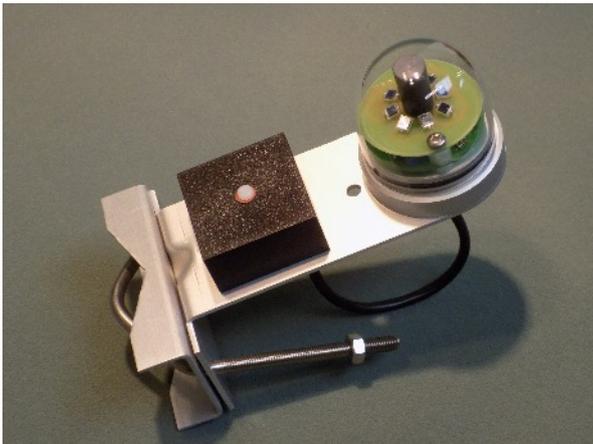




# Instromet Weather Systems Ltd

## Stand Alone Sun Duration sensor

Davis 6612 enclosure configuration setup manual.



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### **1) Introduction.**

Thank you for purchasing an Instromet Weather Systems Ltd Stand Alone Sun Duration Sensor, Davis 6612 build (Davis enclosure available separately)

This unit's ultimate purpose is to supply the user with a numeric record of the days total sunshine duration period as measured by the external outdoor sensor.

The sensor monitors eight photo-diodes and deems the sun to be shining when an imbalance in their readings is measured, caused by the presence of a shadow being cast by the sensors central pillar upon them.

### **2) Package Contents.**

Within the box you should find the following:

- 1 x External sun duration sensor
- 25m of 4 core cable
- 1 x Mounting plate
- 1 x Display inc power cable
- 1 x control pcb
- 1 x fixing hardware kit

### **3) Contact:**

Instromet Weather Systems Ltd.  
10b Lyngate Industrial Estate  
North Walsham  
Norfolk NR28 0AJ

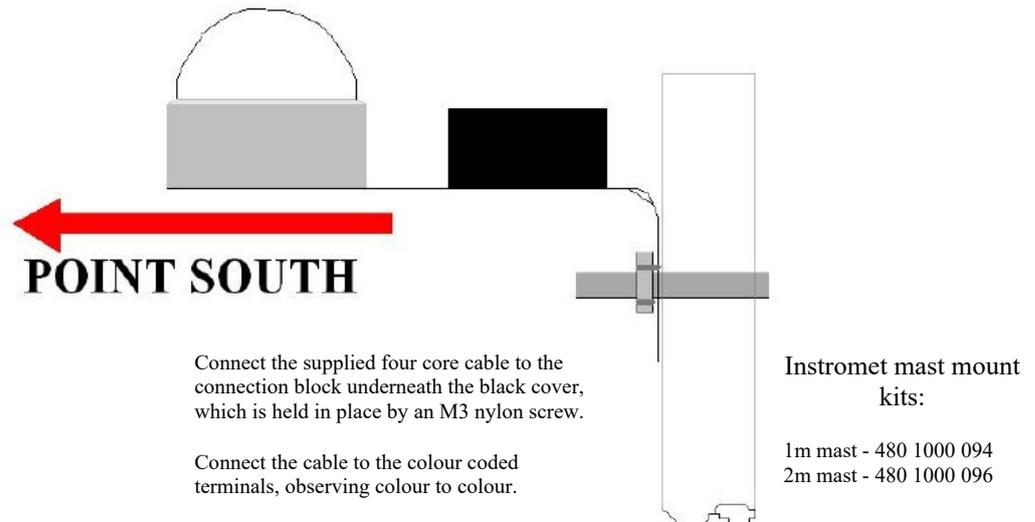
Tel: (01692) 502800  
Fax: (01692) 502801  
e-mail: [sales@instromet.co.uk](mailto:sales@instromet.co.uk)

Website: [www.Instromet.co.uk](http://www.Instromet.co.uk)

## 4) Outdoor sensor installation

Sensor variation options:

Standard: 480 1000 151/01  
IR filtered: 480 1000 158/01



### Sunshine Sensor

The Sensor is designed to be mounted on a mast of between 25 & 50 mm diameter. The mast should be sited where trees, buildings etc. will not cause a shadow at any time of day throughout the year. It must be borne in mind that the sun rises and sets on the horizon which in mid-summer can be NE & NW (depending on latitude) and only rises to a low angle in mid-winter.

The Sensor is best mounted on the top of a mast above any aerials etc and pointed approximately South (North in the Southern hemisphere) to avoid shadows.

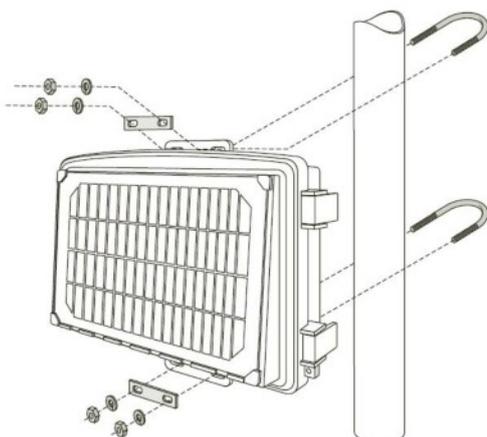
The Sunshine Sensor functions by comparing sunlight to shadow, when the ratio exceeds a predetermined threshold, the sun is deemed to be shining and the counter will count up one every 36 seconds (0.01 hour).

### IR Filtered sensor part number: 480 1000 158/01

This version of the Instromet sun duration sensor incorporates specially IR filtered photodiodes which only respond to light within the 330 - 720nm spectrum. These there for cut out the chance of any unwanted Infra Red light affecting the sensor output improving the accuracy of the device.

## 5) Davis 6612 enclosure mounting. (Available separately)

It is important that the shelter be mounted so that the solar panel gets the greatest amount of sunshine: the solar panel should be facing south (in the northern hemisphere) or north (in the southern hemisphere).

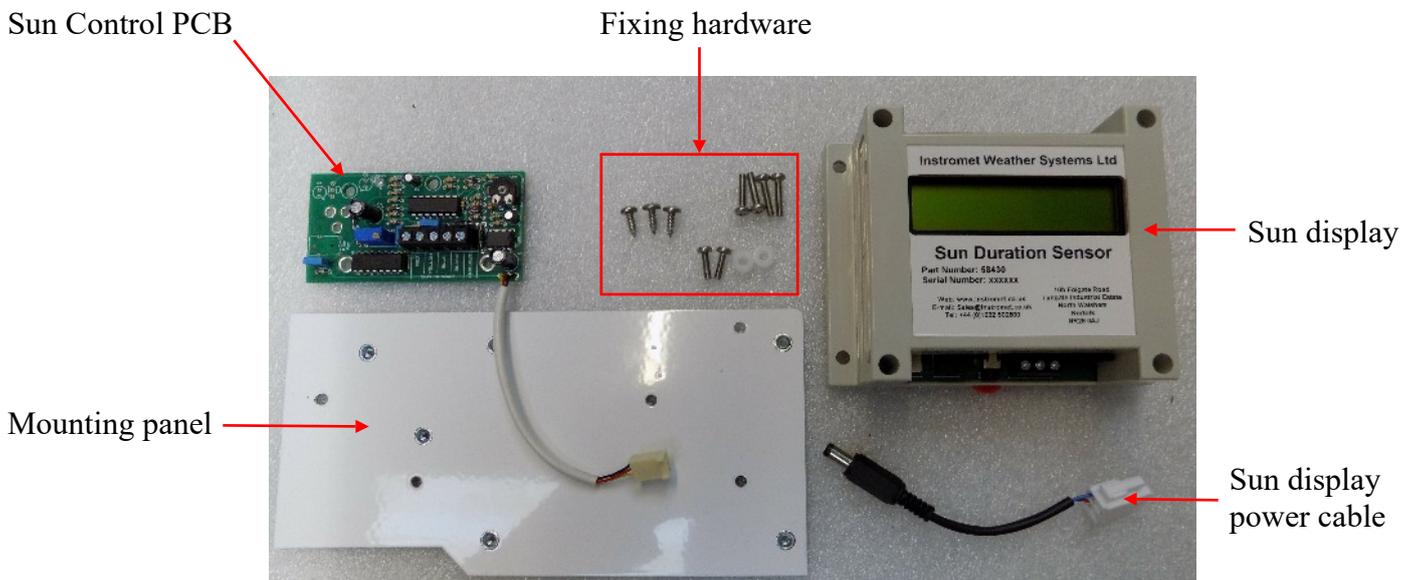


### Mounting on a Pole

Mount the shelter onto a pipe with an outside diameter of 0.84" to 1.84" (21 mm to 27 mm) using the U-bolts, backing plates, washers, and hex nuts provided.

Note: For mounting on larger diameter pipes, the housing can accommodate U-bolts with 5/6" (8 mm) threads for pipes up to 2.40" (61 mm) outside diameter (not provided).

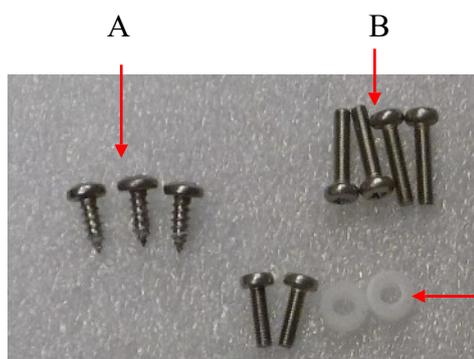
## 6) Kit components



## 7) Kit Assembly within the Davis 6612

Before commencing the assembly of the system, disconnect the battery terminals within the Davis 6612 enclosure. This will not only allow for extra space to assemble the system but also will prevent accidental shorting of the battery.

The very first step of assembly is to move the battery within the enclosure to the position shown in the last image on this page. Once this is done the sun duration sensor hardware can be fitted to the enclosure.

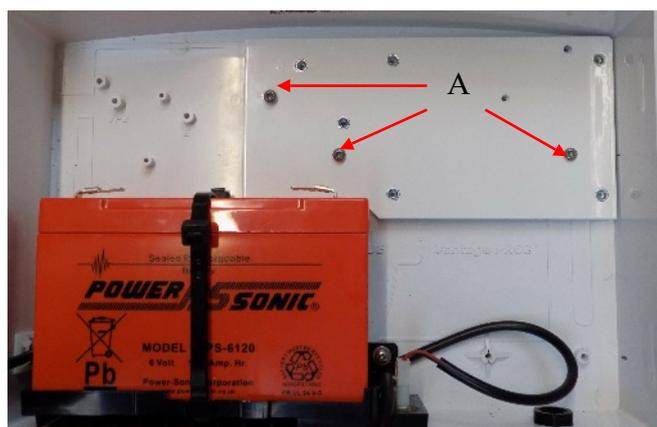


### Fixing Hardware:

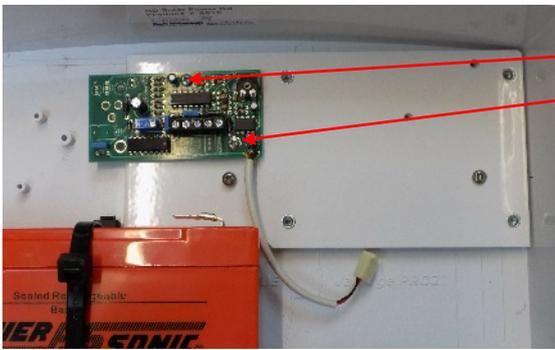
A = 3 x self tapping screw

B = 4 x M3 14mm screw

C = 2 x M3 10mm screw inc 2 x nylon



Using the three self tapping screws (A), fit the mounting plate within the Davis 6612 enclosure as shown



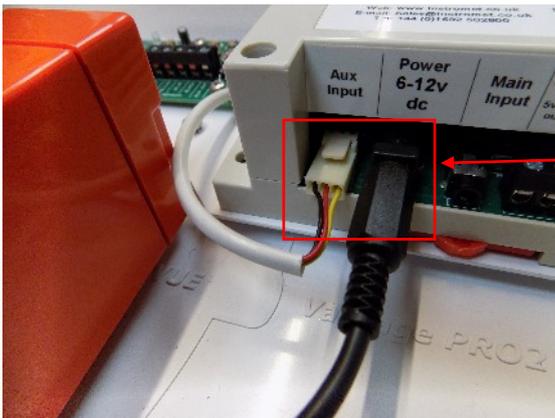
Using screws C, fit the sun control PCB to the mounting plate with the nylon spacers sandwiched between the two items.



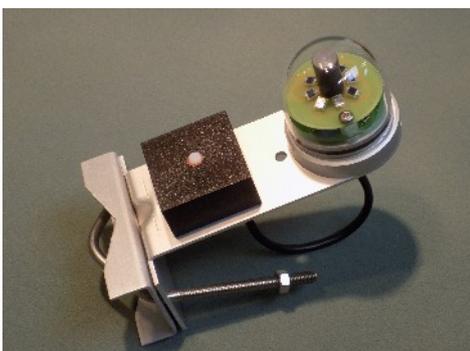
Using screws B, fit the display to the mounting plate as shown via the holes in each of the displays corners



Fit the display power cable to the solar charger as shown



Connect the sun control pcb and power cable to the display as so.



Connect the outdoor sensor to the four terminals marked 'sun sensor' on the sun control pcb using the supplied 25m four core cable, ensuring the colour coding is observed across all three items (cable, sensor & control pcb)

Other peripheral devices can be connected to the display, but these instructions demonstrate the connection of the basic system.



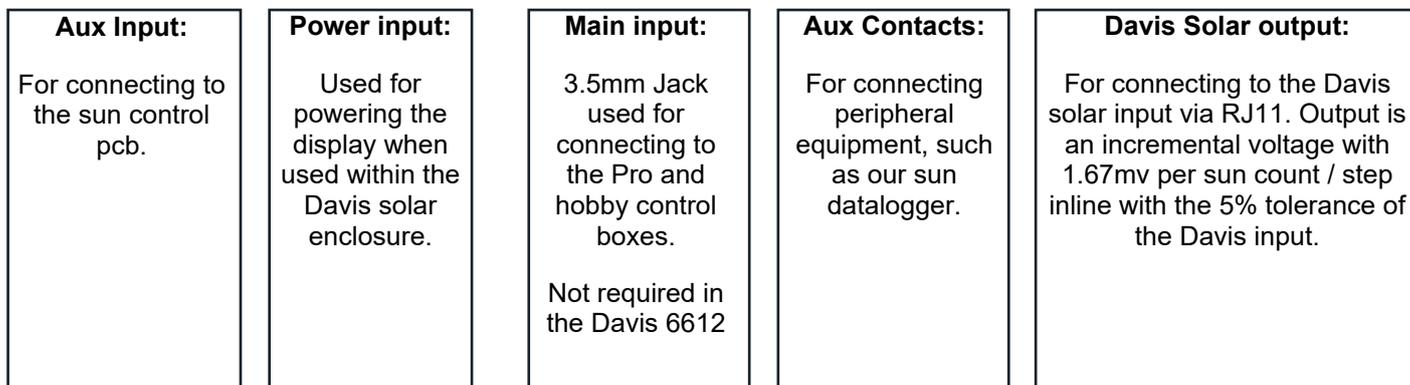
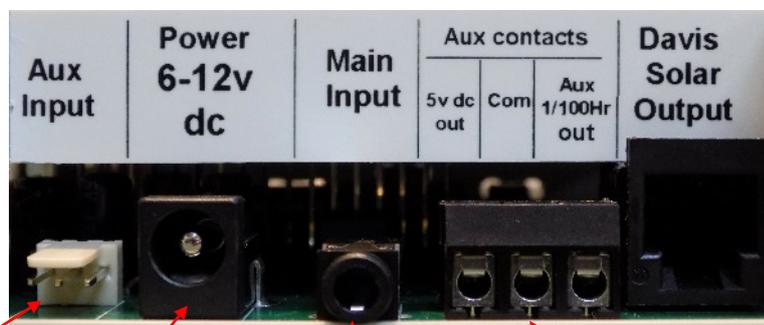
The last couple of installation steps are purely to fit the special cable gland to the enclosure which allows for the sensor cable and Davis RJ11 plug to pass through. The existing cable grommet hole requires opening up to 25mm to allow for the gland to fit securely.

The final step is just to re-connect the battery within the solar enclosure. Once this is done the display should switch on and be ready to start recording once the time and date parameters are set.

## 8) Display connections.

The stand alone sun display is jammed packed full of features and connectivity options and forms the main hub of the stand alone system.

Below is an explanation of the connections found along the lower edge of the display.



## 9) Display features / controls

The stand alone sun sensor display utilises three main screens which constantly switch between themselves.

The first screen is the Time / Date screen the second is the counter display screen and the third screen shows the first and last times sun was received by the outdoor sensor.

**Time / Date screen**

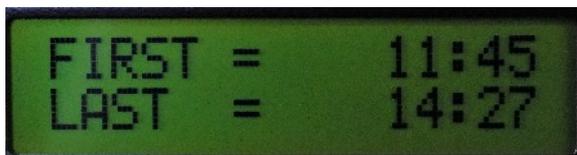


**Counter display screen**

Hrs : Mins : Secs



**First & Last screen**



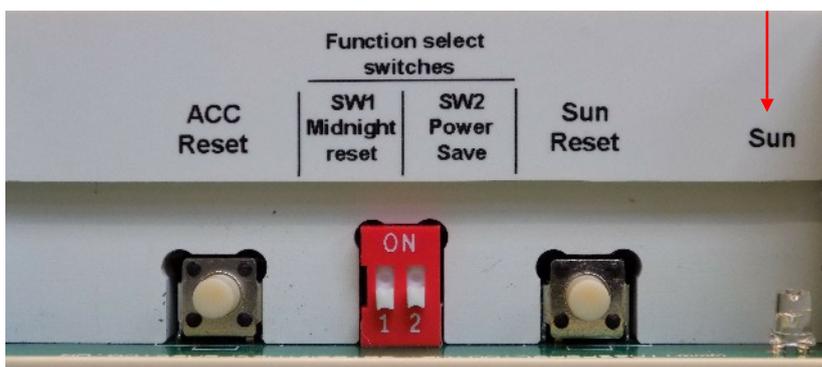
**'SUN'**

LED to indicate when sunshine is being received

Not used in the Davis 6612 build

### Display controls.

In order to control the three aforementioned screens and other functions, the display uses four main adjustment points on its upper most surface as shown here.



## 10) Display operation

### Time / Date.

In order to set the time / date, the use of the two buttons marked 'ACC' and 'Sun' reset will be required.

Firstly while the time / date is being displayed, depress the 'ACC Reset' button to enter 'set mode'. When 'set mode' is entered the first parameter (hours) will start to flash. While the parameter is flashing, press the 'Sun reset' button to advance to the correct reading. Once the correct reading is reached for the selected parameter, press the 'ACC reset' button to advance to the next parameter to be set.

Once the time / date setting procedure is complete, leave the display until the flashing parameters stop and normal display operation commences once more.

### Sun / ACC counters.

The two main display counters will increment each time a pulse is recorded from the outdoor sensor. Although both counters will increment in unison both can be reset separately. This can allow for potentially both daily and monthly figures to be recorded. To reset the displays, just hold down the relevant reset button for the counter you wish to reset for approximately five seconds until the counter returns back to zero.

### SW2 Power Save

When 'SW2 Power Save' is switched to 'on', the display is switched off to save power. This is particularly useful when the display is mounted within the Davis solar enclosure to help lessen the battery draw.

### SW1 Midnight reset

As the switch label implies, this function automatically resets the 'Sun' reading at midnight each day. The 'ACC' reading is not affected.

## 10) Troubleshooting guide

Despite careful consideration when installing the unit if any strange phenomenon's occur then the below may help.

### 1) Display dead

Check the 6v DC power adaptor plug is firmly connected to both the solar charger and display power input. All being well, the display should switch on and show the time/date function.

### 2) Power is on and the 'Sun' LED is illuminated but the display is dead?

Check that 'SW2' power save switch is not in the on position.

### 3) No count is being recorded on the display. – Check if the 'Sun' LED is illuminated - if not:

Check that the outdoor sensor cable is firmly connected to its terminal block beneath its black cover on the sensor bracket. Also check the sensor cable connections within the control box. Remake if necessary. Check that the sun is actually out and not obscured by cloud cover.

If the above doesn't help or if you experience anything different, then please contact our service department on the number in the front of this installation guide for advice.

#### Disclaimer

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