

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.

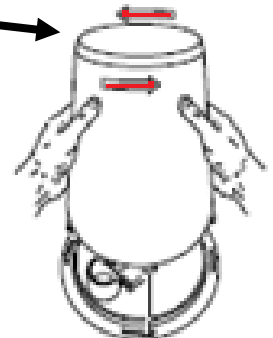
2. Rainfall, temperature and relative humidity measurement

- 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.



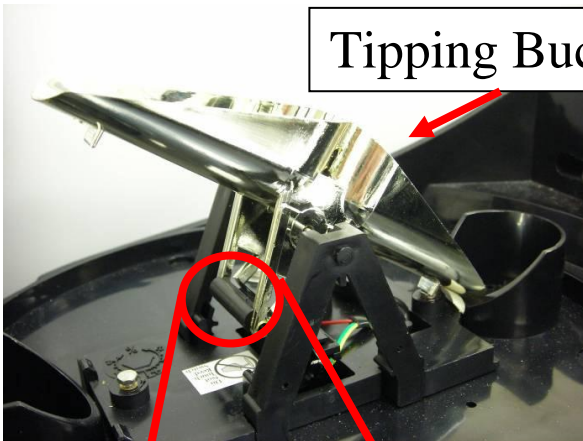
Debris
Screen

In anti-clockwise
direction

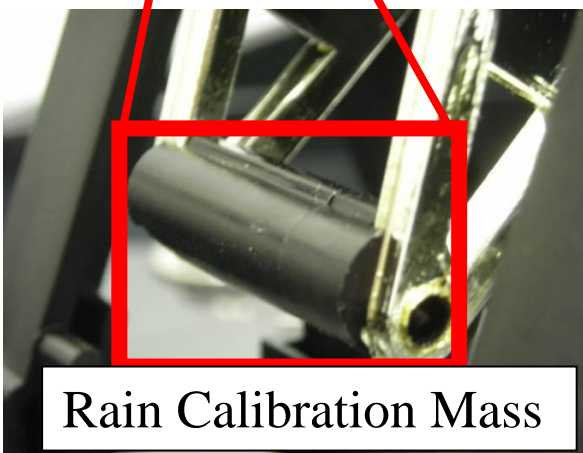


Twist to Open

- Check and mark down the rain calibration mass installed under the tipping bucket.



Tipping Bucket



Rain Calibration Mass



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.

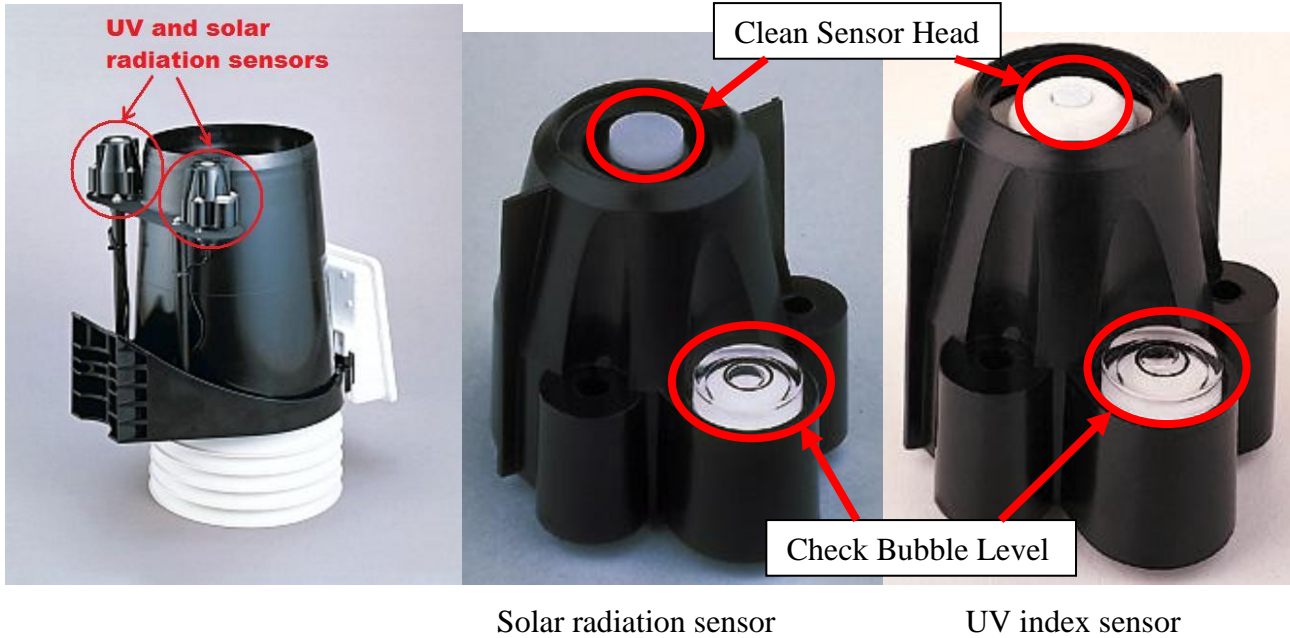
- Clean the white radiation shield when necessary. It should be checked regularly to avoid insects building nests inside.



Radiation shield with temperature
and humidity sensor inside

3. Solar and UV radiation measurement

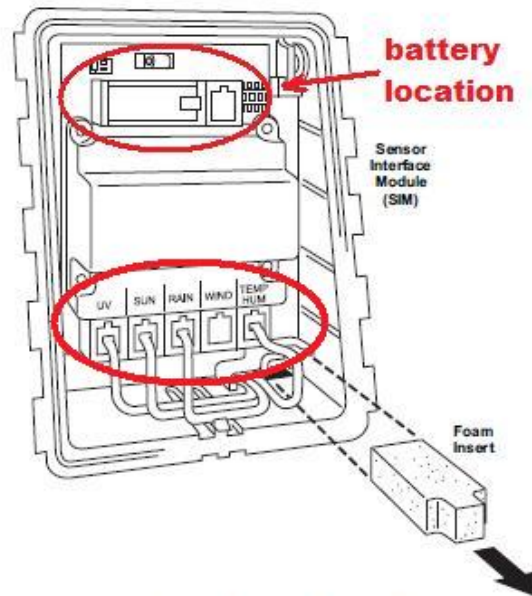
- Use **ethanol cotton** to clean the UV & solar radiation sensor head surface gently.



- 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).



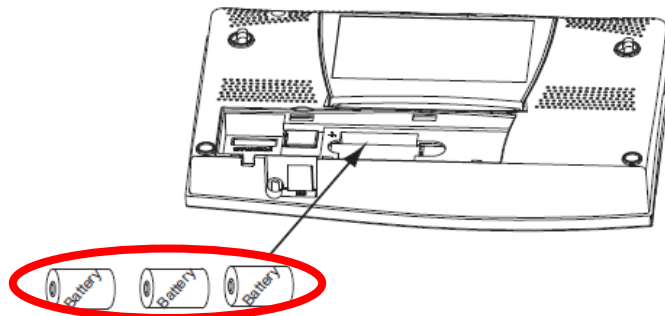
Note: Only Plus models have UV and solar cables already attached.

- (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.

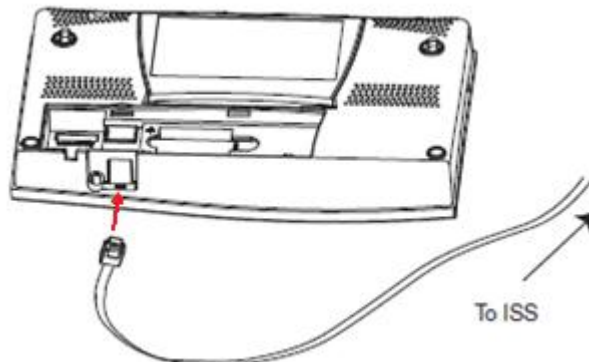
II. Data Acquisition and Display Console



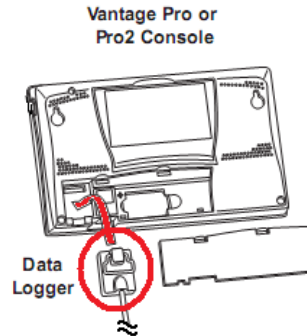
- Confirm A/C adapter plugged with main socket switched on.
- Confirm all diagnostic beep sound when powering up. The first beep notes that the processor is running. The second beep emits when the data logger is detected (if installed) and the third beeps for the display.
- Install 3 C-size batteries into the battery slot. (for ensuring the console working normally during A/C power failure).



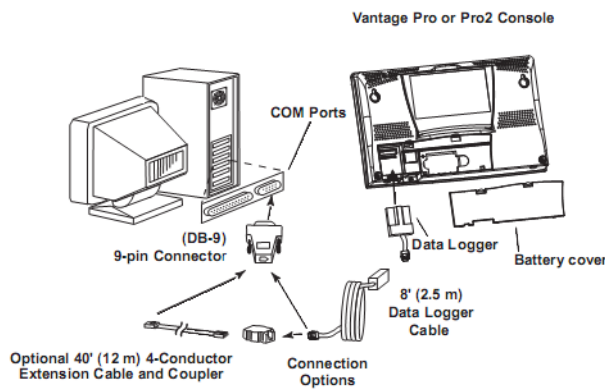
- Replace new battery if “LOW CONSOLE BATTERIES” is shown on console.
- (For cabled version) Confirm console to ISS cable connected.



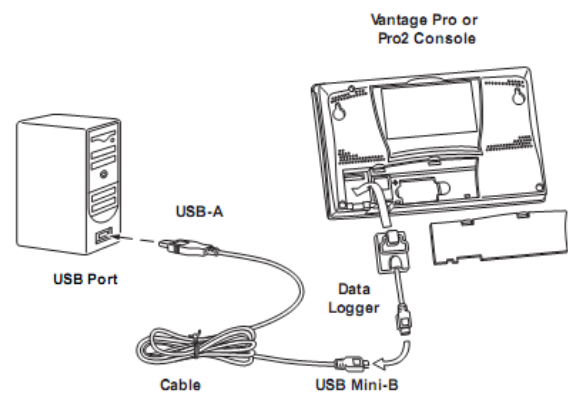
- (If WeatherLink is used) Confirm data logger plugged firmly into the slot at the back of the console. Before plugging / unplugging the data logger, power off the console by disconnecting A/C adapter and removing back-up batteries to prevent damage to and ensure normal operation of the data logger.



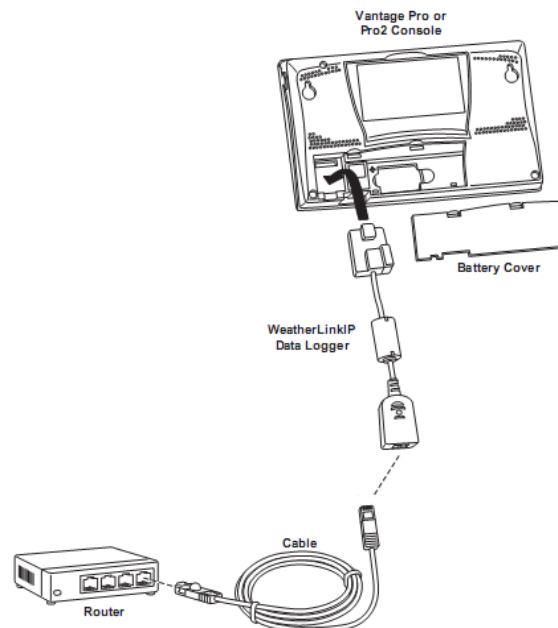
- (If WeatherLink is used) Confirm the cables are plugged firmly into computer / network receptacles and to the data logger.



WeatherLink serial port version



WeatherLink USB version



WeatherLink IP version

Setup mode

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.
2. Use button "**BAR**" and "**DONE**" to switch **back** and **next** setting.
3. Use **left/right** buttons to switch between items and +/- buttons to change value.
4. Press "**2nd**" and then press "**GRAPH**" to change **unit**.

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

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

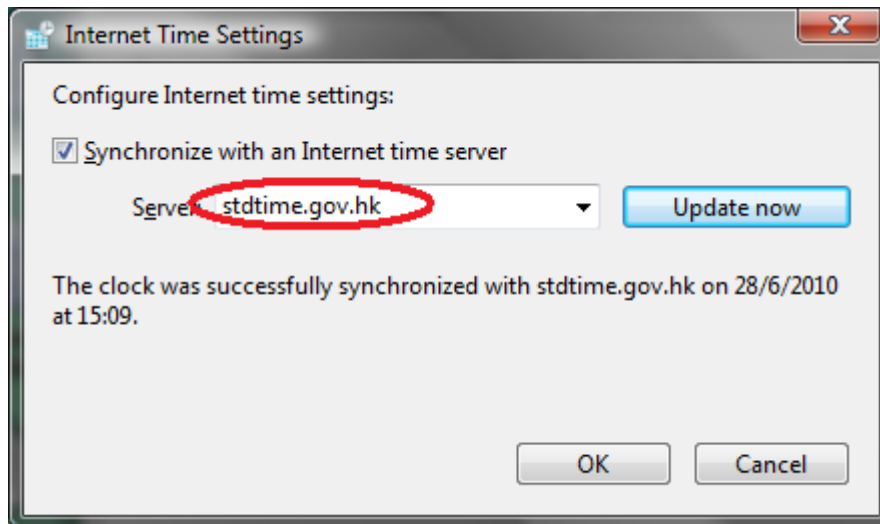
- Receiving from Station No.1 ("**X**" on lower right corner flashing slowly means data is sending back from ISS to console.)
- **On** (ISS) 1.
- Retransmit **Off**.
- Date/Time correct?
- Set Latitude (**North!**) and Longitude (**East!**) (Press "**2nd**" and then press "**GRAPH**" to change direction)
- **+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**.



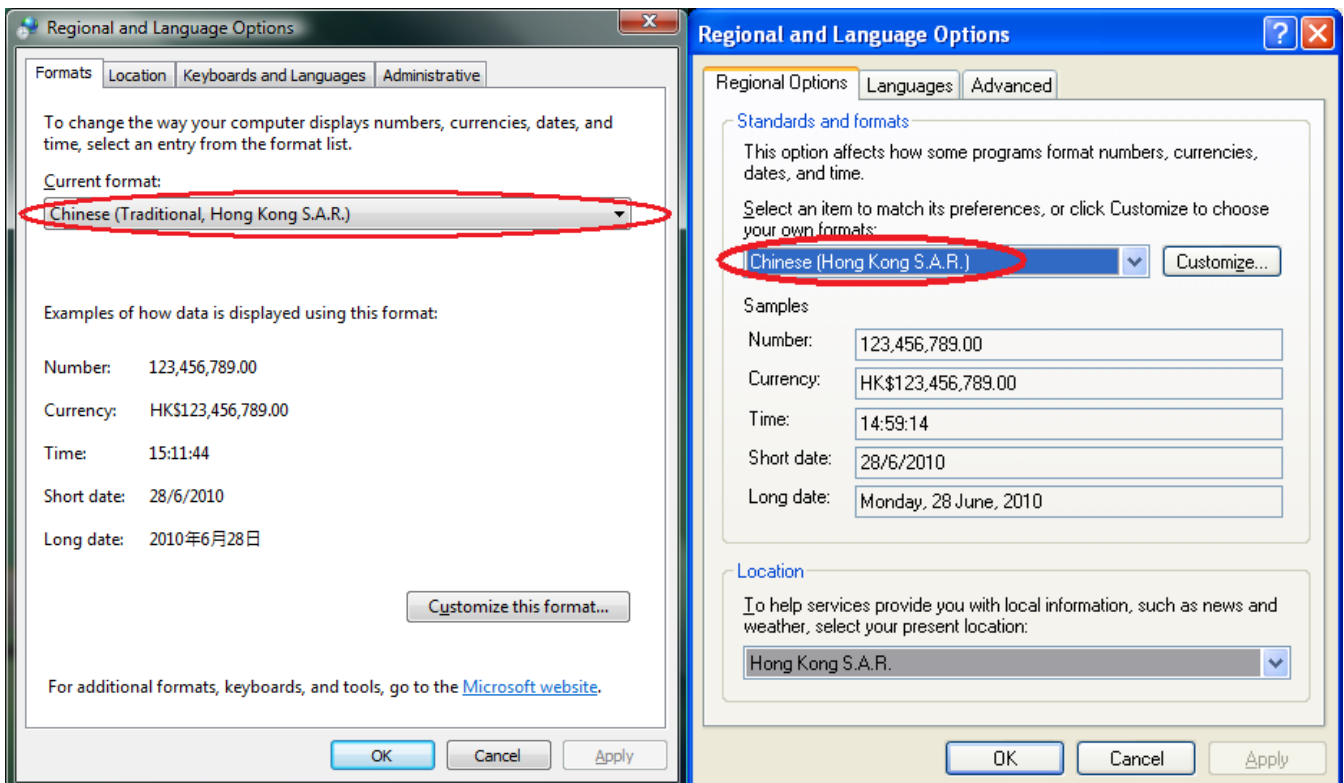
- Rain season begins **Jan 1**.
- (if exist) Serial baud rate **19200**.

III Operating System

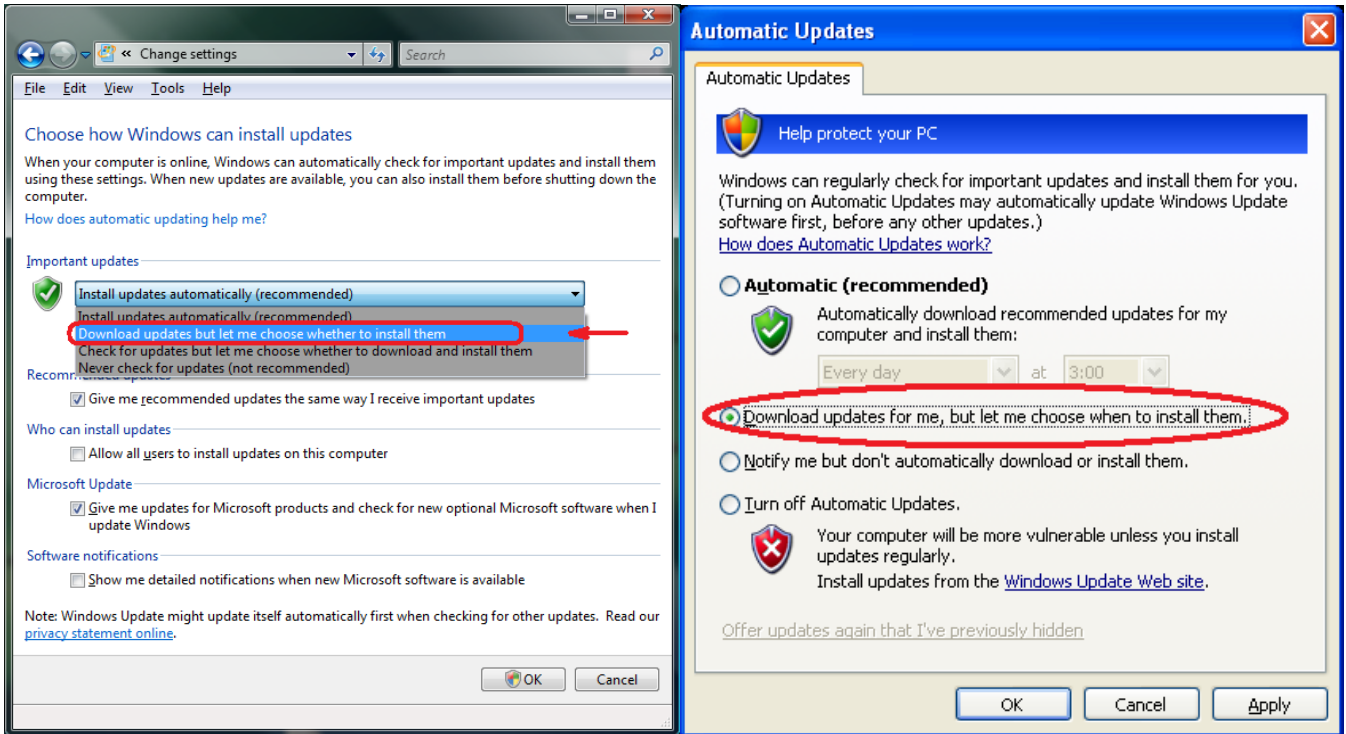
- Synchronize the computer clock with HKO's standard time server (stdtime.gov.hk). **If this step is not done, the data return to Co-WIN will be rejected with incorrect timestamp!**



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



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

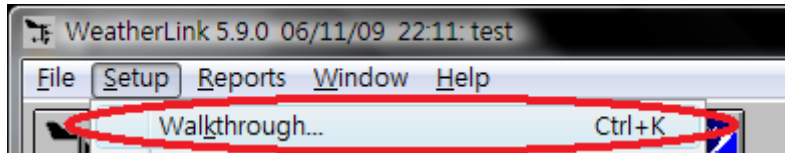


IV WeatherLink

- 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)

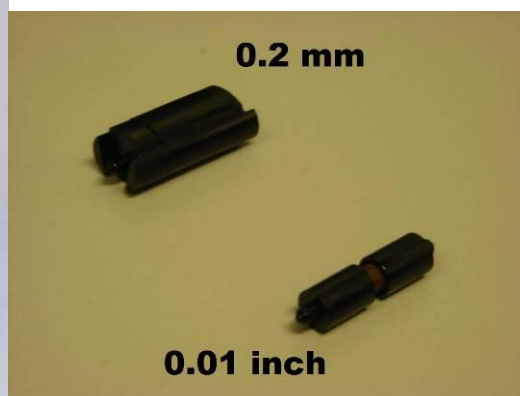
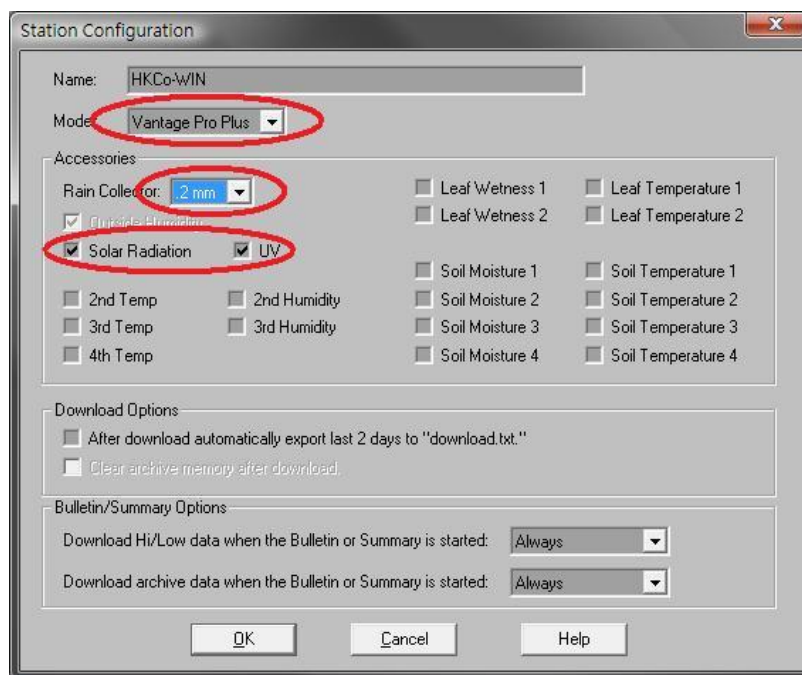
The manufacturer has addressed the driver drop out issue in version 5.9.0, which can solve most of the “connection lost” problem.

- Run Walkthrough: (click setup -> walkthrough)



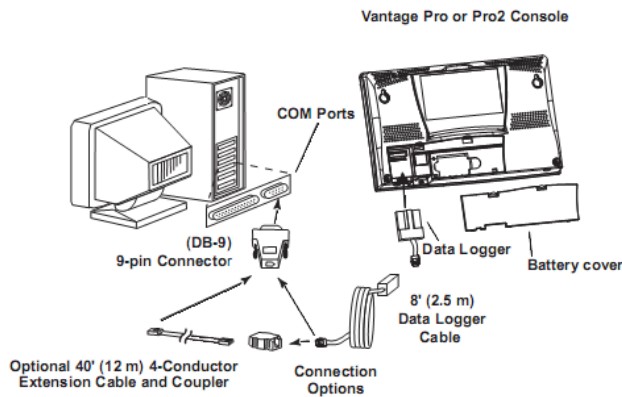
Menu 1:

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!**

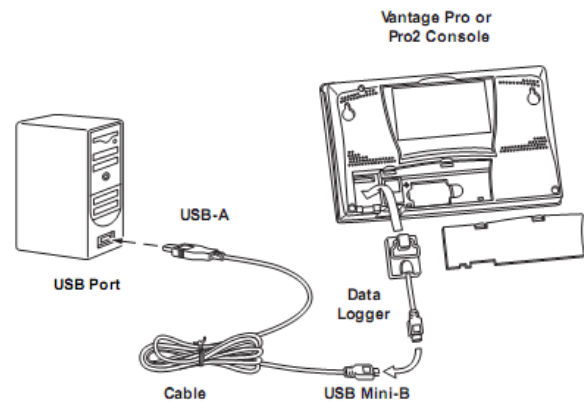


Menu 2:

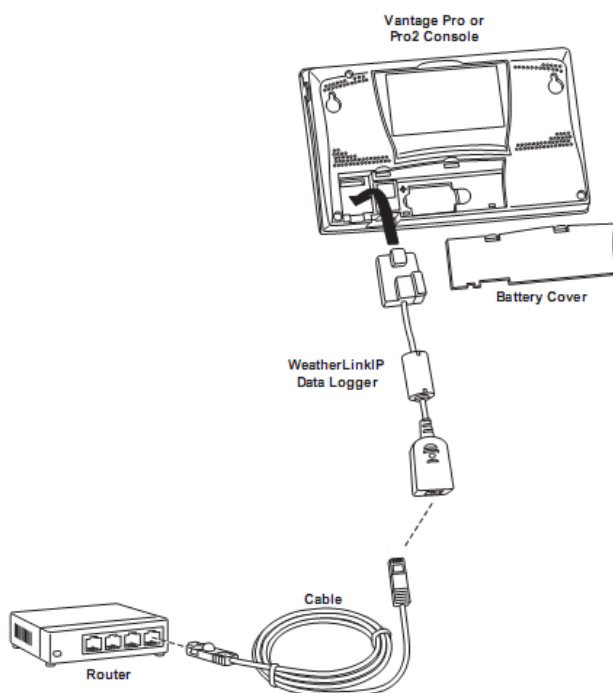
Check which connection method you are using.



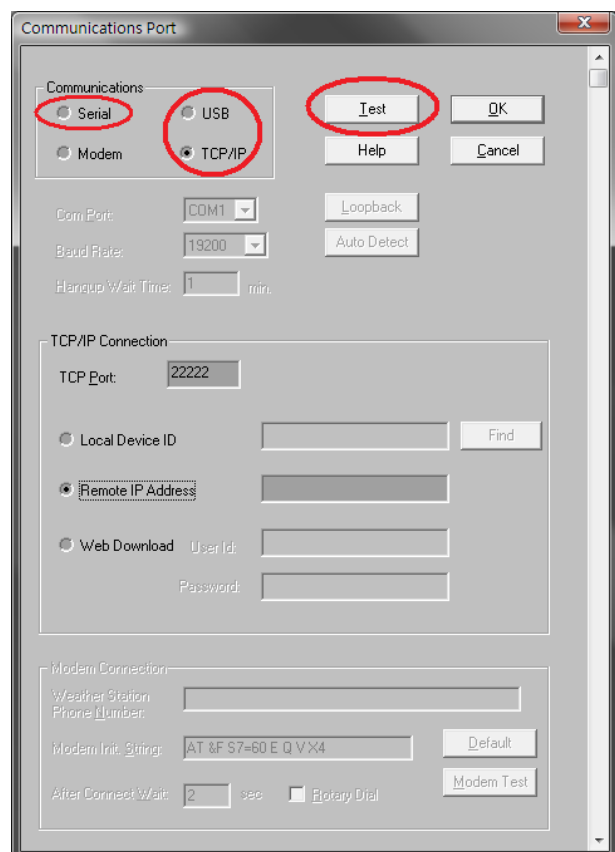
WeatherLink serial port version



WeatherLink USB version



WeatherLink IP version

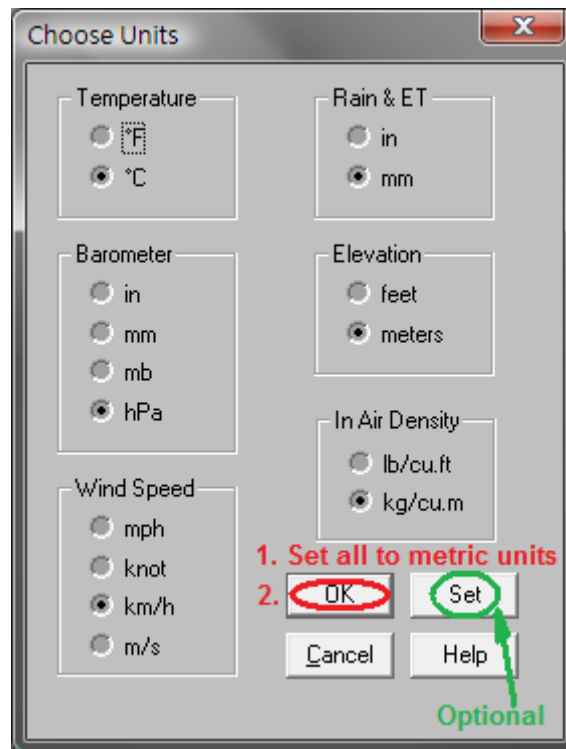


Choose the correct port and enter the appropriate serial port number / IP address if necessary.

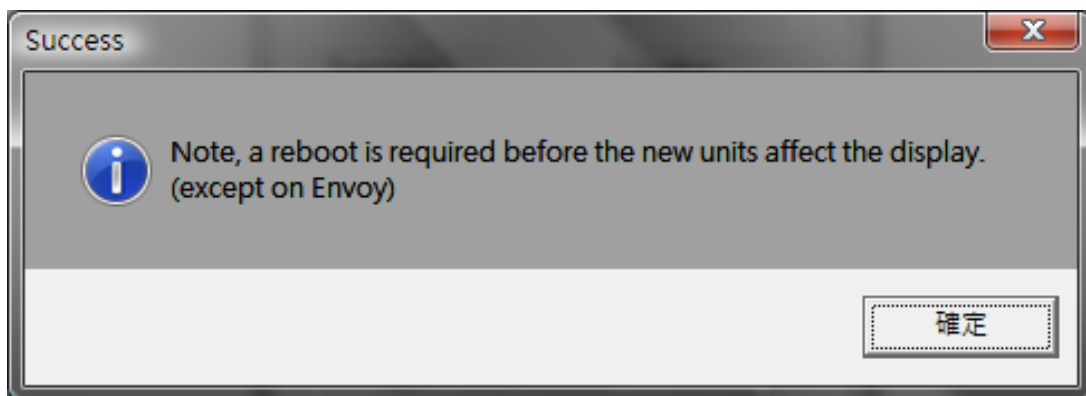
Press “**Test**” to check the connection.

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:

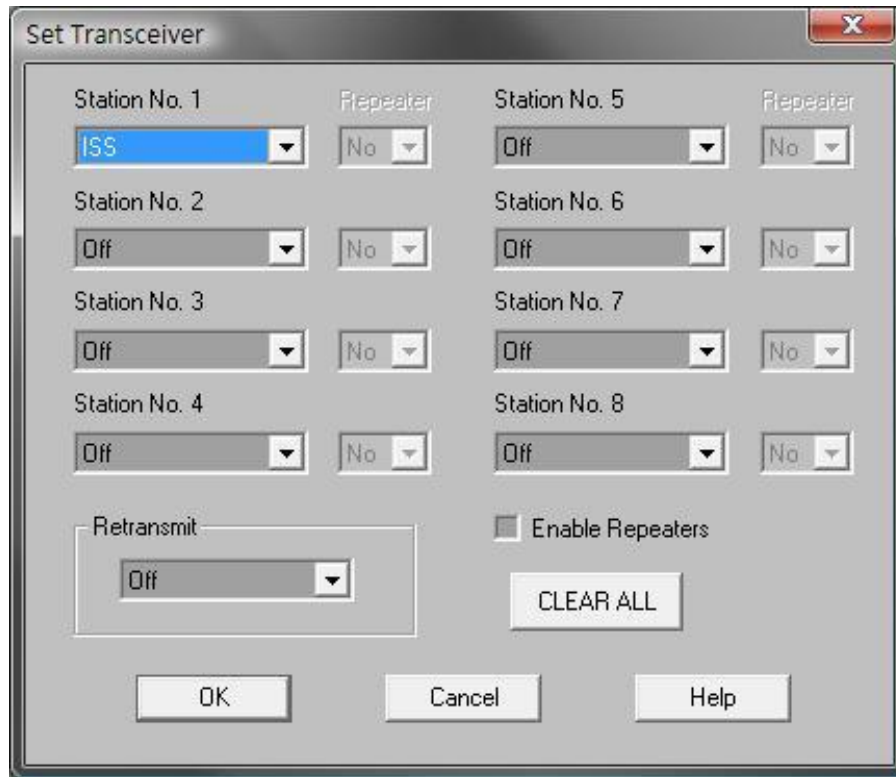
Skin factor type scale: SKIP

Menu 5:

Auto download: SKIP

Menu 6:

Set console transceiver

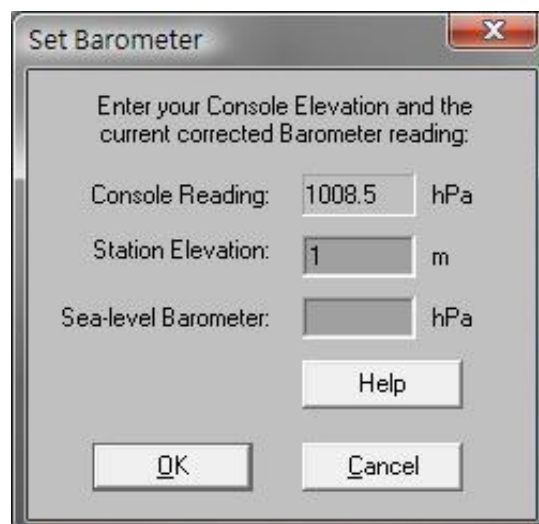


Menu 7:

Barometer and elevation

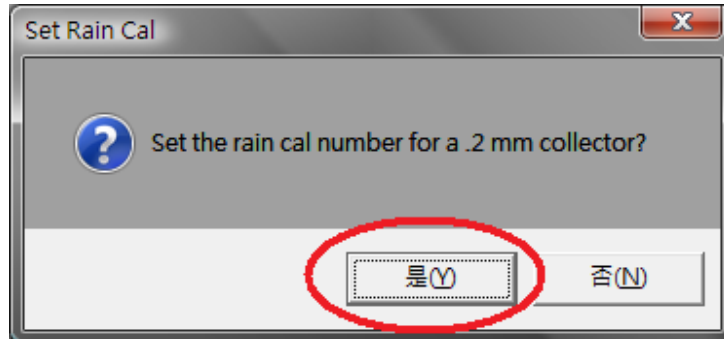
Input elevation of the Console (not the ISS) with reference to the mean sea level (consider the geographical and building height by using Google contour map or other means), and input the pressure found from the nearest HKO weather station from HKO website: (http://www.weather.gov.hk/wxinfo/ts/display_element_pp_c.htm)

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



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!**

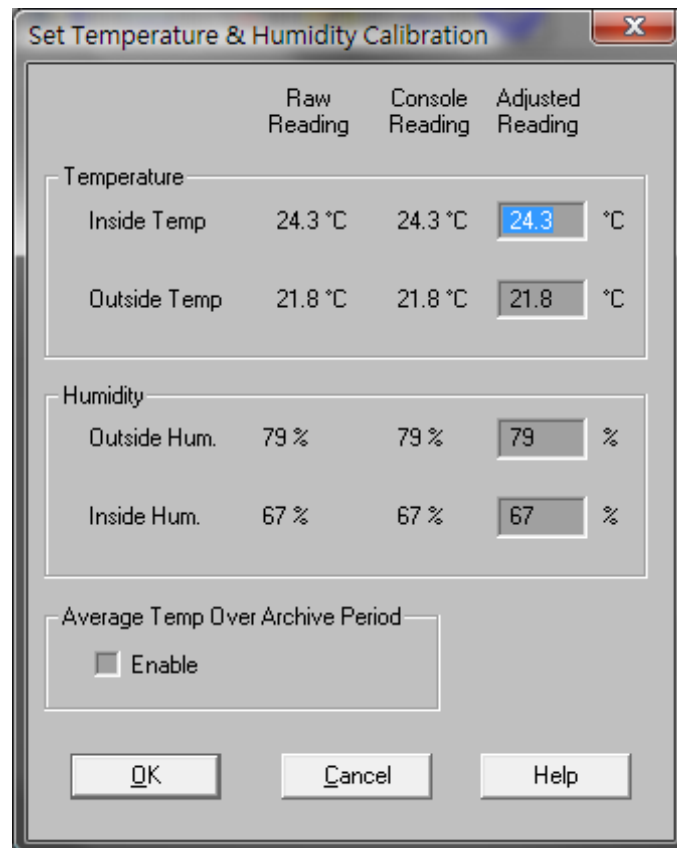


If the cal number prompted is not correct, please set the correct value in **Menu 1**.

Menu 9:

Set temperature and humidity

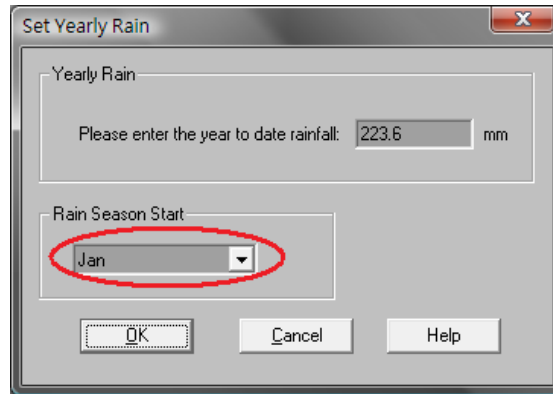
Sometimes console reading value deviates from the raw reading. Just press “OK” to refresh settings.



Menu 10:

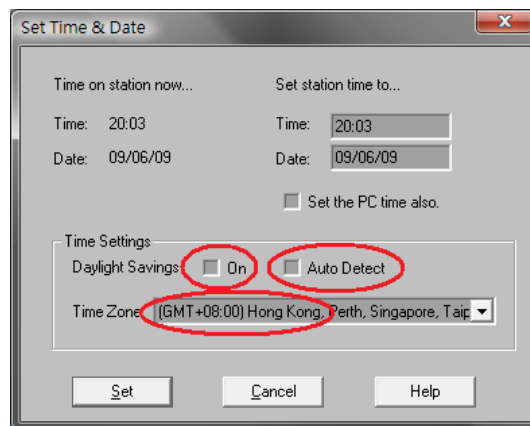
Enter rain season: **Jan**

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



Menu 11:

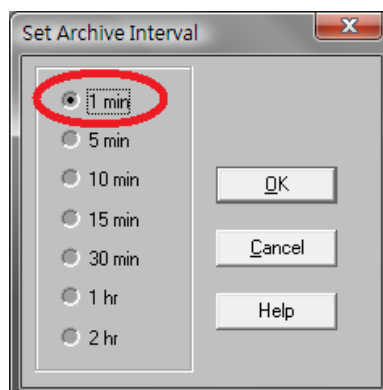
Daylight savings: **no tick** for the 2 check boxes, Time Zone: **GMT +8:00 Hong Kong**, and press “set” to confirm.



Menu 12:

Set the archive interval: 1 min

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



Menu 13:

Input latitude and longitude of the AWS.

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

1. Use a GPS to check the Latitude and Longitude of your weather station.
2. 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!

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

