

Checklist for Operating the Automatic Weather Station (AWS)

Preface: The purpose of writing this checklist for Co-WIN members and staffs is to ensure that the configurations of all the AWSs, both in hardware and software aspects, meet the standard for acquiring accurate weather information. Skipping any part would lead to incorrect data shown to the public. Please try your best to go through the whole checklist and submit the completed checklist form for future reference. This will save a lot of checking time in the future with known data quality for each member station. Thank you for your co-operation!

Matthew

Tools used in this checklist:

Screw driver, wrench, Allen wrench, multimeter, compass, alcohol cotton

I. Integrated Sensor Suite (ISS)



1. Wind measurement

- Confirm wind cup and wind vane turning smoothly.
- Confirm correct wind direction shown on console (pressing "WIND" twice) by comparing wind vane pointing direction with a compass.
- Confirm if the **anemometer mounting bar is pointing north**. It is the **factory default reference of north** when the wind vane is pointing in the same direction as the mounting bar. It is to ensure the weather station gives a correct wind direction. If it is not feasible, enter the offset in **menu 14** in WeatherLink.





2. Rainfall, temperature and relative humidity measurement

- Clear and confirm no dirt and debris blocking the hole at the bottom of the rain collector.

- Take out the debris screen in the rain collector and remove the rain collector as shown (remember to place the debris screen back after checking). Check if the tipping bucket is clean and functioning.

direction

In anti-clockwise









The larger and smaller weight is for measurement in 0.2 mm and 0.01 inch for each flip of the tipping buckets. Settings in WeatherLink and console mismatch with the actual installed mass would give underestimated/overestimated amount of precipitation.

- Clean the white radiation shield when necessary. It should be checked regularly to avoid insects building nests inside.



Radiation shield with temperature and humidity sensor inside





3. Solar and UV radiation measurement

- Use ethanol cotton to clean the UV & solar radiation sensor head surface gently.



Solar radiation sensor

UV index sensor

- Adjust the bubble of the bubble levels to the center for both sensors.





4. Signal cable connection and batteries

- Confirm all cables plugged in the right receptacles inside the white box (see figure below).



- (For wireless version) Check battery level (normal: 3V) of the battery inside the white box
- (for wireless version) Replace the battery if its voltage output is lower than 3V. It should be replaced about half yearly to ensure the proper operation of the automatic weather station.





II. Data Acquisition and Display Console



- Confirm A/C adapter plugged with main socket switched on.

- Confirm all diagnostic beep sound when powering up. The first beep notes that the processor is running. The second beep emits when the data logger is detected (if installed) and the third beeps for the display.

- Install 3 C-size batteries into the battery slot. (for ensuring the console working normally during A/C power failure).



- Replace new battery if "LOW CONSOLE BATTERIES" is shown on console.

- (For cabled version) Confirm console to ISS cable connected.







- (If WeatherLink is used) Confirm data logger plugged firmly into the slot at the back of the console.
 Before plugging / unplugging the data logger, power off the console by disconnecting A/C adapter and removing back-up batteries to prevent damage to and ensure normal operation of the data logger.



- (If WeatherLink is used) Confirm the cables are plugged firmly into computer / network receptacles and to the data logger.



WeatherLink serial port version





WeatherLink IP version





<u>Setup mode</u>

1. Enter Setup Mode by pressing DONE and the down arrow (-) at the same time, or it should be in the setup mode after power failure.

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- 2. Use button "**<u>BAR</u>**" and "**<u>DONE</u>**" to switch <u>back</u> and <u>next</u> setting.
- 3. Use **left/right** buttons to switch between items and +/- buttons to change value.
- 4. Press " $\underline{2^{nd}}$ " and then press "<u>**GRAPH**</u>" to change <u>unit</u>.

Confirm following settings (**bolded**):are being chosen:

(All the items below could be set by using WeatherLink, except serial baud rate)

- Receiving from Station No.1 ("X" on lower right corner flashing slowly means data is sending back from ISS to console.)

- **On** (ISS) 1.
- Retransmit Off.
- Date/Time correct?
- Set Latitude (North!) and Longitude (East!) (Press "2nd" and then press "GRAPH" to change direction)
- +8GMT Hong Kong.
- Daylight Saving Manual.
- Daylight Saving OFF.
- Altitude (**in meter**)? (estimate the elevation of the console location from mean sea level, eg. By google map)
- Wind Cup Size Large.
- Rain collector unit 0.2mm / 0.01inch.



- Rain season begins **Jan 1**.
- (if exist) Serial baud rate 19200.





III Operating System

- Synchronize the computer clock with HKO's standard time server (stdtime.gov.hk). If this step is not

done, the data return to Co-WIN will be rejected with incorrect timestamp!

m ² Internet Time Settings
Configure Internet time settings:
✓ Synchronize with an Internet time server
S <u>e</u> rvel_stdtime.gov.hk Update now
The clock was successfully synchronized with stdtime.gov.hk on 28/6/2010 at 15:09.
OK Cancel

- Under "Regional and Language Options", Chinese (HKSAR) must be chosen. It will affect the identification of time stamp format.

Regional and Language Options	Regional and Language Options 🛛 ? 🗙		
Formats Location Keyboards and Languages Administrative To change the way your computer displays numbers, currencies, dates, and time, select an entry from the format list.	Regional Options Languages Advanced Standards and formats This option affects how some programs format numbers, currencies, dates, and time. Select an item to match its preferences, or click Customize to choose your own formats: Customize		
Examples of how data is displayed using this format: Number: 123,456,789.00 Currency: HK\$123,456,789.00 Time: 15:11:44 Short date: 28/6/2010	Samples Number: 123,456,789.00 Currency: HK\$123,456,789.00 Time: 14:59:14 Short date: 28/6/2010 Long date: Monday, 28 June, 2010		
Long date: 2010年6月28日 Customize this format For additional formats, keyboards, and tools, go to the Microsoft website. OK Cancel Apply	Location I o help services provide you with local information, such as news and weather, select your present location: Hong Kong S.A.R.		



- Windows update must be set to be installed manually to prevent computer restarted and not logged in.







IV WeatherLink

- WeatherLink version at least 5.9.0? (if not please download the update patch from the following webpage: http://www.davisnet.com/support/weather/software_sftwr.asp)

The manufacturer has addressed the driver drop out issue in version 5.9.0, which can solve most of the "connection lost" problem.

- Run Walkthrough: (click setup -> walkthrough)



Menu 1:

Select the correct model (Vantage Pro – without UV and solar sensors, Vantage Pro Plus – with UV and solar sensors), rain collector unit setting **0.2mm / 0.01inch**. If this step is not done, the data return to Co-WIN will be incorrect!

tame: HNLO-V	/IN		
lode Vantag	e Pro Plus 💌 🔿		
ccessories			
Rain Collector:	mm 🚽	🔲 Leaf Wetness 1	🔲 Leaf Temperature 1
Cutside Humi	litte	🔲 Leaf Wetness 2	📃 Leaf Temperature 2
Solar Radiatio	n 🔽 UV		
		Soil Moisture 1	Soil Temperature 1
2nd Temp	2nd Humidity	Soil Moisture 2	Soil Temperature 2
3rd Temp	3rd Humidity	Soil Moisture 3	Soil Temperature 3
4th Temp		Soil Moisture 4	Soil Temperature 4
		<u>C</u> ancel	lelp



0.01 inch



Menu 2:

Check which connection method you are using.



Communications Port

WeatherLink serial port version



Vantage Pro or Pro2 Console	Communications USB Iest OK Modem UCP/IP Iest OK Modem TCP/IP Iest OK Communications UDB Iest OK Communications ComPose Iest OK Communications ComPose Iest OK Communications Igeo Iest Iest OK Baud Refer Igeo Iest Auto Detect Herpoto Imin. Icophack Auto Detect TCP/IP Connection TCP Port: Z222 Find © Local Device ID Find Find Find @ Web Download User Id: Password: Iost Iost
Cable Router	Modern Connection Weather Station Phone <u>B</u> umber: Modern Init: <u>B</u> trings: AT &F S7=60 E Q V X4 <u>D</u> efault After Connect Wait: 2 sec Botary Dial

WeatherLink IP version

Choose the correct port and enter the appropriate serial port number / IP address if necessary. Press **"Test"** to check the connection.





Menu 3:

Set all to Metric Unit. If this step is not done, the data return to Co-WIN will be incorrect!



If you also want to set units display on console by WeatherLink, press "Set" and reboot the console by disconnecting all power sources (A/C adapter and batteries).



Menu 4:

Skin factor type scale: SKIP

Menu 5:

Auto download: SKIP





Menu 6:

Set console transceiver

Set Transceiver			×
Station No. 1	Flepeater	Station No. 5	Repeater
ISS	No 🔫	Off	No
Station No. 2		Station No. 6	
Off	No 👻	Off	No 💌
Station No. 3		Station No. 7	
Off	No 💌	Off 💌	No
Station No. 4		Station No. 8	· · · · · · · · · · · · · · · · · · ·
Off	No 🔫	Off	No 🔻
Retransmit	-	Enable Repeaters	
		CLEAR ALL	
ОК	Can	cel Help	

Menu 7:

Barometer and elevation

Input elevation of the Console (not the ISS) with reference to the mean sea level (consider the geographical and building height by using Google contour map or other means), and input the pressure found from the nearest HKO weather station from HKO website: (http://www.weather.gov.hk/wxinfo/ts/display_element_pp_c.htm)

If this step is not done, the air pressure measured will be incorrect!

Enter your Console current corrected B	Elevation a Barometer re	and the eading:
Console Reading:	1008.5	hPa
Station Elevation:	1	m
Sea-level Barometer:		hPa
	Help	
<u>o</u> k	<u>C</u> anc	el





Menu 8:

Confirm rain calibration number. The rain collector unit setting in menu 1 will send to the console after confirmation. If this step is not done, the rainfall measurement will be incorrect!



If the cal number prompted is not correct, please set the correct value in Menu 1.

Menu 9:

Set temperature and humidity

Sometimes console reading value deviates from the raw reading. Just press "OK" to refresh settings.

	Set Temperature &	Humidity (Calibration	1	×
		Raw Reading	Console Reading	Adjusted Reading	
l	_ Temperature				
ļ	Inside Temp	24.3 °C	24.3 °C	24.3	°C
	Outside Temp	21.8 °C	21.8 °C	21.8	°C
	Humidity				
	Outside Hum.	79 %	79 %	79	%
	Inside Hum.	67 %	67 %	67	%
	Average Temp Ove	r Archive Pe	riod		
	🔲 Enable				
	<u>0</u> K	<u>C</u> an(cel	Help	





Menu 10:

Enter rain season: Jan

"Rain Season Start" here means the first month starting to count the annual rainfall, not the starting month of rain season.

Set Yearly Rain	x
Yearly Rain	
Please enter the year to date rainfall: 223,6 m	m
Rain Season Start	
<u>C</u> ancel Help	

Menu 11:

Daylight savings: **no tick** for the 2 check boxes, Time Zone: **GMT +8:00 Hong Kong**, and press **"set"** to confirm.

S	et Time 8	& Date		×
	Time o	n station now	Set stat	ion time to
	Time:	20:03	Time:	20:03
L	Date:	09/06/09	Date:	09/06/09
	Time Day Time	Settings light Savings 🔲 On e Zone ((GMT+08:00))	E Se	et the PC time also. to Detect Perth, Singapore, Taip ▼
		Set	<u>C</u> ancel	Help

Menu 12:

Set the archive interval: 1 min

If this step is not done, the data return to Co-WIN will be incorrect!

Set Archive Interva	I X
© 10 min	<u>K</u>
 15 min 30 min 	<u>C</u> ancel
© 1 hr © 2 hr	Help





Menu 13:

Input latitude and longitude of the AWS.

Set the latitude (North!) and longitude (East!)

Set Latitude & Longitude
Latitude 22 Deg 18 Min 13 Sec North South
Longitude 114 Deg 10 Min 47 Sec East © West
Latitude Longitude On Vantage Console: 22.3 N 114.2 E See Results OK Cancel Help

- 1. Use a GPS to check the Latitude and Longitude of your weather station.
- Use Google map to right click the location of your weather station on the map and choose "set this point as center of map", then type the following command line into browser address bar: javascript:void(prompt('',gApplication.getMap().getCenter()));

Menu 14:

Confirm wind cup size: Large

If this step is not done, the data return to Co-WIN will be incorrect!

Set Wind	
Cup Size Small Large Vue (Dther)	Direction Calibration Raw Reading 7 Adjusted Reading 7 Calculated Offset 0
ОК	Cancel Help

If the anemometer mounting bar cannot be set to pointing north, please input the current direction in degree in "Adjusted Reading" to amend the wind direction.

Mark down the value of "Calculated Offset".

Menu 15:

Set alarm – cancel all alarm

