

# **SAFE-AID TS350 ANEMOMETER**

## **Wireless Model**

## **Installation & Setup Manual**

## **Version 3**



THE COMPLETE TS350 WIRELESS WIND SPEED SYSTEM HAS BEEN PRE-ASSEMBLED AND THE FOLLOWING MANUAL WILL AID IN THE INSTALLATION & SETUP PROCESS

### **! WARNING !**

THE PURPOSE OF THIS MANUAL IS TO PROVIDE THE CUSTOMER WITH THE OPERATING PROCEDURES ESSENTIAL FOR THE PROMOTION OF PROPER MACHINE OPERATION FOR ITS INTENDED USE. THE IMPORTANCE OF PROPER USAGE CANNOT BE OVERSTRESSED. ALL INFORMATION IN THIS MANUAL SHOULD BE READ AND UNDERSTOOD BEFORE ANY ATTEMPT IS MADE TO OPERATE THE MACHINE.

SINCE THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION, CONFORMANCE WITH GOOD SAFETY PRACTICE IN THIS AREA IS THE RESPONSIBILITY OF THE USER AND HIS OPERATING PERSONNEL.

ALL PROCEDURES ARE BASED ON THE USE OF THE SYSTEM UNDER PROPER OPERATING CONDITIONS, WITH NO DEVIATIONS FROM THE ORIGINAL DESIGN. ALTERATION AND OR MODIFICATION OF THE EQUIPMENT IS STRICTLY FORBIDDEN WITHOUT PRIOR WRITTEN APPROVAL.

# Contents

---

SYSTEM COMPONENTS: .....	3
DISPLAY MOUNTING INSTRUCTIONS: .....	3
DISPLAY BOARD POWER SUPPLY WIRING .....	4
CONNECTING RELAY OUTPUTS.....	5
MOUNTING THE ANEMO 4403 ANEMOMETER.....	6
REPLACING 3.6V BATTERY .....	7
REPLACING THE ANEMOMOMETER - HEAD UNIT .....	7
SYSTEM USE.....	8
SYSTEM STARTUP .....	8
ERROR MESSAGES & UTILISATION .....	9
WIND SPEED LIMIT & UNIT SETUP.....	10
LOW BATTERY INDICATION .....	12
SYSTEM SETUP & TESTING.....	12
SETTINGS MENU .....	13
SET DATE & TIME .....	14
CONTINUOUS LOGGING .....	14
RESET WIRELESS MODULE & RELOAD FIRMWARE.....	15
WIRELESS SETUP – TS350 DISPLAY UNIT .....	16
WIRELESS SETUP – ANEMOMETER HEAD UNIT.....	17
TEST MENU .....	18
SYSTEM INFORMATION .....	18
TS350 TESTS.....	19
TOUCH SCREEN CALIBRATION .....	20
DATA LOGGER SOFTWARE SETUP FOR PC.....	21
BASICS OF THE PC LOGGING SOFTWARE - ccWINDSPEEDLOG.....	22
UNIT REGISTER - ccWINDSPEEDLOG .....	24
DOWNLOADING LOGGED FILES - ccWINDSPEEDLOG.....	26
DATABASE VIEWER - ccWINDSPEEDLOG .....	27
CLEARING DATABASE - ccWINDSPEEDLOG.....	29
LOADING DATABASE - ccWINDSPEEDLOG.....	30

## SYSTEM COMPONENTS:

- Anemo 4403 Anemometer
  - Head unit (with vanes) & 360mm Cable with connector
  - Stainless Steel bracket with oilon bush and washer
  - IP65 Enclosure with wireless communication board & Size D 3.6V Lithium battery (Battery not included for export).
- Mounting pole (M10 threaded bar) with mounting foot, lock nuts & washers.
- TS350 Display Unit enclosed in anodized aluminium housing complete with buzzer, external antenna, universal swivel mounting bracket & 5 meters of 2 core cable for power supply.

## DISPLAY MOUNTING INSTRUCTIONS:

### TOOLS REQUIRED:

- 1 x Power Hand Drill
- 1 x 7mm Drill Bit
- 1 x 5mm Hex Head Allen Key
- 1 x 10mm Spanner

### PROCEDURE:

1. The display unit must be mounted in the '**best line of site**' to the anemometer at all times; this must be in an easily viewable and accessible place. The display can be mounted in virtually any suitable place by using the universal ball joint type bracket which is attached to the back plate of the housing. To allow free movement of the display on the bracket, turn the wing knob on the mounting bracket anti-clockwise enough to loosen the bracket. Decide which position is best by turning the brackets to the desired position and then "locking" the universal bracket by turning the wing knob clockwise until the ball type bracket does not have any free movement.
2. Remove the two M6 x 30mm socket head cap screws and nuts supplied with the ball mounting bracket round disc with 4 large (7mm) and 4 small (5mm) holes. Place the disc where it is to be mounted and mark two mounting holes using 2 of the large holes. Drill two 7mm holes and fasten the mounting ball bracket using two M6 screws and nuts. Fasten the screws through the bracket using a 10mm spanner and 5mm Hex Head Allen key.
3. Once the display is fixed, position the antenna so it is in a vertical position and in line of site of the anemometer.
4. Locate a suitable fuse protected power source to power the display unit (2A for the display only). Route the two core cable to the fused power source and connect the numbered wires as indicated:
  - Wire #1        -        + Supply (10-36VDC)
  - Wire #2        -        - Supply (Earth/Ground)

## DISPLAY BOARD POWER SUPPLY WIRING

Power supply cable for the TS350 display unit is prewired on delivery.

Great care should be taken when opening the display unit as wires from the main board are connected to or running through the back plate and incorrect procedures could result in damaging the wires. Please also ensure that the display power is OFF while the following procedure is carried out.

### TOOLS REQUIRED:

- 1 x 8mm Spanner
- 1 x 2.5mm Hex Head Allen key
- 1 x 2mm Flat Head Screwdriver

### PROCEDURE:

The following steps 1, 2, 6 & 7 can be skipped if the back plate is removed carefully and not moved more than 150mm from the housing (do not hang back panel from wiring).

1. Remove the antenna by turning the swivel connector at the base of the antenna anti-clockwise using your finger to turn. If the swivel connector is tight, an 8mm spanner may be used to loosen the connector.
2. Using an 8mm spanner, loosen the brass nut on the antenna receptacle and then remove the nut and washer. The antenna cable should then slip back freely into the display.
3. Loosen the gland(s) on the back plate to allow the cable(s) to move freely through the gland(s).
4. To remove the back plate loosen and remove the 8 x M3 x 12mm socket head cap screws completely using a 2,5mm Allen key. Support the plate at all times to ensure that the plate does not fall.
5. Carefully lift the back plate approximately 150mm away from the aluminium housing.
6. The buzzer is connected to the main board by red and white wires terminated with a white Molex connector; this connects onto the receptacle connector on the main board. Carefully unclip the Molex connector from its receptacle.
7. Remove the back plate completely.
8. Make sure the 2A blade fuse is not damaged and is inserted securely.
9. Connect the power wires to the following terminals using the 2mm flat head screwdriver:

- |               |   |         |   |                         |
|---------------|---|---------|---|-------------------------|
| • Terminal ++ | - | Wire #1 | - | + Supply (10-36VDC)     |
| • Terminal -- | - | Wire #2 | - | - Supply (Earth/Ground) |

9. To close the display:

- Ensure all power wires are securely in the terminals.
- Connect the buzzer's Molex plug to the circuit boards reciprocal connector.
- Attach antenna receptacle connector to back plate (refer point 2).
- Position back cover on display box making sure not to pinch any wires and replace the 8 x M3 x 12mm socket head cap screws.
- Gently pull wire(s) back through glands until slack has been taken up and then tighten gland(s).
- Reconnect antenna (refer point 1) make sure it is vertical.

## CONNECTING RELAY OUTPUTS

The TS350 display unit has provision for wiring up external lights and/or siren using the two relays mounted on the display board.

- Relay 1 - equal to or exceeding the intermediate limit
- Relay 2 - equal to or exceeding the upper limit

To set up the relevant limits see Windspeed & Unit Setup.

The contact block is situated inside the display unit on the board and the contacts utilised are as follows:

### RELAY 1 (Intermediate limit)

- NC1 – Normally Closed Contact
- COM – Common
- NO1 – Normally Open Contact

### RELAY 2 (Upper limit)

- NC2 – Normally Closed Contact
- COM – Common
- NO2 – Normally Open Contact

## TOOLS REQUIRED:

- 1 x 2.5mm Hex Head Allen key
- 1 x 2mm Flat Head Screwdriver

## PROCEDURE:

Connection can be done to both outputs (intermediate and upper) or individually as required.

1. Open the display box as per the Display Board Power connector wiring.
2. Replace M12 blank-off(s) in back plate with M12 gland(s) as required for output wiring.
3. Establish the relay output required by the device – Maximum 10A @ 250VAC or 10A @ 28VDC.

4. Connect the required output to the common on the contact block – Preferably use a separate supply but if low power (less than 2 Amps) or ground feed is required connect a wire directly from the supply or ground into the Common on the relevant relay.
5. Common signal will now be directed through the relevant relay as follows:
  - Normally Open (NO) - Error will close contact
  - Normally Closed (NC) - Error will open contact

## MOUNTING THE ANEMO 4403 ANEMOMETER

### TOOLS REQUIRED:

1 x Welding Machine – Qualified welder to do welding  
1 x Hacksaw  
2 x 17mm Spanners

### PROCEDURE:

1. The wireless anemometer unit is pre-assembled with or without battery. If there is no battery fitted please see: Replacing 3.6V Battery.
2. The anemometer head unit will need to be mounted in the **best line of site** of the TS350 display unit at the furthest point possible ensuring that the “wind vanes” are ABOVE the highest obstructive point i.e. on mobile cranes the unit should be mounted on the tip section above the level of the top of the boom so that even when the boom is at its highest point, the wind speed meter head is still above the boom head.
3. Find a suitable place to mount the anemometer. The mounting pole must be cut to the correct length, we recommend as short as possible to eliminate the possibility of the unit getting damaged or knocked off. The unit should be positioned correctly and have complete freedom of movement when swinging. The anemometer has a green nylon bush & washer where the pole slides through, this is fastened by using two M10 Nylock nuts & washers on either side of the spacer using the two 17mm spanners. Ensure the following:
  - a. **DO NOT** tighten the nuts together too tightly as the anemometer will not be able to swing freely & self-level with the movement of the boom
  - b. Ensure that the threaded bar is flush (inline) with the inner nut so that the threaded bar does not touch or interfere with the cable i.e. if the threaded bar protrudes from the nut it will damage the cable.
4. Once a suitable mounting place has been identified, weld the mounting foot to the crane’s boom. The anemometer is isolated and the bracket may be welded while the wind speed meter is attached to the pole. If the anemometer has been removed from the pole refit the anemometer as in point #3 above.
5. The anemometer and the display unit have been factory paired and therefore there is no need to “pair” the units. They will work together immediately (give at least 1 minute on brand new installations) once the installation has been completed, the power has been wired up to the display unit and the anemometer battery has been fitted.

## REPLACING 3.6V BATTERY

### TOOLS REQUIRED:

- 1 x 5mm Flat screwdriver
- 1 x Size D 3.6V Lithium Battery (1.5V Battery can be used but the battery life will be considerably less)

### PROCEDURE:

1. Loosen the four screws in the lid and remove the lid / cover of the IP 65 box located underneath the anemometer.
2. If there is no battery inside the battery compartment, then you will need to slide the battery into the compartment, making sure you have matched the positive pole of the battery to the positive side of the compartment, and the same for the negative pole. The battery is clearly marked on either side with a + (positive) and – (negative) and the compartment is also clearly marked with the same.
3. If you are replacing the battery, remove the old battery carefully and follow step #2.
4. Make sure all wires and the battery compartment are fitted neatly inside the box and close the box by tightening the four lid screws.

## REPLACING THE ANEMOMETER - HEAD UNIT

### TOOLS REQUIRED:

- 1 x 5mm Flat screwdriver
- 1 x 3mm Flat screwdriver
- 1 x 3mm Allen Key

### PROCEDURE:

1. Loosen the four screws in the lid and remove the lid / cover of the IP 65 enclosure situated underneath the wind speed unit.
2. Loosen the M16 gland cap at the bottom of the enclosure, unscrewing the gland “cap” until it is hanging loose.
3. The cable must be carefully disconnected from the circuit board using the 3mm flat screwdriver. Insert the screwdriver into the flat side of the 2-way grey connector this will loosen the wire from the connector. Repeat this for both wires.
4. Remove the wind speed “head unit” from the self-levelling bracket by removing the three M4 cap screws with the 3mm Allen Key.
5. Carefully pull the cable (unplugged in Step 3) through the M16 gland and the hole in the self-levelling bracket. Completely remove the anemometer “head unit” to be replaced.

6. Place the new anemometer “head unit” on top of the self-levelling bracket and fasten the wind speed unit to the bracket with the three M4 cap screws, tighten using the 3mm Allen Key making sure the cable is through the centre.
7. Gently feed the cable through the M16 gland from outside to inside the enclosure.
8. Plug the cables back into the grey 2-way connector on the board inside the IP65 box by inserting the 3mm flat screwdriver into the flat opening and inserting the crimped contact into the round opening. Standard wiring is yellow wire on the left and red wire on the right.
9. Tighten the cap of the M16 gland around the cable.
10. Close the lid of the IP65 enclosure and fasten the four screws in the lid.

## SYSTEM USE

The Safe-Aid TS350 unit is designed with ease of operation in mind. The touch screen is sensitive to touch therefore it is not necessary to push hard on the screen (*if touch screen does not work or selects incorrectly see touch screen calibration*). The working screen (**Figure 1**) displays the following parameters:

- current wind speed
- wind speed limit (user adjustable maximum wind speed)
- the percentage utilisation – digital and bar graph
- buzzer activated or buzzer override activated
- graphical representation of anemometer
- USB flash drive inserted
- Low Battery

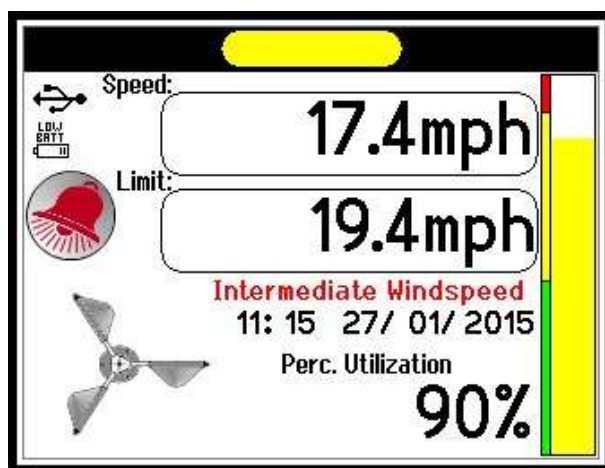


Figure 1

## SYSTEM STARTUP

When powering up the TS350, the system runs through a complete set of internal system diagnostics to make sure all inputs and outputs are working correctly (**Figure 2**). The TS350 system goes into the working screen once all the relevant checks have been completed. No user entry is necessary when starting up.



Figure 2

## ERROR MESSAGES & UTILISATION

The wind speed unit measures wind speed between the following parameters.

UNIT OF MEASURE	MINIMUM WIND SPEED	MAXIMUM WIND SPEED
KNOTS	1.0	107.9
MILES PER HOUR	1.2	124.2
KILOMETERS PER HOUR	2.0	200.0
METERS PER SECOND	0.5	55.5

The TS350 display unit will only start displaying the wind speed once the **Minimum** wind speed has been reached.

If the TS350 display exceeds the user adjustable **Maximum** speed for the anemometer unit, the unit will display **100% Windspeed** (in red) underneath the “Limit” field and the buzzer will sound continuously.

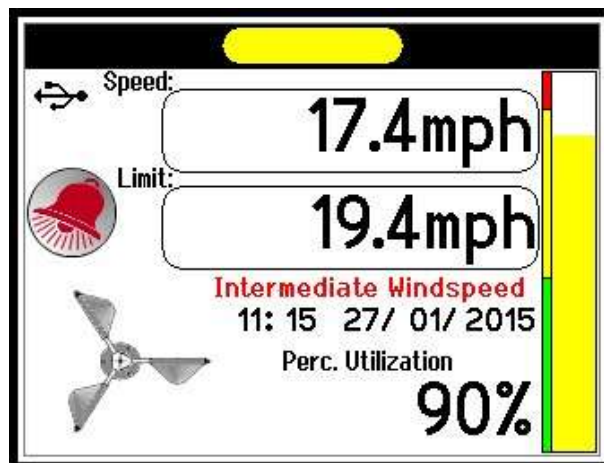


Figure 3

**Utilisation:** Utilisation is the actual wind speed utilised against the wind speed limits. This is displayed graphically by the bar, proceeding from green (less than **Intermediate Limit**), then amber (greater than or equal to **Intermediate Limit** but less than **Upper Limit**) and finally red (greater than or equal to **Upper Limit**) increasing incrementally as a percentage.

If the wind speed is equal to or greater than the Windspeed Intermediate Limit (**Figure 3**) the following will happen:

- The percentage utilisation bar graph will turn yellow
- **Intermediate Windspeed** will be displayed below the Limit block
- The display buzzer will sound intermittently
- Top robot type indication light on the top of the screen will change to yellow
- The buzzer symbol will be displayed after five seconds

If the wind speed is equal to or greater than the Windspeed Upper Limit (**Figure 4**) the following will happen:

- The percentage utilisation bar graph will turn red
- **100% Windspeed** will be displayed below the Limit block
- The display buzzer will sound permanently until an intermediate condition or lower is reached
- Top robot type indication light on the top of the screen will change to red
- The buzzer symbol will be displayed after five seconds

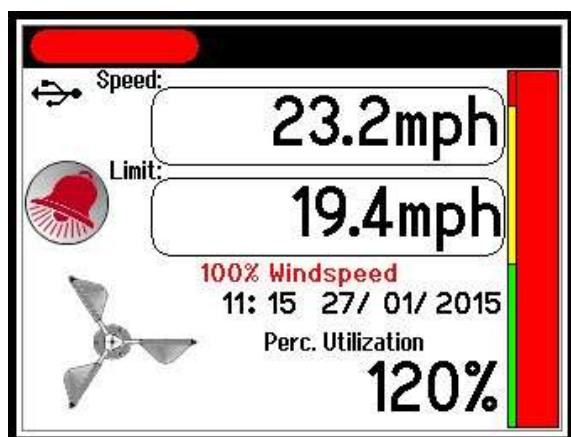


Figure 4

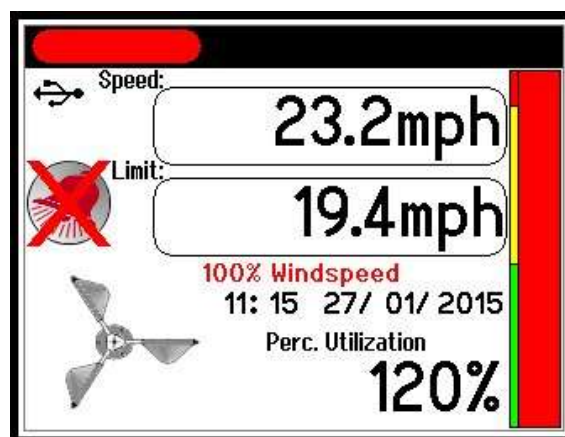


Figure 5

The display buzzer can be overridden (shut-off) by pressing the buzzer symbol if intermediate or 100% windspeed is reached. Once the symbol has been pressed (**Figure 5**) a red cross will be placed through the buzzer symbol.

## WIND SPEED LIMIT & UNIT SETUP

To enter the **Windspeed Limits** setup, press the screen on the wind speed limit value. The password screen will appear and a password will be requested (**Figure 6**). Enter the three digit password [ ] [ ] [ ] followed by the **Enter** key. The **Windspeed Limits** screen will now be displayed (**Figure 7**). Contact your authorized distributor or email the factory for password access.

Select the required units by pressing **Wind Speed Units**. Wind Speed Units will now be highlighted blue and by pressing the select button the units will change. Each time the **Select** button is pressed the units will change sequentially as follows:

- **kts** - **Knots**
- **mph** - **Miles per hour**

- km/h - Kilometers per hour
- m/s - Meters per second

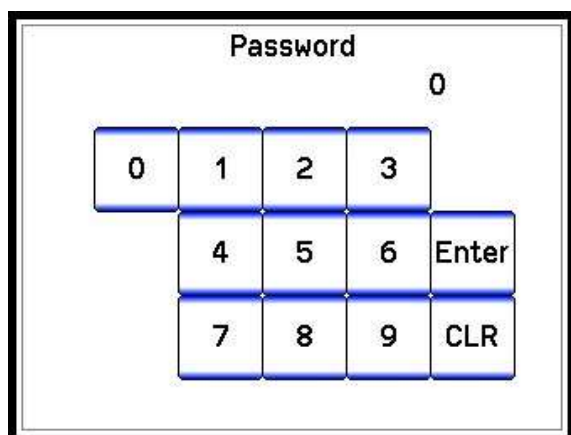


Figure 6

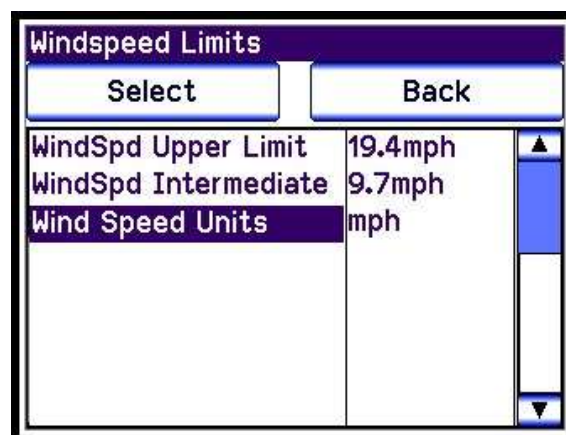


Figure 7

Once the correct units have been selected, highlight the desired limit and use the keypad to enter the Intermediate (**Figure 8**) and Upper (**Figure 9**) wind speed limits. The system has a pre-programmed conversion formula so the limits can be set in one unit of measure but shown in another with no calculations needed by the operator. This can be done by just selecting the correct unit, inputting the desired limits and then changing the units to the required units to be displayed.

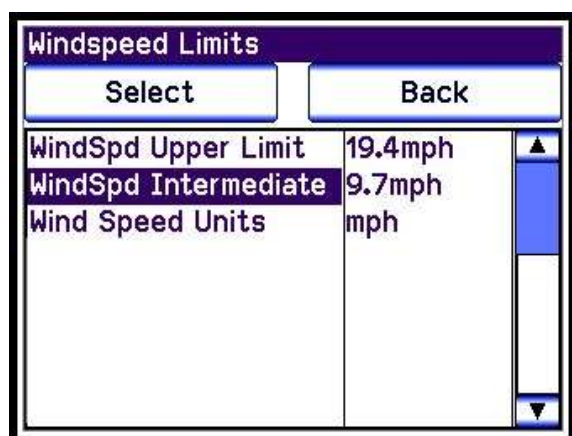


Figure 8

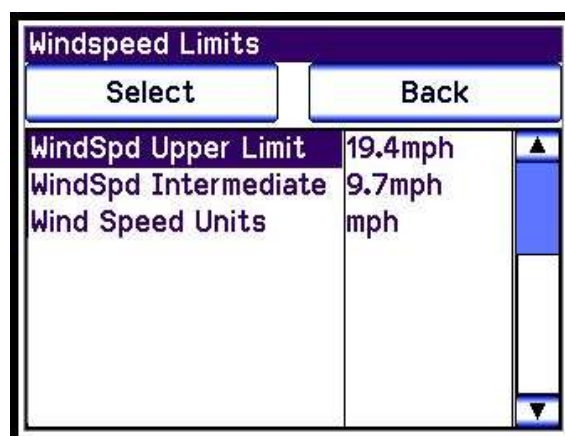


Figure 9

Once the limits and correct units have been set press the Back button, the system will return to the working screen.

## LOW BATTERY INDICATION

The TS350 display unit constantly monitors the 3.6VDC lithium battery in the anemometer and will display a low battery signal in the top left hand corner once the battery voltage is below the factory set voltage. This battery low warning will allow the operator time to do a battery change as per the REPLACING 3.6V BATTERY procedure.

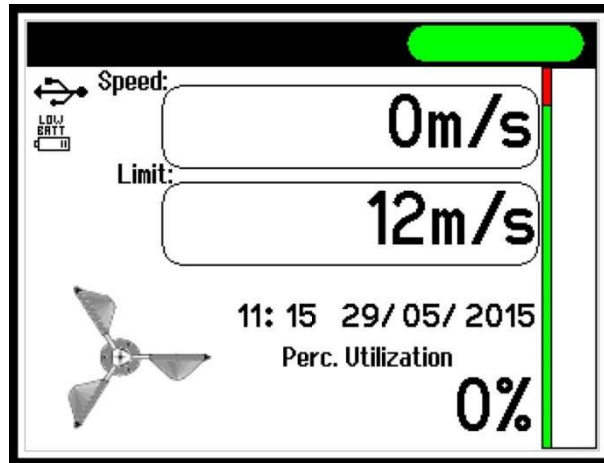


Figure 10

## SYSTEM SETUP & TESTING

To enter the **Settings & Test Menu**:

- Press the screen in the top left hand corner.
- The password screen will appear and a password will be requested (**Figure 11**).
- Enter the 4 digit password [ ] [ ] [ ] [ ] followed by the **Enter** key. Contact your authorized distributor or email the factory for password access.
- The **Settings & Test Menu** screen will now be displayed (**Figure 12**).

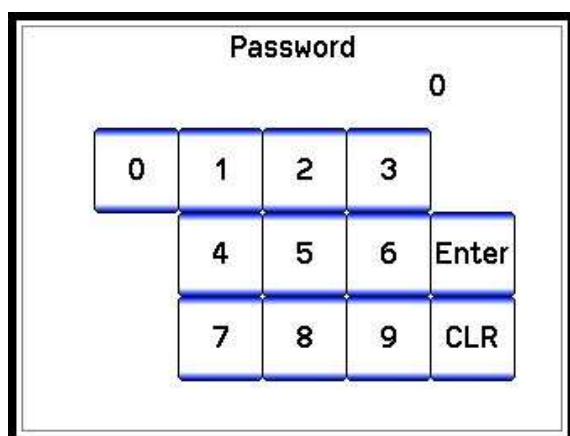


Figure 11



Figure 12

## SETTINGS MENU

To enter the system setup of the TS350 display unit

- Press the **Settings Menu** button
- **Settings Menu** will be displayed (**Figure 13 or 14**).

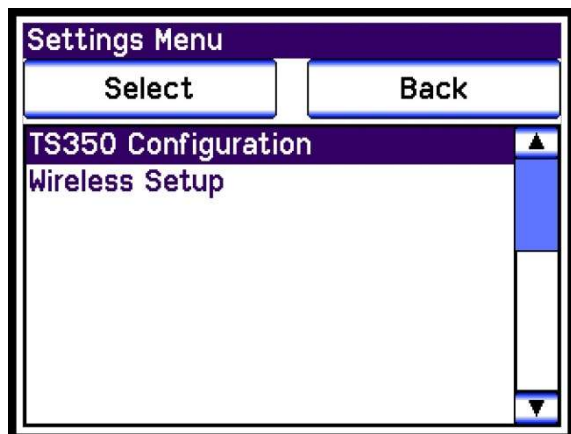


Figure 13

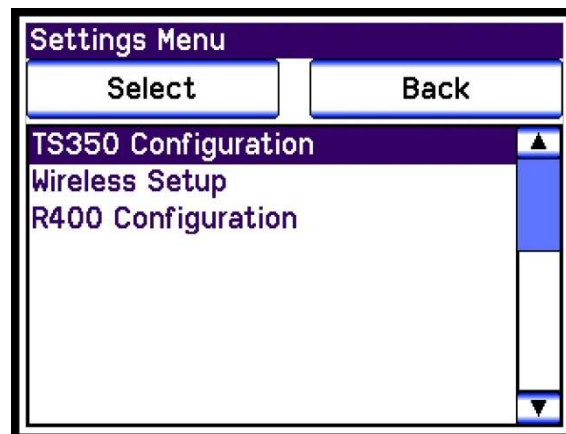


Figure 14

From this menu you can setup all the parameters of the entire TS350 wind speed meter.

The following parameters can be set here:

- TS350 Configuration (**Figure 15**)
  - Set Date & Time
  - Continuous Logging
  - Reset Wireless Module
  - Reload Firmware
- Wireless Setup (**Figure 16**)
  - Display
    - ❖ Channel
    - ❖ PanID
    - ❖ Destination Address (DL)
    - ❖ Source Address (MY)
    - ❖ Scan Channel
  - Anemometer



Figure 15

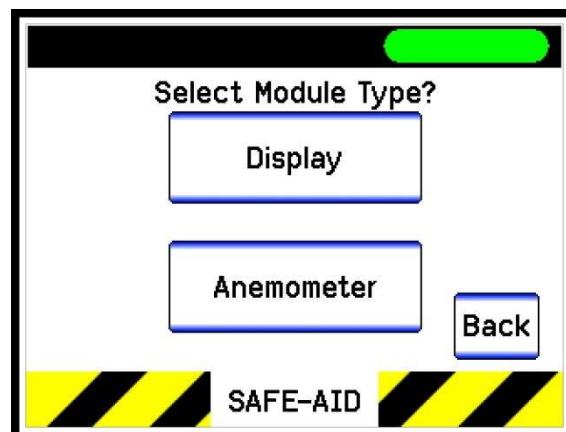


Figure 16

- R400 Configuration (**Figure 14**) – This option is only shown if a R400 board is connected. See the R400 I/O board for TS350 installation manual for more information.

## SET DATE & TIME

To change the systems current date and time highlight the **Set Date & Time** and press the select button (**Figure 17**). Select the date or time unit that needs to be changed by pressing on the relevant value, all units will display a keypad where the required number should be entered except for the month which will change incrementally on each selection.

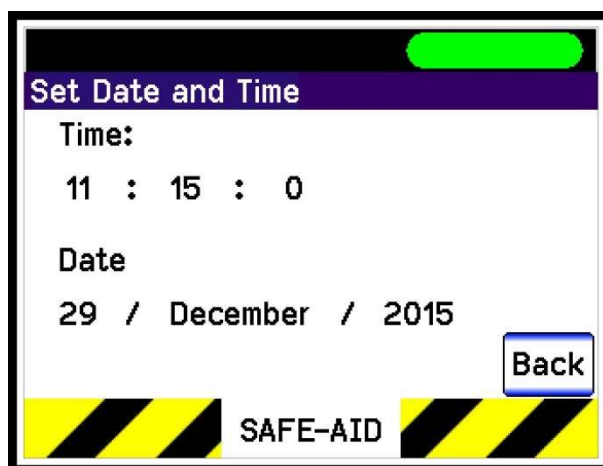


Figure 17

## CONTINUOUS LOGGING

For any logging of data to take place a USB flash drive (memory stick) must be inserted into the TS350 display unit i.e. the USB symbol is displayed in the top left corner. The following pre-set data is then logged to the USB with the TS350 display units date and time stamp:

- Windspeed Board Not Connected
- Windspeed Board ReConnected
- Over Intermediate Limit
- Under Intermediate Limit
- Over Upper Limit
- Under Upper Limit
- Peak Speed
- Relay Board Not Connected
- Relay Board ReConnected
- Anemometer Low Battery
- Anemometer Battery Good
- Anemometer Not Connected
- Powerup / Anemometer ReConnected
- WindSpeed Password Entered
- System Password Entered
- UpperLimit Changed
- Intermediate Limit Changed
- Units of Measure Changed

There are two methods of logging used on the TS350 display unit:



Figure 18

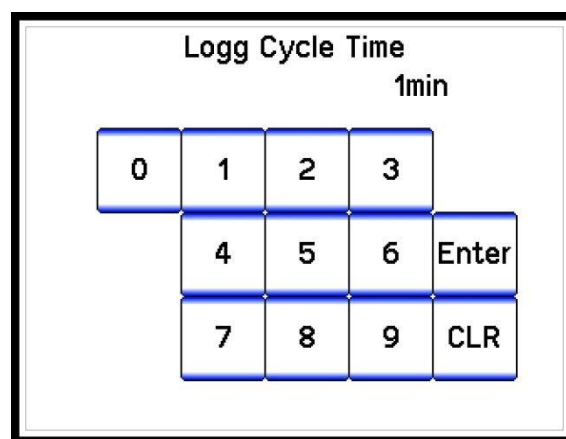


Figure 19

Option 1: Continuous Logging - **Logg Cycle Time** (log interval) – Interval time to be set

- Highlight **Continuous Logging**
- Press **Select**
- Select **Yes** (Figure 18)
- Enter the required time interval (1-60 minutes) followed by the Enter key (Figure 19)

Option 2: Log pre-set data only - Continuous Logging – **Disabled**

- Highlight **Continuous Logging**
- Press **Select**
- Select **No** (Figure 18)

## RESET WIRELESS MODULE & RELOAD FIRMWARE

These are advanced options and should only be done by or under the supervision of an authorized factory. These options have random code generation protection therefore require a onetime password from the factory. Please contact your authorized distributor who will get a factory representative to help with these features.

- Highlight **Rst Wireless Module** or **Reload Firmware** (Figure 20)
- Press **Select**
- Confirm Selection & enter **Random Generated Password** from factory (Figure 21)

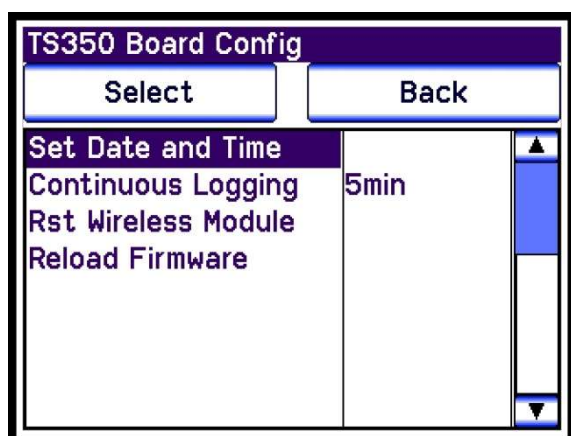


Figure 20

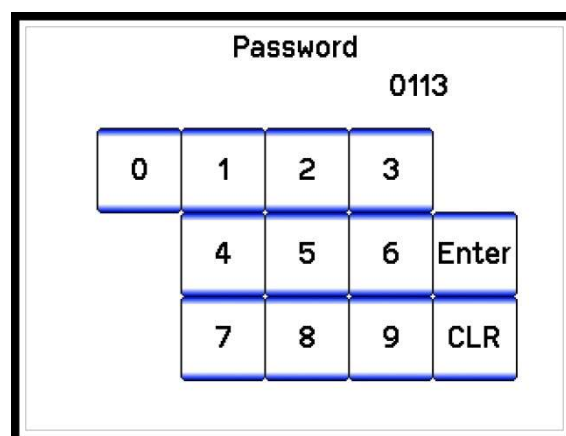


Figure 21

## WIRELESS SETUP – TS350 DISPLAY UNIT

To make the system modular the TS350 XBee Pro wireless module parameters can be changed if required i.e. if an anemometer head unit is changed the TS350 display unit wireless parameters can be configured to suit. These parameters are found on the inside lid of the anemometer wireless board/battery compartment or can be accessed from the factory serial number register. To enter these parameters:

- Highlight **Wireless Setup** (Figure 22)
- Select **Display** (Figure 23)

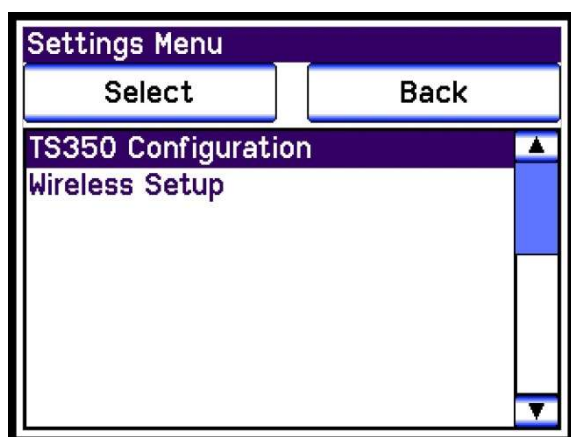


Figure 22

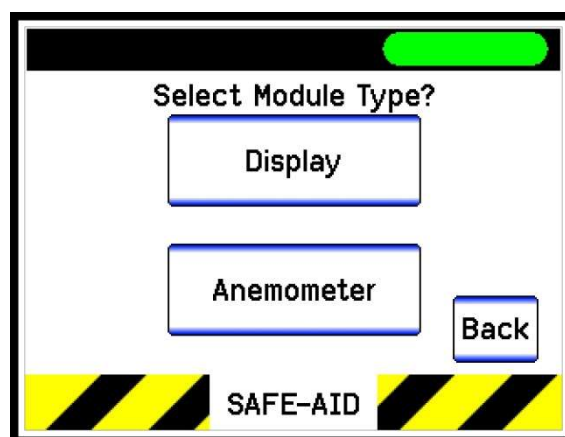


Figure 23

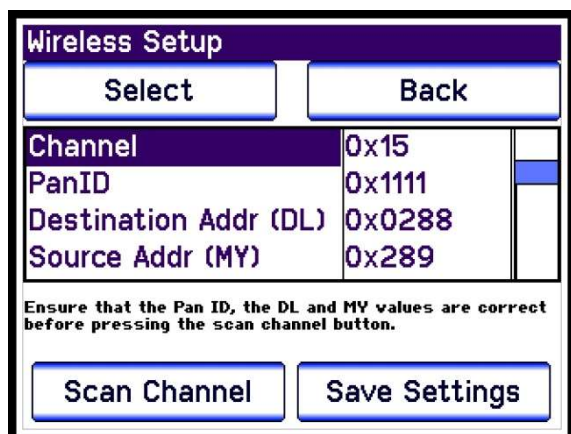


Figure 24

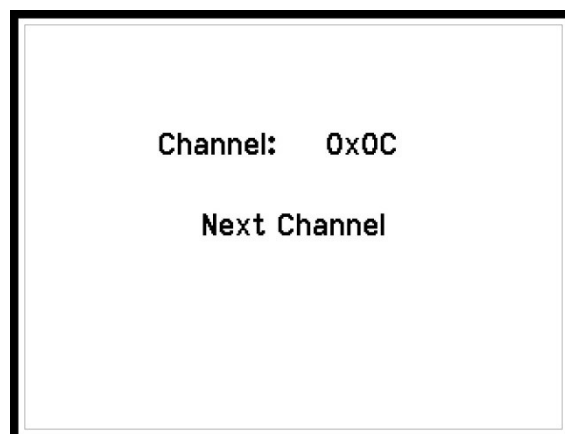


Figure 25

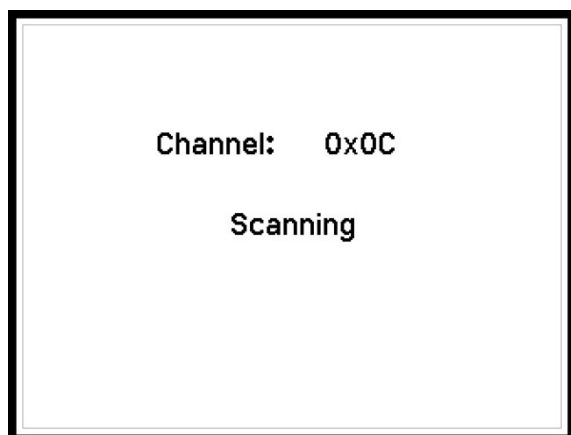


Figure 26

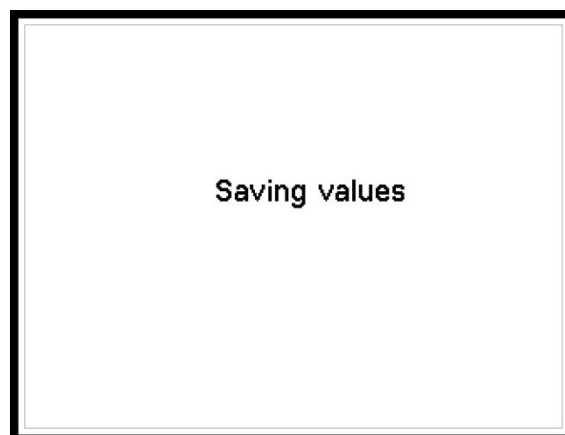


Figure 27

Now begin entering the values (**Figure 24**) by the using the **Select** button to select the required value and using the keypad to enter the correct parameters

- Channel – Entered as per the anemometer sticker or if the sticker is missing or illegible can be scanned by pressing the **Scan Channel** button at the bottom of the screen. All the other parameters have been set i.e. PanID, DestinationAddr and Source Addr. The unit will scan through the pre-set channels (**Figure 25 & 26**) until the correct channel is found, once the unit has found the correct channel it will return to the **Wireless Setup** screen.
- PanID – Always set to **0x1111**
- DestinationAddr (DL) – Source address (MY) of anemometer head unit
- Source Addr (MY) – Destination Address (DL) of anemometer head unit

Once all the parameters have been set press **Save Settings** button and the values will be saved (**Figure 27**).

Press **Back** to return to the previous screen.

**Windspeed NC** will be shown on the working screen below the Limit block if the wireless unit is not wirelessly connected and working correctly.

## WIRELESS SETUP – ANEMOMETER HEAD UNIT

The setup of a new XBee Pro wireless module for the anemometer can be done on the TS350 display unit by an authorized factory technician or under the supervision of an authorized factory technician. This option has random code generation protection therefore requires a onetime password from the factory. Please contact your authorized distributor who will get a factory representative to help with this feature. To enter these parameters:

- Highlight **Wireless Setup** (**Figure 28**)
- Select **Anemometer** (**Figure 29**)
- Enter Random Generated **Password** from factory

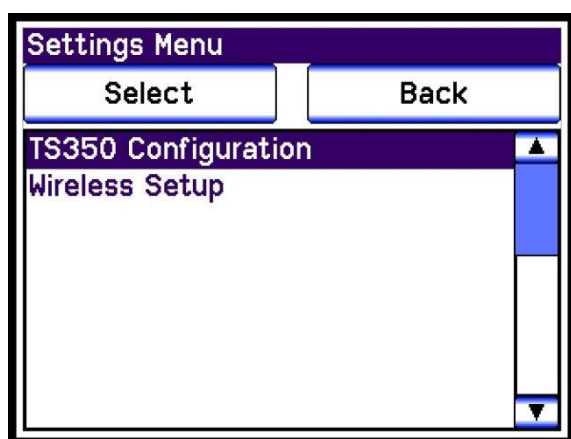


Figure 28

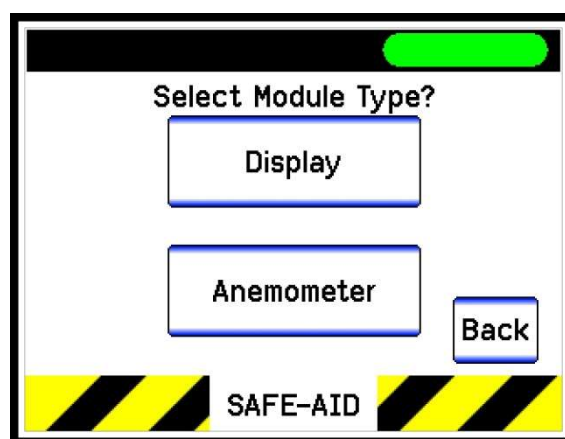


Figure 29

## TEST MENU

To enter the **Test Menu** for the TS350 display unit

- Press the **Test Menu** button (**Figure 30**)
- **Test Menu** will be displayed (**Figure 31**).



Figure 30

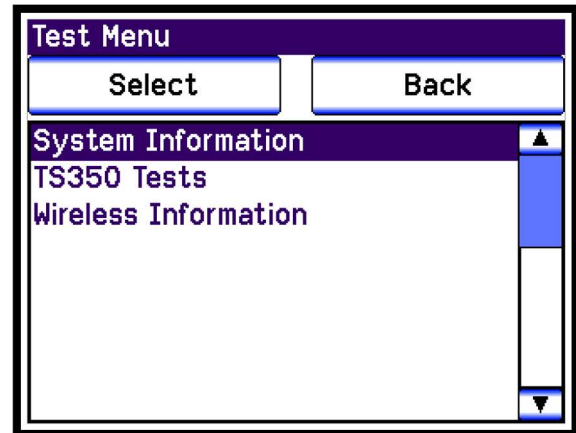


Figure 31

From this menu you can view and test the following parameters of TS350 wind speed meter.

- System Information
- TS350 Tests
  - View Variables
  - Test Inputs
  - Test Outputs
- Wireless Information – This menu is for factory use only

## SYSTEM INFORMATION

This screen (**Figure 32**) displays the following information:

- Display Serial no. – The last four digits are the serial number of the display unit
- Display Board FW. – This is the Firmware version of the board
- R400 Board FW. – If the R400 Board is connected via CAN Bus it will be displayed with the relevant serial number, if not connected 'Not **connected**' will be displayed.

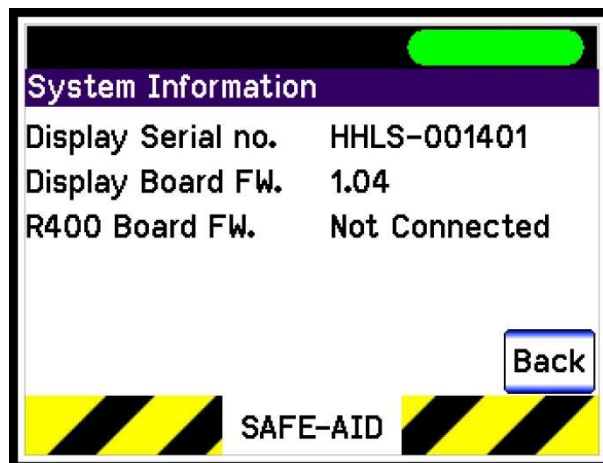


Figure 32

## TS350 TESTS

Select **View Variables** (**Figure 33**) to view the wind speed in all the different units of measure:

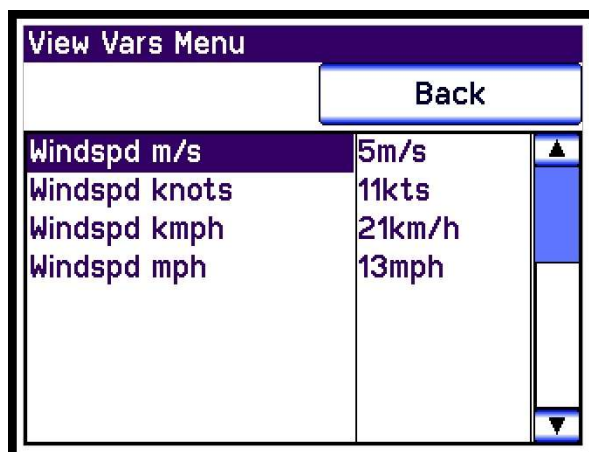


Figure 33

Select **Test Inputs** to view the digital inputs on the TS350 display board (**Figure 34**). The box next to the relevant input will be as follows:

- Input present – green block e.g. Input 1
- No Input – clear block e.g. Input 2, 3 & 4

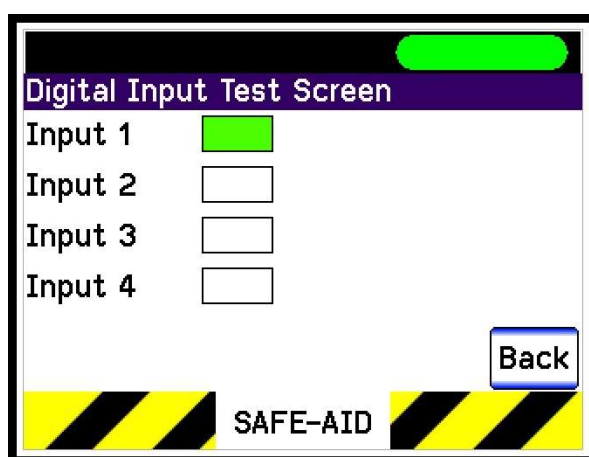


Figure 34

Select **Test Outputs** to test the two relay outputs on the TS350 display board (**Figure 35**). Press the button next to the relevant relay to switch the relay on and off.

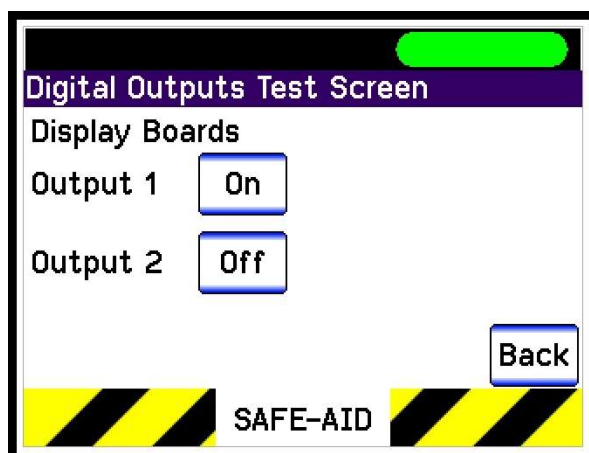


Figure 35

## TOUCH SCREEN CALIBRATION

*If the screen is not responding correctly to touch, the touch screen may need to be calibrated.*

Switch the TS350 display power off, power up the TS350 while pressing in the middle of the screen.



Figure 36

While the splash screen is on keep pressing in the centre of the screen for a full five seconds until the touch calibration is activated and loaded (**Figure 36**). Immediately lift your finger and follow the on screen instructions.

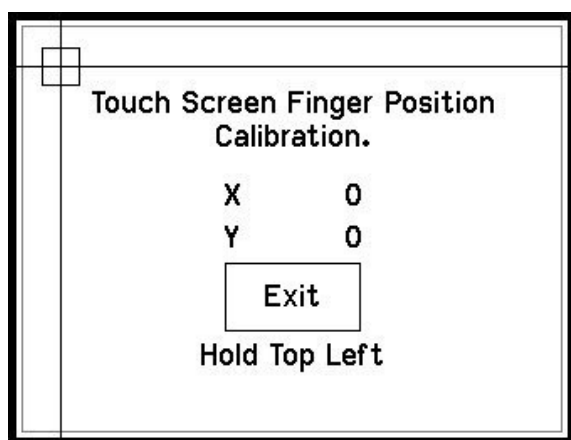


Figure 37

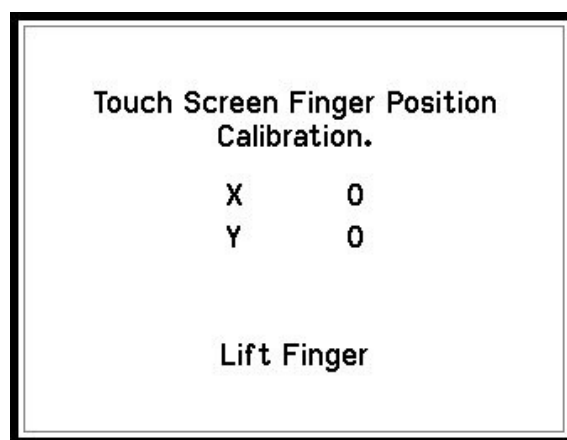


Figure 38

If the calibration screen has been entered by accident and touch calibration is not necessary, press the **Exit** button without pushing anywhere else on the screen to continue with normal start up procedures.

If the touch screen calibration is required follow the below procedure:

Press and hold finger where the two lines meet inside the small box at the top left hand corner (**Figure 37**). Calibration works fine when using a finger but for better results use a pen taking care not to press too hard or the screen will be damaged.

Hold finger/pen in this area until prompted to lift (**Figure 38**). Prompts will then be given for three more touch zones resulting in co-ordinates for all four corners of the screen.

Once calibration is complete the software automatically goes to the working screen.

## DATA LOGGER SOFTWARE SETUP FOR PC

All the data stored on the USB flash drive can be downloaded and stored on to a Windows based PC. The software application setup can be found on the USB flash drive in the TS350 display unit.

Full software support is available for the following operating systems:

- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

Insert USB flash drive into the PC & double click on the setup executable file WindspeedLoggerXXXX\_fullsetup.exe. XXXX represents the software version number.

Once the application has started correctly a **Welcome** screen will appear (**Figure 39**), click **Next** to continue to the **Installation Folder** screen (**Figure 40**). The application will automatically create a folder **Elec-Mech\Windspeed Logger** or select **Change** to select a different folder. 8.0MB of space is required for installation and the available space is shown, make sure there is enough space before continuing.



Figure 39



Figure 40

Click **Next** to continue to the **Shortcut Folder** screen (**Figure 41**). The shortcut will be placed on the desktop and can be made available for the current user or all users; this is selectable on this screen using one of the two options provided.



Figure 41

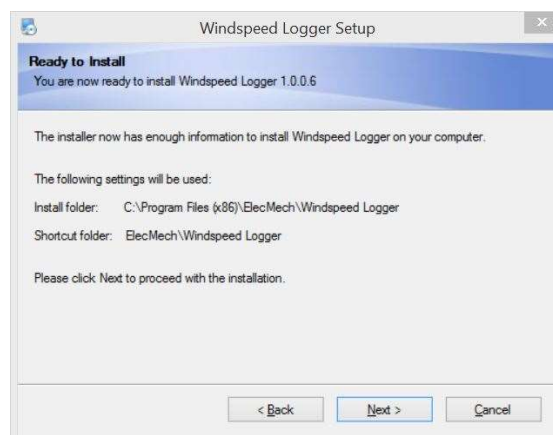


Figure 42

Before the installation starts all the selected information is displayed again on the **Ready to Install** screen (**Figure 42**). Confirm all the selections made are correct and click **Next** to continue.

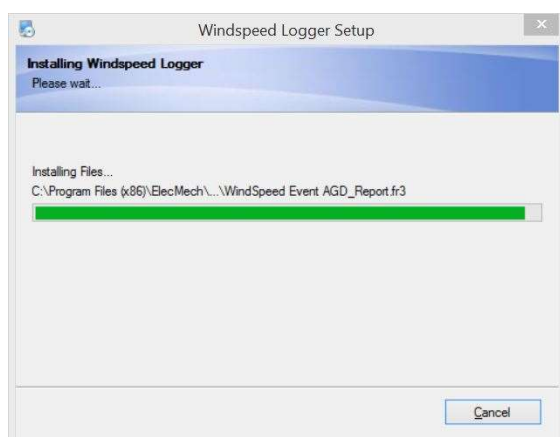


Figure 43

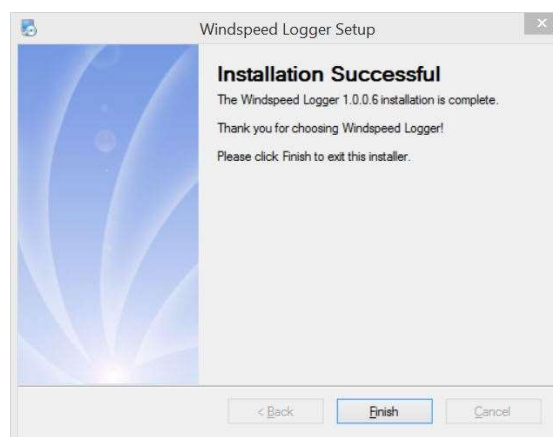


Figure 44

The application will now install and a progress bar will be displayed (**Figure 43**), once complete the Installation screen will be displayed (**Figure 44**). Click Finish to complete installation and exit the Windspeed Logger Setup installation.

Once the **ccWindSpeedLog** program is installed open the program on the PC using the shortcut on the desktop, remove the USB flash drive from the TS350 display unit and insert the USB flash drive into the PC.

Any software problems contact your authorized distributor or email the factory at:

- [info@mobilecranesafety.com](mailto:info@mobilecranesafety.com)

## BASICS OF THE PC LOGGING SOFTWARE - ccWINDSPEEDLOG

All the data stored on the USB flash drive can be downloaded and stored directly from the USB flash drive onto the PC using the ccWindSpeedLog software.

The following functions can be done or viewed with the ccWindSpeedLog application:

- Backup DataFile on Read - Download & backup windspeed data from USB flash drive
- Delete DataFile on Read - Download & delete windspeed data from USB flash drive
- Unit Register- Create a crane register with TS350 display serial number and a crane identification or serial number therefore allowing multiple cranes data to be stored in one place
- Delete event data from data base (date selection)
- Copy latest Firmware to USB flash drive
- Number of logged data entries – Viewed on the screen
- Printing of reports by data entry date – user selectable with a start date and an end date.


Open the ccWindSpeedLog shortcut on the PC desktop (**Figure 45**).



Figure 45

## UNIT REGISTER - ccWINDSPEEDLOG

Each TS350 display unit is appointed a serial number at the factory i.e. the serial number cannot be changed. This is used to identify all the displays in the logging software and therefore can be given a customised description linking the display to the crane. Once a list of TS350 display units and cranes has been compiled add them to the logging software as follows:

- Click on the **Unit Register** tab
- Click on the  button, the Serial Number entry window will be displayed (**Figure 46**)

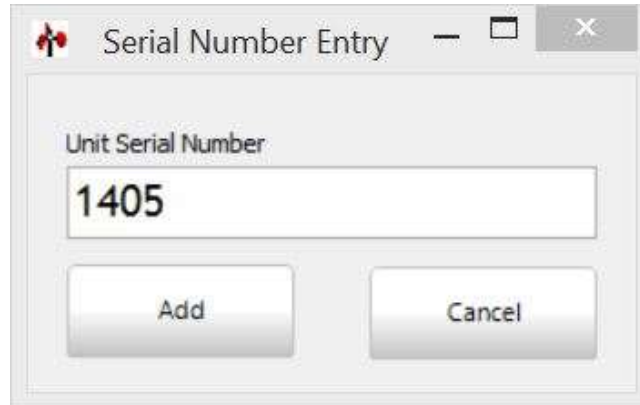
A dialog box titled "Serial Number Entry" with a red icon in the top-left corner. It contains a text field labeled "Unit Serial Number" with the value "1405" entered. Below the text field are two buttons: "Add" and "Cancel".

Figure 46

- Enter the TS350 display serial number and click **Add**.
- Click on the Unit Description box (**Figure 48**)

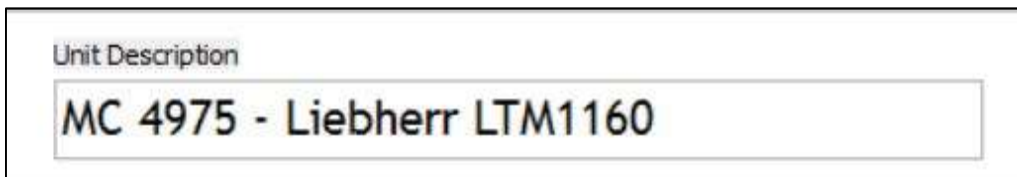


A rectangular text box with a label "Unit Description" in the top-left corner. The text "MC 4975 - Liebherr LTM1160" is entered into the box.

Figure 48

- Type a customised description of the machine the TS350 is installed into in the Unit Description box i.e. this description can be the machine description, serial number, fleet number or a combination.
- Click on the  button once the description is complete to save. The description can be edited at any time by clicking on the description editing the text and repeating the save.
- Repeat the above steps to add all the TS350 display units with their relevant descriptions.
- To delete a unit click on the  button and the Confirm Delete window will be displayed (**Figure 49**). Click **Yes** to confirm deletion or **No** to keep the record.

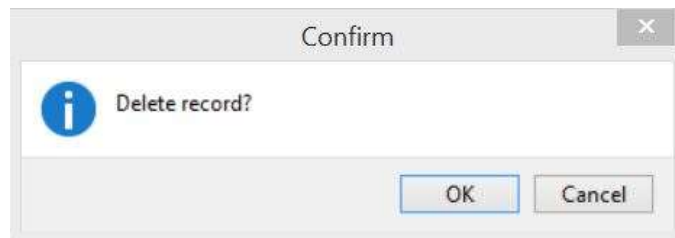


Figure 39

- Once completed the PC should have a list of all the TS350 serial numbers and descriptions (**Figure 50**).



Figure 50

## DOWNLOADING LOGGED FILES - ccWINDSPEEDLOG

The logged data from the TS350 display unit is transferred from the USB flash drive to the PC manually to allow the data to be managed. The following process will run through the download of the files from the USB flash drive:

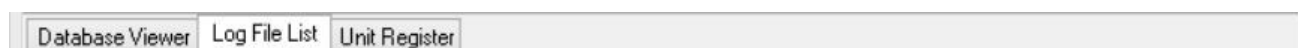


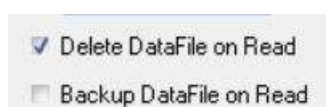
Figure 51


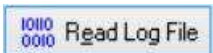
- Once the USB flash drive has been inserted the **Log File List** tab will be displayed between the Database Viewer and the Unit Register tabs (**Figure 51**)
- Click on the Log File List tab to show the file path on the left as well as the log files (**.WSS**) on the USB flash drive on the right of the screen (**Figure 52**).
- The log files are generated daily by the TS350 and the file is structures as follows:
  - WS – first 2 letters are for wind speed
  - \_SN1401 – TS350 display unit serial number
  - \_170615 – Day, Month & Year the file was created on the TS350 display unit



Figure 52

- Select the log file(s) that need to read into the data base by checking on the Check box(s) next to the file(s) name(s).
- There are 2 methods of reading the data files into the data base:
  - **Delete DataFile on Read** – this saves the data into the data base and deletes the file from the USB flash drive
  - **Backup DataFile on Read** – this saves the data into the data base creates a backup file in My Documents and deletes the file from the USB flash drive



- Click the  tick box to select the required method
- Select  button
- The data will be deleted from the flash drive and loaded into the data base.


## DATABASE VIEWER - ccWINDSPEEDLOG

Once the data has been read into the data base Click on the **Database Viewer** tab (**Figure 53**) the data can be viewed and/or printed as required by following the procedure.



Figure 53

- All downloads will be shown, as follows:
  - **Download** - download number which is added incrementally for each download completed and cannot be reset
  - **Plant ID** – the identity of the equipment the TS350 is installed into
  - **DateTime** - is the date and time that the download was done and not when the file was created on the USB flash drive

- Click on the relevant heading to reorder (sort) the downloaded files from low to high and vice versa.
- Select the  button (**Figure 54**) and then select the options as laid out below:
  - Report Date Range
    - **From date to date** – select a **from** date and a **to** date, this will reduce the print data
    - **No date** (All events) – all events in the data base will be selected
  - Report Grouping
    - **By Equipment Number** – only the selected equipment number will be displayed
    - **All Equipment** – all equipment in the data base will be selected

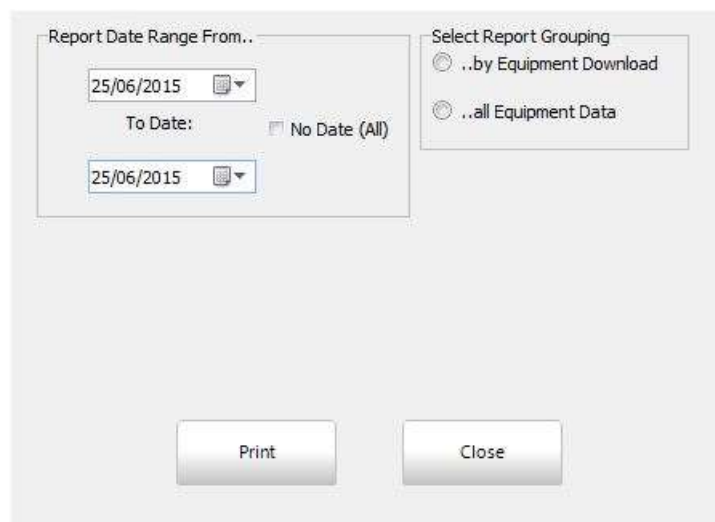



Figure 44

- Once date range and equipment type has been selected press the  button and the requested report will be generated (**Figure 55**).


WindSpeed Event Report			
<a href="http://www.mobilecranesafety.com">http://www.mobilecranesafety.com</a>			
Date / Time	Limit / Data	Error Description	Peak Speed
Serial Number: 1562			
Unit Description:			
28 Jul 2016 12:46:06:pm	0.0m/s	Continuous Log	
28 Jul 2016 12:51:05:pm	0.0m/s	Continuous Log	
28 Jul 2016 12:56:04:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:01:03:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:06:02:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:11:01:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:16:00:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:20:59:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:25:58:pm	0.0m/s	Continuous Log	
28 Jul 2016 01:30:57:pm	0.0m/s	Continuous Log	

Figure 55

The windspeed event report shows the following data:

- **Serial Number** – TS350 display unit's unique serial number
- **Unit Description** – Description created by user in Unit Register
- **Date / Time** – Date & time that actual event occurred – as per the TS350 Display Units real time clock
- **Limit / Data**
  - The limit value at the time of event
  - The value for continuous logging
  - The value entered for limit changes

All the event data is in date and serial number order.

## CLEARING DATABASE - ccWINDSPEEDLOG

Events can be deleted by date range using the following procedure:

- Click on  in the top left hand corner.
- Click on **Clear Old Records**
- Select the data range to be deleted (**Figure 56**)

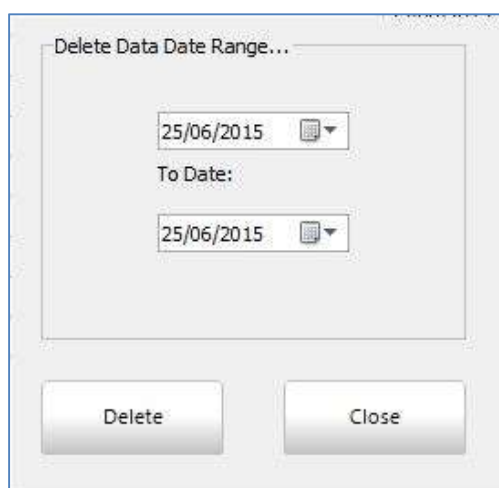


Figure 56

- Once the dates have been selected click the  button.

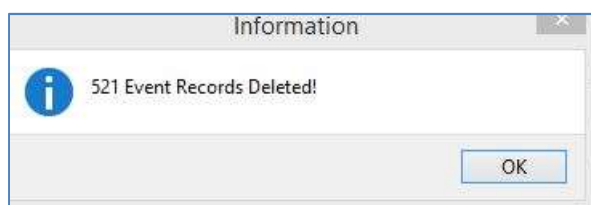


Figure 57

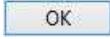
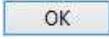

- The total number of events deleted will be displayed (**Figure 57**)
- Click the  button
- If all the events from a download have been deleted the download will be deleted (**Figure 58**)



Figure 58

- Click the  button
- Once complete click the  button.

## LOADING DATABASE - ccWINDSPEEDLOG

Databases can be moved from PC to PC and loaded using the following procedure:

- Click on  in the top left hand corner.
- Click on **Load Database File**
- Select the location of the new data base (**Figure 59**)

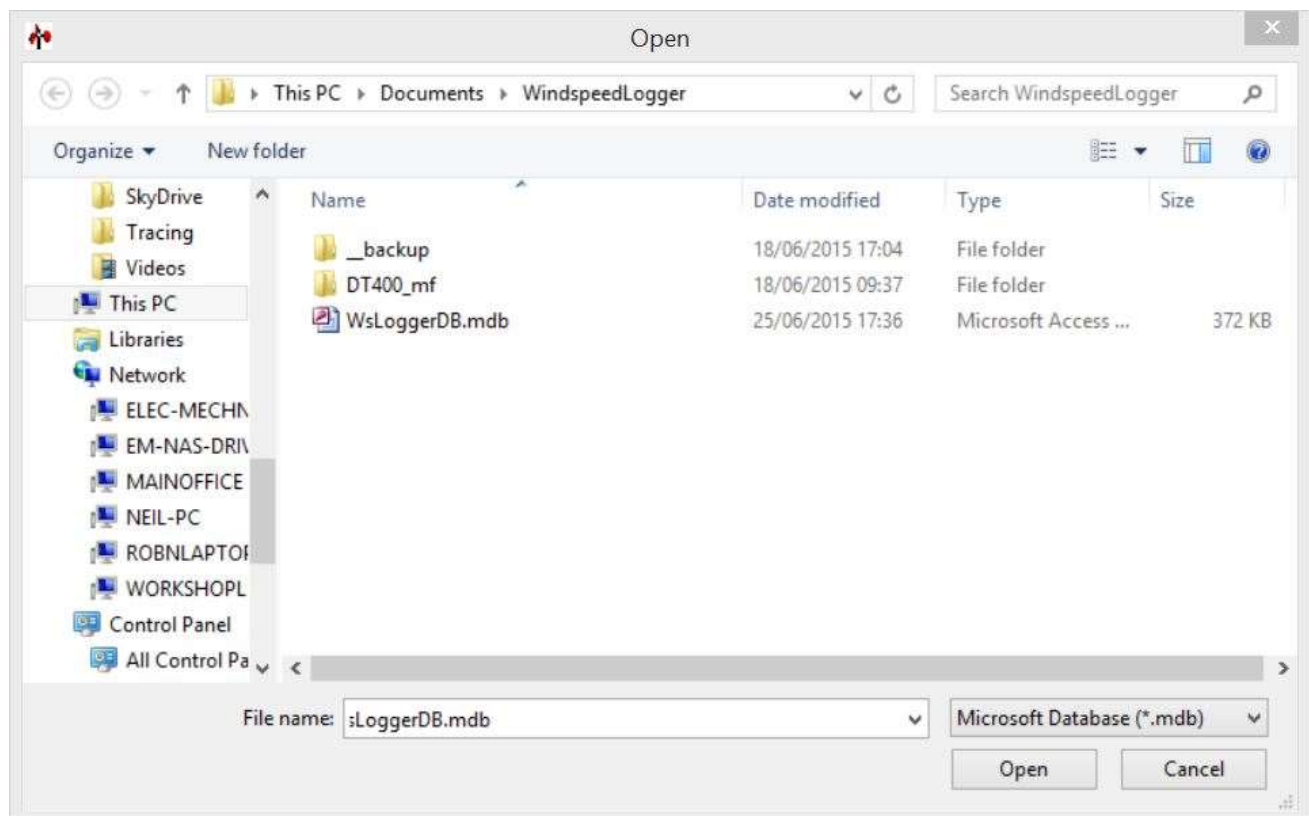
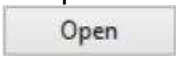


Figure 59

- Select the required database file \*.mdb
- Click the  button to use the selected data base