






EnviroTrack Weather Station & Data Logger

The EnviroTrack Weather Station & Data Logger is designed to meet World Meteorological Organization (WMO) guidelines and combines proven technologies from leading meteorological manufacturers.

The rugged and compact multi channel system is battery powered and supplied ready to start tracking:

-  **Wind Speed & Direction**
-  **Temperature & Humidity**
-  **Rainfall**

making it ideal for monitoring microclimates.

A further two channels are available for additional plug and play smart sensors (Speak to us directly, if you need more, as it is possible for us to expand the system).

Data is downloaded directly through a USB port for fast, efficient data readout to a computer.

Installation is very simple and can be carried out by almost anyone with a few basic tools. The only thing you should remember is to take care if you have to work at height and ensure you comply with relevant health and safety requirements.

The outdoor sensor suite and anemometer are supplied with U clamps for a 45mm Ø pole and coach screws for a post or wall. Larger U clamps can be used up to 65mm Ø

Installation options such as tripods and mounting pole kits are available from our Installation Kit pages. For suggestions about installation please see our knowledgebase.

The EnviroTrack Weather Station & Data Logger has been designed to require very little maintenance and does not require regular recalibration¹.

Logging is performed by the H21-USB datalogger, this is housed in a rugged IP66 rated enclosure and features 5 smart plug and play sensor channels for the tipping bucket rain collector, temperature / humidity sensor and Wind Speed / Direction sensor to connect directly with.

The radiation shield for the temperature / humidity sensor is supplied with fixing brackets for easy installation. The tipping bucket mechanism records rain every 0.2mm and is chrome plated to reduce loss through evaporation.



¹Rain Gauge may benefit from annual field calibration

Wind Speed & Direction Smart Sensor

H21-WS-WD-T-R-H



The Davis wind speed and direction smart sensor is designed to work directly with the datalogger weather station. The smart sensor has a plug-in modular connector that allows it to be added easily to the H21-USB or RX3000.

All sensor parameters are stored inside the smart sensor, which automatically communicates configuration information to the logger without the need for any programming or extensive setup.

Note: This sensor has been modified to work with Onset equipment only.

Wind Speed & Direction Smart Sensor

Items required:

- Weather-resistant cable ties or cable clips
- Electrical tape
- Handheld compass, local area map, or handheld GPS

If mounting on tripod or mast:

- Adjustable spanner

If mounting on wooden surface:

- Drill with 5 mm (3/16 inch) drill bit

	Wind Speed/Gust	Wind Direction
Measurement Range	0 to 76 m/sec (0 to 170 mph)	0 to 355 degrees
Accuracy	±1.1 m/sec (±2 mph) or ±5% of reading, whichever is greater	±7 degrees
Resolution	0.5 m/sec (1.1 mph)	1 degrees (0 to 355 degrees)
Starting Threshold	≤1 m/sec (2.2 mph)	1 m/sec (2.2 mph)
Measurement Definition	<p>Cup revolutions are accumulated every three seconds for the duration of the logging interval</p> <p>Wind speed: Average speed for the entire logging interval</p> <p>Gust speed: The highest three-second wind recorded during the logging interval</p> <p>See <i>Measurement Operation</i>.</p>	<p>Unit vector averaging used; vector components for each wind measurement are calculated every three seconds for duration of logging interval (see <i>Measurement Operation</i>)</p>
Operating Temperature Range	-40°C to 65°C (-40°F to 149°F)	
Environmental Rating	Weatherproof	
Housing	Polycarbonate wind cups	UV-resistant ABS wind vane and black-anodised aluminum anemometer arm
Bearing Type	Sealed stainless steel	
Turning Radius	108 mm (4.25 in.)	Approximately 135 mm (5.25 in.)
Dimensions	470 x 191 x 121 mm (18.5 x 7.5 x 4.75 in.)	
Weight	1.332 kg (2 lb, 15 oz)	
Bits per Sample	8 for each channel, 24 total	
Number of Data Channels*	3	
Measurement Averaging Option	Automatic averaging (see <i>Measurement Operation</i>)	
Cable Length Available	3 m (9.8 ft)	
Length of Smart Sensor Network Cable*	0.5 m (1.6 ft)	



The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* A single station can accommodate 15 data channels and up to 100 m (328 ft) of smart sensor cable (the digital communications portion of the sensor cables).

Rain Gauge

H21-WS-WD-T-R-H



The Rain Gauge smart sensor has a plug-in modular connector that allows it to be added easily to the datalogger.

All sensor parameters are stored inside the smart sensor, which automatically communicates configuration information to the datalogger without the need for any programming or extensive user setup. **Note:** This sensor has been modified to work with Onset dataloggers only.

Rain Gauge Smart Sensor*Items required:*

- Electrical tape or weather-resistant cable ties

If mounting on pole or mast:

- 7/16 inch combination spanner

If mounting on flat surface:

- Drill with 5 mm (3/16 inch) drill bit
- Adjustable spanner

Measurement Range	0 to 10.2 cm (0 to 4 in.) per hour, maximum 4,000 tips per logging interval
Accuracy	±4.0%, ±1 rainfall count between 0.2 and 50.0 mm (0.01 and 2.0 in.) per hour; ±5.0%, ±1 rainfall count between 50.0 and 100.0 mm (2.0 and 4.0 in.) per hour
Resolution	0.2 mm
Calibration	Requires annual calibration; can be field calibrated
Operating Temperature Range	0° to 50°C (32° to 122°F), survival -40° to 75°C (-40° to 167°F)
Environmental Rating	Weatherproof
Housing	UV-stabilised ABS plastic
Mechanism	Tipping bucket with magnetic reed switch pivots on metal shaft
Dimensions	16.5 cm opening diameter (6.5 in.) x 24 cm (9.5 in.) high; 214 cm ² (33.2 in. ²) collection area
Weight	1 kg (2 lb, 3 oz)
Bits per Sample	12
Number of Data Channels*	1
Measurement Averaging	No
Cable Length Available	2 m (6.6 ft)
Length of Smart Sensor Network Cable*	0.5 m (1.6 ft)



The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* A single datalogger can accommodate 15 data channels and up to 100 m (328 ft) of smart sensor cable (the digital communications portion of the sensor cables).

Operation

Rain enters the collector cone, passes through a debris-filtering screen, and collects in one chamber of the tipping mechanism. The tipping spoon tips when it has collected an amount of water equal to the increment in which the sensor measures (0.2 mm or 0.01 inch). As the spoon tips, it causes a switch closure and brings the second tipping spoon chamber into position. The rain water drains out through the screened drains in the base of the collector.

Components

The smart sensor includes the components shown on the next page. The smart sensor includes a hardware kit with the items most commonly needed for installation. The items you use from the kit depend on where you install the sensor. You may need to adapt or purchase additional hardware to fit your individual requirements.

Temperature & Humidity Sensor

H21-WS-WD-T-R-H



The temperature/RH smart sensor is designed to work directly with the weather station datalogger.

All sensor parameters are stored inside the smart sensor, which automatically communicates configuration information to the logger without any programming, calibration or extensive user setup.

Temperature/RH Smart Sensor

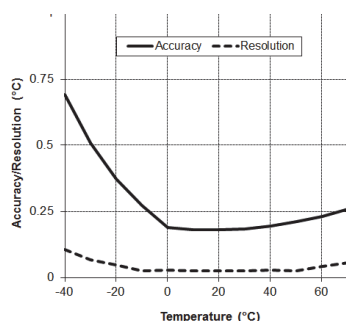


Chart A: Temperature Accuracy and Resolution

	Temperature	RH
Measurement Range	-40°C to 75°C (-40°F to 167°F)	0-100% RH at -40° to 75°C (-40° to 167°F); exposure to conditions below -20°C (-4°F) or above 95% RH may temporarily increase the maximum RH sensor error by an additional 1%
Accuracy	±0.21°C from 0° to 50°C (±0.38°F from 32° to 122°F); see Plot A	±2.5% from 10% to 90% RH typical to a maximum of ±3.5% including hysteresis at 25°C (77°F); below 10% and above 90% ±5% typical
Resolution	0.02°C at 25°C (0.04°F at 77°F); see Chart A	0.1% RH
Bits Per Sample	12	10
Drift	<0.1°C (0.18°F) per year	<1% per year typical
Response Time	5 minutes in air moving 1 m/sec	5 minutes in air moving 1 m/sec with protective cap
Operating Temperature Range	-40°C to 75°C (-40°F to 167°F)	
Environmental Rating	Weatherproof: 0 to 100% RH intermittent condensing environments. For best results, the temp/RH smart sensor should be mounted inside a protective enclosure, such as a solar radiation shield.	
Housing	PVC cable jacket with ASA styrene polymer RH sensor cap; modified hydrophobic polyethersulfone membrane	
Sensor Dimensions	10 x 35 mm (0.39 x 1.39 in)	
Weight	110 g (3.88 oz);	
Number of Data Channels*	2	
Measurement Averaging Option	No	
Cable Lengths Available	2.5 m (8.2 ft); 8 m (26.2 ft)	
Length of Smart Sensor Network Cable*	0.5 m (1.6 ft); 6 m (19.6 ft)	
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).	








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Datalogger

H21-WS-WD-T-R-H

Operating Range	-20° to 50°C (-4° to 122°F) with alkaline batteries -40 to 70°C (-40 to 158°F) with lithium batteries
Smart Sensor Connectors	5
Smart Sensor Network Cable Length	100 m (328 ft) maximum
Logging Interval	1 second to 18 hours
Start Modes	Immediate, at interval, push button, or delayed start
Memory Modes	Stop when full or wrap when full
Memory	512 KB nonvolatile flash data storage
Time Accuracy	0 to 2 seconds for the first data point and ±5 seconds per week at 25°C (77°F)
Battery Type	Four AA 1.5 V alkaline batteries for operating conditions of -20° to 50°C (-4° to 122°F); four AA 1.5 V lithium batteries for operating conditions of -40 to 70°C (-40 to 158°F)
Battery Life	1 year, typical use (up to five sensors with 1 minute or greater logging interval)
Communication Type	USB 2.0 interface
Full Memory Download Time	4 minutes
Enclosure Access	Hinged door secured by one latch with eyelet for use with user-supplied padlock
Materials	Outer enclosure: Polycarbonate/PBT blend with stainless steel hinge pins; Gasket: Silicone foam; Cable channel: EPDM rubber
Dimensions	17.04 x 11.94 x 4.47 cm (6.71 x 4.70 x 1.76 in.) Padlock hole diameter: 0.58 cm (0.23 in.)
Weight	414 g (14.6 oz)
Environmental Rating	Weatherproof enclosure, NEMA 4X and IP66
CE Compliant	Yes

Advantages

-  Compact size for easy deployment
-  Weatherproof IP66 enclosure for harsh environments
-  Direct USB offload--no need for an adapter cable
-  Includes five Smart Sensor input
-  Hinged door and integrated mounting tab
-  Runs for up to a year on four standard AA batteries
-  Compatible with HOBOWare and HOBOWare Pro software for logger setup, graphing and analysis



Minimum Requirements



Software



USB cable*



Sensor