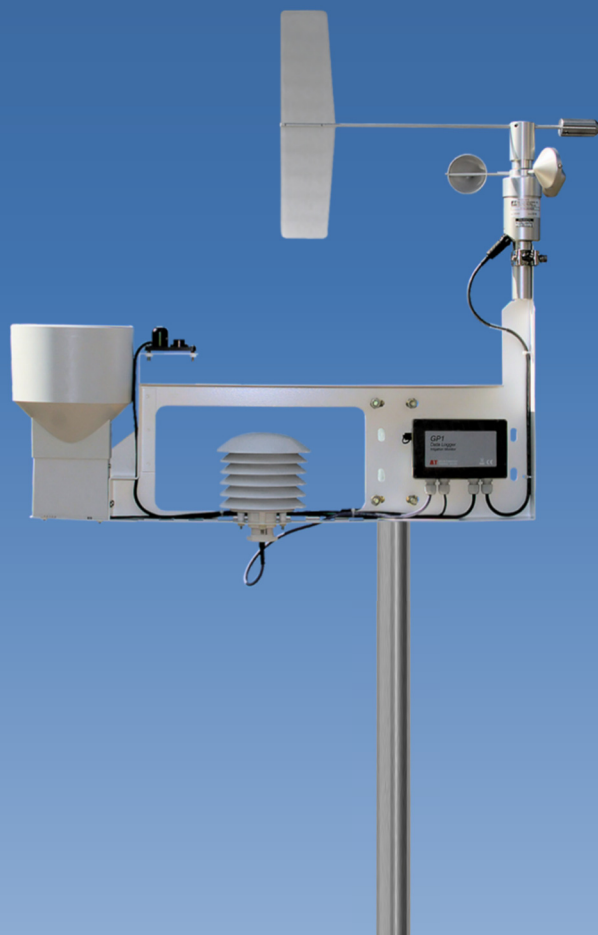
# WS-GP1 Weather Station

Online Data Viewing  
and Sharing

DeltaLINK-Cloud  
[www.deltalink-cloud.com](http://www.deltalink-cloud.com)



More information inside



### Standard Sensors include:

- **Rain**
- **Solar radiation**
- **Wind speed and direction**
- **Relative humidity**
- **Air temperature**

## Simple, convenient and accurate

The WS-GP1 is a complete, battery-powered, compact solution for recording weather data. It can be set up in minutes and requires minimal maintenance. The internal battery provides 6 months' operation (typical).

The sensors are carefully matched for reliability and accuracy. Being based on the powerful GP1 Data Logger, the system provides high quality weather data at moderate cost. Data can be collected with a notebook PC or by using the cellular modem options (see page 3).

## Rugged and reliable

The WS-GP1's sensors are dependable and suitable for use in demanding environments. The galvanised steel tripod and white painted stainless steel cross-arm ensure excellent physical strength – and an optional steel guy wire kit is available for additional stability.

## GP1 Data Logger

At the heart of the WS-GP1 Weather Station is the powerful GP1 Data Logger.

- **>600,000 readings**
- **Waterproof - IP67**
- **Accurate and reliable**

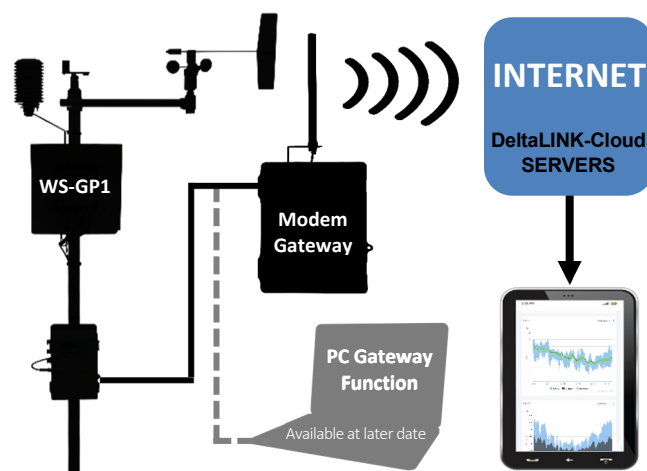


As a standalone logger, the GP1 can handle a wide range of data logging monitoring applications. Up to 10 GP1s can be connected in a GP1 cable network. Visit our website ([www.delta-t.co.uk](http://www.delta-t.co.uk)) for details.

**DeltaLINK software** is supplied as standard with the GP1. This easy to use software helps you to check sensor operation, set up recording intervals, and view and download logged data. A Dataset Import Wizard makes it easy to import data into Excel spreadsheets.

DeltaLINK also provides recording options for average, min and max, plus specialised wind options: wind rose, gusts and average (including direction and vector average).

Data can be collected remotely using an optional battery powered cellular modem communication system. A solar recharging option can extend the battery life of modem systems. (Please note that modem options do not fit inside WS-GP1 carry cases).



## Weather Station TESTIMONIALS

*"We have two Delta-T weather stations in Kazakhstan that have been working in extreme environmental conditions for many years: +40 to -30 C and dusty."*

**Prof. T W Tanton**  
Head of Environmental Research Group, Southampton University

*"Just to let you know that all of the Delta-T Devices weather stations we ordered have been working sweetly and are very durable against extremely strong gusts. A colleague came to visit the other day and now wants to order the same brand."*

**Shiyu Jiang, Research Assistant**  
Architectural Science Group, Cardiff University

*"We have 6 weather stations in the field. We ordered another 2 earlier this year. The 6 stations in the field have run constantly for several years and are robust and very reliable. We would have no hesitation in recommending Delta-T as a supplier of weather monitoring equipment."*

**Mr John Swaney**  
Scottish Agricultural College

# WS-GP1 Weather Station

## Remote communications

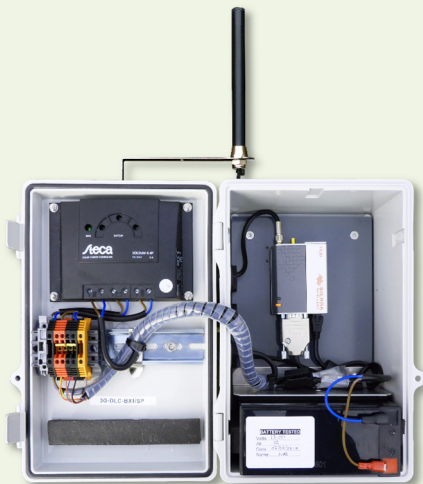
### DeltaLINK-Cloud Modem Gateway options

To connect Delta-T Loggers to DeltaLINK-Cloud, customers need to purchase a modem gateway and a data package.

The 3G-DLC-BX1/SP and 3G-DLC-BX1/B are “plug and play” modem gateway systems that can upload your logger’s status and data automatically to DeltaLINK-Cloud.

Both systems include an enclosure, battery, quad band modem, smart SIM, battery, cables, antenna and mounting kit for fixing to masts. In addition, the 3G-DLC-BX1/SP version includes a 30 W solar panel.

Please note that the logger (ordered separately) has to be mounted outside the modem box. A Data Package is also required to complete the system. To ensure the system meets your needs, please request a quotation before ordering.



3G-DLC-BX1/SP and 3G-BX1/SP Modem Box

### Data Packages

To connect to local network services, customers need to purchase a Data Package. Delta-T modem gateways are supplied with a Smart SIM that can connect to multiple network providers, maximising the chance of a stable connection being established. For almost all locations with network coverage, the Smart SIM will be able to make a connection. (Data Packages enable the Smart SIM to connect to specific networks; they do not relate to geographical zones).

Data Packages are supplied in blocks of 120MB; each Package is valid for use for up to 3 years from the date of purchase and line rental is included in the Package cost. To ensure the Data Package is able to access the appropriate networks, please request a quotation, stating the precise location required.

#### Typical data capacity requirements:

- Weather Station sending 10k data recordings/day – 35 MB per year (typical light usage)
- Weather Station sending 20k data recordings/day – 70 MB per year (typical medium usage)



**DeltaLINK-Cloud is a sophisticated and secure online data viewing, management and sharing platform for Delta-T Devices data loggers.**

- Remote data monitoring on mobile devices
- Animated live data dashboard graphics
- Easy data sharing for collaborative projects
- Powerful charting and reporting features
- Smart SIM card provided - for easy set-up
- Secure and encrypted
- Remote management of multiple sites
- Multi-language (Fr, De, Es, 中文)

DeltaLINK-Cloud is an advanced, yet easy to use, online solution that enables remote viewing, management and sharing of sensor data.

The platform allows users to monitor the status of the logger, graph and export the uploaded data and to share access to data with project collaborators/stakeholders.

The remote logger control feature and DeltaLINK software enables users to remotely control the program, start or stop logging, modify program settings, set the logger’s clock, or delete a dataset - minimising the need for time consuming site visits.

Data generated by the data logger can be charted alone or aggregated and charted for multiple loggers. Charting is customisable and can be saved as reports for future use and then shared via a URL link.

### DeltaLINK-Cloud Dashboards

DeltaLINK-Cloud can display data using simple graphical devices known as widgets. Dashboards enable users to control the type, colour and position of widgets, ensuring that critical data is displayed clearly and with maximum impact.

These high quality animated data visualisations transform the ability of teams to identify and respond to trends or incidents, such as a threshold being exceeded. Dashboards are quickly linked to relevant data sources and can be viewed remotely on smart devices, enabling users to view and share real-time sensor data on-screen.



# WS-GP1 Weather Station

## Practical Design

The WS-GP1 is supplied in two suitcase-style carry cases that can be used to store or transport the system. The cases are easy to stow in a vehicle and are light enough for one person to carry on site. The sensors and logger are ready assembled and pre-wired on the cross-arm, making it an easy task to assemble the system, even in difficult environments.

The well-illustrated Quick Start Guide leads the user through the process of installation, set-up and data collection. Other mast options are available e.g. a simple 2 m pole for mounting in concrete. Alternatively, the cross-arm can be ordered separately for fitting onto the customer's own mast (42-52 mm diameter).

## The WS-GP1 can be carried and set up quickly by just one person



## WS-GP1 Weather Station Specification

|                                                        | Specification                   | Range / Note                                   |
|--------------------------------------------------------|---------------------------------|------------------------------------------------|
| <b>Wind speed</b> D-034B-CA (combined wind sensor)     |                                 |                                                |
| Range                                                  | 0.4 to 75 m.s <sup>-1</sup>     | (0-167 mph)                                    |
| Accuracy                                               | ± 0.1 m.s <sup>-1</sup>         | Up to 10.1 m.s <sup>-1</sup>                   |
|                                                        | ± 1.1% of reading               | Over 10.1 m.s <sup>-1</sup>                    |
| Starting threshold                                     | 0.4 m.s <sup>-1</sup>           | -30° to +70°C if icing minimal                 |
| <b>Wind direction</b> D-034B-CA (combined wind sensor) |                                 |                                                |
| Accuracy                                               | ±4 degrees<br>0.5° (resolution) | Mechanical: 0 to 360°<br>Electrical: 0 to 356° |
| Starting threshold                                     | 0.4 m.s <sup>-1</sup>           | -30° to +70°C if icing minimal                 |
| <b>Rainfall</b> RG2+WS-CA                              |                                 |                                                |
| Sensitivity                                            | 0.2 mm/tip                      | 160 mm funnel diameter                         |
| <b>Humidity</b> RHT3nI-CA (combined air temp sensor)   |                                 |                                                |
| Accuracy                                               | ± 2% RH                         | 5 to 95% RH <sup>[1]</sup>                     |
|                                                        | ± 2.5% RH                       | <5%, >95% RH                                   |
| <b>Air temperature</b> RHT3nI-CA (combined RH sensor)  |                                 |                                                |
| Accuracy                                               | ± 0.3°C                         | -20 to 70°C                                    |
| <b>Solar radiation</b> D-PYRPA-CA                      |                                 |                                                |
| Accuracy                                               | ± 5%                            | 0 to 1.1 kW.m <sup>-2</sup><br>300 to 1100 nm  |
| Cosine response                                        | ± 1% at 45°<br>± 4% at 75°      | At zenith angle                                |
| <b>Data recording and power</b>                        |                                 |                                                |
| Logging frequency                                      | 1 s to 24 hr                    | Logging status indicated by flashing LED       |
| Comms                                                  | To PC or laptop                 | RS232 USB <sup>[2]</sup> or modem              |
| Battery life                                           | 9 V alkaline                    | 190 days typical, reading every 5 minutes      |
| <b>Physical</b>                                        |                                 |                                                |
| Environmental                                          | IP65 sealing                    |                                                |
| Temperature                                            | -20 to +60°C                    | If icing minimal                               |
| Cross-arm                                              | White-painted stainless steel   | Fits horiz. or vertical pole (42-52 mm dia.)   |
| Weight                                                 | 14.3 kg                         | Complete with 2 m tripod and ground stakes     |

[1] At 23°

[2] With USB to RS232 Adapter Cable type USB-RS232 (supplied)



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WS-GP1\_Data\_Sheet\_version\_4.pdf

**AT**  
Delta-T Devices