



DF15 YU (front fascia YOUR SPEED on diamond grade fluorescent yellow, U channel mounting)
DF15 YGU (front fascia YOUR SPEED on diamond grade fluorescent yellow green , U channel mounting)
DF15 WU (front fascia YOUR SPEED on diamond grade white background, U channel mounting)
DF15 YZ (front fascia YOUR SPEED on diamond grade fluorescent yellow, Z bracket mounting)
DF15 YGZ (front fascia YOUR SPEED on diamond grade fluorescent yellow green , Z bracket mounting)
DF15 WZ (front fascia YOUR SPEED on diamond grade white background, Z bracket mounting)

DF 15 Customer Handbook

DORMAN
VARITEXT

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1. Introduction

1.1 Pre-requisites

If you are installing DF15 hardware you must perform the following tasks:

Choose an appropriate installation location.

Manage your own personal safety and safety of other personnel.

Assemble the required equipment and organise/implement Traffic Management arrangements.

Have experience installing electrical equipment at height.

1.2 Important Safety Information

Please review the following information before installation.

Warning

READ ALL INSTRUCTIONS BEFORE USE AND SAVE THIS MANUAL FOR FUTURE REFERENCE

DF15 units must be installed and adjusted in accordance with the installation instructions contained in this Handbook.

Use the DF15 only for the applications it was designed and supplied for.

Changes or modifications not expressly approved by Dorman Varitext could void any warranty or guarantee on the equipment.

Safety Information

The following safety information and warnings enable you to avoid potential harm to yourself and others; and possible damage to the equipment, being installed/maintained

This should not be considered to be an exhaustive list of hazards you may encounter during with the equipment and should never be considered as a substitute for your judgment and experience.

Please read and observe all the safety information and instructions contained in this manual before installing or operating any equipment. You should keep this handbook in a safe place for future reference.

If you are unsure about any part of this installation or of the potential hazards listed, please contact Dorman Varitext immediately using the details at the back of this handbook.

This section contains important information to help you recognize, understand and mitigate some of the risks involved with installing and maintaining a DF15 sign.

Please read all the following safety advisory messages before carrying out any work on this equipment.

To reduce the risk associated with electric shock injury.

Operate any AC isolation equipment fitted to support structures.

Open the white fuse barrels located on the DIN Rail illustrated in section 2.3.1 to isolate the equipment within the sign.

All electrical equipment must be serviced by suitably qualified personnel. Specifically, someone with previous training or who has received factory training on these or similar types of equipment, such that they thoroughly understand the techniques, tools, and methods required to properly service this equipment.

Qualifications should be valid where there is a time expiry clause attached to them.

Battery acid may cause skin irritation and eye injury. To reduce the risk of burns or other acid related injury resulting from handling lead-acid batteries:

Wear approved gloves, goggles, and an apron when handling batteries

Beware of cracked battery cases

Handle batteries with care.

Always use the recommended charging systems.

To reduce the environmental risks associated with the improper disposal of batteries containing lead and acid:

Please dispose of batteries in strict accordance with all national and local government laws/regulations.

Radar Radio Frequency (RF) energy can be harmful to the eyes.

To reduce exposure to the risk of RF energy, do not stare into the Moving vehicle detector (MVD) radar antenna. Maintain a minimum safe distance of 20cm (8-inches) from display face.

An accidental short circuit may instantly heat conductive jewellery, tools, etc to skin-burning temperatures. To reduce this risk when working on live equipment:

Keep tools, jewellery, and other conductive objects away from the battery Terminals and/or live equipment.

To reduce the risk of impact hazards resulting from falls, accidents with passing vehicles, and from unstable equipment:

Use appropriate traffic control methods, work equipment, and procedures.

Strain or back injury may result from lifting equipment improperly.

To reduce the risk of strain or back injury, always use proper lifting techniques and have adequate help. Strong consideration should be given to the use of mechanical lifting equipment such as cranes during installation.

To avoid the possibility of injury due to falling or unstable equipment:

Be certain the sign is mounted to an appropriately rated pole or equivalent mounting surface.

Use appropriately rated mounting hardware.

NOTICE

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions provided, may cause harmful interference to radio communications. However, there can be no guarantee that interference will not occur in a particular installation.

Changes or modifications not expressly approved by Dorman Varitext could void the user's authority to operate the equipment and invalidate any warranty.

1.3 Scope of this Document

This documentation provides the following information for DF15

Setup and Operation

Troubleshooting

Installation of DF15 hardware may require that you work above the ground on a ladder or access device. Please make sure you have all the required equipment and are aware of potential safety issues before starting any installation. DO NOT install any DF15 hardware if you are unsure how to complete the installation or lack appropriate safety equipment.

Dorman Varitext does not recommend installing this hardware during inclement weather.

Every effort has been made to ensure the accuracy of the information given in our Publications, but in accordance with our policy of continually improving our products we reserve the right to modify designs and specifications whenever necessary. All equipment is designed to conform to relevant UK and European standards.

Every care is taken to ensure that, as far as reasonably practical, equipment supplied will perform without risk to health. It is essential that accepted codes of professional practice are followed in the assembly, installation and commissioning of the equipment. If in doubt with respect to any of these instructions, please consult Dorman Varitext before installing the device. Dorman Varitext reserves the right to vary or modify any specification without prior notice.

Please note that equipment and components described in this document are protected by patent and no part of this document may be reproduced in any form without the written permission of Dorman Varitext

1.4 Description

DF15 are electronic vehicle speed activated LED road side signs which are directly targeted, and proven to have an effect on road safety.

The sign provides a digital speed feedback display and user selectable 'Slow Down' or 'Slow Ice' warning legends coupled with flashing amber LED lanterns in each corner of the sign.

The sign is supplied with front fixed plate fascia with YOUR SPEED in black lettering on a choice of diamond grade reflective fluorescent yellow, yellow green or white backgrounds

DF15 signs are available with a speed data logging analysis feature which is described in more detail in a later section of this document. The feature allows the user to collect speed data at the sign site. The data logger can be operated with the sign in both covert and operational mode which allows the user to collect 'before' and 'after' data for performance evaluation purposes.

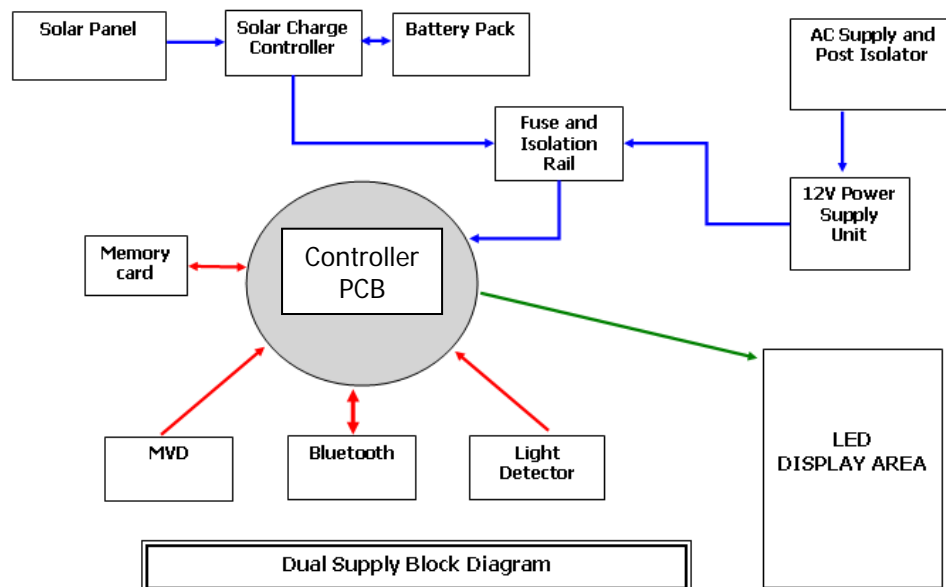
All signs are supplied as standard with dual AC/Solar plug and play compatibility to suit both urban and rural site applications.

The DF15 Sign is fully compliant with the FHWA Manual for Uniform Traffic Control Devices (MUTCD) 2009 Edition and meets the minimum requirements detailed in Section 2B.13 Speed Limit Sign (R2-1) Clause 20.

The DF15 can be configured to deliver a speed warning message that is in direct relation to how far the speed limit is being exceeded. eg 2mph above speed limit display speed solidly, 5mph above limit display speed solidly with flashing beacons , 10mph over limit display Speed alternating with SLOW DOWN, 15mph over limit display SLOW DOWN with flashing beacons.

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Shown below is a schematic diagram which depicts the interfacing of the various LRUs which go to make up a DF15.



2. Installation

Prior to Installation commencing it is highly recommended that the installer undertakes a site survey evaluation and a full health and safety risk assessment covering installation, operation and maintenance.

At the time of going to press the photographs showing the Z Bar mounting structure were not available. Consequently the rear views of the sign show Signfix channeling which is not applicable for use in the State of Florida. This omission will be rectified in future issues of this Handbook

2.1 Installing DF15

1. Mark a chalk line on the post at 7 ½ ft/2.28m from ground level (level with road surface). This will be the location for the bottom of the sign. For optimum alignment the sign display face should be pointing at the centre point of the approach traffic lane at a range of between 300ft (92M) and 500 ft (150M) distance from the sign. In the case of a dual lane approach, use the dividing centre line of both approach lanes.

Handy hint: Place a cone at both 300 (92M) and 500 ft (150M) points from sign at the road edge and aim sign anywhere in between these points at the centre of approaching traffic.

Failure to align the radar correctly may affect radar performance.

2. The preferred mounting method in Florida is to use pre-drilled Z section and U Bolts as detailed in FDOT Design Standard 11860 which should be consulted before installation commences.
3. Signs can be specified by customers with Sign Fix Channelling as the mounting hardware and are installed with ¾" / 19mm banding using SX0220 banding adaptors. Dual bands should be used on the top and bottom band to add extra strength. The sign can also be affixed using Signfix U brackets for ease of frequent dismantling and re-deployment of the DF15

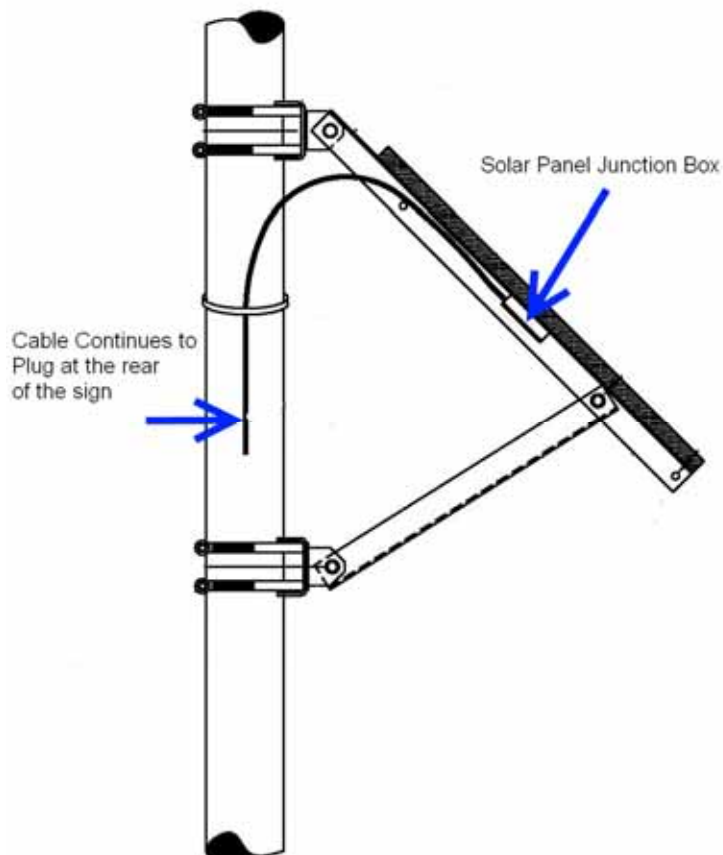
2.2 Installing the Solar Panel

Important note: Given an average 3 solar hours per day falling onto one of our standard 80W solar panels which is pointing due south and with a clear view of sky; the sign will provide continuous power for ADT one direction volumes of up to 7000, when it is used in conjunction with the standard 4 cell 80amp/hr battery reservoir.

Prior to physical mounting of solar panel, it is recommended that item 30, the separately provided plug and play solar power lead is connected to the Solar Panel before mounting.

1. The bracket is assembled using the instructions included in the bracket packaging.
2. The spacing between the two cross members which attach to the post should be set at 18" / 457mm. This will give an angle of approximately 45 degrees from the panel to the vertical support post. The angle of the panel can be adjusted if required for seasonal solar changes, i.e. 30 to 45° in summer. >45° in winter.
3. The bottom cross member of the side of pole bracket should be mounted approx 12" / 305mm above the top of the sign.

4. Please note: The Solar panel should be aligned to be facing directly south and have a clear 360 degree view of the sky. It is important to avoid any shadowing by trees or tall buildings.



2.3 Electrical Hook Up

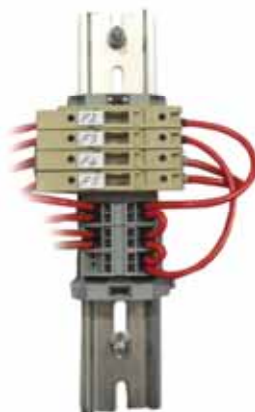
All DF15 within the family series are supplied as standard with Dual AC/DC (Solar) functionality, allowing clients the flexibility to select an appropriate power source to suit specific of each DF15 site location.

2.3.1 DC Solar Hook up

Actions to install:

Open the sign with access key provided

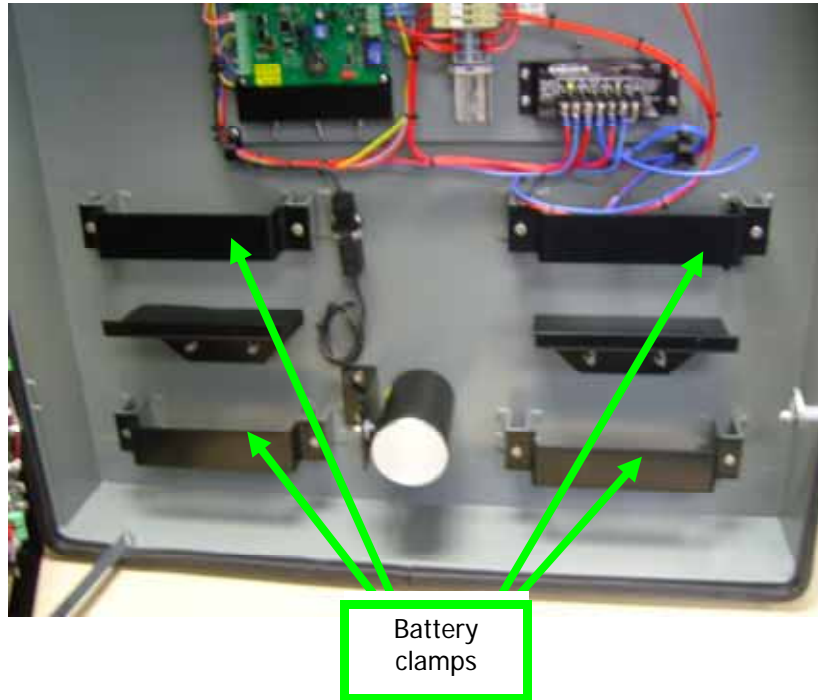
Open all fuse barrels located on the internal power din rail by pulling each fuse carriage open



Physically clamp all 20 amp/hr 12v battery cells into position in the compartment provided internally within the bottom section of the DF15

WARNING

If the sign is to be solar powered it is essential that the fuse in position F2 is removed



Connect the sign wiring harness to the batteries, connecting the Red to Positive (+) and Blue to Negative (-) using the cable links provided to connect all batteries in parallel.

The supplied lead connects at one end into the solar panel junction box and at the other to the rear of the sign via an IP65/NEMA Standard 4 plug/socket arrangement.

Open the junction box on the back of the solar panel by undoing the 4 retaining screws. Fit the ½" / 13mm plastic cable gland (provided), and then feed the cable through the gland and terminate to the screw terminal connections. Finally, hand tighten the gland to ensure weatherproofing.

Important Note:

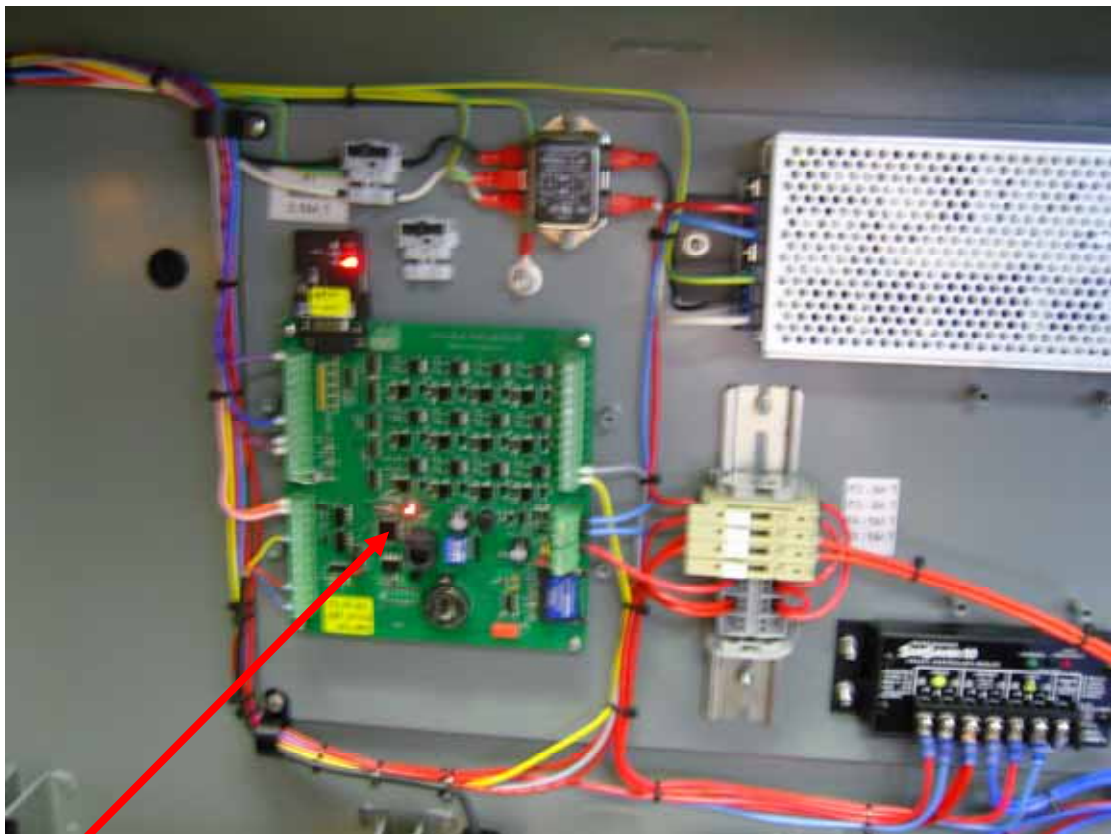
It is essential that the correct polarity of all connections is maintained to prevent possible damage to the system.

The plug end of the cable fits into the 2 pin socket on the rear of sign marked Solar Panel. Align the key and guide built into the plug and socket, and screw down the plug securing ring fully to ensure proper fitment; and that the IP65/NEMA Standard 4 ingress rating is preserved. Ensure dust caps are fitted to all unused sockets



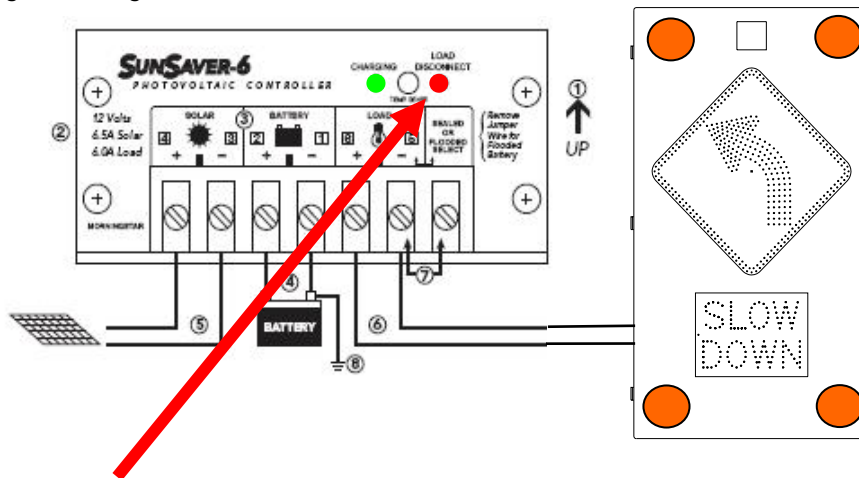
Important Note: Ensure polarity of the connection lead is correct by proving with a meter **before** connecting the sign to the solar panel.

The fuse carriages can now be closed. The installer should note that the red LED1 on the DF15 control card will flash to indicate that the system is being powered correctly.



Activity LED

The installer should also at this point take note of the LED indicators on the SunSaver charge controller located within the sign: The green 'charging' LED will light whenever sunlight is available and indicates that the battery reservoir is being charged correctly. The green LED will extinguish at night.



The Red 'Load Disconnect' LED will light to indicate that the charge controller has automatically disconnected the DF15 during a condition where the battery charge is low in order to prevent potential damage. The controller will automatically turn the DF15 back on once the battery charge has returned to acceptable levels.

Solar Power connection is now complete and the DF15 is ready for sign configuration parameters to be set and deployment. (See section 3)

There is also a provision where specified by the customer for an additional battery charger which is hooked up to a 110V supply provided by a street lamp. This can be used to augment the solar charging system by providing a charging facility during the hours of darkness.

The charger requires site specific instructions for hook up to the street lamp and this will be provided on a case by case basis by Dorman Varitext.

2.3.2 AC hook up

Actions to install:

Open sign with access key provided

Open all white fuse barrels located on the internal power din rail by pulling each fuse carriage open as shown in the section on solar hook up above

WARNING

If the sign is to be 110V AC powered it is essential that the fuse in position F3 is removed

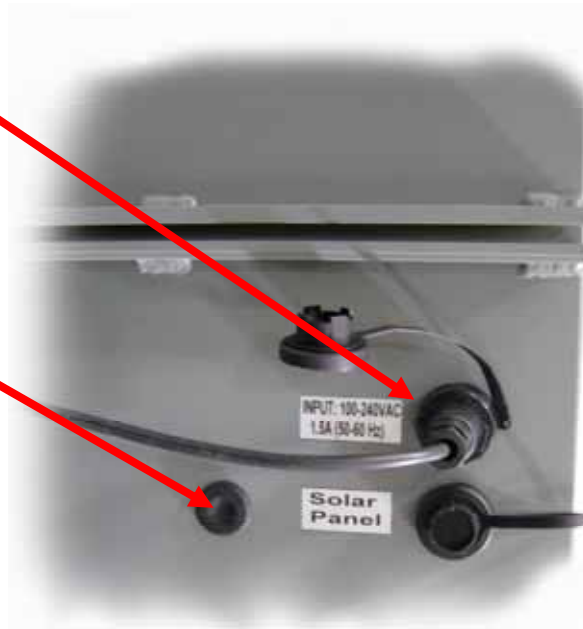
Two AC 110V entry points to the sign are available to the client:

Option 1

Via the IP65/NEMA Standard 4 rated Plug and Socket at the rear of the sign

Option 1

Option 2



Or

Option 2

Via $\frac{3}{4}$ " / 19mm entry hole drilled for $\frac{1}{2}$ " / 13mm flexible conduit (provided by others) located on the rear of sign (supplied blanked off with rubber blanking grommet)

Important Note: The following items are to be conducted by an Approved Electrician

Option 1. Install a 3 core, 1.5mm PVC covered armored flexible cable, terminated at one end into the IP65 Plug, and at the other connected to a fuse isolated external local AC 110V supply (5amp minimum provided by others)

Option 2. Fit an approved outdoor armored flexible conduit (not supplied) between the sign conduit entry point and the fuse isolated external local (5amp minimum) AC 110V supply. (Provided by others at the rear of the sign)

Install a 3 core, 1.5mm (0.6") PVC covered flexible cable via the conduit between the external local (5 amp minimum) fuse isolated 110V AC supply and the internally labeled 110VAC DF15 F1 supply input fused screw terminal (it will be necessary to disconnect and stow the pre-connected cables leading from the 3 pin socket).



Strip back each core 6mm (.23") and connect the green earth core into the terminal marked \perp (the middle terminal), connect the black core to the live fused terminal and connect the

white core into the neutral terminal. DF15 signs will operate from 100 -240V AC single phase supply. Internal Fuse rating is 3.15A and is of the Time Delay variety.

IT IS ESSENTIAL THAT ALL THE TERMINATIONS AND CONNECTIONS ARE FULLY INSULATED AND THAT NO CURRENT CARRYING CONDUCTOR IS LEFT EXPOSED

Follow the same instructions as per above to connect into the local external fuse isolated supply (provided by others). Connectors required are dependant on the type of isolator that has been installed. Close all fuses and ensure the red LED on the main controller board flashes continuously as shown in the solar instructions above.

AC Power connection is now complete and the DF15 is ready for sign configuration parameters to be set. See section 3

3.0 Configuration and Setup

This section provides a guide to configuring of the DF15 once physical and electrical power supply procedures have been completed.

3.1 Setting Normal/Convert mode

The DF15 Signs have the ability to operate in both active and stealth modes for data logging purposes. When first installed it is normal to set the sign in stealth mode to allow before speed data to be collected. Once a suitable amount of stealth data is collected the sign may be switched to active mode and data collection continued.

Collecting data in this way will allow the operator to evaluate the performance of the signs. The data collection process is covered in more detail in section 4.

Stealth mode is simply selected on the PDA by unticking all the speed parameters.

3.2 PDA Software

The PDA will come pre-loaded with DF15 V1.0 software. This software is specific to the DF15 sign and will not operate in conjunction with Dorman Varitext VATCS.

3.3 DF15 Data Logger

This raw data may be downloaded from the sign to a hand held PDA operating the Datalogger application software via a wireless Bluetooth connection to the DF15, where it can then be manipulated in Microsoft Excel to allow the operator to attain average, percentile and percentile ranking of speeds.

More information on the functionality of both the Datalogger Scheduler PDA and VAMP Desktop applications are covered in the remaining section of this guide.

4.0 Operating Instructions

To run the Df15 data logger application on the supplied PDA, select the start menu and select DF15 V1.0 program shortcut in the drop down menu, this will run the

program and by following the remainder of this section of the handbook will allow the operator to establish a connection to the sign, configure the sign parameters, set the real time clock, request a status report, download speed data and upload timetable schedules.

4.1 Initial Set Up

Go to the start page on the PDA and click the small blue icon on the bottom right of the display. This brings up the Bluetooth page.

The large circular button underneath the word "Bluetooth" should be green as shown on the screen illustrated. If it has a red cross striking through it, then Bluetooth is turned off. Clicking the button will turn it on and clicking the button again will turn Bluetooth back off.

Click the OK button at the top right hand side once you have finished.

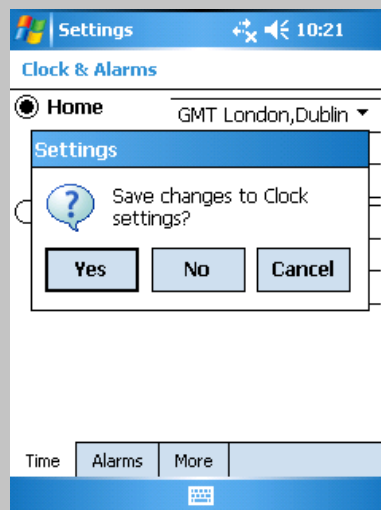
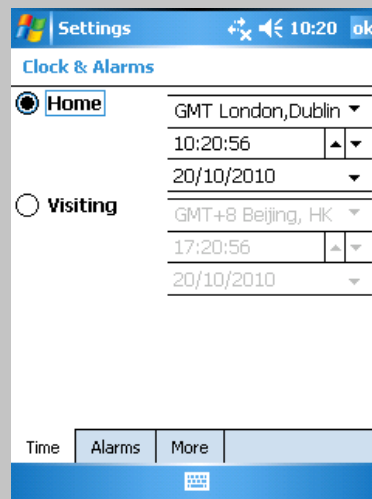


Set the PDA Time by clicking on the Start menu>Settings

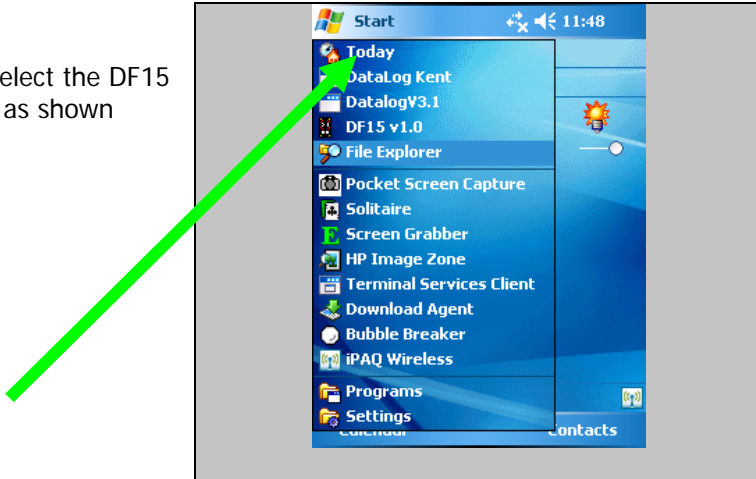
Then after selecting the System Tab at the bottom of the screen click on Clock and Alarms



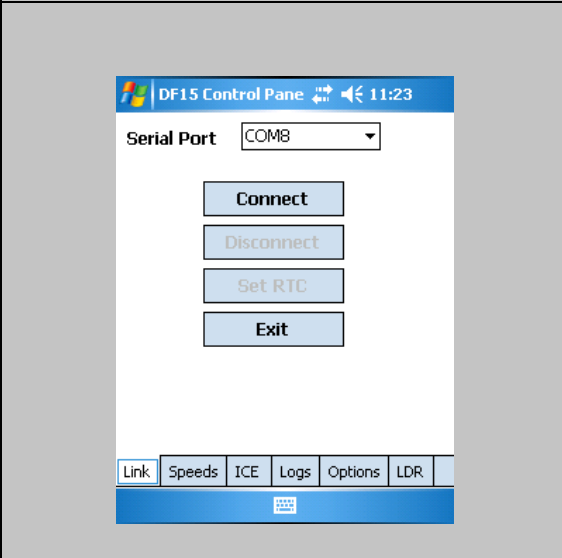
Set the Home Time Zone and correct time using the dropdowns. The unit will automatically compensate for daylight saving. Then accept the changes.



From the Start Menu please select the DF15 v1.0 Operating Software as shown

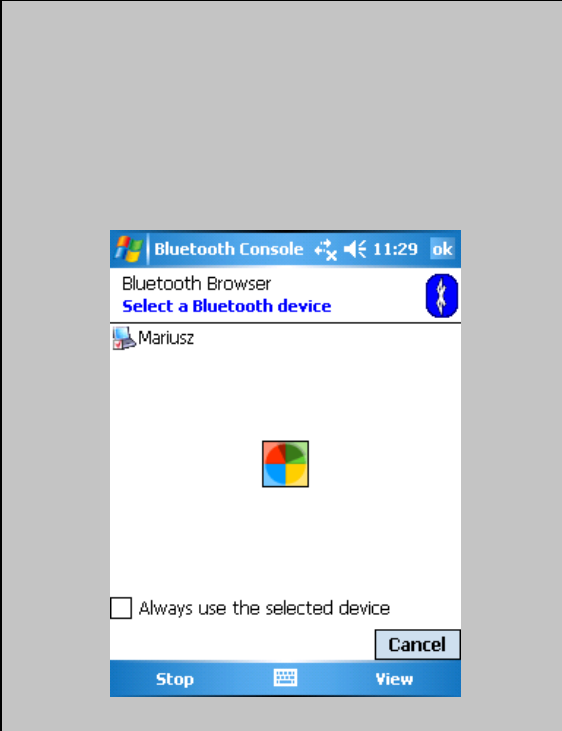


Once you have done this, click the CONNECT button. Please note that you will need to be within 15 feet of the DF15 sign in order for the Bluetooth™ to pick up a signal.



You will now be presented with a screen asking you to select a Bluetooth device similar to the one on the right.

It may take a few seconds for the software to locate all surrounding Bluetooth devices. The Bluetooth icon in the top right of this screen will spin as the software searches for devices.



A connection to a sign will appear here as an icon with a name that will be your unique Dorman Varitext Project No YYYY--XXX"

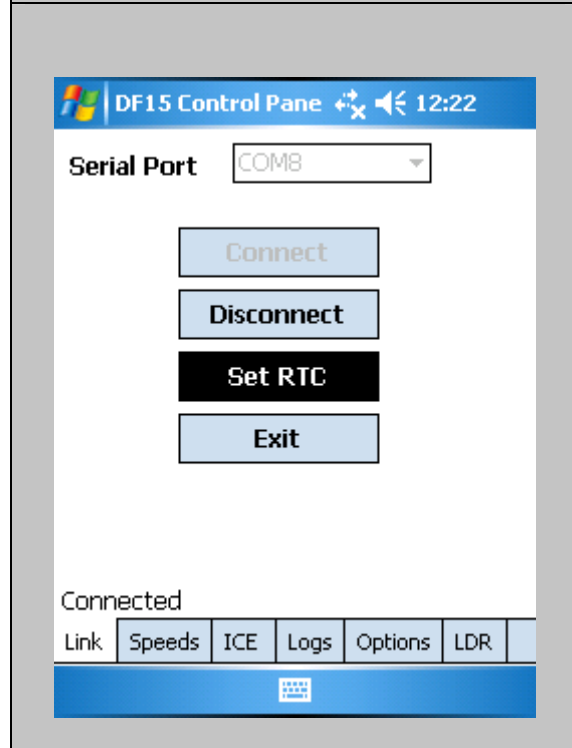
where YYYY is project number and XXX is the no of the sign.

E.g. 4342-0001

To connect to the sign, select it on the screen and press the OK button. This will take you to the Main Menu.



Upload the Real Time Clock Setting if required using the screen shown

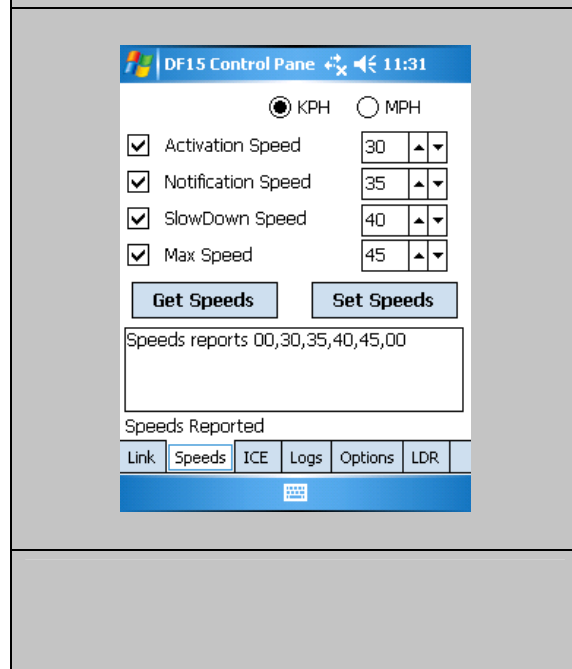


4.2 Setting Speeds

First select the SPEEDS tab at the bottom of the screen and then toggle either or radio buttons

To set the sign in Stealth Mode untick all the speed selection boxes

The Get Speed button will obtain the values currently set in the sign.



The speeds can now be set by ticking the relevant box and then adjusting the value in the box by clicking on the up or down arrow.

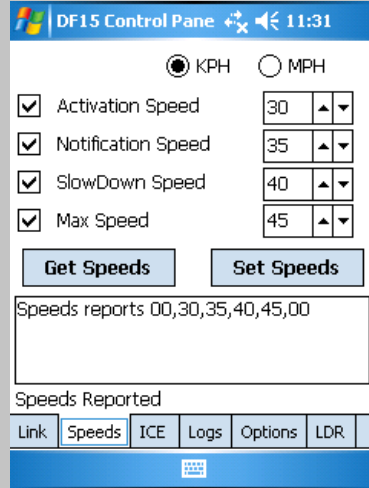
Activation Speed is the value at which if exceeded will trigger the sign to display a steady indication of the vehicle's approach speed

Notification Speed is a higher value which if exceeded would cause the speed to be shown accompanied by the flashing lanterns.

If the Lanterns are disabled using the Options Tab the display will flash the vehicle approach speed at the driver.

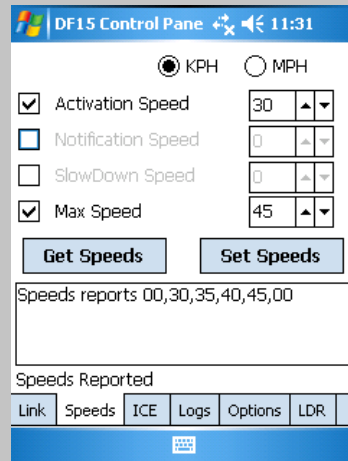
Slow Down Speed is the next speed increment and above this value the display will alternate between the approach speed and the SLOW DOWN legend. Also, if the lanterns are enabled they will flash.

The Max Speed setting will disable the speed feedback to the driver to prevent the sign being used for 'highest score' competitions. However the Slow Down legend and lanterns (where enabled) will still flash



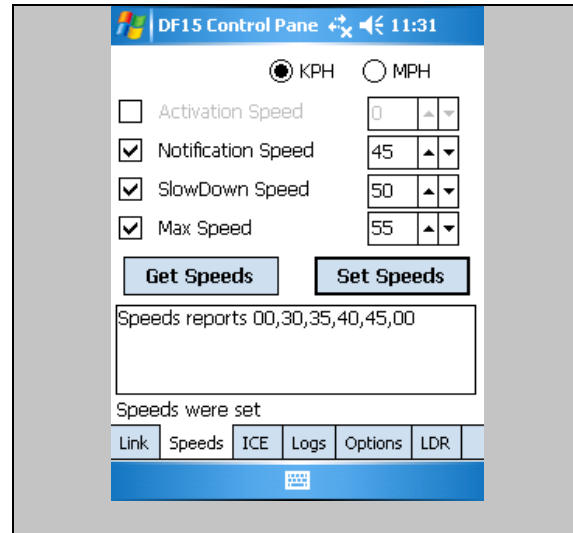
Any Combinations of settings can be employed:

This combination would cause the sign to feedback a steady display of approach speed from 30 , until 45 when the speed read out would cease. The Slow Down legend and lanterns (where enabled) will still flash



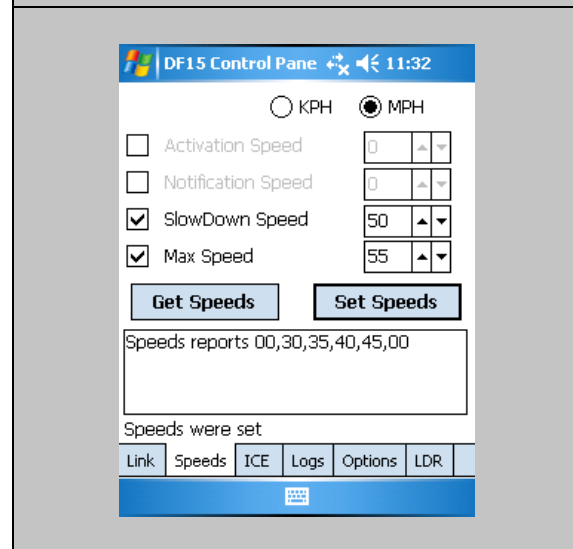
This combination would cause the sign to go straight to a speed feedback display plus flashing lanterns at 45. (where the lanterns are disabled the display would flash) At 50 the display would alternate between the speed display and the SLOW DOWN legend; and at 55 the display would change to the SLOW DOWN legend only with flashing Lanterns where selected.

(Where the lanterns are disabled in the Options Tab, the display would flash where only one legend is displayed).



In this example The sign would trigger at 50 with an alternating Speed Feedback and SLOW DOWN legend complete with Lanterns where enabled.

At 55 the speed display would be disabled leaving just the SLOW DOWN legend and the lanterns, where enabled, flashing. If the lanterns were disabled the SLOW DOWN display would flash.

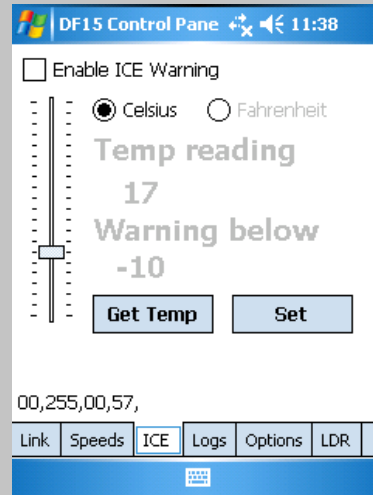


4.3 Setting the ICE warning

First select the ICE tab at the bottom of the screen and then toggle either Celsius or Fahrenheit radio buttons

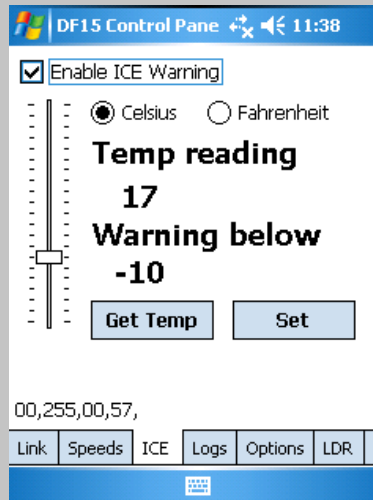
Then click SET and use the slider to set the threshold temperature.

The GET TEMP Button will retrieve the parameter already set in the sign.

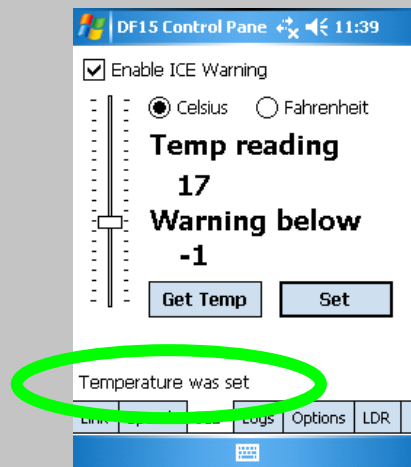


When the value is set ticking the Enable ICE Warning box will set the parameter into the sign.

The SLOW DOWN Legend which would normally be triggered is replaced by the SLOW ICE warning when the temperature drops below the set threshold.



The screen shown will confirm that the transfer was successful by the dialogue shown appearing above the Tabs



4.4 Retrieving Log Files

To retrieve a log file, you first need to enter a name for the file that the log file will be stored in*.

In order to do this, click the box at the top of the display labeled "Filename" and then click the keyboard icon at the bottom of the display.

This will display a keyboard which you can use to enter the filename.

*For example XXXX.MMDDYYYY Where XXXX is a unique sign identifier and MMDDYYYY is the date.

Then click on "Get Log" and the download should begin.

Note:

Depending on the size of the log being downloaded this may take several minutes. If the logs are taking too long to download, then consideration should be given to increasing the frequency the signs are visited at to download smaller files.

It should also be noted that the sign controller stores logs in blocks of 64. If fewer than 64 logs have been collected then no data will be downloaded.

4.5 Deleting a Log File

To delete the log file from the DF15, Type the Password LOGCLR into the Filename box then click the CLEAR LOG button.

DELETING THE LOG IS A ONE CLICK OPERATION AND IS PERMANENT. THE LOG FILE CANNOT BE RETRIEVED ONCE YOU HAVE DELETED IT. The system automatically begins to log data in a new file after the previous log has been deleted.

The screenshot shows the DF15 Control Panel interface. At the top, it says "DF15 Control Pane" and "11:41". Below that is a "Filename" input field containing "streetnamelog". There are four buttons: "Status", "Clear", "Get Log", and "Clear Log". Below the buttons is a "Log Length 0" label and a large empty text area. At the bottom, there is a navigation bar with buttons for "Link", "Speeds", "ICE", "Logs", "Options", and "LDR". A red arrow points to a keyboard icon in the bottom right corner of the interface.

Keyboard
Icon

This screenshot is identical to the one above, but the "Clear Log" button is circled in green to highlight it.

4.6 Options

Clicking on the Options Tab will allow you to set some unique options to enhance the signs operation.

Get Options will download the Options already set in the sign.

Ticking the Lanterns Enabled box ensures that where the correct parameters are set all relevant displays will be accompanied by the lanterns in each corner of the sign flashing in alternating horizontal pairs.

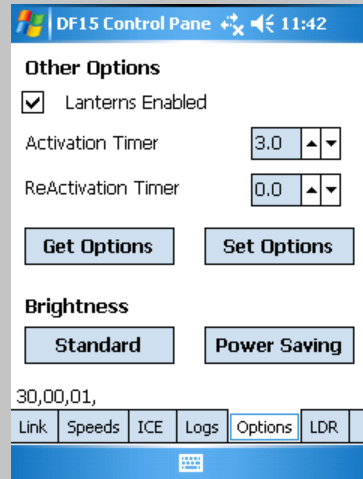
The Activation Timer allows the user to set a time delay measured in seconds between initial detection of a vehicle travelling above the preset trigger speed and the illumination of the display.

The Reactivation Timer allows the setting of a delay in seconds between sign activations when for instance there is a stream of traffic approaching the sign, all travelling above the trigger speed. This will separate the Speed Feedback into distinct events which will indicate to drivers their individual speed.

Careful consideration of the Activation and Reactivation Timer settings can allow savings to be made in the power consumption.

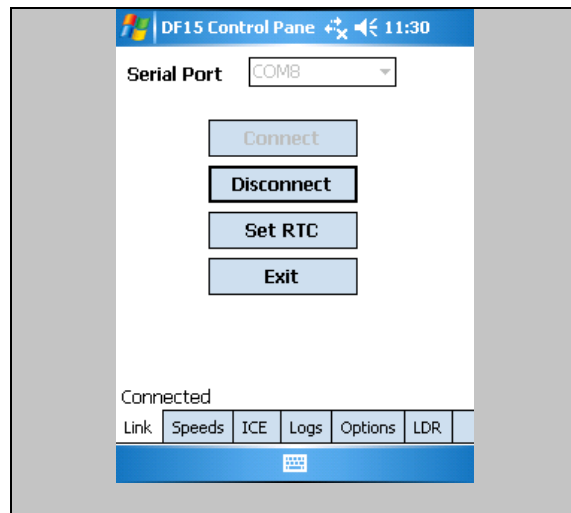
Toggling between Standard and Power Saving on the brightness option allows the brightness of the displays to be reduced slightly independent of the automatic dimming facility, and can be used to preserve battery life in solar powered signs.

The combination of setting Activation/Reactivation times and selecting Power Saving can return significant power consumption savings.



From the Link Tab at the foot of the screen, select Disconnect to close the Bluetooth link to the sign and then click Exit.

This should return you to the PDA HOME Screen.



4.7 LDR Tab

There is an additional Tab at the bottom of the screen labeled LDR. This is for use by Dorman Varitext only and is password protected.

5.0 Setting a Timetable

5.1 Introduction

V-AMP is Dorman Varitext's switching timetable editing application designed to work with DF15 Signs. V-AMP provides tools for designing timetables to instruct the sign to automatically change display modes. Timetables created using V-AMP can then be uploaded to one or more DF15 wirelessly using the supplied PDA via a Bluetooth connection.

All images contained within this Annex are pictorial representations only.

5.2 Overview of Timetable System

V-AMP provides a simple method of creating a switching timetable for your DF15. Each timetable created using V-AMP will contain, as a minimum, a base timetable. The base timetable is a weekly, Monday to Sunday timetable which will repeat every week of every year.

For each day of this weekly schedule, up to 10 sign switchovers can be defined. A single switch-over defines a time at which the sign should change and to which preset parameters it should change to.

Often a weekly schedule repeating throughout the year is inappropriate for a sign's intended application. A common example of this is the occurrence of school holidays. V-AMP provides tools to allow periodic alternatives to the base timetable. Once a base timetable is defined, V-AMP allows up to 40 alternative time periods to be defined.

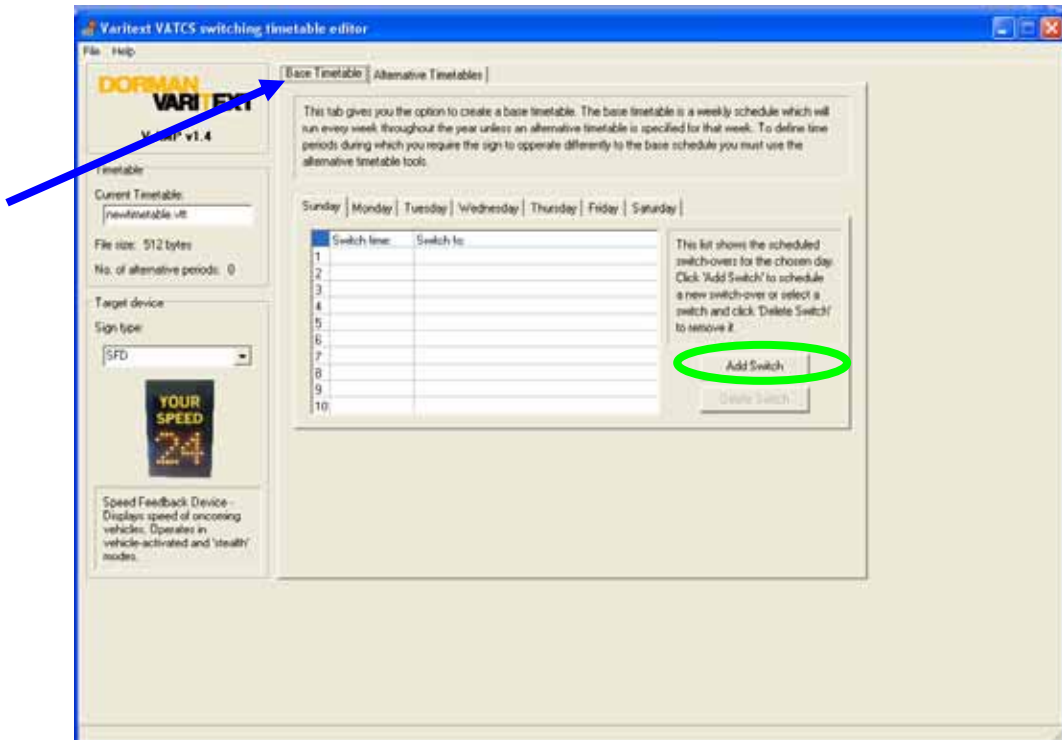
Between the dates defined by an alternative timetable, V-AMP will override the base timetable and instead switch the sign using the schedule defined for the alternative period. An alternative period can be defined in the same way as the base timetable by creating a weekly schedule which will repeat during the defined period.

5.3 Creating a Timetable

When the V-AMP application first opens, the user is presented with the following menu screen, select the SFD button which incorporates both the SFD sign and the DF15.



A blank timetable is presented and this allows you to begin editing straight away. If a timetable is already open, a new timetable can be created by selecting File>New Timetable from the menu bar. If the current timetable has unsaved changes, you will be prompted to save, ignore or cancel.



5.4 Creating a Base Timetable

To create the base timetable for your schedule, click on the Base Timetable tab as shown by the blue arrow. You will be presented with a blank schedule table as shown above.

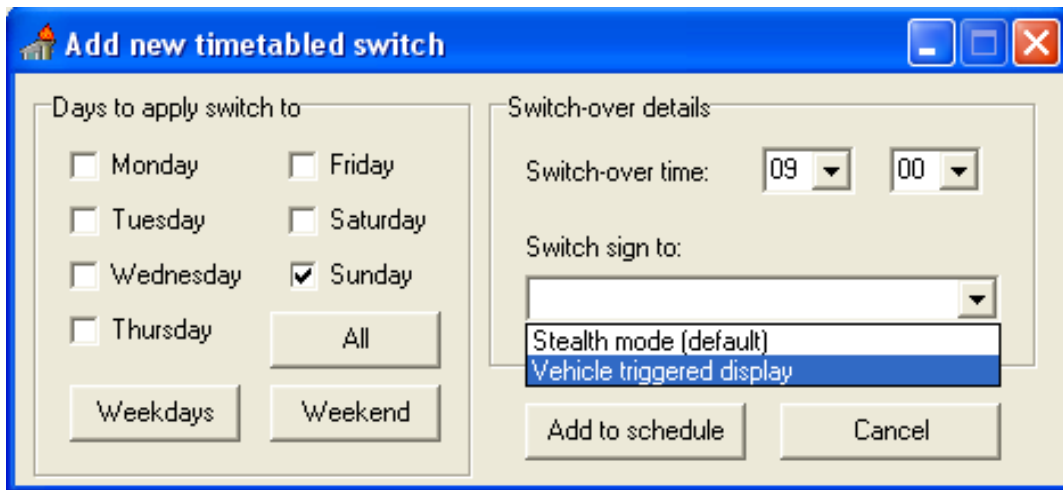
5.5 Adding a Switch-Over to a Schedule

To add a switch-over, first click the 'Add Switch' button (ringed in green on this screenshot).

A new window will appear as shown below, giving the various options relating to the switch. The switch-over can be applied to multiple days during the weekly schedule by checking the boxes for the required days. The 'All', 'Weekdays' and 'Weekend' buttons provide a quick method of selecting days.

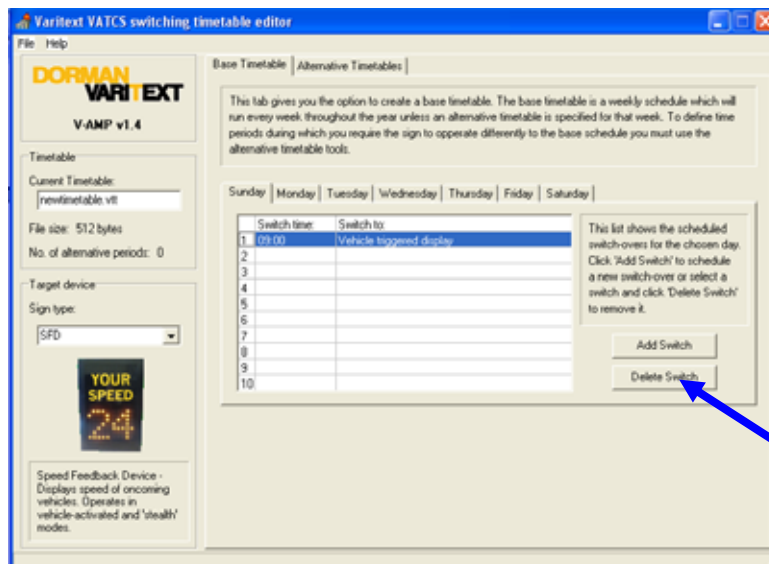
To set the time at which the switch over is to take place, select the appropriate hours (hh) and minutes (mm) from the drop down boxes. Finally, using the 'Switch Sign To' dropdown, select the state to switch the sign to.

NOTE: By default, at 00:00 each day, the DF15 will switch to Sign state A. If an alternative mode is required at the beginning of the day, a switch must be created, with time set to 00:00.



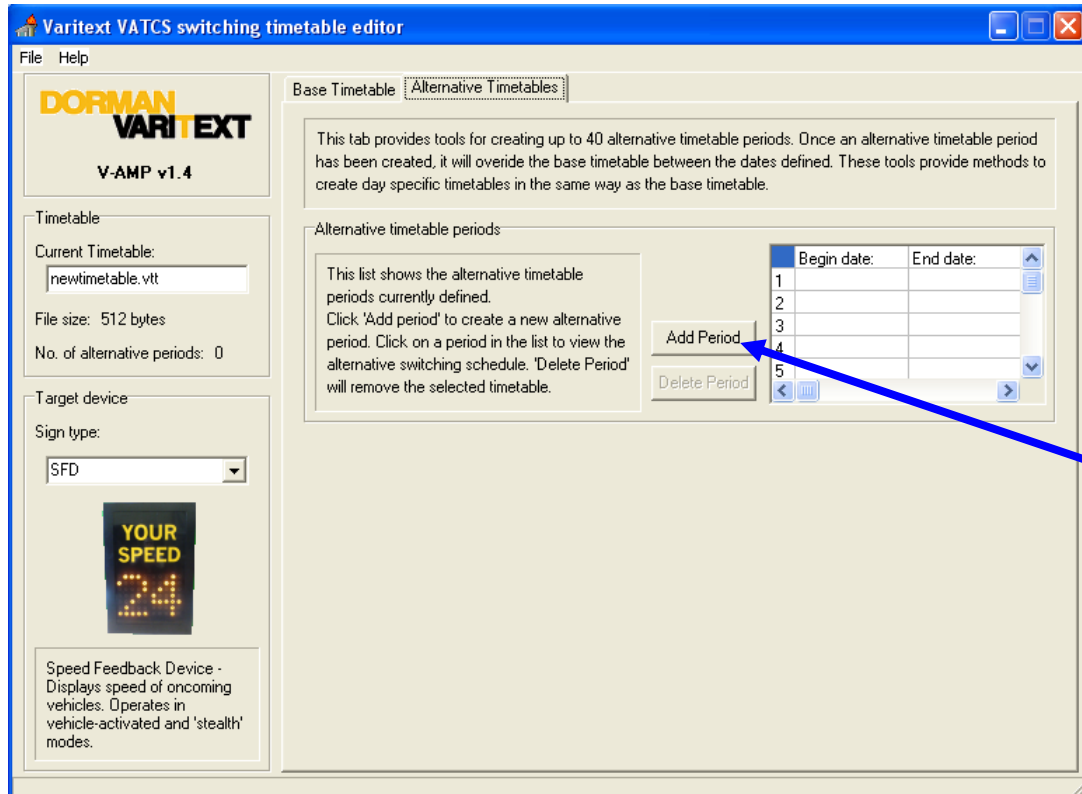
5.6 Removing a Switch-Over to a Schedule

To remove a switch-over from a schedule simply click on its entry on the schedule table to highlight it in blue as shown below and click 'Delete Switch'.



5.7 Creating an Alternative Timetable

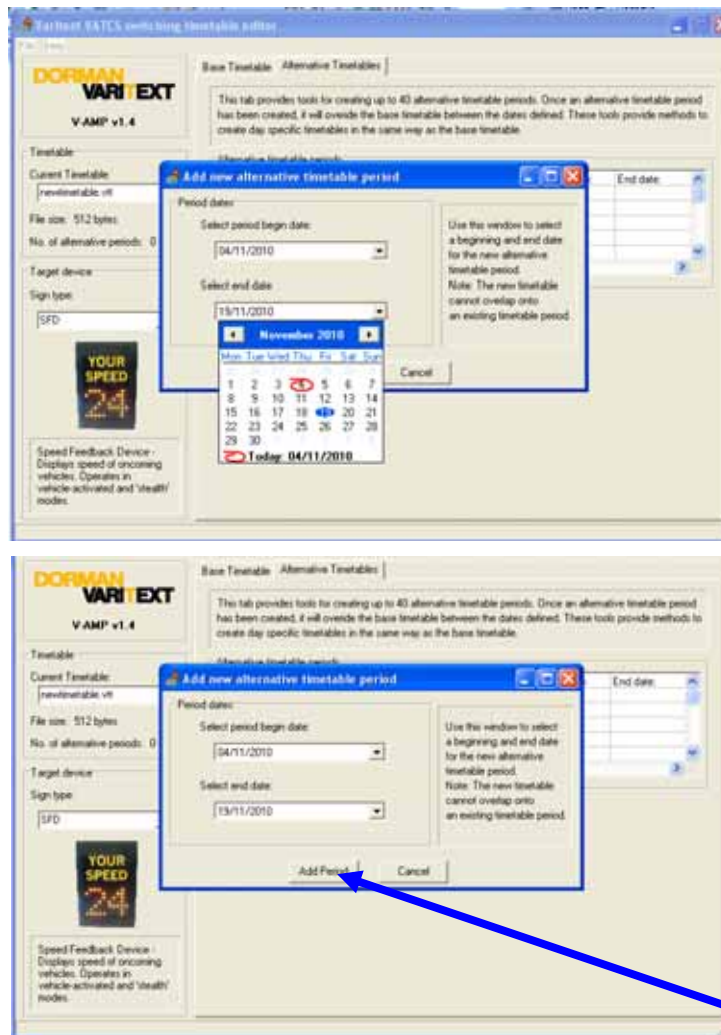
When an alternative to the weekly base timetable is required, an alternative timetable period can be defined. To create an alternative schedule, select the Alternative Timetables tab within the main application window. This tab will present the list of currently defined timetables as shown below.



5.8 Adding an Alternative Schedule Period

To define a new period in which to enable an alternative schedule, first click Add Period. This will present the window shown below. A beginning and an end date can be selected using the drop down calendars provided. Click Add Period to add the new dates to the list.

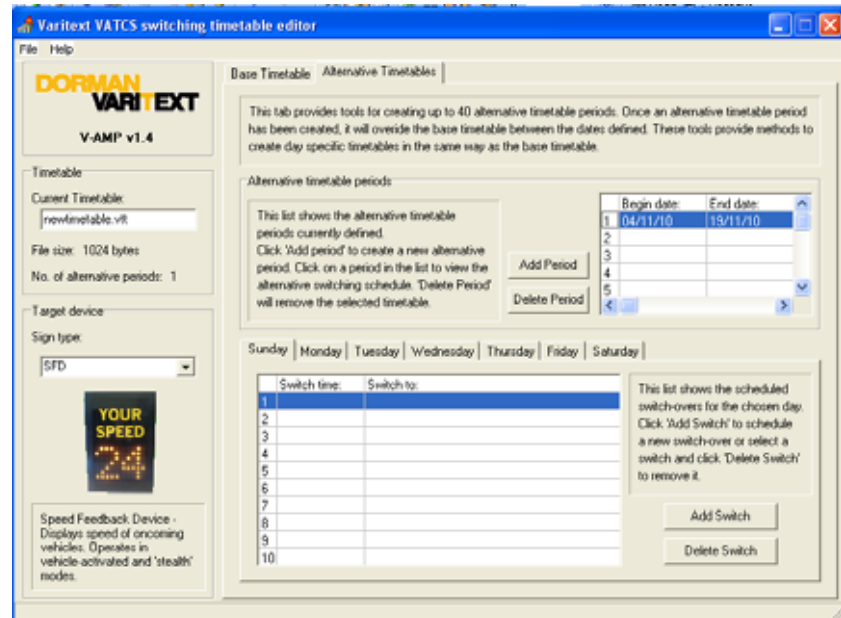
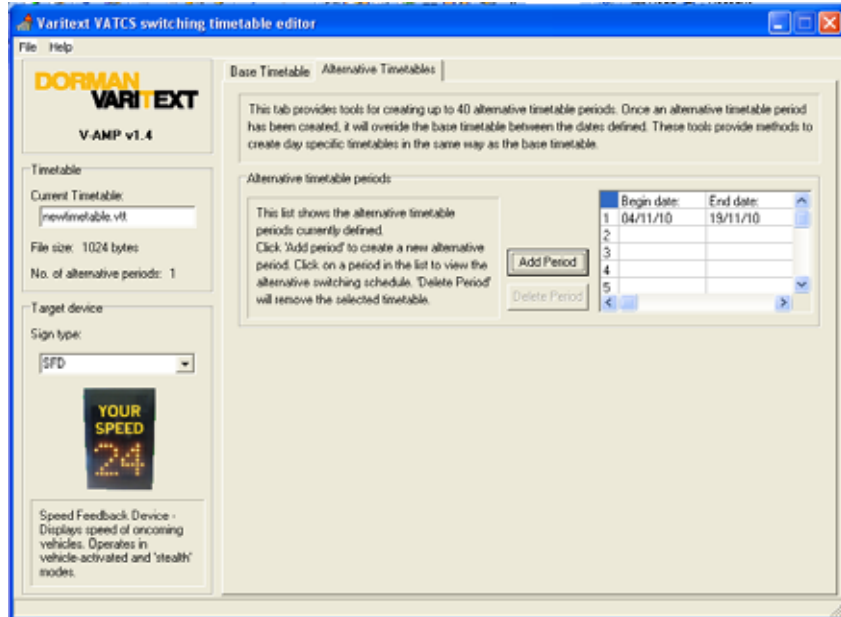
NOTE: A newly defined period may not overlap with an already defined period. If the dates provided coincide with another alternative period then a warning will be given and different dates must be selected.



5.9 Creating an Alternative Schedule

Once the dates for an alternative period have been defined, the period will appear in the alternative period's table. To define the daily switchovers for the alternative period, click on it's entry in the list. This will display the schedule for that period in a new schedule table as shown below. Browsing this schedule as well as adding and deleting switchovers can be performed in exactly the same way as for the base timetable.

NOTE: Alternative timetables can also be used to define periods where no switching is required. Simply leaving an alternative timetable without any switchovers defined will instruct the DF15 to remain in its default state for each day defined by the alternative period.



5.10 Removing an Alternative Schedule Period

To remove an alternative schedule period from the list, click on it's entry in the period list and click Delete Period.

5.11 Transferring a Timetable to a DF15

Once a timetable file has been created and saved, it can then be uploaded to one or more DF15 signs. To do this, the timetable file needs to be transferred to the supplied PDA so that it can be uploaded to the sign wirelessly.

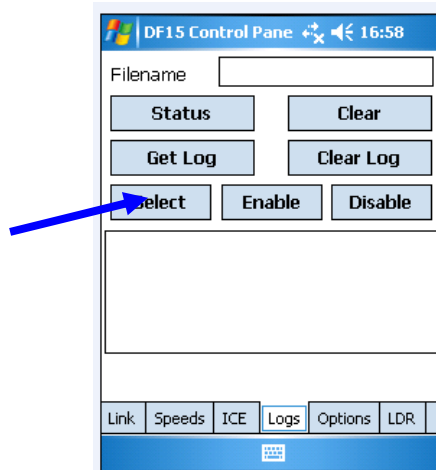
To copy Timetable files to a PDA, the PDA must first be synchronized with the PC where the timetables are saved. This is achieved using Microsoft Active Sync (supplied with the PDA).

If Active Sync is not already installed on the PC then it should be installed from the disk that was provided in the PDA's packaging. Please refer to Microsoft's documentation for details of how to install Active Sync. Once Active Sync is installed, the PDA must be connected to the PC via the USB cable which was supplied with the device. After connection, Active Sync will automatically attempt to synchronize with the PDA. If you have already configured Active Sync to recognize and synchronize with your device, then connect as normal. Alternatively, you can choose to connect as a guest. Once synchronization is complete, Active Sync will present a window similar to the one shown in Figure 6.

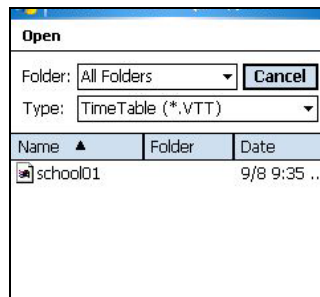
Next click the button marked Explore. This will open a window, entitled Mobile Device which displays the PDA's file system. With this window still open, open a new window and locate the previously saved timetable file(s) you wish to upload.

Select the file(s) required and either copy and paste or drag them to the Mobile Device window. You may be asked if you wish to copy the files to your PDA in which case, confirm the transfer. This transfer process will store the timetable files in the My Documents file on the PDA.

First tap the LOGS tab and then tap **SELECT** on the PDA screen as shown by the blue arrow.

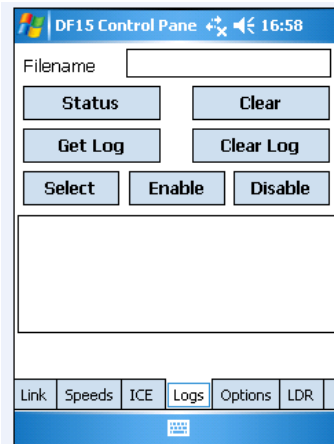


This will bring up a file browser which will indicate any .vtt files that are stored in the My Documents file of the PDA. If the .vtt file you wish to use is in another directory then you may need to navigate to that directory to locate the file. To choose which file to upload, simply tap on the appropriate filename from the list. This will begin the upload process. A progress bar will appear showing the status of the upload process. The PDA will indicate when the transfer is complete.



Once Uploaded, to enable the timetable, simply tap the button, **ENABLE**. If no timetable has currently been uploaded, the PDA will return an error. Similarly, to return the sign to its

default, non-switching mode, the timetable stored can be disabled. To disable the timetable, tap the **DISABLE** button.



6.0 Repair & Maintenance

It is recommended that routine maintenance is carried out at six monthly intervals as detailed below. This period may need adjusting depending on the conditions of use and should be revised after each maintenance visit.

6.1 Visual Check

Visually check the enclosure and screen, including the case seal for damage. Repair and replace as necessary. Check the cabling to the enclosure is secure and undamaged. Repair or replace as necessary.

6.2 Enclosure Cleaning

Clean the enclosure and front screen with a cloth with mild detergent solution. Abrasive materials or solvent based cleaners should never be used.

6.3 First Line LRU Maintenance.

The DF15 family series have no field maintainable components and have been modularly designed so that should any fault occur with the sign. The trained client maintainer may replace/remove the faulty LRU (line replaceable unit) for return and repair.

The DF15 series of signs is made up of the following LRUs:

- Si-3 Radar
- DF15 Controller Card
- DF15 PSU
- DF15 Display Modules (display specific)
- SS6 Charge controller
- 80W Solar Panel
- 12V 20amphr battery

It is recommended the client maintains a spares holding of LRUs commensurate with the quantity and types of DF15 model deployed to ensure minimum downtime of any DF15 due

to failure. It is also recommended that the client maintainers are trained in the operation and maintenance of the DF15 to ensure a long and trouble free life.

Note: All failures due to manufacturer defects will be replaced or repaired at no cost to client during warranty period. Full warranty details are available on request.

The DF15 have no field maintainable content. However, a client trained maintainer may quickly diagnose the fault and replace the modular item causing it.

6.4 Replacing LRUs

After observing all normal safety precautions and considering any traffic management requirements, access to the inside of the sign should be made from a stable working platform.

The sign interior should be examined for any signs of water ingress or excess condensation and the enclosure door seal should be examined for integrity. Any evidence of water accumulation should be investigated and remedial action taken.

Before any work is carried out on the sign which does not require the sign to be powered up, the sign should be electrically isolated by withdrawing the fuse barrels located on the DIN rail as shown below.



6.5 Replacing the Control Board

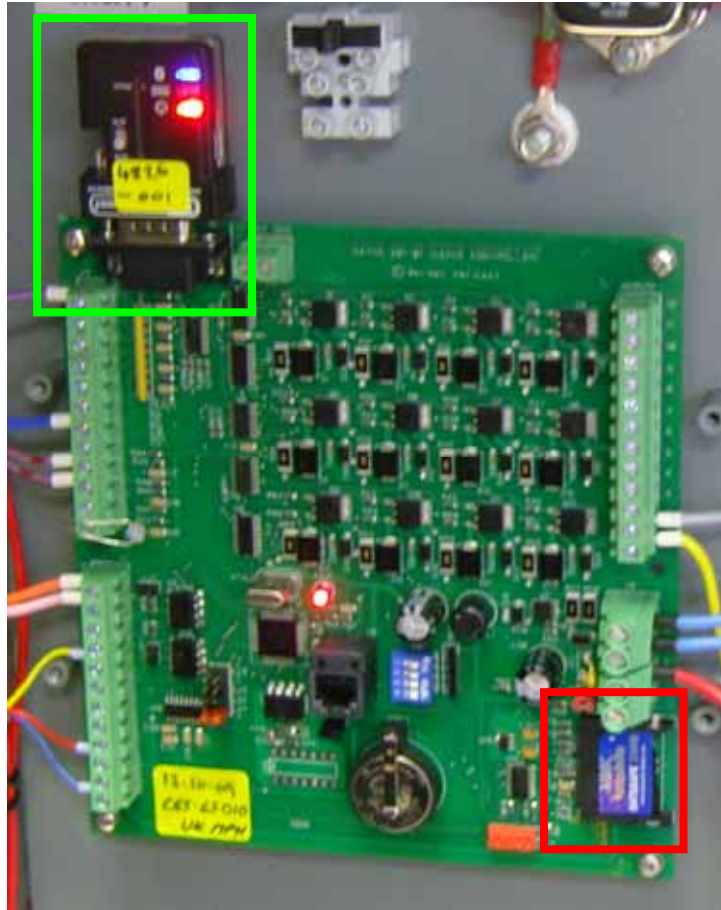


**Activity
LED**

After locating the Control Board, all cables linking it to the rest of the sign should have their positions carefully noted and then be disconnected by undoing the grub screws securing the cables to the board. (Please note that the picture above is a representation of a control board installation and colours/positions of cables may differ)

Remove the four cross head screws in the corner of the board and lift it out.

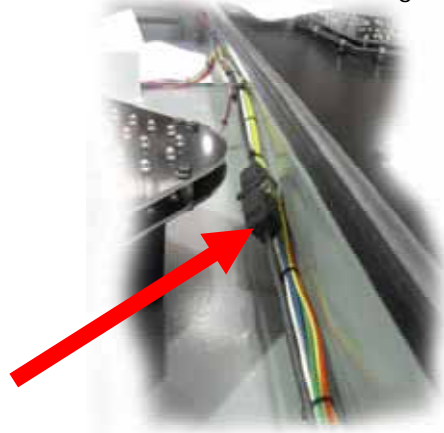
If an MMC Card as shown by the red box below is fitted to the board, it will need to be transferred to the replacement board during fitment. Also the Bluetooth dongle as shown by the green box below will need to be transferred between the old and new board.



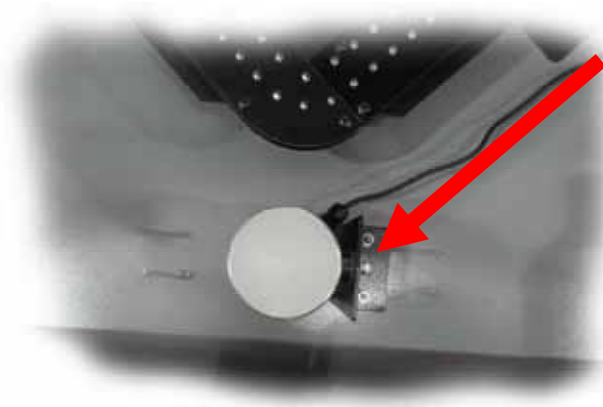
Restore power by refitting the fuse barrels, and ensure the red indicator LED on the control board flashes approximately once every second.

6.6 Replacing the MVD

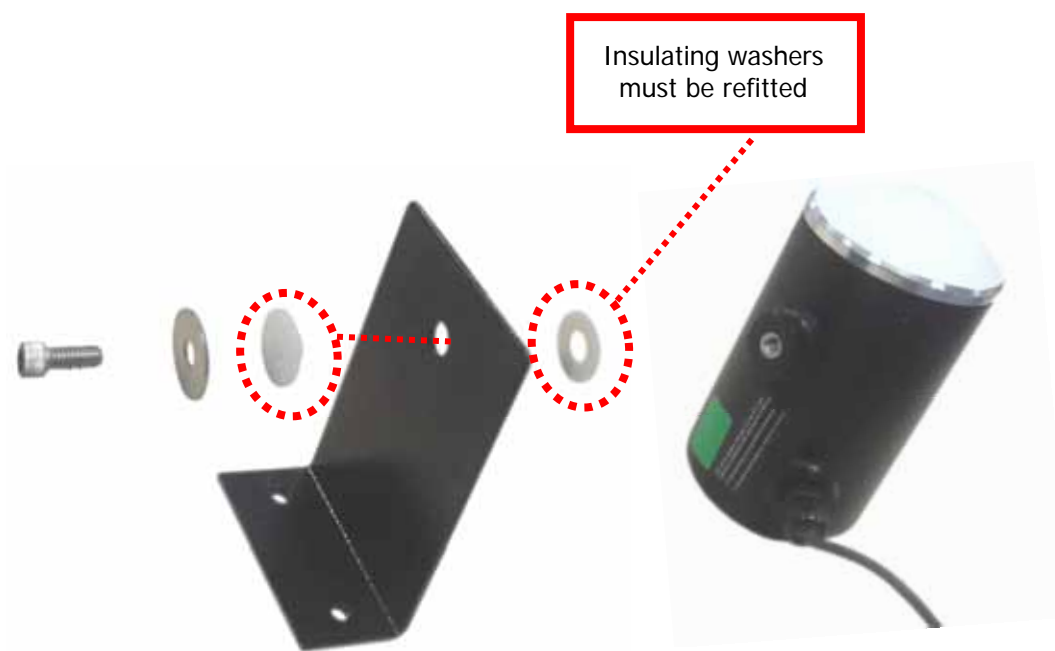
After Locating the MVD, first trace the cable run around the sign, and then disconnect it from the sign at the disconnection break seen below removing cable ties as required.



The MVD head can then be removed from the support bracket using a 3/16" Allen Key.



Fitment is a reversal of removal. It should be noted that if the insulating washers indicated in the pictures below are not fitted, and an earth path is created, the MVD will not function and may suffer irreparable damage.



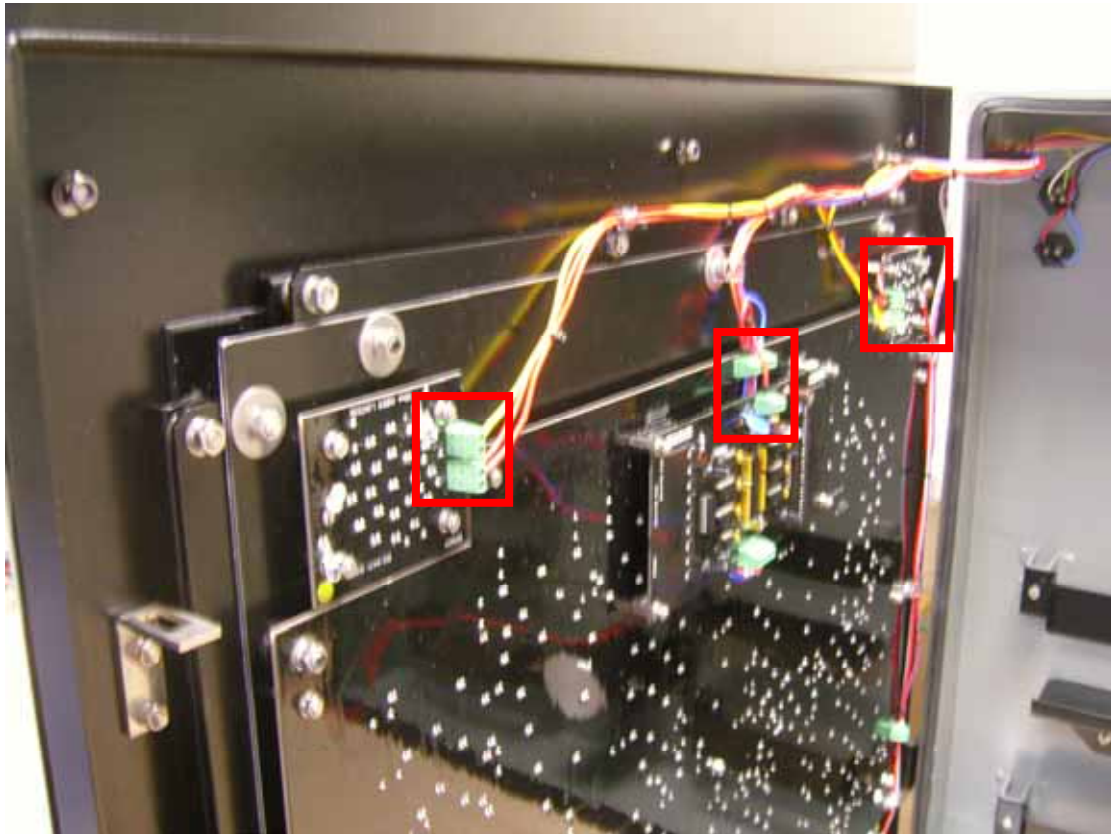
The cable should be tidied and cable ties fitted as required.

Restore power by refitting the fuse barrels, and ensure the red indicator LED on the control board is illuminated.

6.7 Replacing the LED Arrays

There are a variety of displays fitted in many variants of sign but essentially the arrays are secured using simple nut and bolt fasteners. Note the position of any washers fitted and ensure they are replaced in the same order.

Electrical connection is achieved by using screw down terminals as shown below in the red boxes



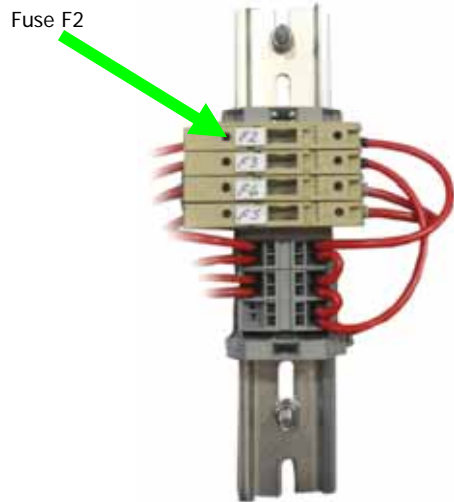
Please note cable identification may vary with build standard and to ease reconnection Dorman Varitext strongly advise the marking of each cable position prior to disconnecting.

6.8 Fuse ratings and position

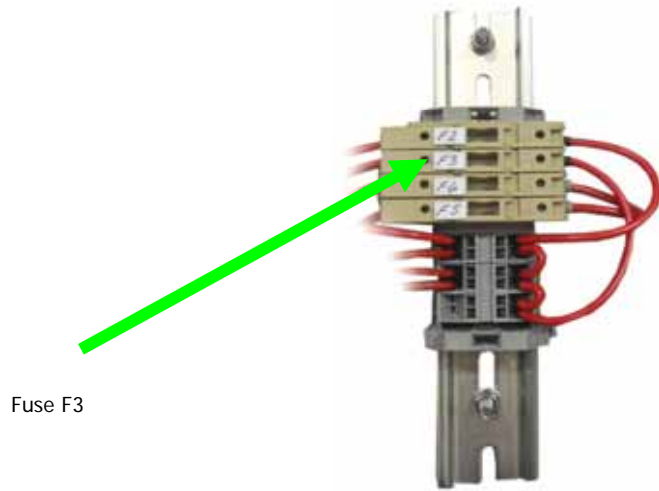
Fuse F1



This fuse protects the equipment against AC supply voltage anomalies and is a time delay fuse rated at 3.15 Amps

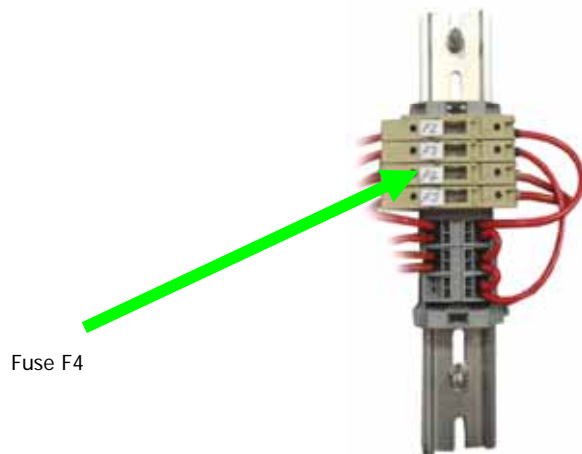


Fuse F2 protects the control board where supplied from the AC-DC PSU and is rated at 5 Amps (Time Delay)



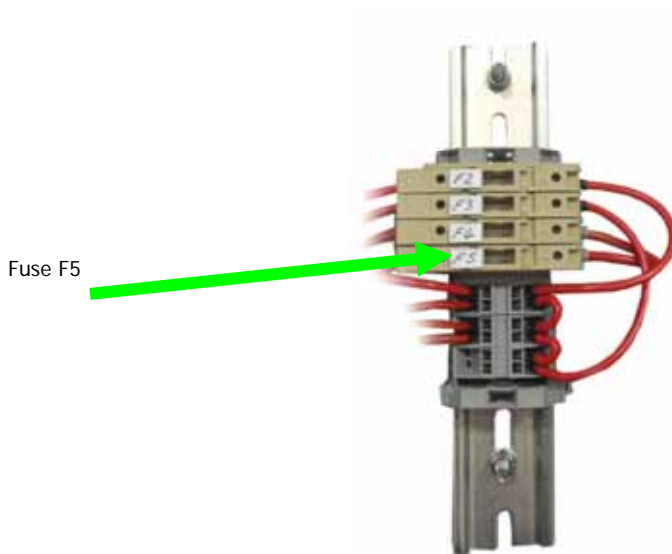
Fuse F3

Fuse F3 protects the control board where supplied from the SunSaver 10 Solar Controller and is rated at 5 Amps (Time Delay)



Fuse F4

Fuse F4 protects the battery supply and is rated at 10 Amps (Time Delay)



Fuse F5 protects the battery supply and is rated at 10 Amps (Time Delay)

6.9 Radar Performance

If there are problems with the sign is late or fails to trigger when the approaching vehicle is clearly exceeding the set speed, consideration should be given to clearing all significant radar energy reflectors from within the radar footprint. Please contact Dorman Varitext for further advice.

7.0 Software Application Troubleshooting

Here are some answers to some common problems that may be encountered during use of the Communicator software.

After Selecting the Bluetooth Connection to the Sign, the Software Does Not Reappear On the Display

If this occurs, the PDA does not have Bluetooth turned on. Please see the section "Establishing a Connection to the Sign" on how to do this.

Keyboard Icon Does Not Appear On Software

When trying to enter a name for the log file, the keyboard icon has not appeared in the bottom right hand corner of the screen.

To fix this, go to START→SETTINGS and select the SYSTEM tab. Click the MEMORY icon and then select the RUNNING PROGRAMS tab. In the list you should see "Dorman Varitext Sign", click this and then click the ACTIVATE button. The keyboard will now be available in the software

Sign Remains Connected to the PDA after Closing the Software

When you have exited the software, the dongle connection light remains on, meaning that the software has not disconnected from the sign. The problem here is that the software is still running in the PDA memory, usually because you exited the software via the X button rather than the EXIT button.

To fix this go to START→SETTINGS and select the SYSTEM tab. Click the MEMORY icon and then select the RUNNING PROGRAMS tab. In the list you should see one or more “Dorman Varitext Sign” entries. This is the DF15 Communicator software. Click each one of these entries and click the STOP button to remove them from memory. Next turn the Bluetooth on and then off (See the “Establishing a Connection to the Sign” section).

The Bluetooth Device Selection Screen Does Not Appear When You Click the CONNECT Button.

The PDA by default is set to display a device selection screen as it is searching for Bluetooth devices. However, the setting may have been turned off which would prevent this screen from appearing when you clicked CONNECT.

To fix this, follow the instructions for determining the outbound communication port settings found in the section “Establishing a Connection to the Sign”. On the screen displaying these settings, check the box stating “Default Device for outgoing serial connections...” This causes the device selection screen to be displayed.

Other Problems

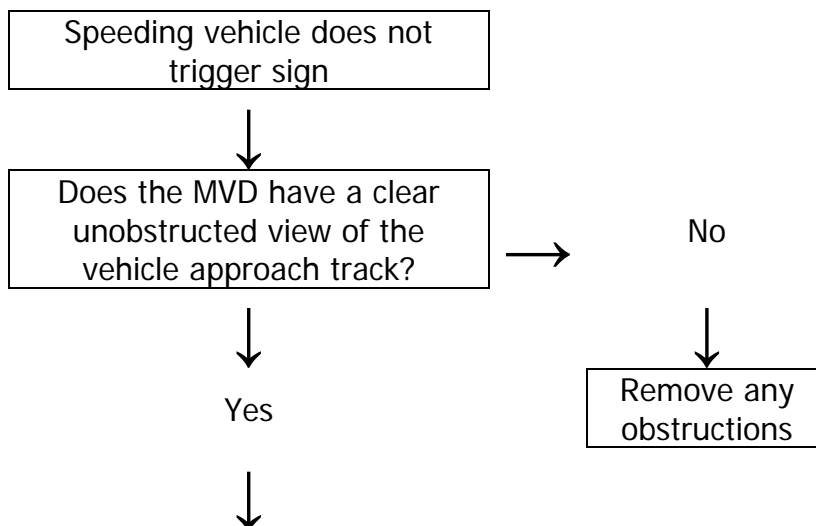
If you have any other problems with the software, resetting the PDA will get the DF15 software back into its original state. To do this, use the PDA pen to press and hold the small button at the side of the PDA. The PDA should take a few moments to reset.

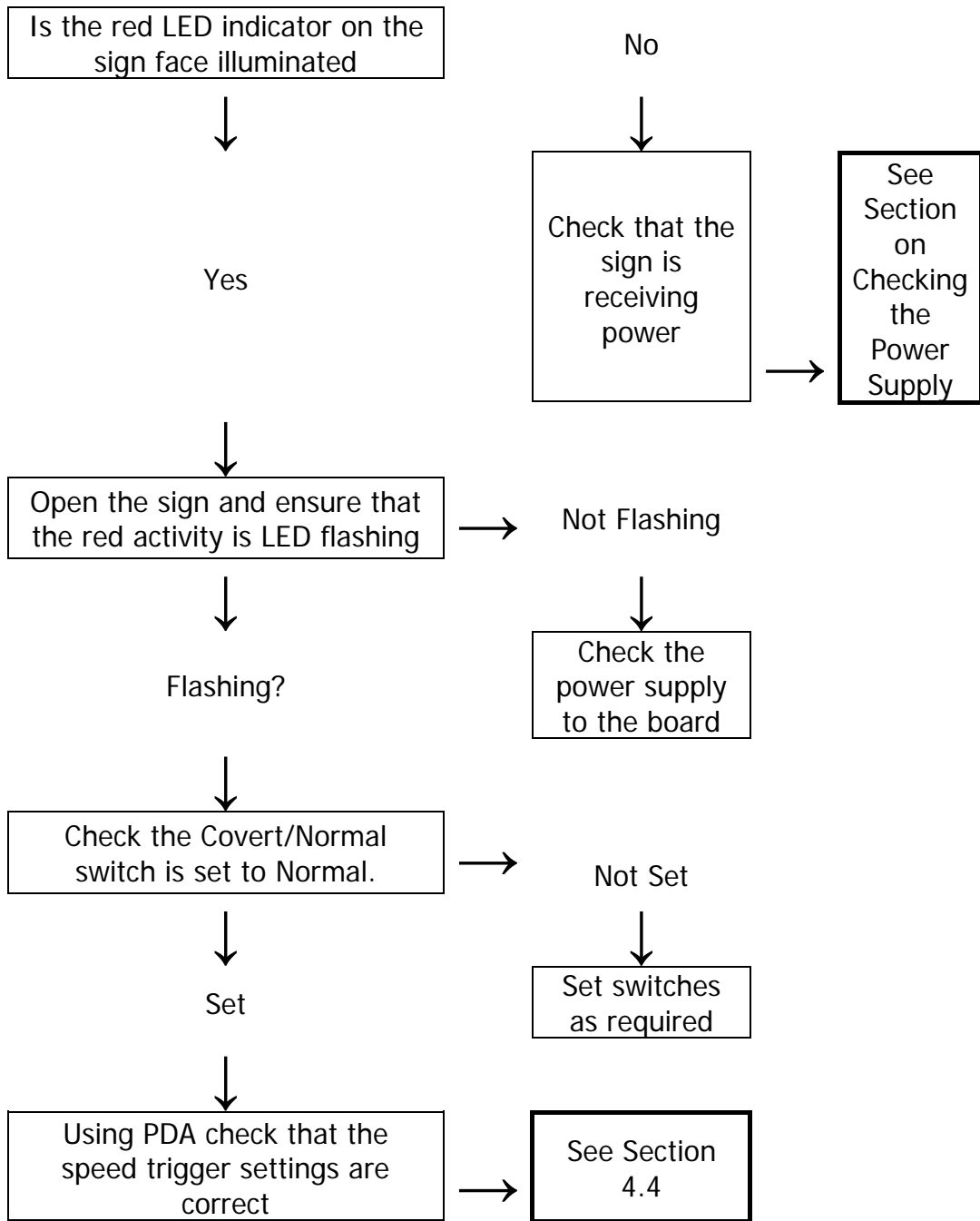


8.0 Troubleshooting Flow charts

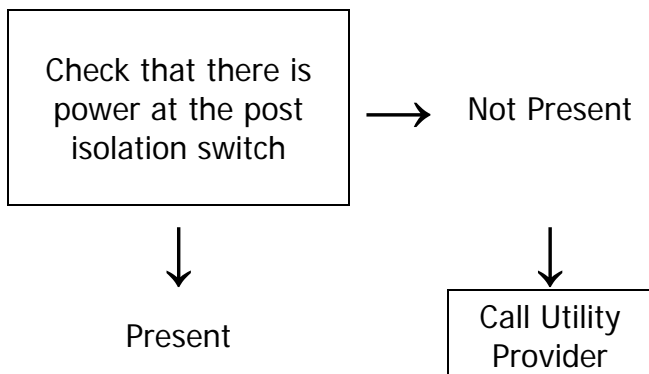
The following charts are not exhaustive but are designed to provide some guidance to fault finding.

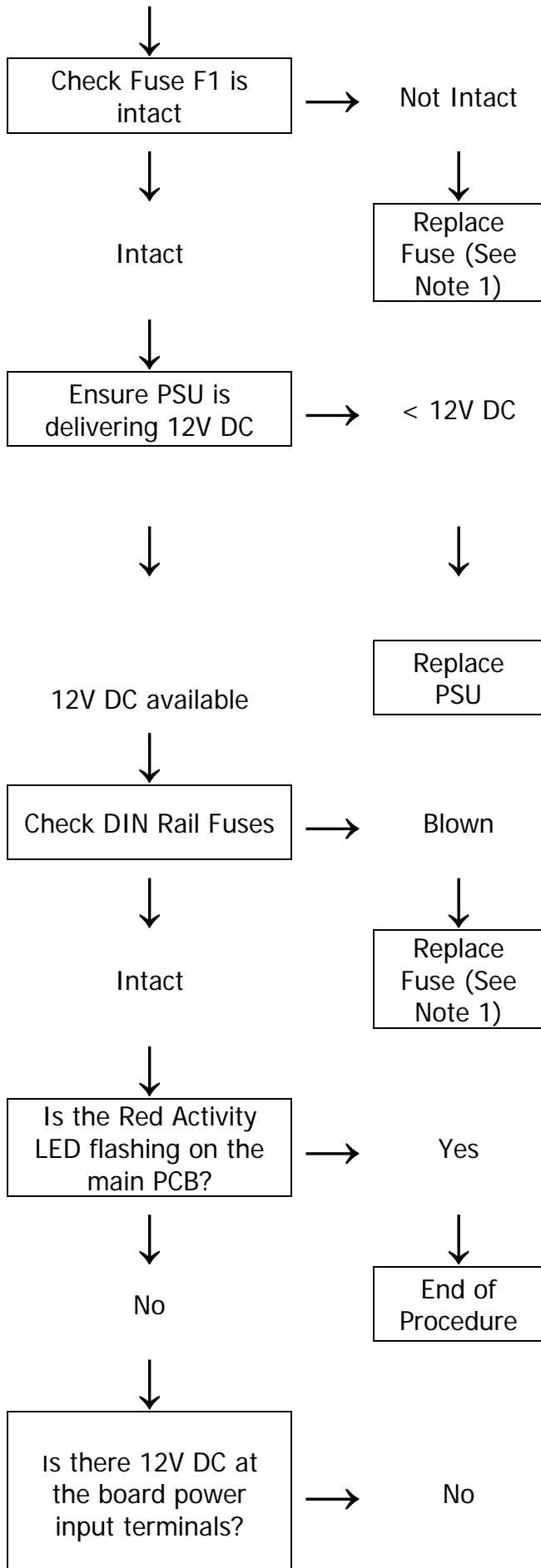
MAIN DIAGRAM





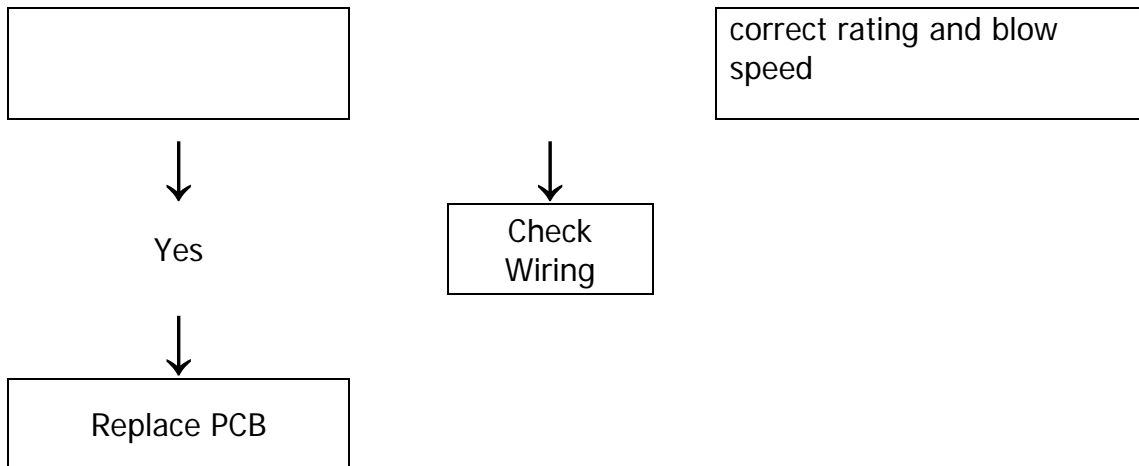
AC POWER CHECKS



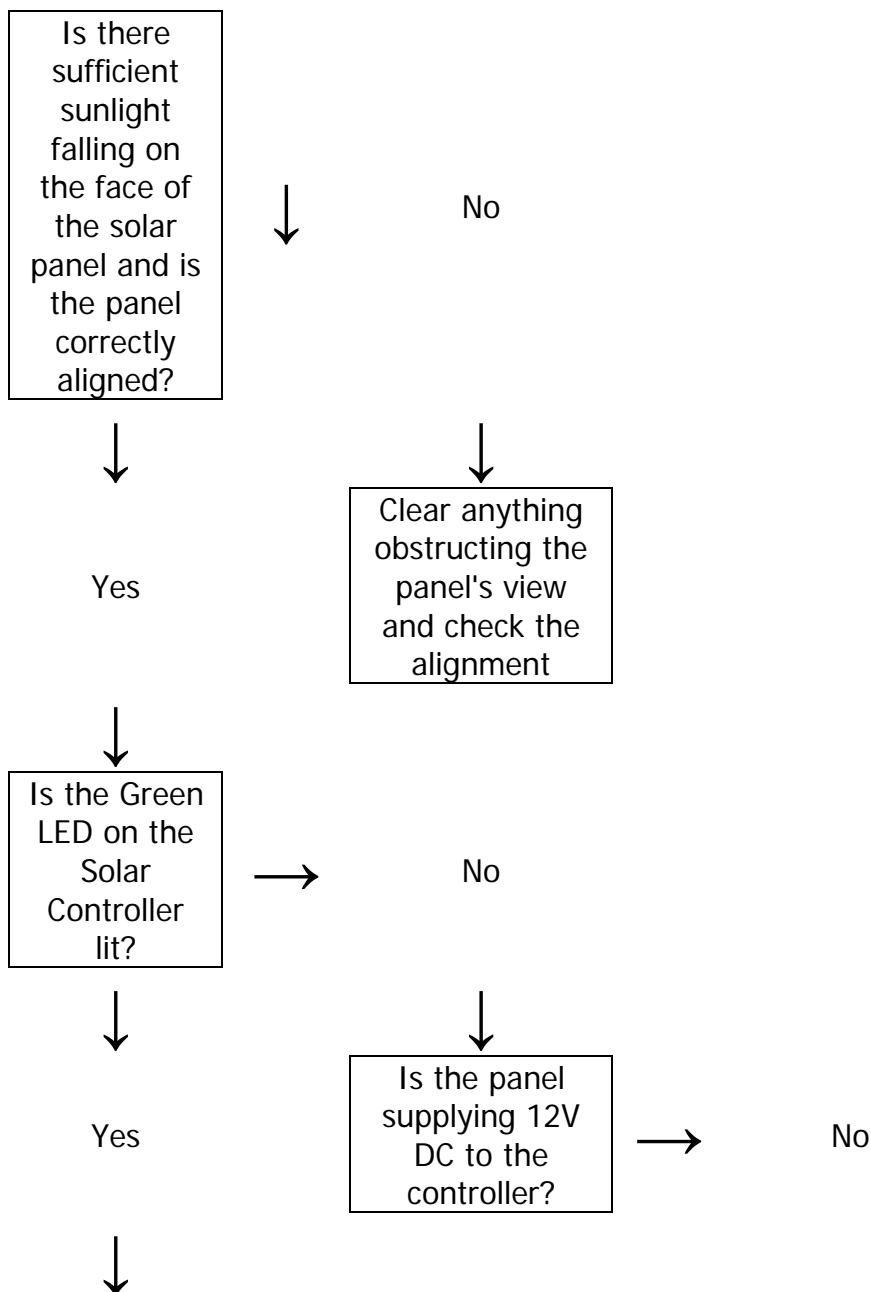


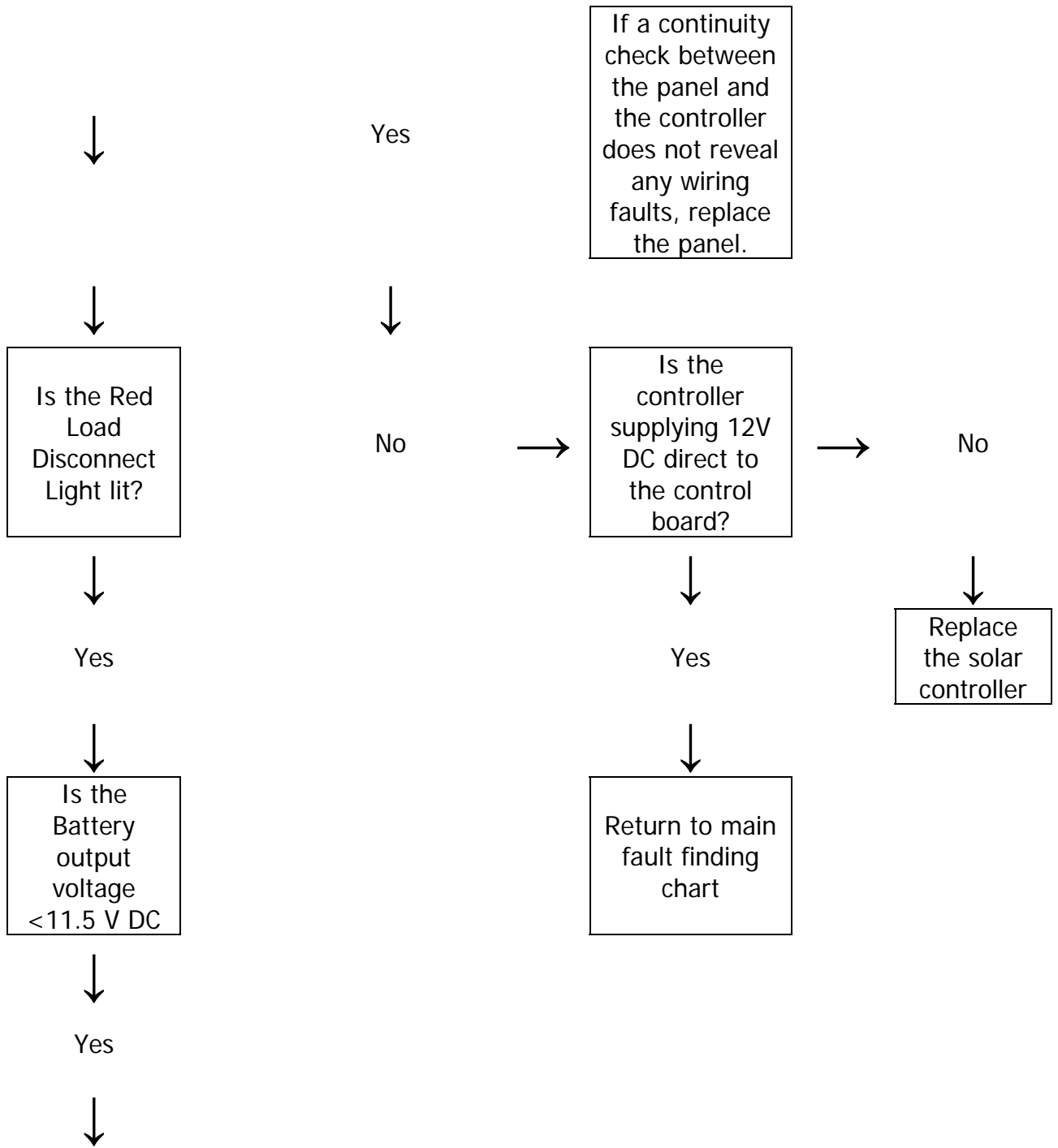
Note 1 :Care should be taken when replacing fuses to ensure that the replacement is of the correct rating and blow speed

Note 1 :Care should be taken when replacing fuses to ensure that the replacement is of the



DC POWER CHECKS





Wait for
battery
voltage to
exceed
11.5V DC or
charge
externally

NOTE: If this condition occurs on more than one occasion and there are no faults causing a battery drain. Serious consideration should be given to increasing the solar capture and/or wattage of the solar panel. Please contact Dorman Varitext for further advice.

9.0 Glossary of Terms

AC	Alternating Current
Amp/Hr	Amperes per Hour
CD	Compact Disc
DC	Direct Current
Hz	Hertz
IP (65)	Ingress Protection Rating
KPH	Kilometres per Hour
LRU	Line Replaceable Unit
M	Metre
MMC/SD	Memory Card Variants
MPH	Miles per Hour
MVD	Moving Vehicle Detector (Radar Unit)
PDA	Personal Digital Assistant
PSU	Power Supply Unit
RTC	Real Time Clock
RF	Radio Frequency
RTC	Real Time Clock
V	Volt
W	Watt

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