

GE Infrastructure
Sensing

HygroHawk

User Instructions



GE Protimeter

HygroHawk user instruction contents

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HygroHawk® Instrument

The HygroHawk ® is a handheld hygrometer with data logging facility. Spot measurements of relative humidity, dew point, mixing ratio and ambient temperature are shown on a split display at the touch of a button. Surface temperature can also be measured using an optional surface temperature sensor.

When used as a data logger the instrument is set to record measurements as required and is left in place for the required period of time. The memory contents are then downloaded to a PC - using optional software - where the logged measurements are displayed in tabular and graphical form for quick and simple analysis.

Hygrostick® and Humistick® Humidity Probe Options

The HygroHawk is used with a detachable humidity probe to measure relative humidity and ambient temperature. Two humidity probes are available, *the Hygrostick and the Humistick*. The Hygrostick is optimized for measuring humidity in the 30- 100%rh range and may be used with Protimeter humidity sleeves used when measuring the equilibrium relative humidity of solid walls and floors. The Humistick is a general purpose sensor, with a measurement range of 1-100%rh making it more suitable for general air quality applications.



<u>Humidity Probe</u>	<u>Dimensions</u>	<u>nominal rh range</u>	<u>nominal temperature range</u>
Hygrostick	Ø8mm x 50mm	30 – 100%rh	0 - 50°C
Humistick	Ø16mm x 65mm	1 – 100%rh	-20 - 50°C

Function Buttons

The HygroHawk has four buttons that are used individually or in pairs to take measurements, log readings and set-up the instrument as required. When pressed individually they perform the following standard functions:

- ⏻ On, off and hold.
- ▶ Upper level display scroll
- ▶▶ Lower level display scroll
- ← Stores measurement in memory

For details of all button combinations, refer to the Function Tables.

Standard functions – humidity and temperature measurements

1. Connect the Hygrostick or Humistick probe to the Hygrostick instrument either directly into the socket on the top of the instrument or indirectly with the optional extension lead.
2. Switch the HygroHawk instrument ON by pressing ⏻ briefly.
3. Press ▶ successively to display relative humidity (%rh), dewpoint (Td) or mixing ratio/absolute humidity (ppmw/gpp) on the upper display.
4. Press ▶▶ successively to display air temperature (TA), surface temperature (Ts), surface to dewpoint temperature difference (Δ -T), time and date, probe serial number.
5. To switch off, press and hold ⏻ until display shows 'OFF'. Alternatively, the instrument will switch itself off after a user-settable interval (default 2 minutes) from the last button press or RS232 activity.

Note:

- The battery status will be shown for 3 seconds each time the instrument settings are changed. Change batteries immediately when 1 bar is shown as < 10% of life remains. See note below regarding clock.
- Ts and Δ -T will only be displayed if the auxiliary surface temperature sensor is connected to the socket in the right hand side of the instrument and this latter is set to "On" (see above). Otherwise, the lower display will show "OFF" changing to "—" after 3 seconds.
- Should successive readings on both halves of the display not change, the upper display decimal is flashed to show that new readings are still being taken.

Function Tables – (a) Spot Measurements

Button	Function	Display Symbols	Explanation
	On, off and hold	II (pause)	Switch on – quick press Hold value – quick press and release. Pause symbol flashes whilst value is held. Switch off – press and hold for 3 seconds
	Humidity, dewpoint, mixing ratio/absolute humidity Air temperature,	%rh T _D , °C or °F ppmw or gpp	Primary display scroll. To change units (°C / °F, ppmw / gpp) see Instrument Set Up section.
	Surface temperature, surface - dewpoint temperature difference, time and date, probe serial number	T _A T _S Δ-T	Secondary display scroll. Time is shown on upper display as HH:MM. Date is shown on lower display as MM:DD. Probe serial number is scrolled across.
	Stores measurement in the instrument memory	Log	Press and hold for 3 seconds to store all measurements. Momentarily displays the log record number and stored data.

(b) Setup functions (press both buttons at once) – see details below

Button	Function	Display Symbols	Explanation
	Enter logging parameters set up mode		When the instrument is on, press and hold buttons for 2 seconds to enter data logger mode – see Logger Set Up
	Enters instrument set up mode		When the instrument is on, press and hold buttons for 2 seconds to enter instrument set up mode – see Instrument Set Up
	Short cut to Surface Temperature set up modes	 (RS 232 mode)	Switches surface temperature socket On, Off (RS232 mode) or Auto mode.

(c) Common functions in setup modes

Button	Function	Explanation
▶	Slow incremental advance	Increment the active parameter
▶▶	Fast incremental advance	Fast Increment the active parameter
←┘	Advance to next parameter.	Accept the selected parameter and advance to next parameter. After final parameter, save the settings.
⏻	Abandon set up	Returns instrument to normal operation without saving new settings
▶ & ▶▶	Zeroes current parameter settings	Resets the active parameter to minimum value
(none)	Timeout	If no button is pressed for 5 seconds setup mode exits without saving changes.

(d) Logging setup ►► & ◀◀ – the parameters are presented in the following order:

Upper display	Lower display	PC setup definitions	meaning	minimum	maximum
SEt	LOG		Entering Logger setup mode (display is frozen until buttons released)		
15	Int	Logging	Logging interval is set to 15 minutes (example)	0 (off)	24 hrs
0	dEL	WB First	Delay before logging is set to none (take a log immediately when settings accepted)	0 (no delay)	24 hrs
0	COU	No. Rem	If not zero, count this many logs and stop	0 (no count)	400 logs
2	Job	Job No	User job number to be stored with all following readings	0	15

If ◀◀ is pressed after 'Job', the logging settings will be accepted. If the interval is set other than to 0, logging will be active and the  icon set. Pressing ⏻ (or no key at all for 5s) at any point in the process will exit immediately without making any changes. Note that the logger settings are unaffected by powering down, but will all be cleared to 0 (i.e. logging disabled) if the batteries are removed and replaced.

(e) Instrument setup ▶ & ⏸ – the parameters are presented in the following order:

Upper display	Lower display	meaning	default	minimum	maximum
SEt	USr	Entering Instrument (User) setup mode (display is frozen until buttons released)			
0	dEF	Reset all instrument parameters to factory DEFault	0 (no)	0 (no)	1 (yes)
2	Sdt	Set automatic ShutDown Time. 0 = stay on until turned-off manually.	2 mins	0	9 mins
⌈	dE9	Select °C (and ppmw) or °F (and gpp)	°C	°C	°F
OFF	SUr	Set side-port surface temperature On or OFF	OFF	OFF	ON
2	bu2	Set buzzer level: 0 = Off (silent), 1 = minimum, 2 = maximum	2 (max)	0	2

If ← is pressed after **bu2** the new settings are accepted. With one exception, the settings are retained when the instrument is switched off. Note that the side-port temperature sensing function reverts to the default OFF mode when the instrument is switched off. If ⏸ is pressed during the set-up procedure (or there is a delay of more than 5 seconds in confirming a set-up parameter by pressing ←) the instrument returns to normal operating mode without changing the set-up parameters.

(f) Surface temperature port selection (short cut) ▶▶ & ⏻

Upper display	Lower display	meaning	default	minimum	maximum
-	Sur	Set side-port surface temperature ON or OFF	OFF	OFF	ON

This is a short-cut to enable setting of the Surface Temperature port without using the instrument setup menu. Each time the key-pair is pressed, the lower display switches between ON and OFF.

Logging functions – PC setup

1. Connect sensors as above and confirm correct operation.
2. Unplug the surface temperature sensor if fitted and connect the instrument to the serial port on the host PC using the supplied cable.
3. Switch ON the instrument and ensure that the side socket is set to RS232 mode ('computer' icon  is lit)
4. Start the PC software and select Tools → Setup (if the setup dialogue hasn't started automatically).
5. Confirm that the instrument serial number has been read correctly (not shown as "-") – this checks that communications are established. If not, check settings under the 'Communication' tab.
6. Click on "Set Time" to set the instrument clock, to the PC clock time.
7. Enter the required logging parameters (Logging interval, Wait Before First log, Number of Logs and Job No) in the appropriate boxes and press "Set Interval" button to send to the instrument. Now confirm that the logging parameters are set correctly by pressing the "Check Interval" button and ensure that the settings you require have appeared in the appropriate parameter boxes. Finally, check that the 'logging' icon  is lit on the instrument display.

It makes no difference whether the above is set from the PC or in "Logging Setup" mode as described in **Logging Set-up Function Table**.

8. Remove the RS232 serial cable from the instrument port and place it in the environment that is to be monitored. Ensure that a Hygrostick or Humistick sensor is plugged into the top of the instrument!
9. Press and hold  until display shows 'OFF' (see above)

Logging functions – Manual logging (recording)

1. It is recommended that the clock is checked before performing manual logging – use **▶▶** as described above to scroll to the time / date display. The clock must be set from the PC as described above whenever batteries are replaced.
2. With the instrument OFF, press and hold **←** for 3s to take a manual log point – this behaves exactly as if the logging was performed using the timer as above. There is no requirement for logging to have been enabled first though it may be useful to set the job number.
3. Similarly - with the instrument ON, press and hold **←** for 3s to take a manual log point. In this case note that the side port must be previously set "surface temperature" mode if this input is to be used. Again, there is no requirement for logging to have been enabled first though it may be useful to set the job number.

Logging functions – Reading the data

1. Switch ON the instrument and ensure that the side socket is set to RS232 mode ('computer' icon **■** is lit)
2. Start the PC software and select Tools → Setup (if the setup dialogue hasn't started automatically).
3. Confirm that the instrument serial number has been read correctly (not shown as "-") – this checks that communications are established. If not, press "Get Serial Number" before checking settings under the 'Communication' tab.

4. Confirm that "Number of records used" is as expected (refresh the data with the "Get Log Data" button) and close the setup dialogue using "OK"
5. Select the fourth tool button (shows two computers, tool-tip "Download data") and "All new records" in the download dialogue. Use "Latest specified number of records" to recover older data if desired.
6. When download completes, click on OK then save as prompted.
7. Use the graphing tool for a quick inspection (select a subset of the records first if required) or open the saved data file in a spreadsheet for further manipulation.

Notes

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