Delta-T Devices

WS-GP1
Weather Station

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**
- **Free use of DeltaLINK-Cloud data sharing service**

Complete package:

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

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

Standard Sensors include:

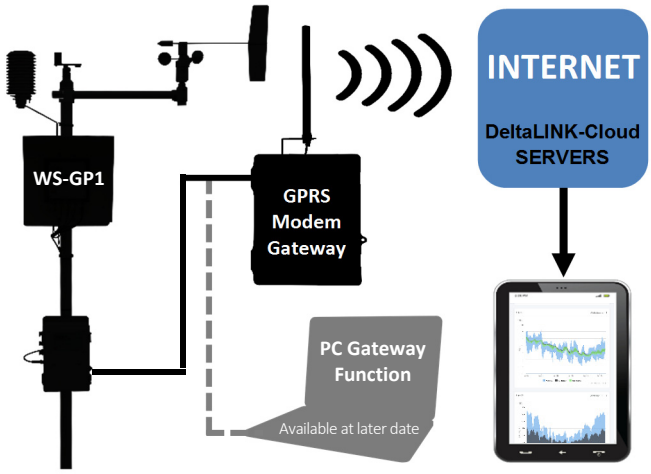
- **Rain**
- **Solar radiation**
- **Wind speed and direction**
- **Relative humidity**
- **Air temperature**

Delta-T Devices

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 GPRS 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. A separate GP1 data sheet is available on request.

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 GPRS 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

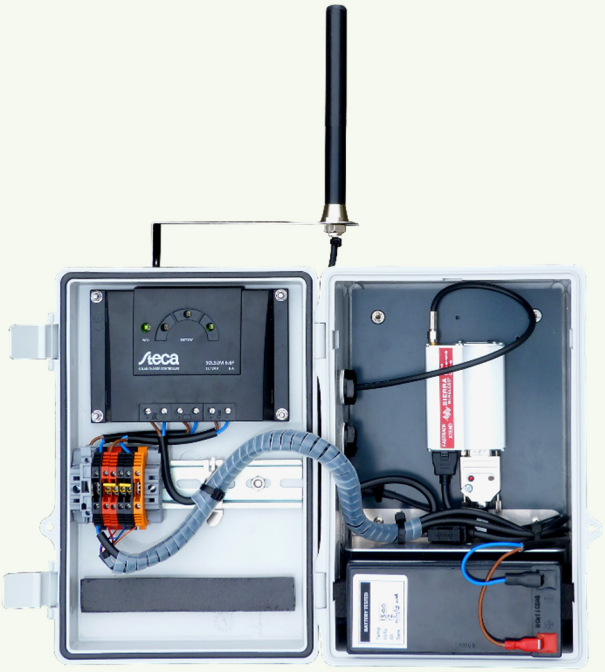
GPRS remote communications

There are two options for providing GPRS modem communications with the WS-GP1

DeltaLINK-Cloud GPRS options

The GPRS-DLC-BX1/SP and GPRS-DLC-BX1/B systems provide a GPRS Modem gateway which upload your logger's status and data automatically to DeltaLINK-Cloud (a free online data viewing and sharing service). It also provides a connection between DeltaLINK and your logger - adding the following capabilities: program, start/stop logging, modify program settings, set the logger's clock or delete a dataset.

The GPRS-DLC-BX1/SP and GPRS-DLC-BX1/B systems include an enclosure, battery, quad band modem, smart SIM, 10Ah battery, cables, antenna and mounting kit for fixing to masts or poles (42-51 mm dia.). In addition, the GPRS-DLC-BX1/SP version includes a 30W solar panel with brackets for mast/pole fixing. Please note that the logger (ordered separately) has to be mounted outside the modem box. A line rental and data package are also required to complete the system and must be ordered separately. To ensure your modem system exactly meets your needs, please request a quotation.



GPRS-DLC-BX1/SP and GPRS-BX1/SP Modem Box

GPRS options without DeltaLINK-Cloud access

For customers who would prefer not to use the free DeltaLINK-Cloud service, or whose local GPRS service cannot be accessed by the Delta-T Smart SIM, we can supply the GPRS-BX1/B and GPRS-BX1/SP modem systems. They only provide access via DeltaLINK PC software and not DeltaLINK-Cloud. All DeltaLINK functionality is available as detailed above (for the GPRS-DLC-BX1/SP and GPRS-DLC-BX1/B systems).

These systems are supplied without a SIM and come with modems that require a fixed IP address. In all other respects the hardware is identical to the GPRS-DLC-BX1/SP and GPRS-DLC-BX1/B systems. Please note that to activate the system customers need to obtain their own SIM card and to make arrangements with a network provider. (The SIM must have fixed IP address and be GPRS enabled).

DeltaLINK-Cloud
www.deltalink-cloud.com

DeltaLINK-Cloud is a **free** online data viewing and sharing service for Delta-T data loggers and weather stations. Collect, view and share your sensor data with ease. Anywhere. Anytime.

DeltaLINK-Cloud is a secure cloud based connectivity, data management and automatic data retrieval solution. The website allows a user to monitor the status of their devices, graph and export the uploaded data and share access to data with project collaborators/ stakeholders. All website functionality comes for free and is accessible from most modern internet capable devices (phones, tablets and computers).

FREE Service

- **Remote data monitoring**
- **Share data and collaborate**
- **Automatic upload**
- **Flexible charting and reporting**
- **Smart SIM card provided**
- **Secure and encrypted**
- **Multi-language (Fr, De, Es, 中文)**

Visit the DeltaLINK-Cloud Information page at: www.delta-t.co.uk/deltalink-cloud.asp

Data Packages and SIMs

To connect the modem gateway to DeltaLINK-Cloud, customers will need to purchase a data package. Data packages provide access to GPRS services worldwide.

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)

For most applications we would initially offer a 35 MB package.

Data packages have to be purchased in advance of activation. Please note that they are not time limited – if the annual line rental is paid, unused capacity is never cancelled.

Line rental: The line rental must be paid annually to guarantee continuity of service. The cost is very low, and up to 3 years rental may be purchased in advance.

No coverage? For the small number of countries not covered by DeltaLINK-Cloud we can supply conventional GPRS communications (see *GPRS options without DeltaLINK-Cloud access*).

Contact our sales team at sales@delta-t.co.uk for more information or a data package quotation.

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 2m 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
Wind speed D-034B-CA (combined wind sensor)		
Range	0.4 to 75m.s^{-1}	(0-167mph)
Accuracy	± 0.1m.s^{-1}	Up to 10.1 m.s^{-1}
	± 1.1% of reading	Over 10.1 m.s^{-1}
Starting threshold	0.4m.s^{-1}	-30° to +70°C if icing minimal
Wind direction D-034B-CA (combined wind sensor)		
Accuracy	±4 degrees 0.5° (resolution)	Mechanical: 0 to 360° Electrical: 0 to 356°
Starting threshold	0.4m.s^{-1}	-30° to +70°C if icing minimal
Rainfall RG2+WS-CA		
Sensitivity	0.2mm/tip	160 mm funnel diameter
Humidity RHT3nl-CA (combined air temp sensor)		
Accuracy	± 2% RH	5 to 95% RH[1]
	± 2.5% RH	<5%, >95% RH
Air temperature RHT3nl-CA (combined RH sensor)		
Accuracy	± 0.3°C	-20 to 70°C
Solar radiation D-PYRPA-CA		
Accuracy	± 5%	0 to 1.1 kW.m^{-2} 300 to 1100 nm
Cosine response	± 1% at 45° ± 4% at 75°	At zenith angle
Data recording and power		
Logging frequency	1s to 24 hr	Logging status indicated by flashing LED
Comms	To PC or laptop	RS232 USB[2] or modem
Battery life	9V alkaline	190 days typical, reading every 5 minutes
Physical		
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 2m tripod and ground stakes

[1] At 23°
[2] With USB to RS232 Adapter Cable type USB-RS232

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