



TAI8585KIT Installation Manual

Ver 1.1
19/06/2002

This document explains the steps needed to modify a Davis Rain Collector II unit to operate within the 1-Wire communication protocol using the TAI8585 Kit.

Nevertheless this document refers to a specific unit, the same procedure can be applied to modify other similar tipping based Rain Gauges.

The TAI8585 Kit is available at www.aag.com.mx and the Davis Rain Collector II at : http://www.davisnet.com/weather/products/weather_product.asp?pnum=7852

Other well suitable and less expensive unit can be the WEA-RN-KIT from Fascinating Electronics available at:

<http://www.columbia-center.org/fascinating/obs/instrmnt.html>

Required tools (Not included with the kit)

<u>Quantity</u>	<u>Description</u>
-1-	Drill bit 1/8
-1-	Nose pliers set
-1-	Cutting pliers set
-1-	Cutter knife
-1-	Pencil or marker

Important: The following procedure voids the warranty of the Davis Rain Collector II, Automatización Aplicada a Gasolineras SA de CV is not liable for damages to the Davis Rain Collector II or any other similar device. In case you continue with the procedure, you are doing so at your own risk.



Required material (Not included)

Quantity

Description

-1-

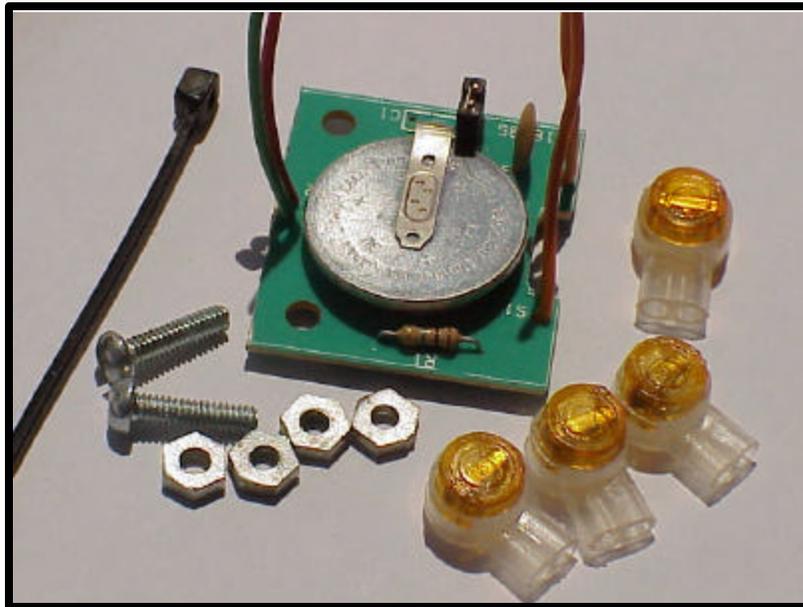
Davis Rain II Collector Kit or equivalent





The TAI8585Kit includes

<u>Quantity</u>	<u>Description</u>
-1-	TAI8585 card (without RJ11 connectors and the reed switch)
-4-	Connection clips
-1-	Nylon tie
-2-	Screws 1/8" x 1/4" standard
-4-	Hexagonal nuts



Procedure

1. Place the Davis Rain Collector II on a flat surface and separate the upper part leaving the lever mechanism exposed as seen in Fig. #1



Fig #1

2. Cut the wire with the cutting pliers at approximately 6 inches from the sensor. See sequence of Figs #2,#3 and #4.

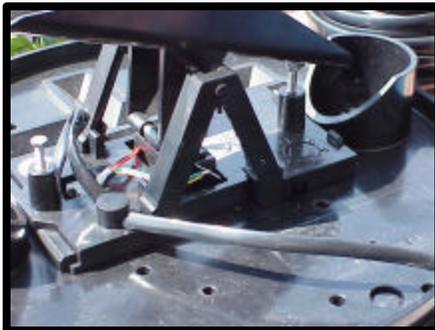
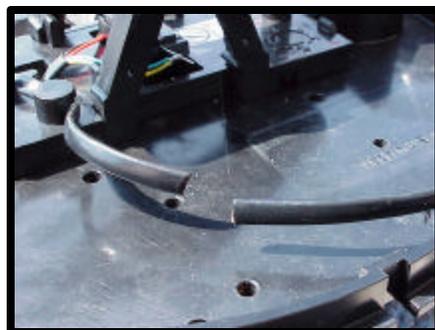


Fig #2



Fig #3



Fig#4

3. **Handling the cutter knife extremely carefully, eliminate the black outer layer of the wire on both sides leaving the internal conductors exposed approximately 1.0 inch each side. Figs #5, #6, #7**



Fig #5

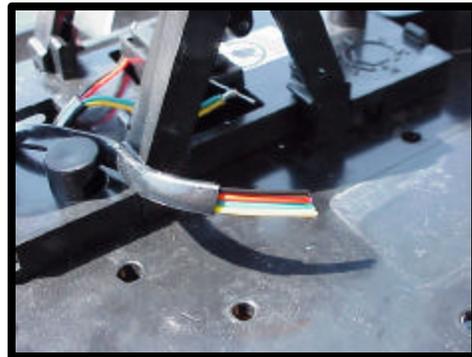


Fig #6

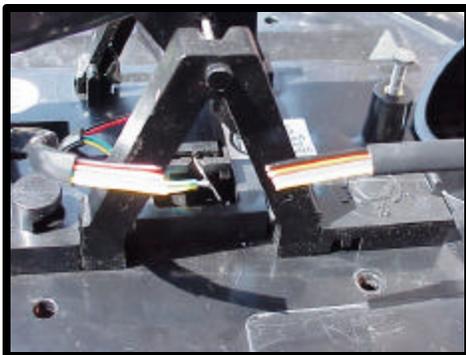


Fig #7

4. Place the TAI8585 card over the base of the Rain Collector II just above the "Made in U.S.A" label as shown in figure #8 and with a pencil, mark the position to drill two 1/8" holes

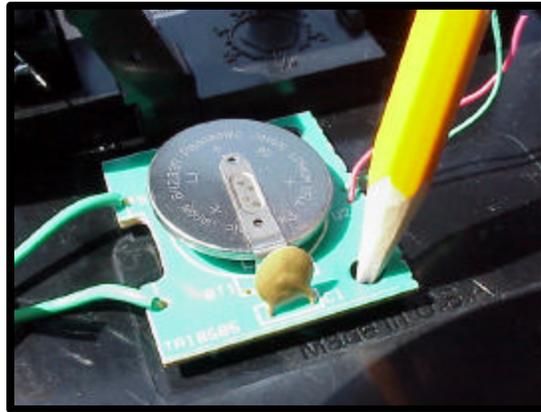


Fig. #8

5. Make the two perforations required with the 1/8" drill bit (*NOTE: One of the perforations has already been drilled on the base previously, so you will only need to make one perforation.*) you don't need to use a drill, the perforation can be made manually if the drill bit is sharp enough. (See figure #9)

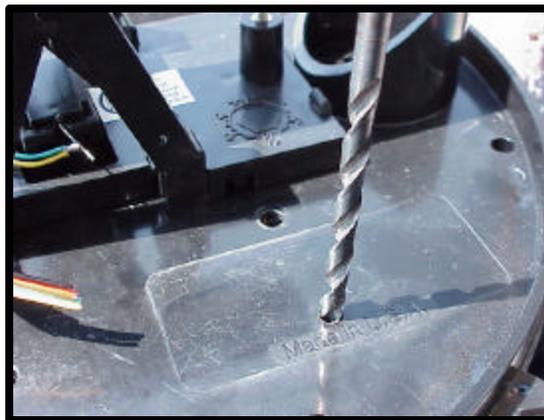


Fig. #9

- Put the card in position and secure it with the screws and the nuts as seen in figures #10,#11 and #12

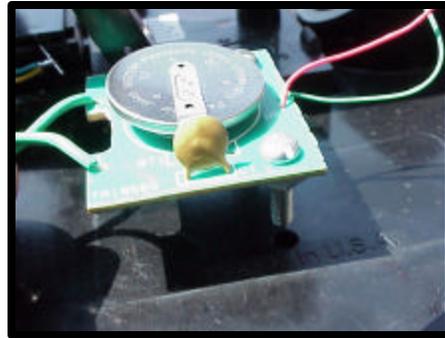


Fig. #10

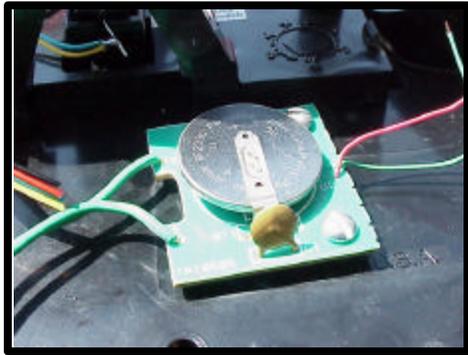


Fig. #11



Fig. #12

7. Figures #14 and #15 show the connections to be made, the TAI8585 card has two groups of connections as seen in figure #13.

Figure #13 shows that if you see the TAI8585 card right in front of you, as indicated in the figure, we have the connections with the 1-Wire Web on the left side and the two connections leading to the magnetic switch on the right side

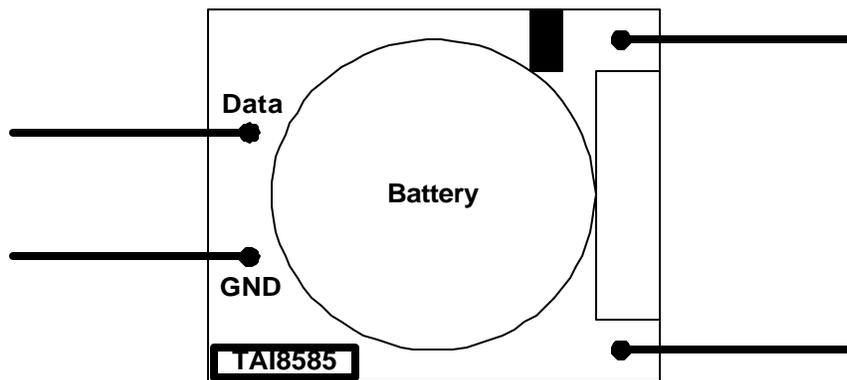


Fig. #13

8. Figure #14 shows the original situation of the Davis Rain Collector II Unit. It only consists of a magnetic switch that is activated by a magnet located in the lever that causes the two switches to close every time they are in front of each other.

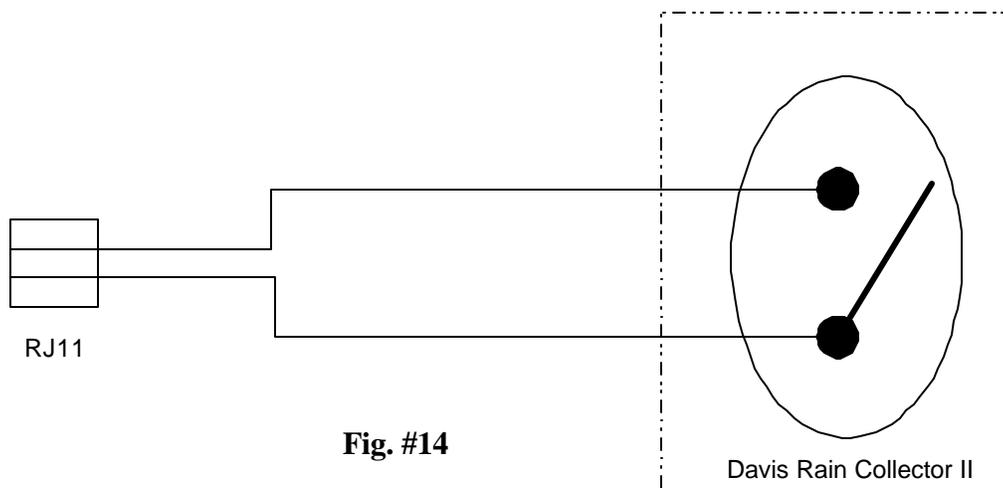


Fig. #14



In figure #15 you may see what is the result of the modification made to the unit to make it compatible with the standard 1-Wire

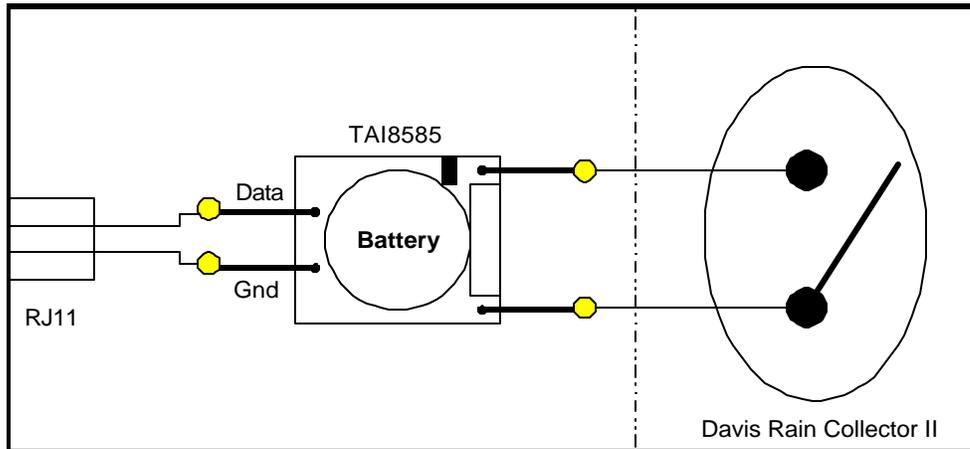


Fig. #15

Very Important Note:

The switch in the Davis Rain Collector II doesn't have any polarity; therefore, the position in the connections in the RJ11 connector should be ignored. However, in the 1-Wire LAN specification each one of its conductors does have a specific function, so it is extremely important to be careful with the connection. The colors on the telephone wires are: yellow, red, green and black. We are only interested in the Red and the Green ones. These two colors will be found in the central conductors in the RJ11, but since the order could be Green-Red or Red-Green, you must not pay attention only to the color of the cables.

Make sure the cable in position 2 of the RJ11 connector is connected to the Data line of the TAI8585 and the cable in position 3 of the RJ11 is connected to the GND line of TAI8585 to guarantee that the connection is correctly made. Fig.#16

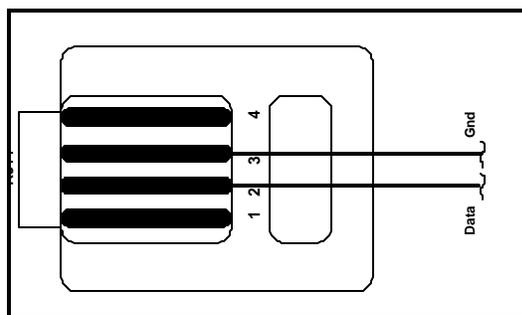


Fig. #16

8. To make the connections above mentioned using the clips provided in the TAI8585 Kit, you have to connect the cables to the corresponding clips and push the yellow button with the pliers. Make sure the button is fully pressed. see Fig#17

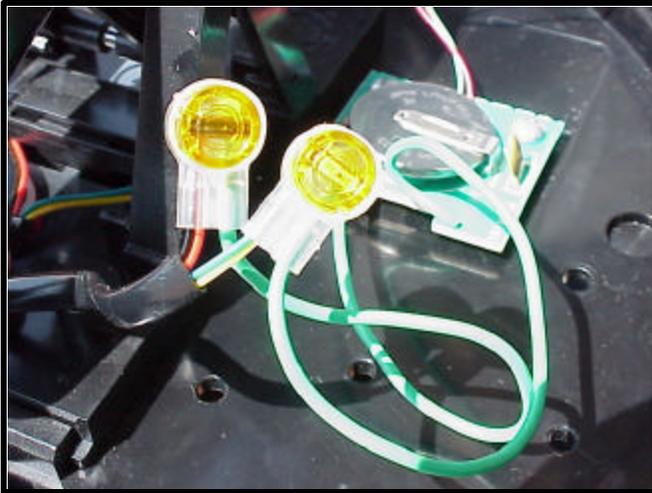


Fig.#17

9. Finally the connections must be as indicated in figure 18, using the nylon belt included in the kit to avoid tensions and stretch of the cable against one of the posts of the lever as shown in figure #18.

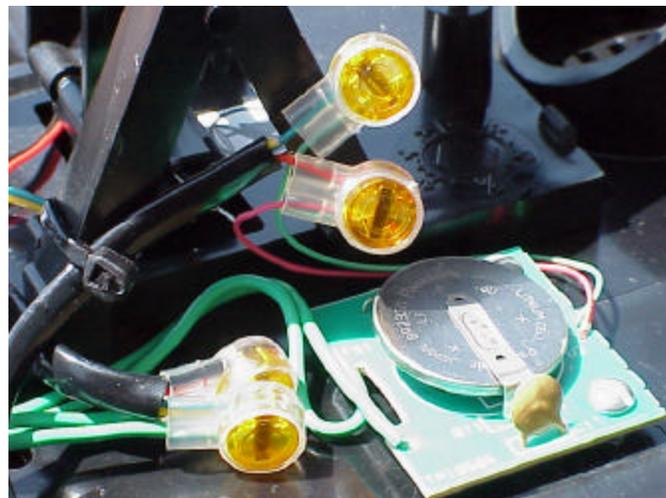


Fig.#18

The connections diagram we recommend is the following:

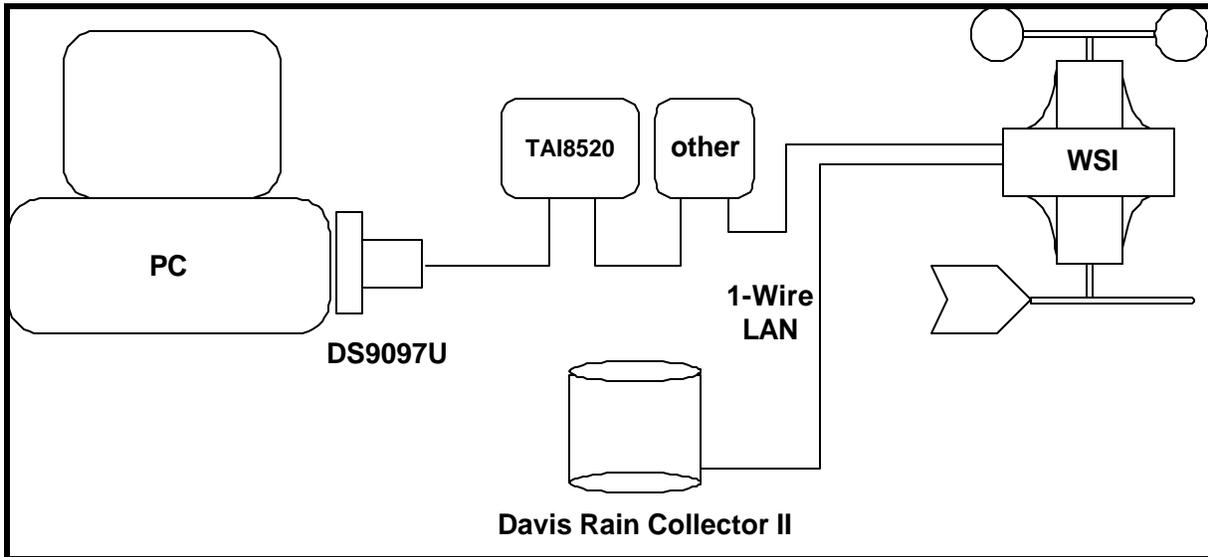


Fig.#19



Software Configuration :

If you use the software Weather.exe we have available at www.aag.com.mx/download free of charge, this program should be calibrated to operate with the Davis Rain Collector II, but if you use other programs you should contact their supplier.

The Davis Rain Collector II is precalibrated when it is manufactured and it is available in two models. The first one has metric calibration and it corresponds to 0.2 mm of rain for each closure of the switch and the second one corresponds to 0.01 inches for each closure. The software calibration procedure is very similar in both cases.

Procedure:

- Execute the Weather.exe program with the Davis Rain Collector II unit disconnected. Once the program has recognized the existing elements in the 1-Wire web, connect the Davis Rain Collector II unit. If the unit is accepted by the software, the lower right panel will become active. Fig#20

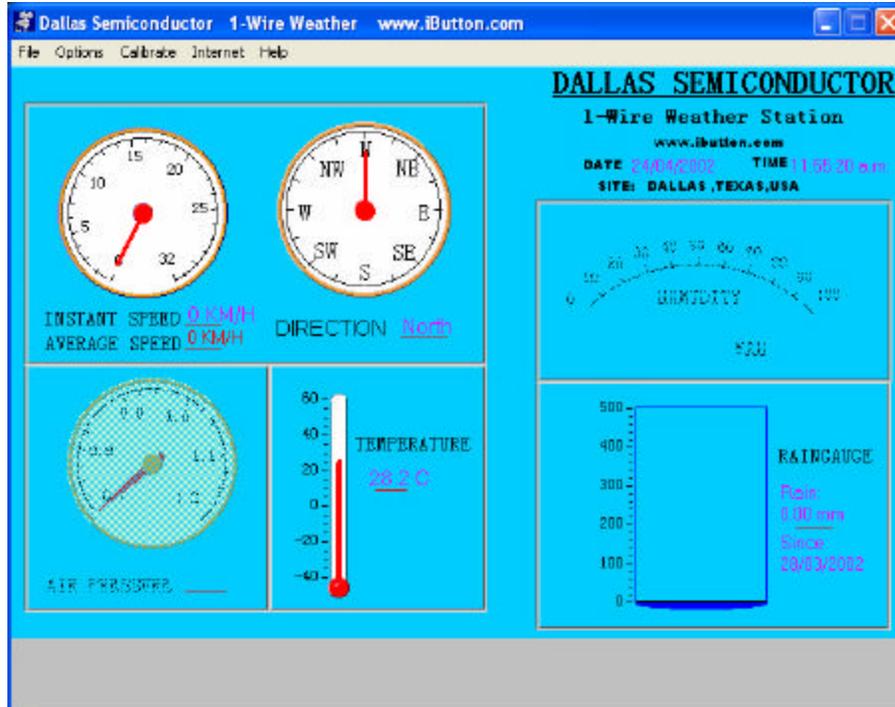


Fig.#20



- First select *Options->Rain Gauge>Reset*, this option will start the internal counter of the program for the rain sensor in zero..

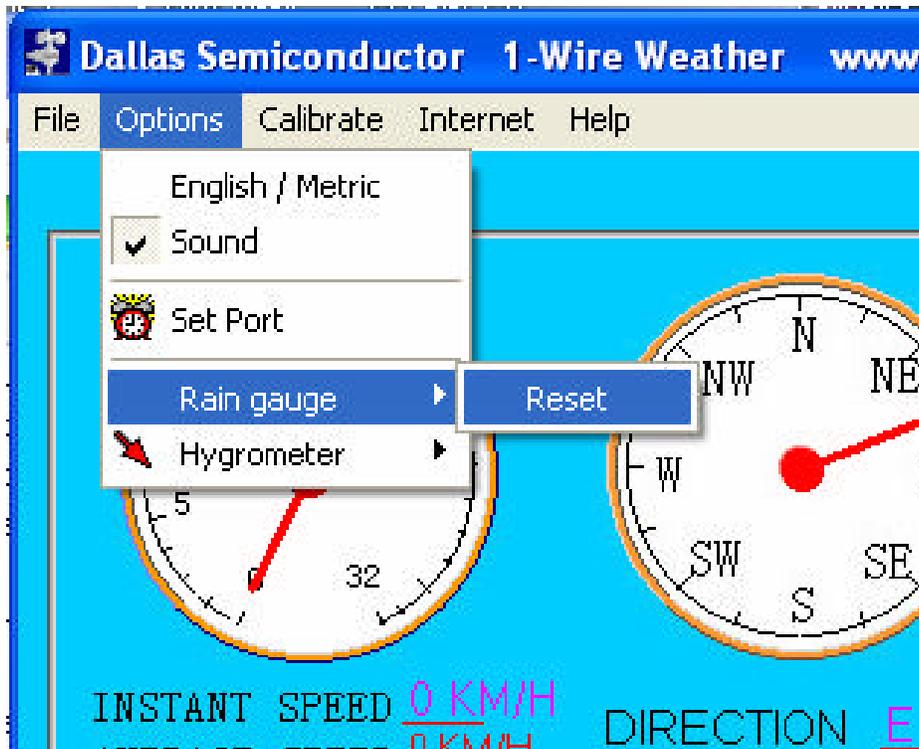


Fig.#20

- Move the lever of the Davis Rain Collector II a controlled number of times, we recommend doing it a hundred counts. Multiply the number of counts by the calibration factor of the equipment acquired, e.g. in the case of the metric unit the result is $0.2 \text{ mm} * 100 = 20 \text{ mm}$. This value is introduced in the option *Calibrate* > *Rain Fall* as shown on figures #21 and #22.

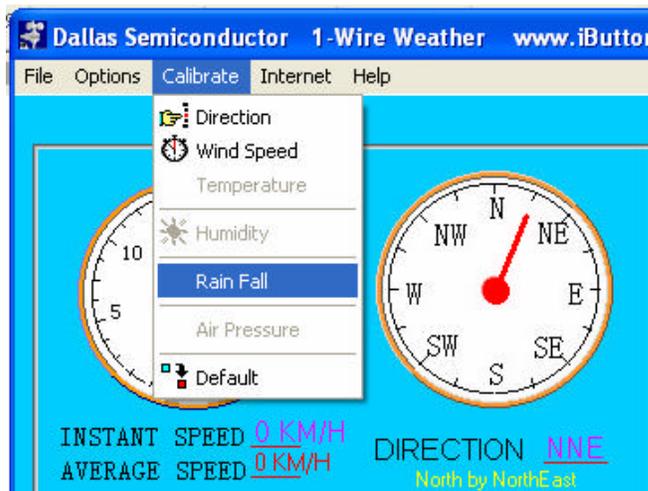


Fig.#21

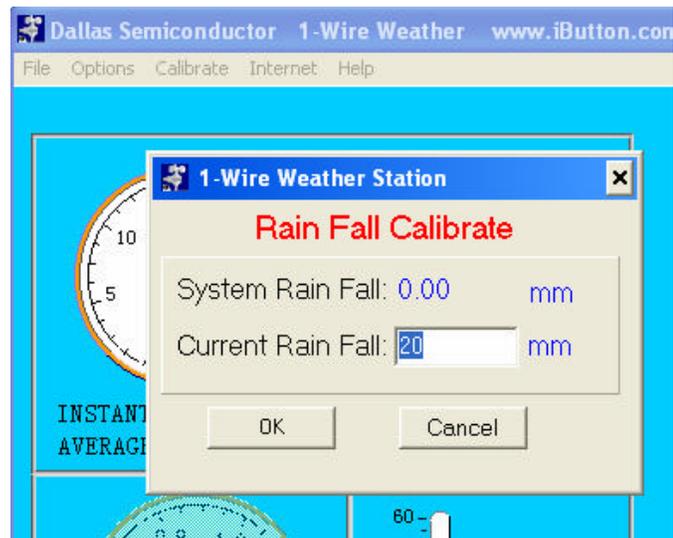


Fig.#22

Now our units is ready to operate.



CAUTION !!!!!

- **DO NOT INSTALL THE WEATHER STATION WHERE IT COULD COME IN CONTACT WITH POWER LINES.**
- **AVOID LEAVING THE WEATHER STATION CONNECTED DURING AN ELECTRICAL STORM. THERE MAY BE A REMOTE RISK OF ELECTRIC SHOCK OR DAMAGE TO EQUIPMENT FROM LIGHTNING.**

This completes the assembly and installation of the 1-Wire TAI8585 KIT.
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