

VMS Manual



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Preface

For optimum performance, Saferoads Zone 2 VMS Electronic Traffic System must be installed, used and maintained as per this manual. Please thoroughly review and understand this manual before using the Zone 2 VMS Electronic Traffic System.

Local requirements may also impose restrictions. Please refer to local governing body for further information.

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Introduction

Saferoads Zone 2 VMS Electronic Traffic System is a solar-powered variable message sign. There are two different models available, Classic and Essential, with each model being available in either amber or five colour lighting displays. The Classic model differs from the Essential model in terms of the inclusion of extra features, such as an onboard battery charger, an onboard message manager, a spare wheel, fully sealed toolboxes, and the ability to tilt and rotate the solar panels. These all come standard on the Classic model, and the first three are optional on the Essential model.

The Zone 2 VMS Electronic Traffic System utilises Zone 2 software to program the messages shown on the display. The remote access website allows the user to easily update and schedule messages from anywhere with an internet connection.

The trailer is designed in Australia and is constructed from a heavy-duty galvanised and powder-coated frame, ensuring durability.

Applications

Saferoads Zone 2 VMS Electronic Traffic System suits many applications, including but not limited to:

- Advertising
- Traffic control
- Lane closures
- Events
- Roadworks



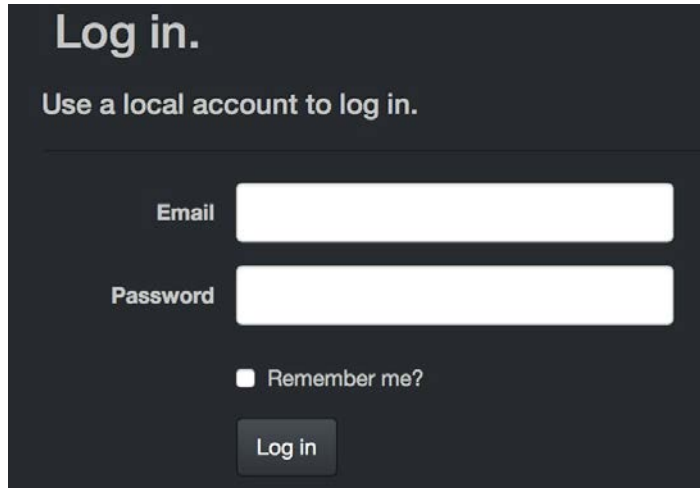
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Quick Start Guide

How to Login to Zone Website

1. Go to the website <http://zonecloud.com.au>
2. Enter email address.
3. Enter password.



The screenshot shows a dark-themed login form titled "Log in." Below the title is the instruction "Use a local account to log in." There are two input fields: "Email" and "Password". Below the "Password" field is a checkbox labeled "Remember me?". At the bottom of the form is a "Log in" button.

Figure 1

4. Click on Log in button.

How to Display a Simple Message

1. Select Messages from the menu or the Editor icon from the Zone main screen

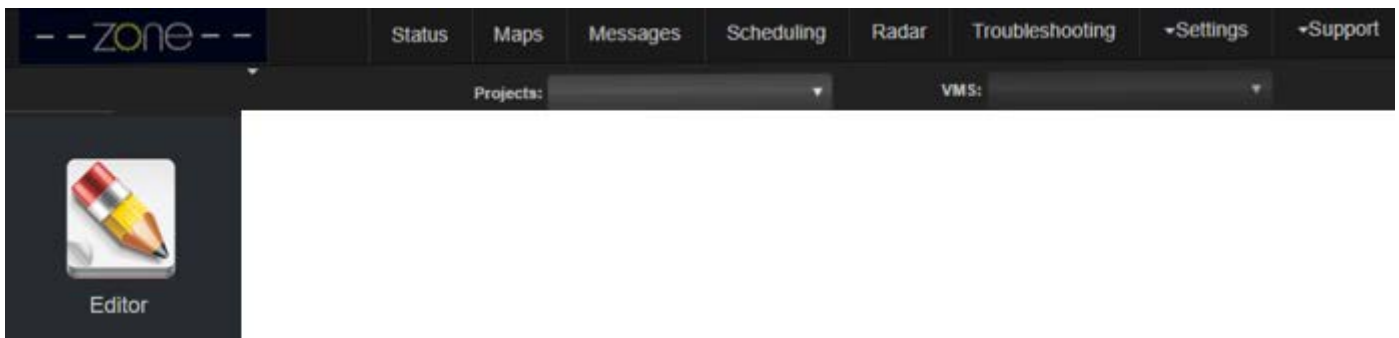


Figure 2



2. Select the Project
3. Select the VMS

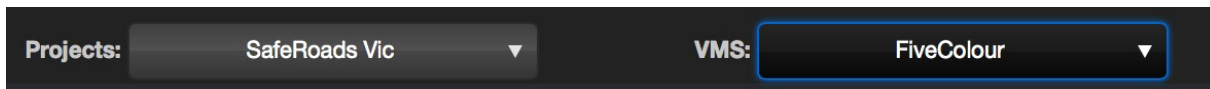


Figure 3

4. Choose image
 - Click on image from Library/Favourites

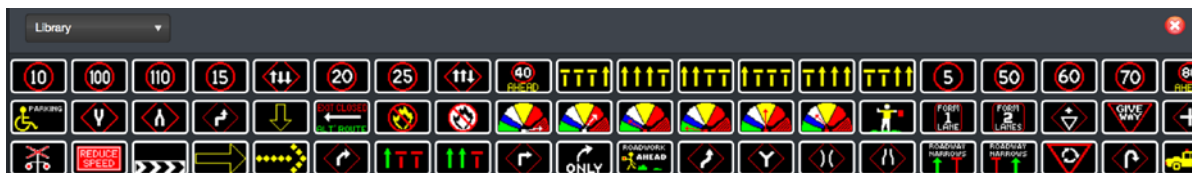


Figure 4

or

- Create a custom image using the drawing tools



Figure 5

5. Click on the Add button to move the image to frames



Figure 6

6. Click on the Send to VMS button. Ensure the VMS Display is switched on, so the message can be displayed.



Figure 7

7. Select the VMS to play the message on. Multiple VMS can be added by clicking on the Select VMS text box

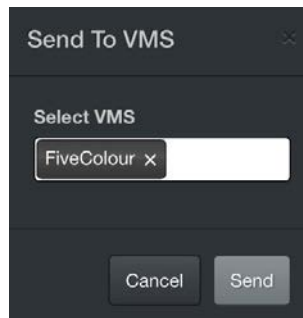


Figure 8

8. Click on the Send button to send the message to the VMS

How to Adjust Settings

1. Select Settings from the menu or the Settings icon from the Zone main screen

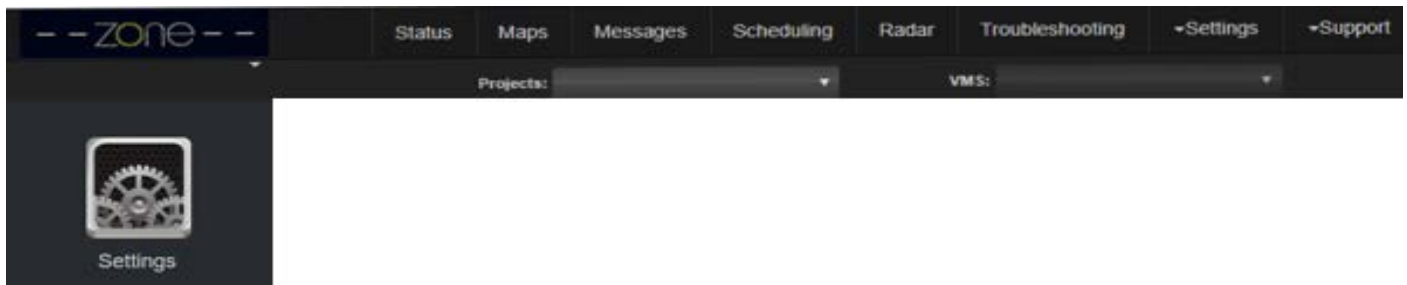


Figure 9

2. Select the Project
3. Select the VMS

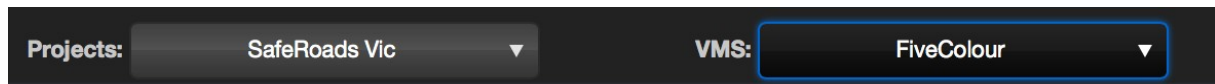


Figure 10

4. Adjust the settings

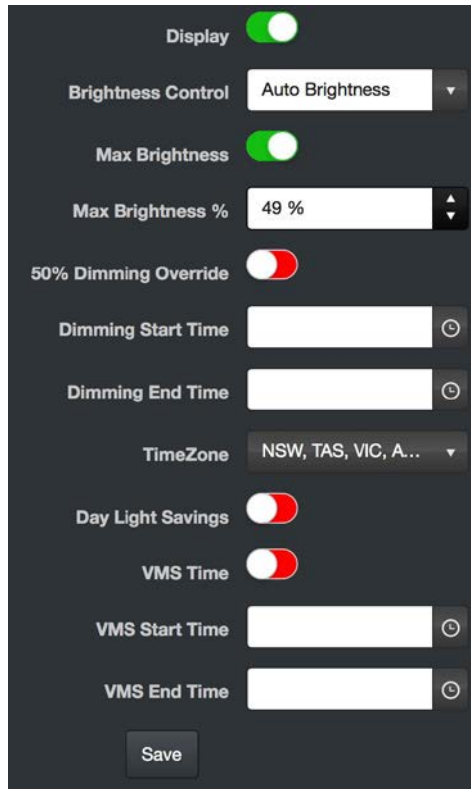


Figure 11

5. Click on the Save button to send the settings to the VMS

How to Setup Radar

1. Select Radar from the menu or the Radar icon from the Zone main screen

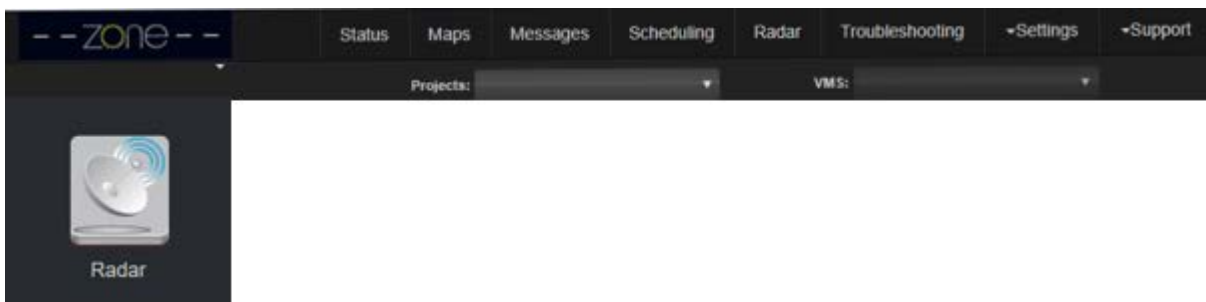


Figure 12

2. Select the Project
3. Select the VMS

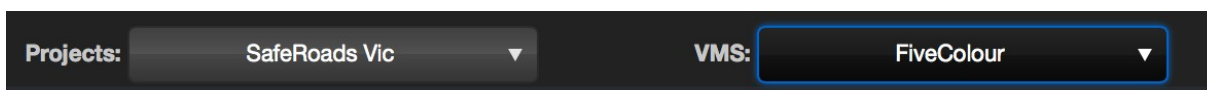


Figure 13

4. To display an Approach Message
 - a. Drag an image from the Library to Approach Message image box

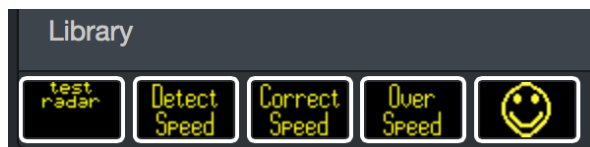


Figure 14

- b. Enable Approach Message by turning the switch on



Figure 15

5. To display Correct Speed
 - a. Drag an image from the Library to Correct Speed image box

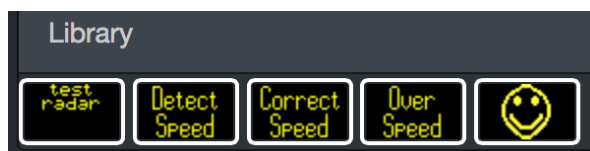


Figure 16

- b. Enable Correct Speed by turning the switch on



Figure 17

6. To display Over Speed
 - a. Drag an Image from the Library to Over Speed image box

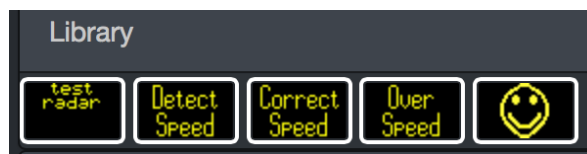


Figure 18

- b. Enable Over Speed by turning the switch on



Figure 19

7. Adjust the Radar Settings

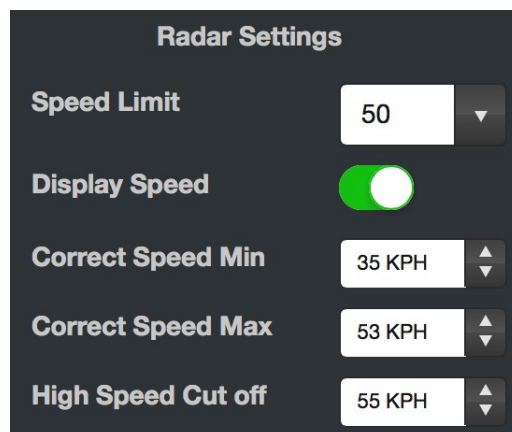


Figure 20

8. To enable radar logging, turn the Enable Radar Log switch on

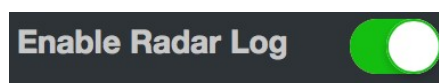


Figure 21

9. Click the Send to VMS button to save the Radar Settings



Figure 22

Deployment

1. Park the VMS unit, with the brake lights facing oncoming traffic.
Park on the side of the road on which the VMS unit is to be deployed.
Make sure the trailer is parked securely on a firm, flat surface and is not parked on a slope.
2. Disconnect trailer from towbar:
 - a. Disconnect the safety chain and power cord.
 - b. Lift jockey wheel and disconnect the trailer from the towbar.
 - c. Lower jockey wheel so trailer is level with the ground.
3. Lock in handbrake tight and make sure the VMS does not move around.
4. Put stabiliser arms into place. Extend if possible.
5. Remove Mast Locking Pin.
6. Check above, if clear, lift the VMS to head height.
7. Watch out for toolbox when lifting & lowering mast.
8. Unlock the Mast Pivot Lock.
9. Rotate to desired angle, facing the desired traffic. Slight angle is fine.
10. Check above, if clear, lift fully or as desired.
11. Place all locks into position, toolboxes, front screen, shaft lock (important).

Pack Up

1. Lower the mast to head height.
2. Unlock the Mast Pivot Lock and straighten the VMS.
3. Lower the display into the transport support beam.
4. Turn off the VMS unit.
5. Lock the Mast Pivot Lock.
6. Return the Mast Locking Pin and secure it.
7. Return all locks, toolboxes, mast.
8. Return stabilising jacks and arms into position.
9. Release handbrake and secure back onto the towbar
10. Connect the trailer to towbar:
 - a. Lift jockey wheel and lower over the tow bar.
 - b. Lift jockey wheel to check it is securely in place.
 - c. Lock jockey wheel in place.
 - d. Connect safety chain.
 - e. Connect power cord and check brake lights are working correctly.



Operation Guide

Solar Panels

There are two (Essential) or three (Classic) identical Solar Panels located above the Display Panel fixed on top of the mast that are used to charge the batteries required to power the Display Panel. The Solar Panels can be tilted and pivoted as a single unit to maximise power production and increase efficiency of the board.



Figure 26

Solar Panel Tilt Switch

The Solar Panel Tilt Switch is located in the rear driver's side toolbox between the VMS Display Switch and the Mast Up/Down Switch. It is employed to tilt the solar panels to an angle to gain maximum power production for the solar panels. The optimum position is to set the panels facing north and tilted up to an angle of 30 degrees, regardless of the orientation of the trailer.

Operation of the solar panel tilt will require the VMS Display Switch to be in the "ON" position and engage the Solar Panel Tilt Switch to orientate the solar panels either up or down.

When finished raising or lowering the tilt on the solar panels, ensure the Solar Panel Tilt Switch is returned to its neutral position to prevent constant driving of the actuator.

Note: The Solar Panel Tilt Switch is only available on the Classic model.



Figure 27



Solar Panel Pivot

The Solar Panel Pivot is located on the Mast Assembly inside the yellow frame covering the top end of the mast. It is used to pivot the solar panels in a 360-degree movement around the mast to gain optimum production from the panels.

To use this feature simply acquire the wheel brace provided in the front driver's side toolbox to turn the Solar Panel Pivot in the direction necessary to gain maximum sunlight.

The solar panels can only be pivoted once they have been tilted. It is recommended to clean and wash down the solar panels every 30 days to decrease the amount of dust and ingress as it can reduce power generation by up to 20%.

Note: The Solar Panel Pivot feature is only available on the Classic model.

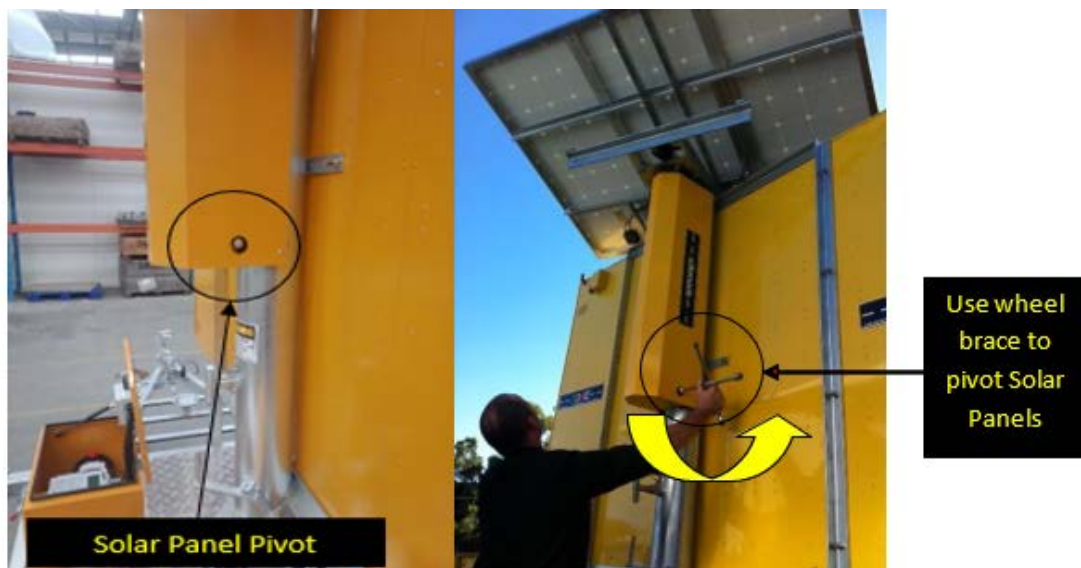


Figure 28

Mast

Mast Assembly

The Mast Assembly is located in the centre of the trailer and provides the frame support for the Display Panel. The Mast Assembly consists of the mast (including Display Panel frame), the Mast Locking Pin, the Mast Pivot Lock, the Solar Panel Pivot and associated wiring.

The mast can be raised or lowered depending on the specific site requirements. To control the height of the mast, simply toggle the Mast Up/Down Switch located in the driver's side toolbox.



Figure 29

Mast Locking Pin

The Mast Locking Pin is a safety feature used when the trailer is in transit, to prevent the mast from rising.

When the mast is lowered simply secure the Mast Locking Pin into the recess and this will stop the mast extending up the shaft and making contact with any objects with low height clearance.

To prevent damage to the mast or any other equipment, ensure the Mast Locking Pin is secure in the recess when not in use.



Mast Pivot Lock

The Mast Pivot Lock is located at the bottom of the mast shaft. It is used to unseat the mast to enable the Display Panel to be pivoted in a 360-degree movement for positioning it to the necessary direction.

To pivot the mast, simply rotate the Mast Pivot Lock 90 degrees to unlatch the locking mechanism and rotate the mast to the desired position.

To prevent the mast rotating undesirably, ensure the Mast Locking Pin is secure back in its seated position when finished rotating the display and when transporting the board.

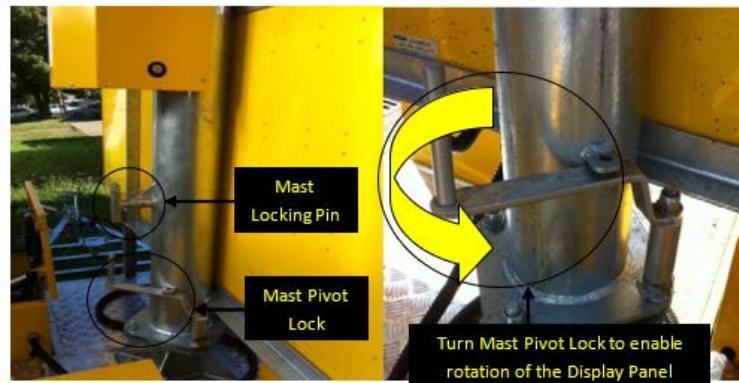


Figure 30

Mast Up/Down Switch

The Mast Up/Down Switch is located in the front passenger side toolbox to the right of the Solar Panel Tilt Switch. It is used to operate the Mast to increase or decrease the height of the Display Panel.

To operate the Mast Up/Down Switch, the VMS Display Switch must be in the "ON" position. Engage the switch into either the "UP" or "DOWN" position to extend or retract the mast respectively.

After extending or retracting the mast, place the Mast Up/Down Switch back to its neutral position to prevent overdriving the motor.

Hydraulic Reservoir and Mast Motor

The Hydraulic Reservoir and Mast Motor are located at the bottom of the rear driver's side toolbox and is required to pump hydraulic fluid used to raise and lower the mast.



Figure 31

Trailer

The Classic model trailer assembly consists of the trailer frame, Stabilising Jacks, Park Brake, safety chain, Jockey Wheel, Transport Support and four toolboxes secured to the trailer frame.

The Essential model trailer assembly consists of the trailer frame, Stabilising Jacks, Park Brake, safety chain, Jockey Wheel and Transport Support.



Figure 32

Stabilising Jacks

There are four Stabilising Jacks located on each corner of the trailer to provide stability and levelling when the VMS trailer has been parked into the required position or on uneven ground. They are constructed of heavy-duty steel and have a smooth operating Screw Jack handle. The jacks can be extended to provide further stability when in strong winds.

To rotate the Stabilising Jacks from the horizontal position to the vertical position (and vice versa), unseat the blue locking pin handle by pulling on the handle and rotating into position. Then, to extend the jack to reach floor level, rotate the Screw Jack counterclockwise.

Ensure all four Stabilising Jacks are seated in the horizontal position prior to transporting the trailer.



Figure 33

Jockey Wheel

The Jockey Wheel is a retractable adjustable-height wheel used on the front of the trailer, located to provide additional support to keep the trailer level. The Jockey Wheel is situated close to the towing hitch and has a built-in Screw Jack to enable the trailer nose to be lifted over a tow ball.

The Screw Jack can then be used to gently lower the trailer nose onto the tow ball. Once securely attached to the towing vehicle, the Jockey Wheel's jacking action is fully retracted into its horizontal position for transportation. Ensure the Jockey Wheel is seated in the horizontal position prior to transporting the trailer.

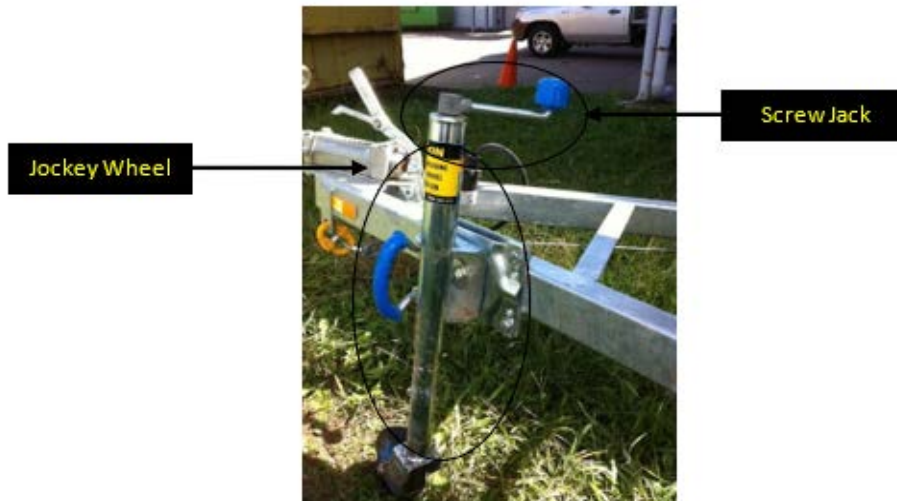


Figure 34

Transport Support

The Transport Support has been built onto the trailer to ensure the VMS display is locked in place when transporting the trailer.

Ensure the VMS display is lowered and positioned into the Transport Support prior to transporting the trailer.

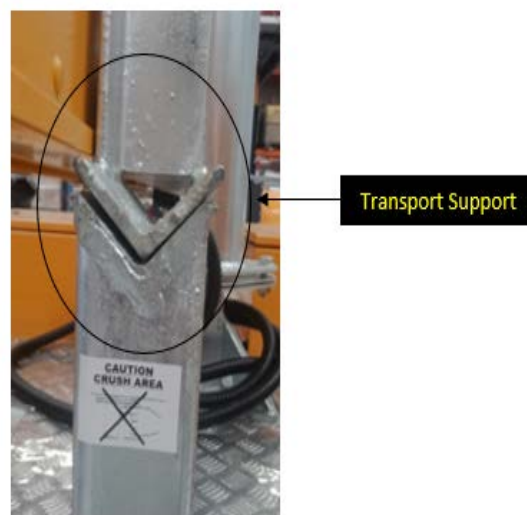


Figure 35

Front Toolboxes

The front passenger side toolbox consists of the VMS Display Switch, Solar Panel Tilt Switch (Classic), Mast Up/Down Switch, Onboard Message Manager (where fitted) and the Hydraulic Reservoir and Mast Motor.

The front driver's side toolbox consists of the wheel brace and manual for the VMS.



Figure 36

Rear Toolboxes

The rear toolboxes are home to either two (Essential Amber), three (Essential 5 Colour) or four (Classic) 12V batteries required to power the VMS display and the 240V Battery Charger (where fitted) required to power the batteries.

Note: The 240V on-board Battery Charger comes standard on the Classic model and is optional on the Essential model.

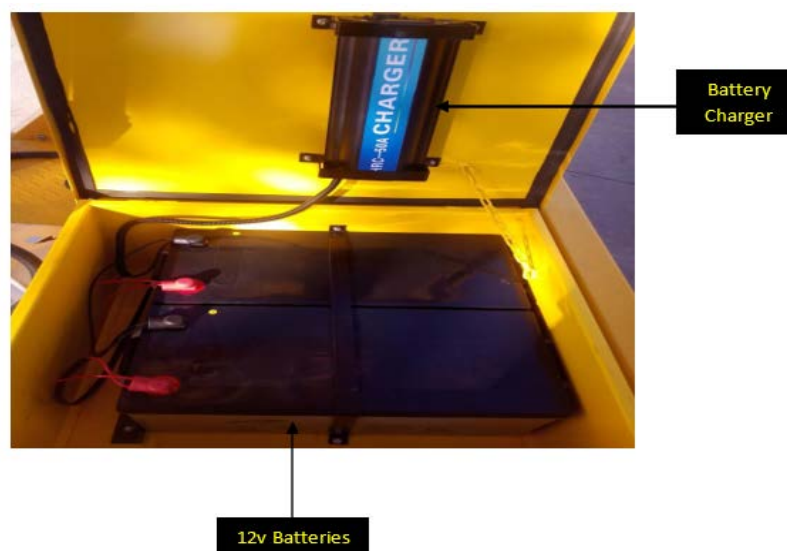


Figure 37

Display Panel

Display Panel Case

The Display Panel consists of 42 identical LED panels with each row wired in parallel and connected directly to the motherboard, which is located behind the panels in the Display Panel Case. The Display Panel Case provides access to the LED panels, motherboard, SIM card assembly and other associated wiring.

Display Panel Locks

There are six Display Panel Locks located on the Display Panel Case that can be fitted with padlocks for added security for the case and the sensitive equipment held within.

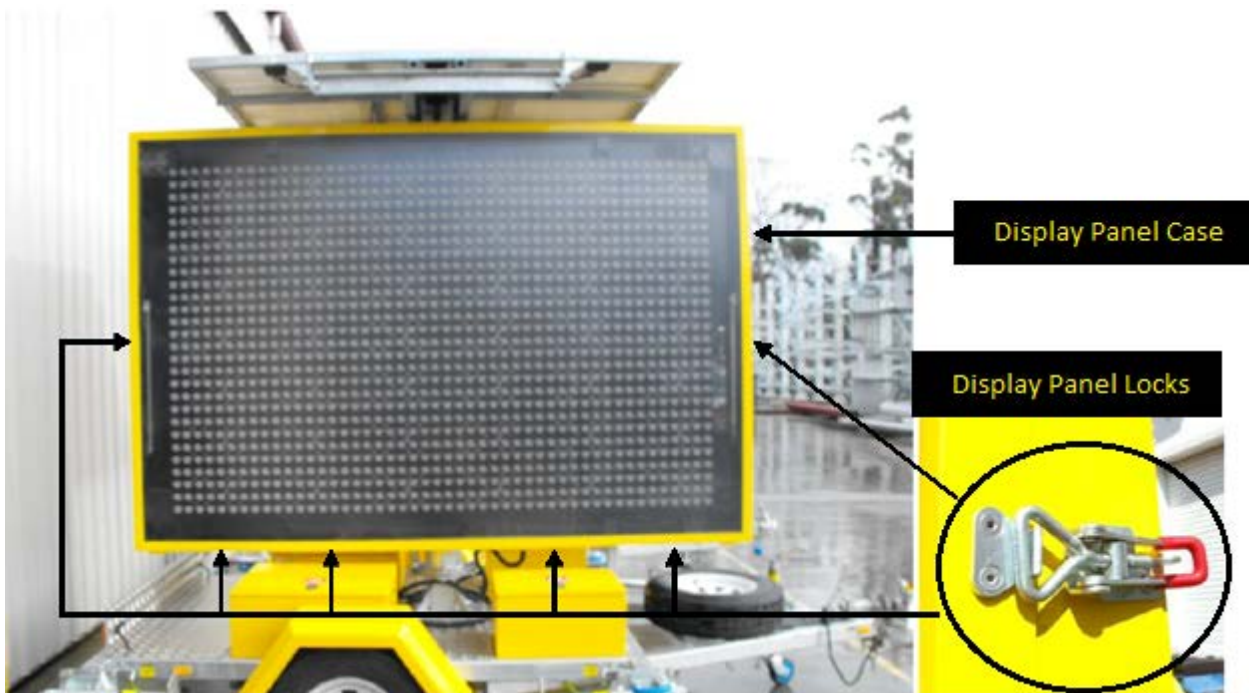


Figure 38

LED Panels

There are 42 identical LED panels made up of 32 LED assemblies on each panel that consist of 14 LED light bulbs per LED assembly.

VMS Display Switch

The VMS Display Switch is located in the front passenger side toolbox to the left of the Solar Panel Tilt Switch and supplies power to the LED panels from the batteries.

It is required to be in the "ON" position to operate the Display Panel and any other features. When the VMS Display Switch is in the "OFF" position the VMS Display Panel is switched off.

Note: To operate the Solar Panel Tilt Switch and the Mast Up/Down Switch, the VMS Display Switch must be in the "ON" position.



Onboard Message Manager

The Onboard Message Manager is located in the front passenger side toolbox. It is a control device used specifically for uploading built in pictures, and built in or manual text to the Display Panel.

Note: The Onboard Message Manager comes standard on the Classic model and is optional on the Essential model.



Figure 39

3G/GPS Assembly

The 3G/GPS assembly is made up of an antenna, modem and SIM card. The antenna performs both 3G and GPS functionality and connects directly to the CPU.



Figure 40

Motherboard (CPU)

The Motherboard is located on the right hand side of the LED display and is essentially the 'brains' of the VMS unit as it controls what is viewed on the Display Panel, distributes power to the board and connects directly with the GPS antenna and the radar (where fitted).

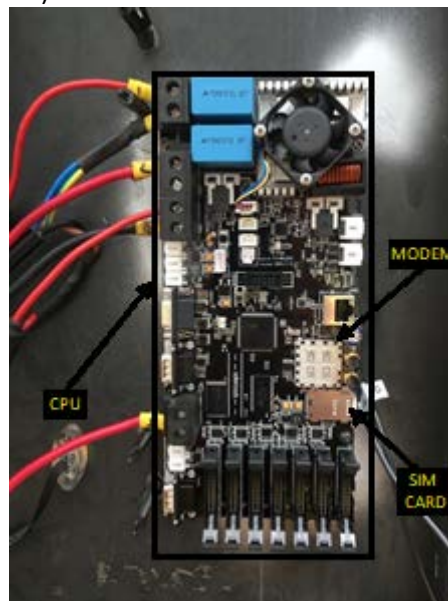


Figure 41

Radar (where fitted)

The Radar Unit is located on the top right-hand corner of the Display Panel Case. It tracks and stores the speed of vehicles approaching the VMS board up to 100m away. It is controlled from the Zone VMS online management system.



Figure 42

Website

Login Page

-- zone --

Status Maps Messages Scheduling Radar Troubleshooting Settings Support Log in

Log in.

Use a local account to log in.

Email 1

Password 2

Remember me?

Log in 3

[Forgot your password?](#)

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Figure 43

1. Email
2. Password
3. Login

Note: A valid account is required to login to the Zone website.



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Dashboard

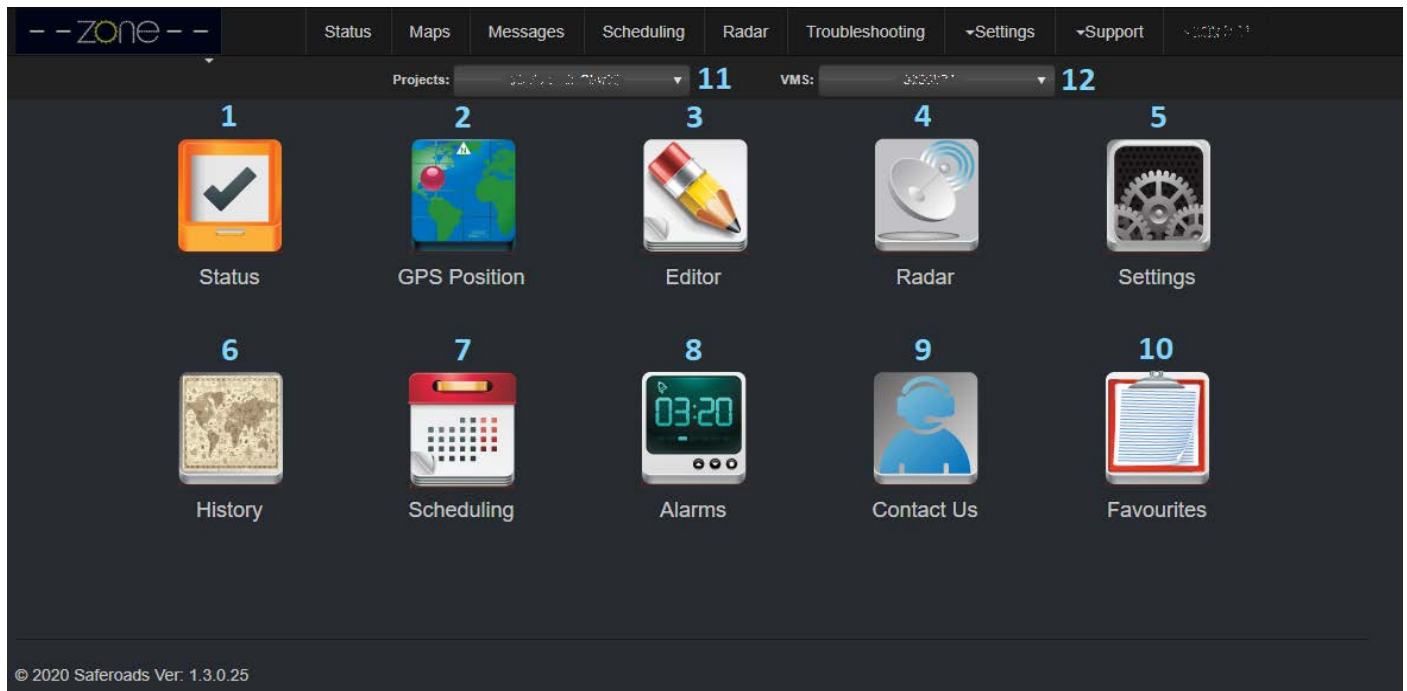


Figure 44

The Zone Dashboard provides links to the most commonly used features on the website.

1. Status page
2. Maps page
3. Editor page
4. Radar page
5. Settings page
6. History page
7. Scheduling page
8. Alarms page
9. Contact Us page
10. Diagnostics page
11. Project
 - Shows a list of all projects available to the user.
12. VMS
 - Shows a list of all VMS in the selected project.



Status Page

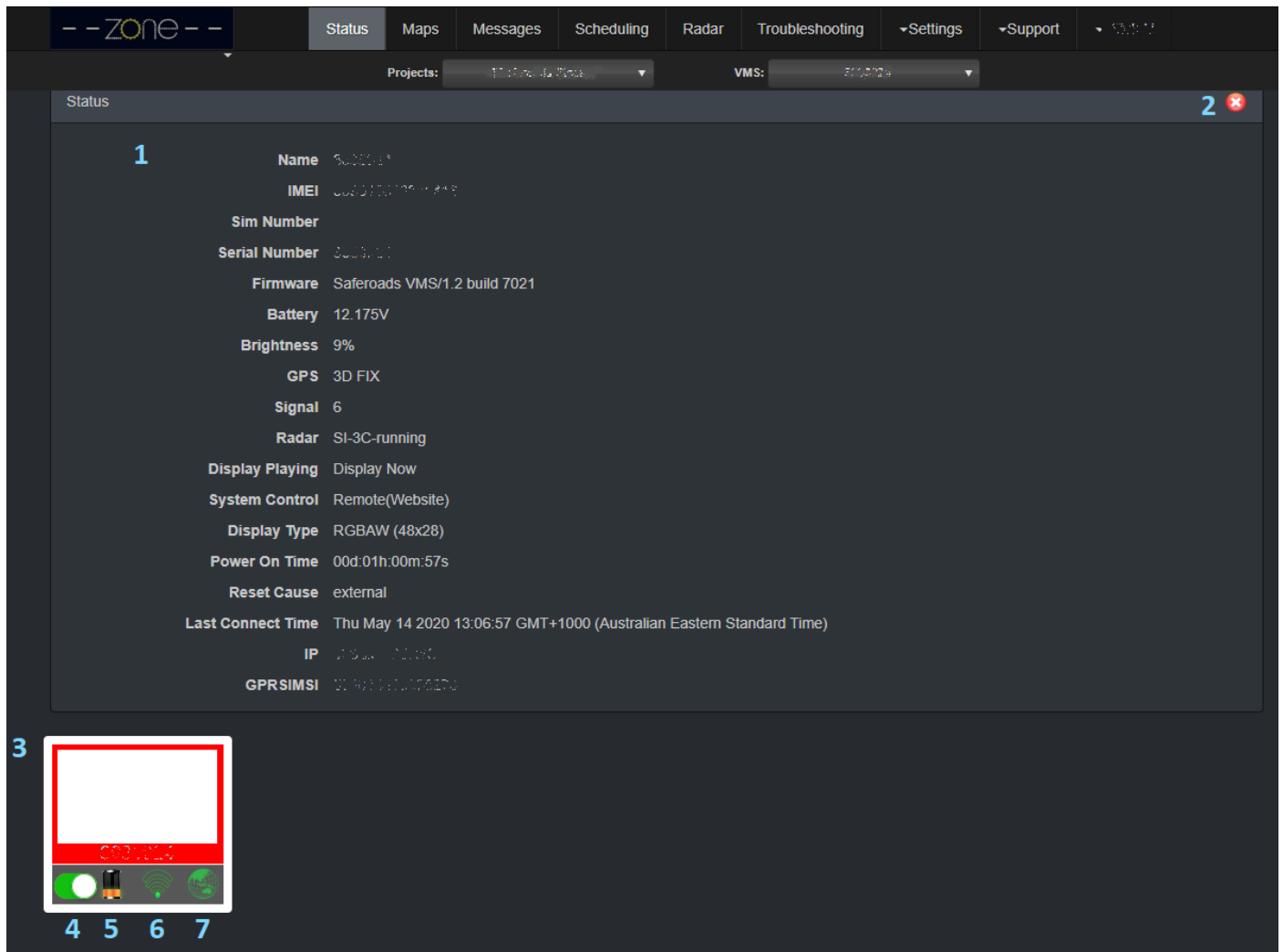


Figure 45

The status page provides information on the selected VMS.

1. Status information
 - Provides status of the selected VMS. It shows the VMS Name, IMEI Number (IMEI number on the VMS modem, this is a unique number for every VMS), SIM Number (SIM phone number), Serial Number (VMS serial number on the main control board), Brightness (brightness percentage of the VMS), Battery Voltage, GPS (GPS status), Signal (VMS signal strength), Display Type (type of VMS), Last Connect Time (the last time the VMS connected to the Zone server).
2. Close button
 - Link back to the dashboard
3. VMS quick information
4. VMS display on/off
 - Turn the display on or off for the VMS.



5. VMS battery
 - Displays the level of the battery on the VMS. There are five levels, 0% red battery, 25% orange battery, 50% green battery, 75% green battery and 100% green battery.
6. VMS signal strength
 - Displays the signal strength of the mobile phone signal on the VMS. There are five levels, 0% 0 bars, 25% 1 bar, 50% 2 bars, 75% 3 bars and 100% 4 bars.
7. VMS GPS signal on/off
 - Displays if there is a GPS signal on the VMS. The green world icon represents GPS has a location fix, whereas the red world icon represents no GPS.



Maps Page

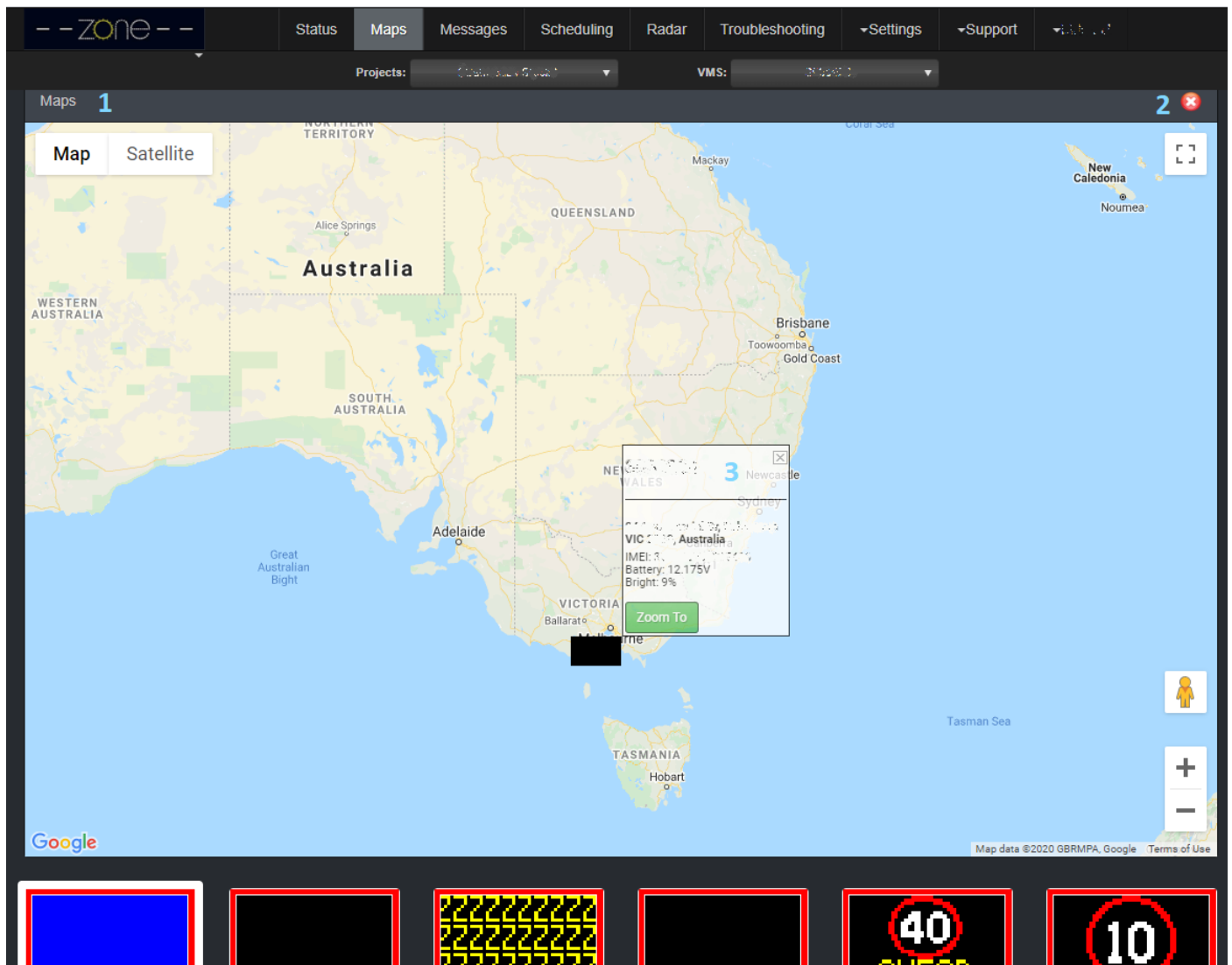


Figure 46

The Maps page provides information of where the VMS is located.

1. Maps
 - Map of the VMS locations.
2. Close Button
 - Link back to the Dashboard.
3. VMS Address and Information
 - Provides basic information of the VMS including current playing message, VMS name, VMS address location, IMEI number, battery voltage and brightness percentage.
 - The Zoom To button will zoom into street level for the VMS.

Messages Page

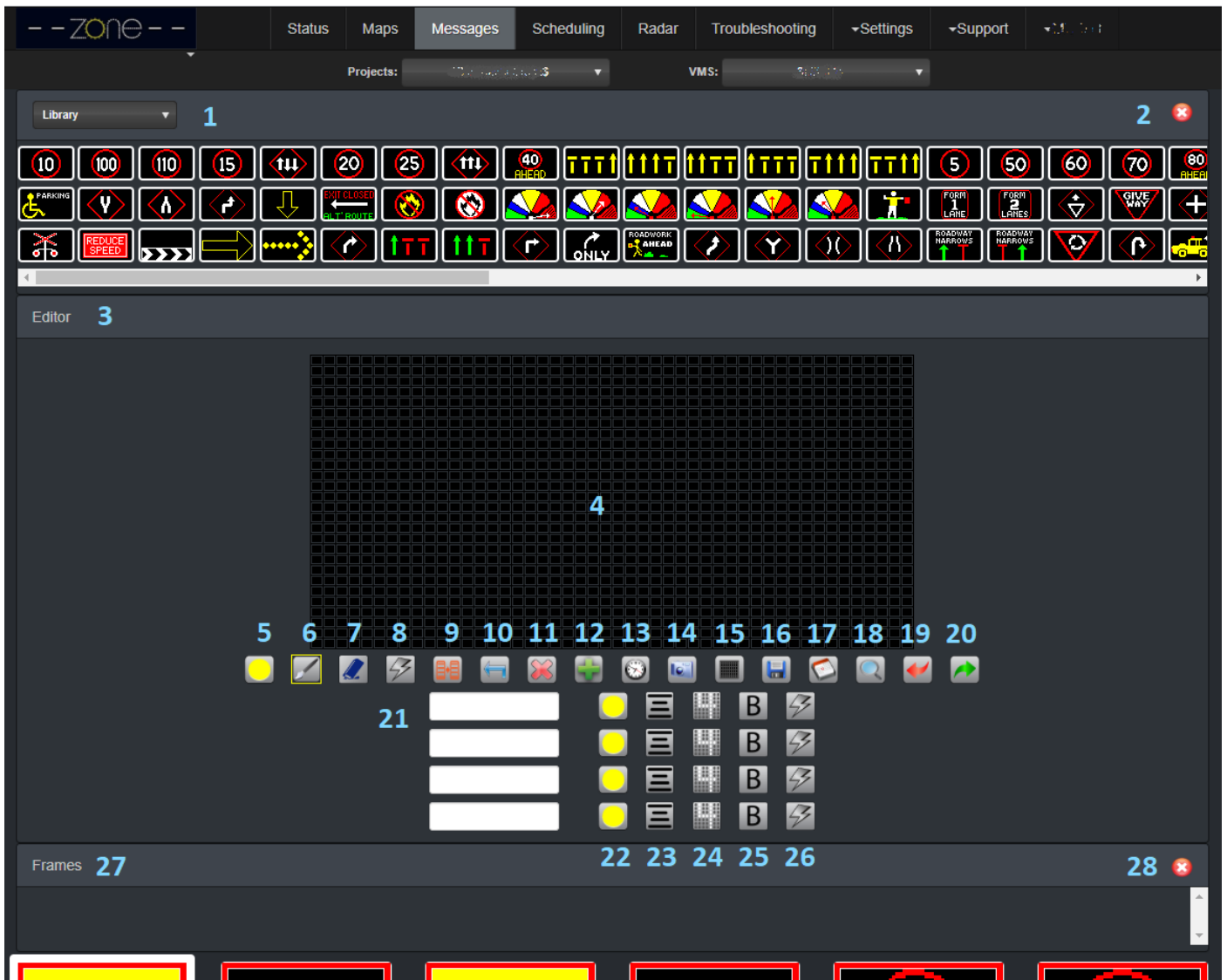


Figure 47

The Messages page allows the user to create a message to play on the selected or multiple VMS from the current project.

1. Library/Favourites
 - Library shows predefined messages. These cannot be edited or deleted.
 - Favourites shows messages that have been added to favourites. These can be removed from Settings -> Favourites page.
2. Close Button
 - Link back to the dashboard



3. Editor
 - Area to create a new message.
4. Editor Canvas
 - Area to draw a message. Each black square represents a pixel on the VMS. The canvas is 48 pixels wide and 28 pixels high.
5. Colour
 - Colour of the drawing tool. There are six colours, amber, white, green, blue, red and black.
 - Click the button to show a drop-down box of the available colours.
 - Note: an amber VMS will display white, green, blue and red as amber. A four colour VMS will show blue as amber.
6. Drawing Tool
 - There are five drawing tools, pen, square, circle, line and fill.
 - The Pen tool will allow the user to draw free hand in the Editor canvas area.
 - The Square tool will allow the user to draw a square. Click and hold the left mouse button down inside the Editor canvas where the square will start, drag to the size of the desired square and release the left mouse button.
 - The Circle tool will allow the user to draw a circle. Click and hold the left mouse button down inside the Editor canvas where the middle of the circle will be located, drag to the size of the desired circle and release the left mouse button.
 - The Line tool will allow the user to draw a line. Click and hold the left mouse button down inside the Editor canvas where the line will start, drag to the size of the desired line and release the left mouse button.
 - The Fill tool will allow the user to fill an object with the selected colour.
7. Eraser
 - The Eraser will delete the selected pixel in the editor canvas and turn it black.
8. Flash Message
 - This will flash everything on the editor canvas.
9. Open Message
 - Opens a Message file from the local disk and displays it in the Editor Canvas.
 - Note: The Message file must be 48x28 in image size. The correct colour RGB value must be used to display correctly. Red = #FF0000, Green = #00FF00, Blue = #0000FF, Amber = #FFFF00, White = #FFFFFF, Black = #000000.
10. Undo
 - Undo the last Drawing Tool used in the Editor Canvas.
11. Delete
 - Deletes a Message or a Frame.
 - If a Frame is highlighted in the Frames section, then the frame will be deleted.
 - If no Frame is highlighted and there is a message drawn in the Editor canvas, then the Message will be deleted.



12. Add Message to Frame

- Adds a Message the user has created in the Editor canvas to the Frames section.
- Note: A Message must be added to the Frames section to play on the VMS or to schedule.

13. Display Time

- Determines how long to play a Message in seconds.
- Only needed for when playing more than one Message.

14. Upload Image

- Note: The Image file must be 48x28 in image size. The correct colour RGB value must be used to display correctly. Red = #FF0000, Green = #00FF00, Blue = #0000FF, Amber = #FFFF00, White = #FFFFFF, Black = #000000.

15. Transition Type

- Display Transition type between Messages. There are eight Transitions. Checkerbox, Clock, Down Up, Left Right, Right Left, Up Down, Zoom In and Zoom Out. Click on the Transition Type button to show the drop-down list

16. Save Message

- Save Message to Radar.
 - The Radar Message is used on the Radar page. Radar messages can be deleted from Settings -> Favourites page.
 - Note: The Message does not need to be added to the Frames section to be saved.
- Save Message to Favourites
 - The Message is saved to the Library/Favourites section above. To see the Message, make sure Favourites is selected at the top. Favourites can be deleted from Settings -> Note: Messages do not need to be added to the Frames section to be saved.
- Save Frames to Favourites
 - Save multiple Frames for the Message to Favourites.
 - Note: The Message must be added to the Frames section to save Frames.

17. Schedule Message

- Schedules Messages in the Fames section to play at a certain time determined by Time and Date.
- File Name
 - File Name of the Message. A File Name must be entered.
- Start Date
 - Start Date of Message to play. If there is no Start Date, then it will play until the End Date.
- End Date
 - End Date of the Message to play. If there is no End Date, then it will play from the Start Date indefinitely.
- Start Time
 - Start Time of Message to play.
- End Time
 - End Time of Message to play.
- Priority
 - There are three Priority levels, low, normal, and high.



- If there are two Messages that are set to play at the same time, then the Message with the higher priority will play.
 - Day Assigned
 - Day of the week the Message will play.
 - Save
 - Saves the Message to the Scheduler
 - Note: When no information is entered into Start Date, End Date, Start Time, End Time and Day assigned, then the Message will always play. This is the same as using Send Frames button. The Message must be added to the Frames section to Schedule the Message.
18. Preview Frames
- Preview the Message in Frames section.
19. Get Frames from VMS
- Load the Message File Name from the selected VMS into the Frames section.
 - Note: The File Name, Display Now is the name of the Message when using the Send Frames button.
20. Send Frames
- Send the Frames to the VMS to play straight away.
 - Select which VMS in the Project to play.
 - Note: The Message must be added to the Frames section for it to be played.
21. Text Line
- Text to enter onto the Editor Canvas.
 - Four lines of text can be entered if the line height is set to 4.
22. Text Colour
- Text Colour, the colour of the text can be changed. There are six colours; amber, white, green, blue, red and black.
23. Text Align
- Align Text line to the Left, Middle and Right. Click the Text Align button to select from the drop-down list.
24. Text Line Height
- Set the height of the text line, there are four heights, 4, 3, 2 and 1.
25. Text Bold
- Set the text line to bold or normal.
26. Text Flash
- Set the text line to flash.
27. Frames
- Display all of the Frames to create a message.
28. Delete All Frames
- Deletes all of the Frames from the Frames section.



Scheduling Page

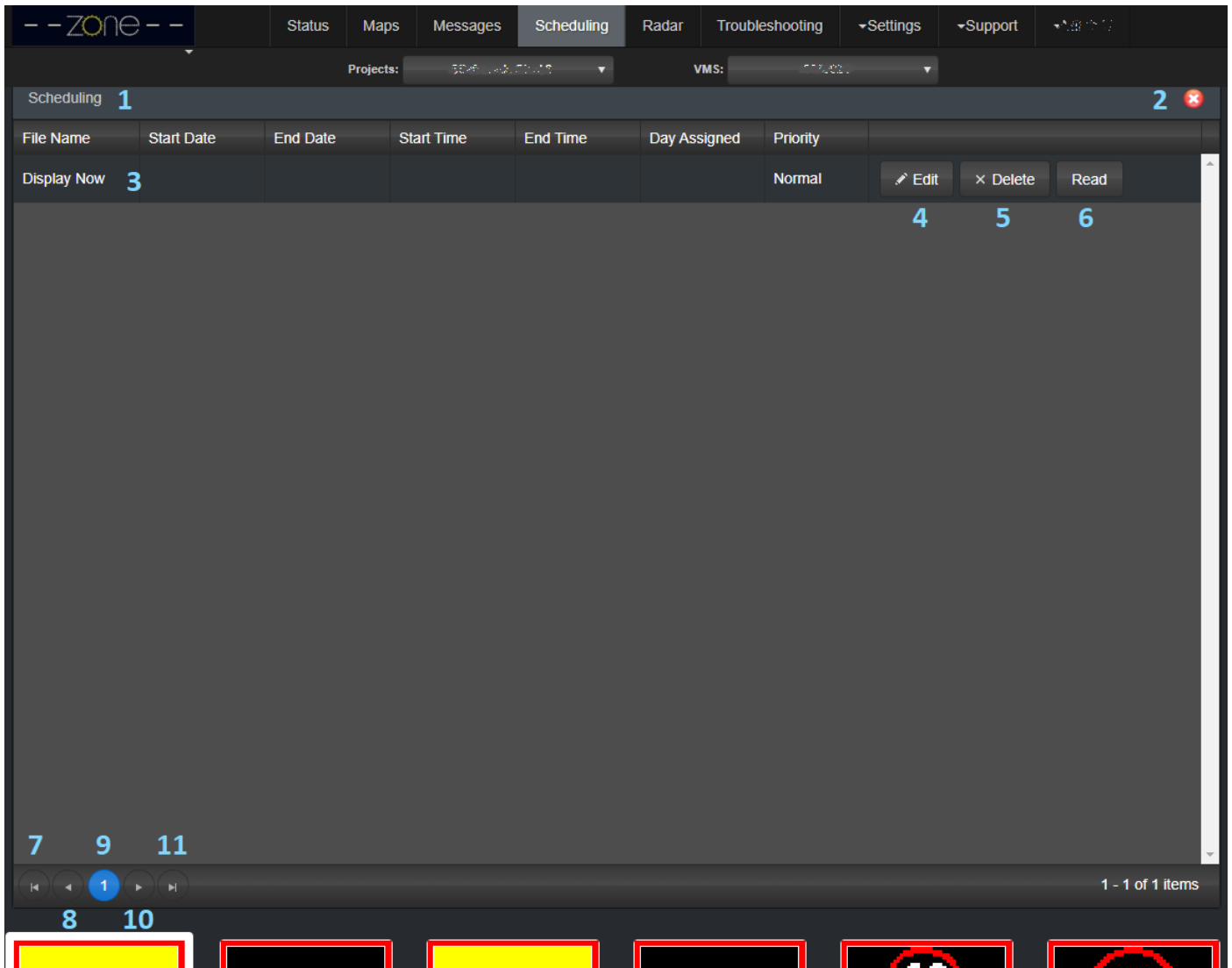


Figure 48

The scheduling page provides information of the selected VMS schedule.

1. Schedule
2. Close button
 - Link back to the dashboard.
3. File name
 - File name of the scheduled message for the selected VMS.
4. Edit schedule



- File name
 - File name of the message. A file name must be entered.

 - Start date
 - Start date of message to play. If there is no start date, then it will play until the end date.
 - End date
 - End date of the message to play. If there is no end date, the message will be displayed indefinitely.
 - Start time
 - Start time of message to play.
 - End time
 - End time of message to play.
 - Priority - there are three priority levels; low, normal, high.
 - If two messages are set to play at the same time, then the message with the higher priority will play.
 - Day assigned
 - Day of the week the message will play.
 - Update
 - Updates the message in the scheduler
 - Note: When no information is entered into start date, end date, start time, end time and day assigned, then the message will always play.
5. Delete schedule
 - Deletes the scheduled message from the selected VMS.
 6. Read schedule in editor
 - Show the scheduled message in the editor page.
 7. Skip to first page
 - If there are more than 10 scheduled messages per page the button will skip back to the first page.
 8. Previous page
 - If there are more than 10 scheduled messages per page the button will go to the previous page.
 9. Page number
 10. Next page
 - If there are more than 10 scheduled messages per page the button will go to the next page.
 11. Skip to last page
 - If there are more than 10 scheduled messages per page the button will skip to the last page.



Radar Page



Figure 49

The Radar Page provides information on the VMS Radar Settings

1. Library
2. Close button
3. Enable Radar Log
4. Speed Limit
5. Display Speed
6. Correct Speed Min – the minimum speed allowed that will display the Correct Speed message on the VMS.
7. Correct Speed Max – the maximum speed allowed that will display the Correct Speed message on the VMS.
8. High Speed Cut Off
9. Approach Message On/Off
10. Approach Message Display
11. Correct Speed On/Off
12. Correct Speed Display
13. Over Speed On/Off
14. Over Speed Display



- 15. Radar Log
- 16. Save Radar

Troubleshooting Page

The screenshot shows the Zone website's Troubleshooting page. At the top, there are navigation tabs: Status, Maps, Messages, Scheduling, Radar, Troubleshooting (selected), Settings, Support, and Reports. Below the navigation, there are dropdown menus for Projects and VMS. The main content is a table titled 'History' with the following columns: IMEI / User, Name, Log, Code, and Date. The table contains 17 rows of data, each representing a logged issue. Below the table is a pagination bar showing '1 - 100 of 177851 items' and a row of five colored boxes (yellow, black, yellow, black, red with white text) representing radar speed limits.

IMEI / User	Name	Log	Code	Date
8511100010001	VMS 12345678901234567890	Message Not Modified	Status	28-05-2020 09:04
8511100010002	VMS 12345678901234567890	Message Not Modified	Status	28-05-2020 09:04
8511100010003	PI 123	Message Not Modified	Status	28-05-2020 09:04
8511100010004	Message 2	Message Sent	Updated	28-05-2020 09:04
8511100010005	Settings 2	Message Not Modified	Status	28-05-2020 09:04
8511100010006	PI 1234	Message Not Modified	Status	28-05-2020 09:04
8511100010007	PI 1234567	Message Not Modified	Status	28-05-2020 09:04
8511100010008	Message 2	Message Sent	Updated	28-05-2020 09:04
8511100010009	PI 123	Alarms Not Modified	Status	28-05-2020 09:04
8511100010010	PI 1234	Settings Not Modified	Status	28-05-2020 09:04
8511100010011	VMS 1	Display Faults 1337	Error	28-05-2020 09:04
8511100010012	PI 123	No Firmware Found	Status	28-05-2020 09:04
8511100010013	Message 2	Message Sent	Updated	28-05-2020 09:04
8511100010014	PI 1234	Alarms Not Modified	Status	28-05-2020 09:04
8511100010015	PI 1234	No Radar Settings Found	NotFound	28-05-2020 09:04
8511100010016	PI 1234	Settings Not Modified	Status	28-05-2020 09:04
8511100010017	Message 2	Display Faults 703	Error	28-05-2020 09:04
8511100010018	Message 2	No Firmware Found	Status	28-05-2020 09:04
8511100010019	Message 2	Message Sent	Updated	28-05-2020 09:04

Figure 50

The troubleshooting page on the Zone website shows a list of issues logged by the VMS boards.



Settings Page

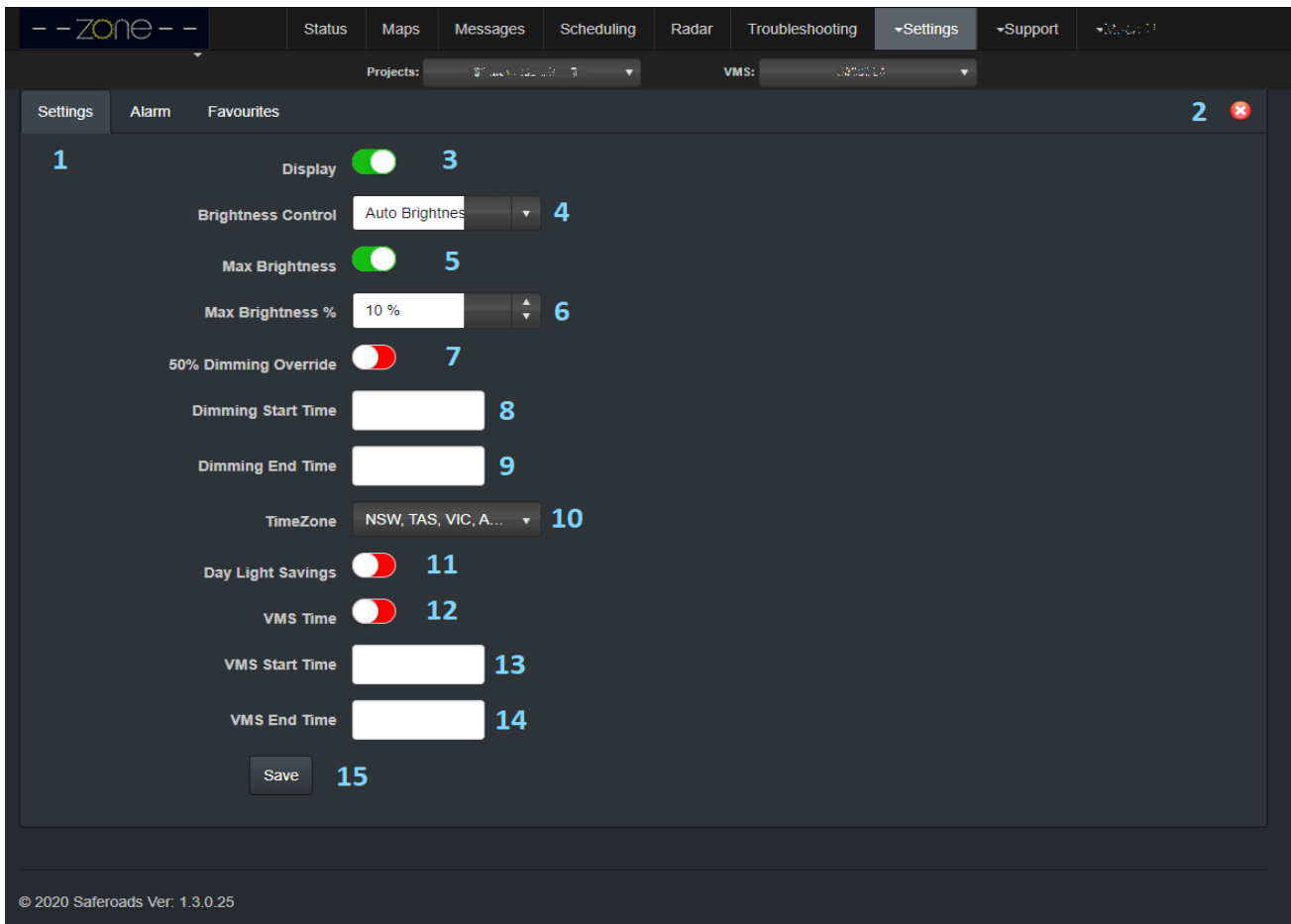


Figure 51

Settings

1. Settings
2. Close button
3. Display
4. Brightness Control
5. Max Brightness
6. Max Brightness %
7. 50% Dimming Override
8. Dimming Start Time
9. Dimming End Time
10. Time Zone
11. Day Light Savings
12. VMS Time
13. VMS Start Time



14. VMS End Time
15. Save button

Alarms Page

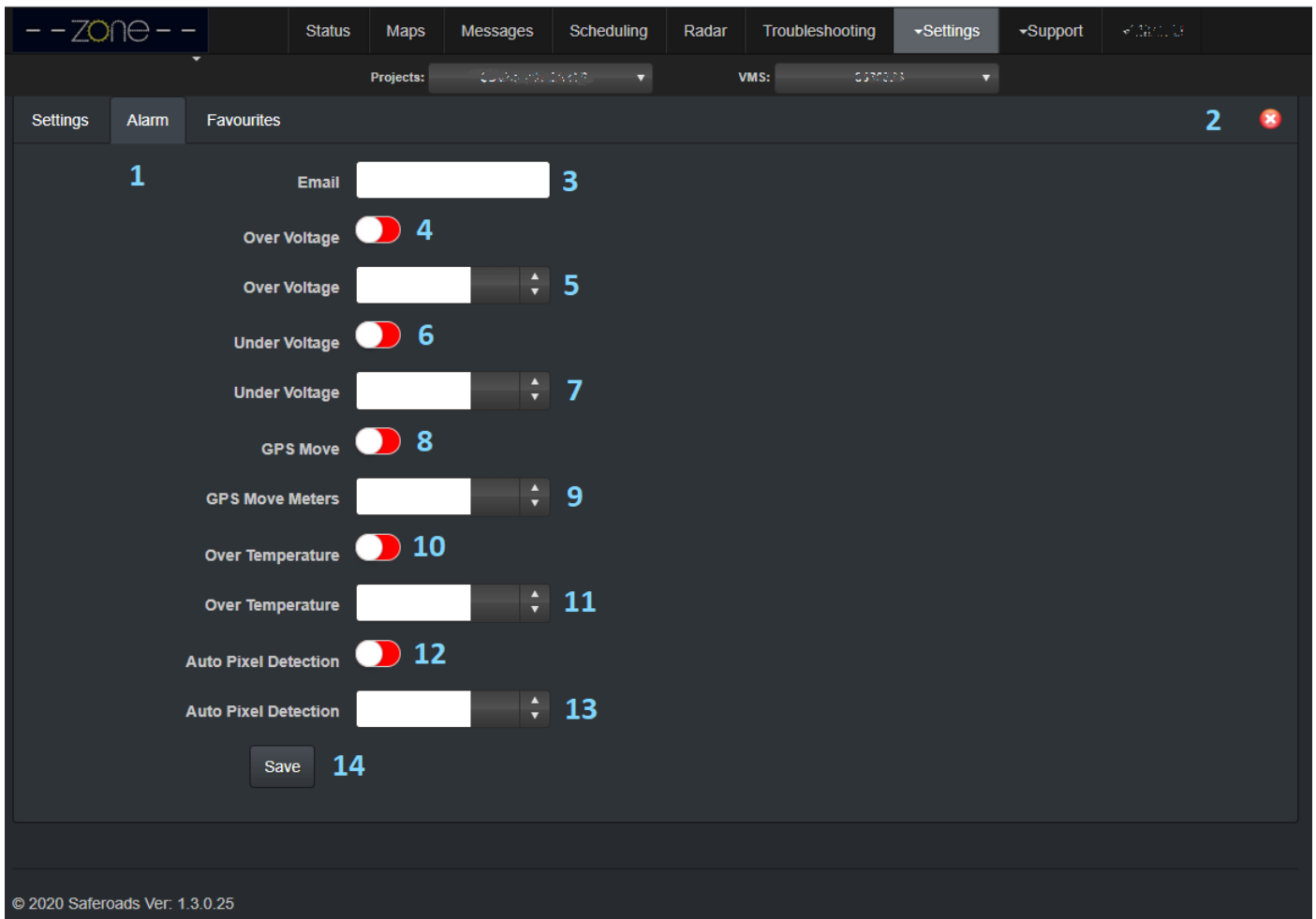


Figure 52

Alarms

1. Alarm
2. Close button
3. Email
4. Over Voltage On/Off
5. Over Voltage value
6. Under Voltage On/Off
7. Under Voltage value
8. GPS Move On/Off
9. GPS Move value
10. Over Temperature On/Off
11. Over Temperature value



12. Auto Pixel Detection On/Off
13. Auto Pixel Detection value
14. Save

Favourites Page

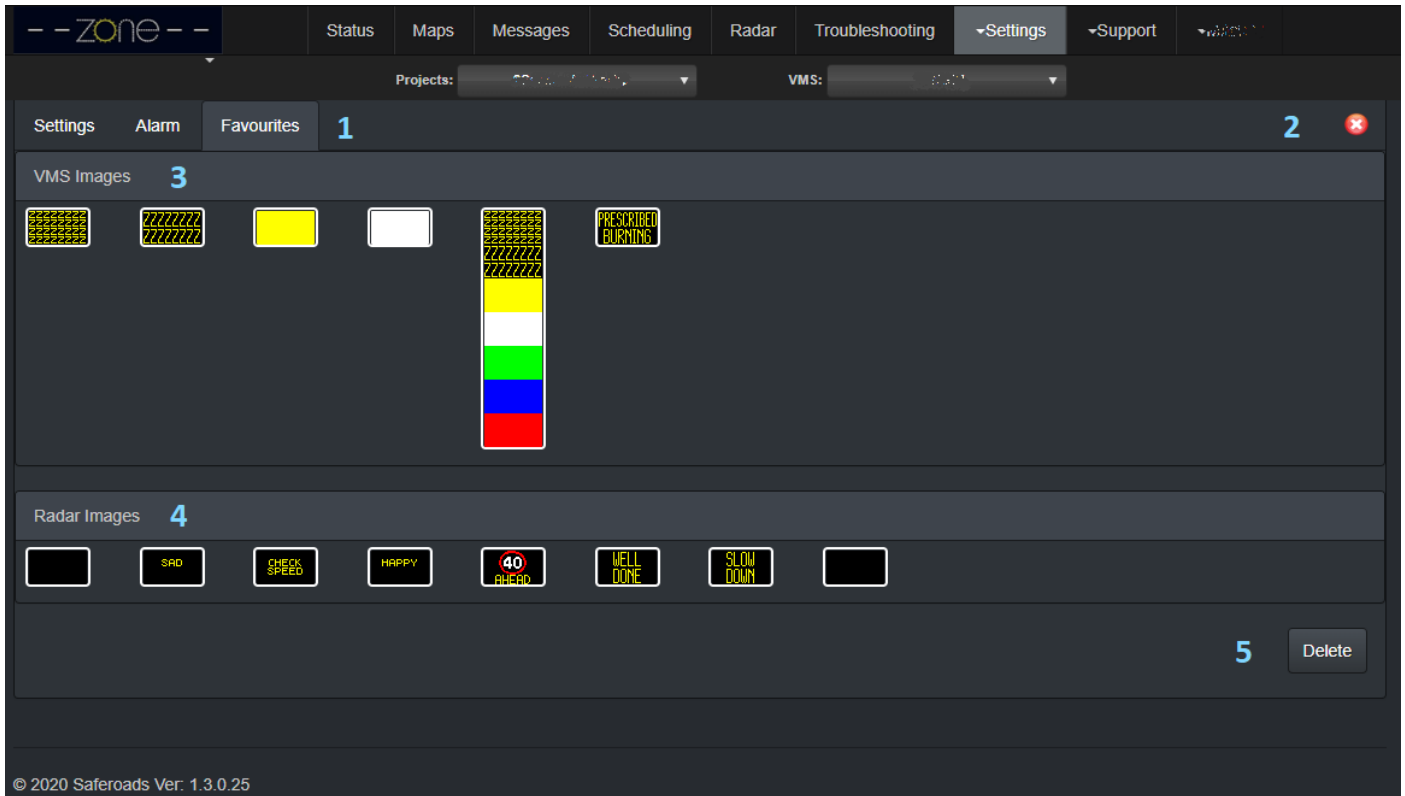


Figure 53

Favourites

1. Favourites
2. Close button
3. VMS message
4. Radar message
5. Delete button

Admin Users Page

The screenshot shows the 'Users' management interface. At the top, there are navigation tabs: Status, Maps, Messages, Scheduling, Radar, Troubleshooting, Settings, Admin, Support, and Help. Below these are filters for 'Projects' and 'VMS'. The main content is a table with the following columns: Type, Email, First Name, Last Name, Company, and Projects. Each row represents a user and includes 'Edit' and 'Delete' buttons. Numbered callouts are present: '1' is next to 'Create New', '2' is next to the 'Type' column header, '3' is next to an 'Edit' button, and '4' is next to a 'Delete' button.

Type	Email	First Name	Last Name	Company	Projects	Actions
Company User	Edit, Delete
Company User	Edit, Delete
Company Admin	Edit, Delete
Company User	Edit, Delete
Company Admin	Edit, Delete

Figure 54

User Administration

1. Create New
2. User details
3. Edit
4. Delete



Support Pages

Manuals Page

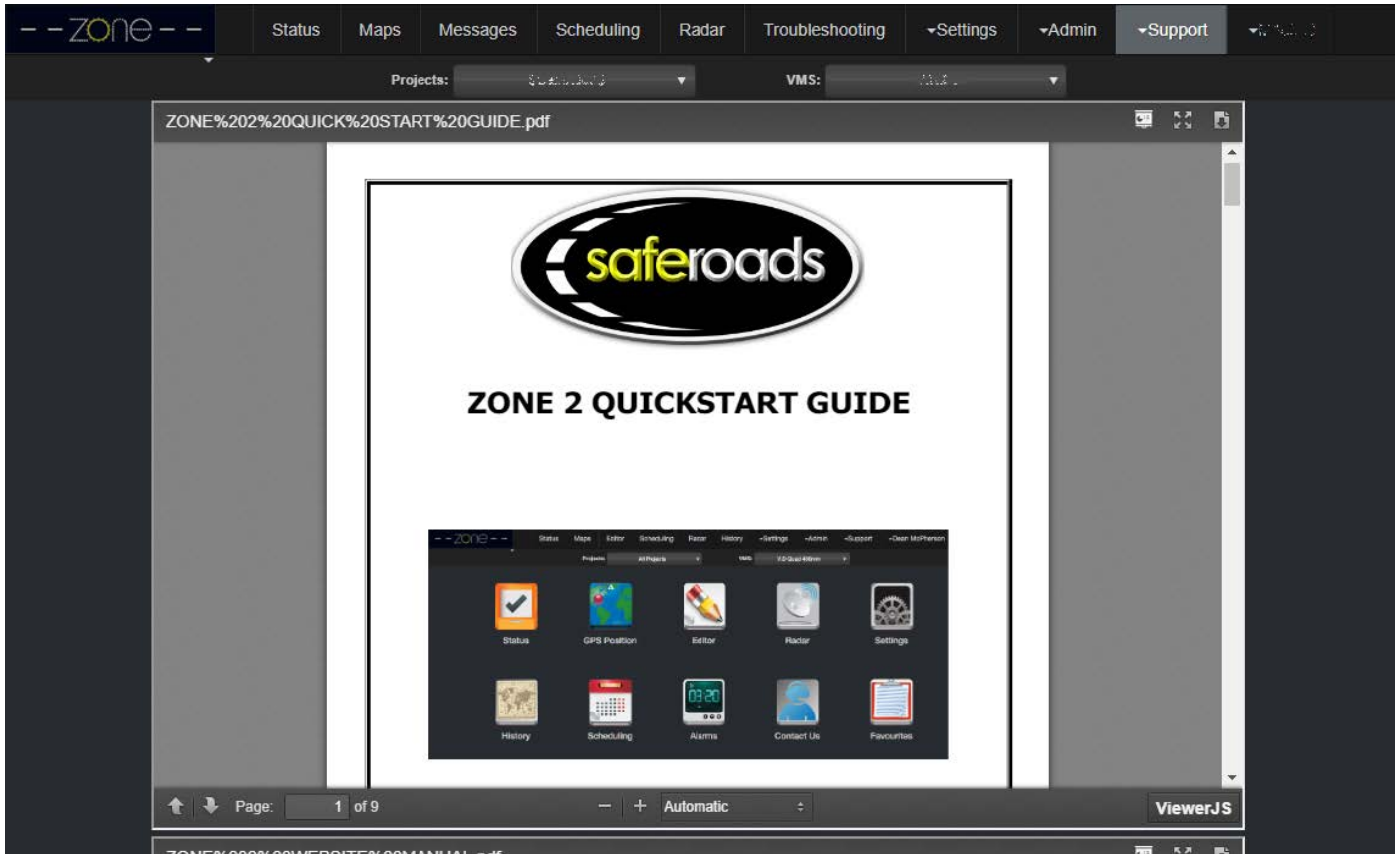


Figure 55

Manuals regarding VMS products are located on this page.

Newsletter Page

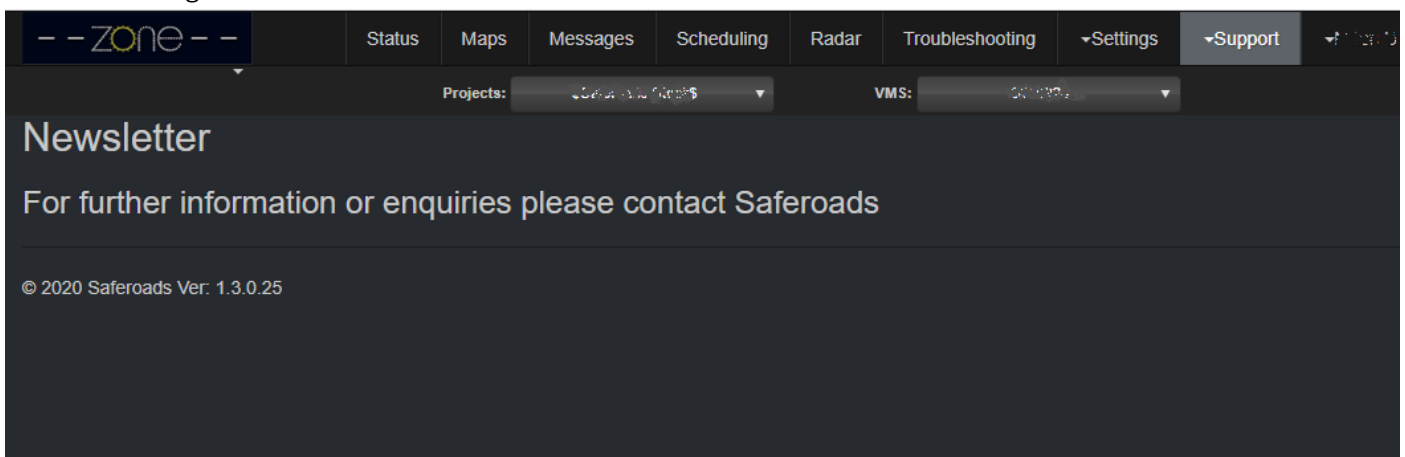


Figure 56

Any newsletter updates will be posted to this page.



W www.saferoads.com.au
T 1800 060 672
E sales@saferoads.com.au

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Support Page

Support

For further information or technical support please contact zonesupport@saferoads.com.au

Zone Care customers may contact Technical Support Advisor directly on 0408 539 111

Alternatively, please enter your email address and description of the issue

Your Email Address

Subject

Description of Issue

Figure 57

This page allows the user to contact support in the case of any issues.



W www.saferoads.com.au
T 1800 060 672
E sales@saferoads.com.au

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Contact Page

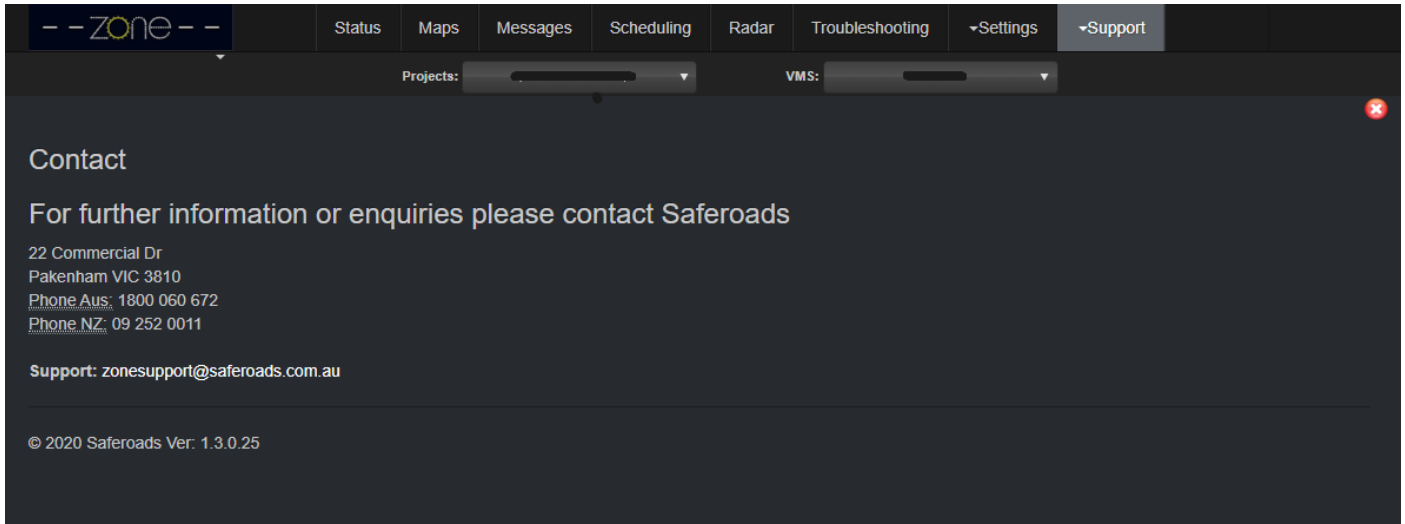


Figure 58

Saferoads contact information is located on this page.

Manage User Page

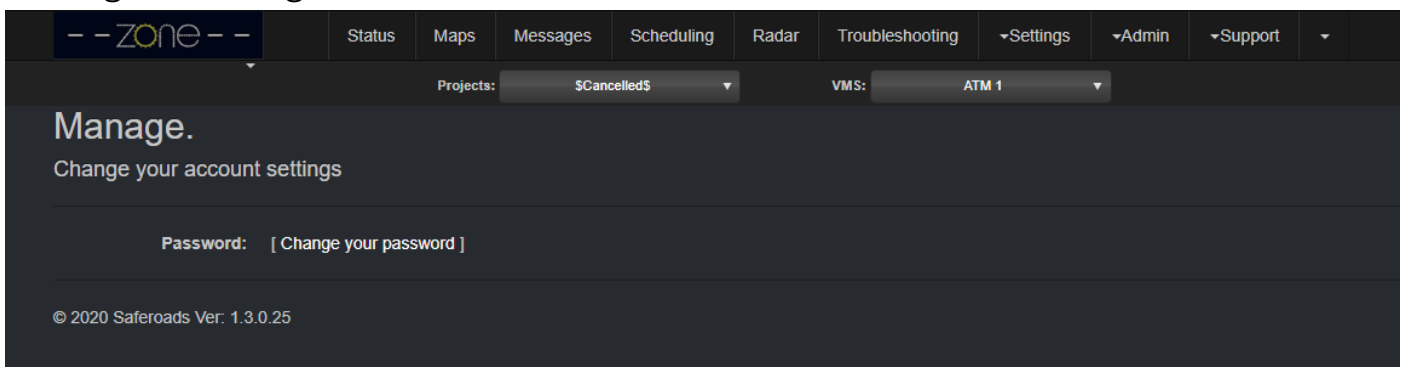


Figure 59

This page is used to reset user passwords.



Maintenance

Opening the Display Case

1. Unlatch the Display Panel Locks from the Display Panel Case.

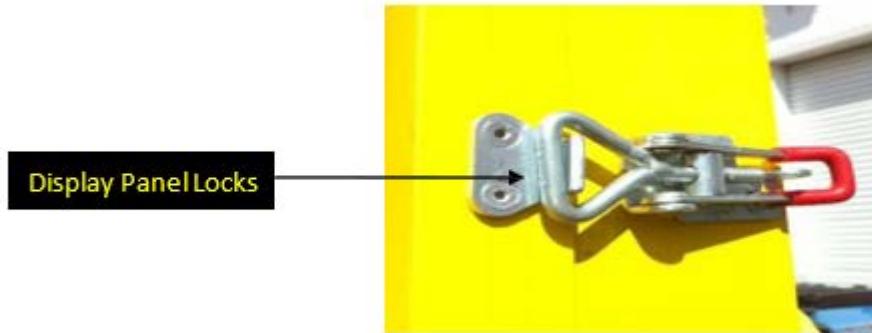


Figure 60

2. Open the Display Panel Case.

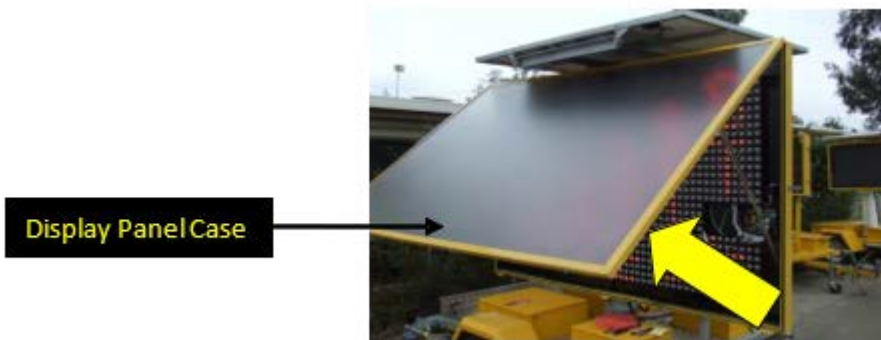


Figure 61

3. Lock in the supporting arms of the Display Panel Case.



Figure 62

Removal and Installation

LED Panel Removal and Installation

To remove the LED panels from the Display Panel Case, complete the following procedure:

1. Open the Display Panel Case as outlined on page 43 of this manual.
2. Using a pair of needle nose pliers, remove the two fuses located at the bottom right hand corner of the Display Panel Case to ensure the main source of power is disconnected from the circuit.

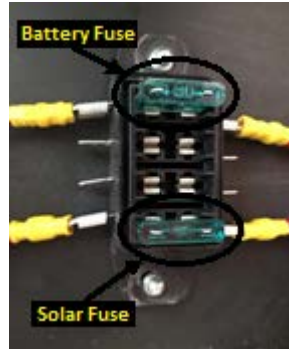


Figure 63

3. Locate the panel(s) to be removed.
4. Using needle nose pliers, unlatch the securing pins in the panel.

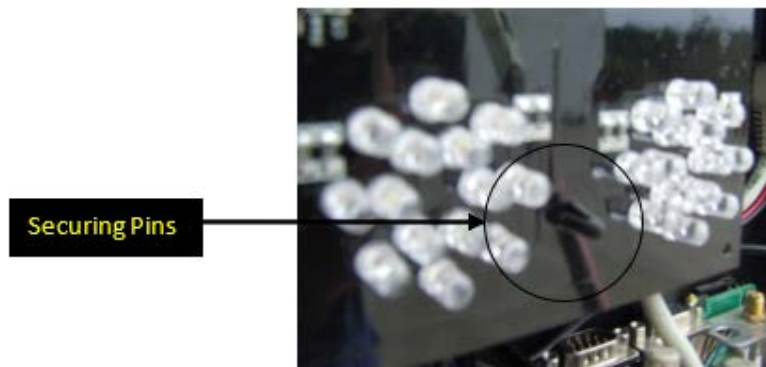


Figure 64

5. Pull the LED panel away from the Display Panel Case being cautious of the ribbon styled wiring.

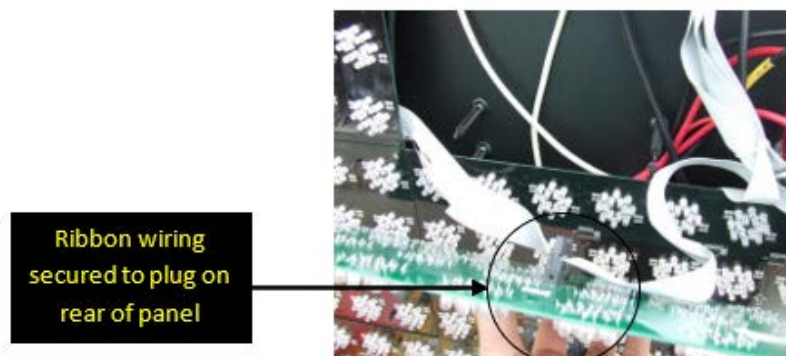


Figure 65

6. Unlatch the two securing pin clips on the plug to the rear LED panel.

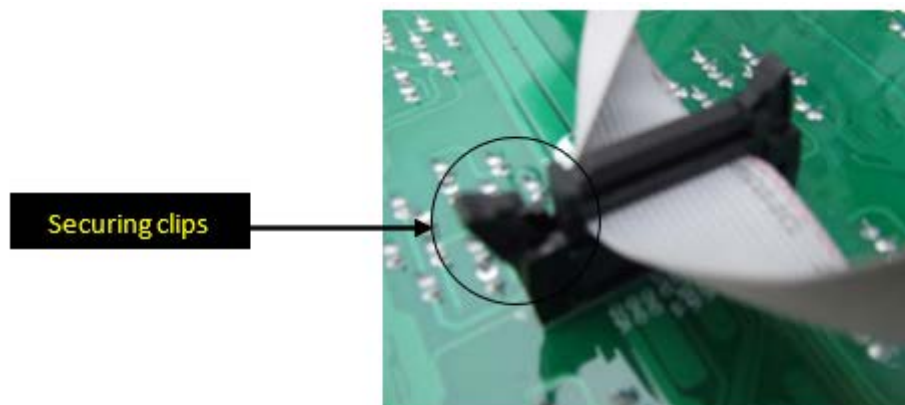


Figure 66

7. Disconnect the plug from the LED panel.

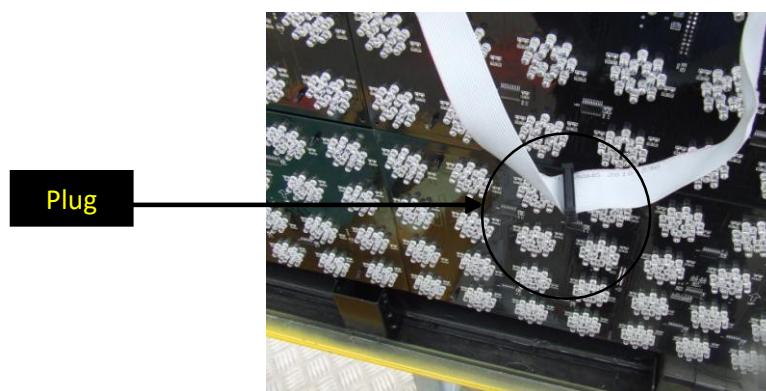


Figure 67

8. Replace the two fuses and backup battery connection.
9. Close the Display Panel Case and latch the Display Panel Locks.
10. For installation procedure, complete steps in the reverse order.

SIM Card Removal and Installation

To remove the SIM card from the modem, complete the following procedure:

1. Open the Display Panel Case as outlined on page 43 of this manual.
2. Eject/insert SIM card by pressing the SIM card.

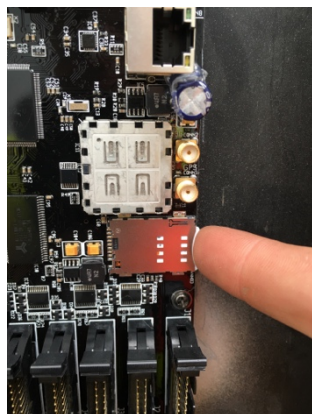


Figure 68

3. Push the reset button on the motherboard and check LED indicators as per the troubleshooting section on page 53.

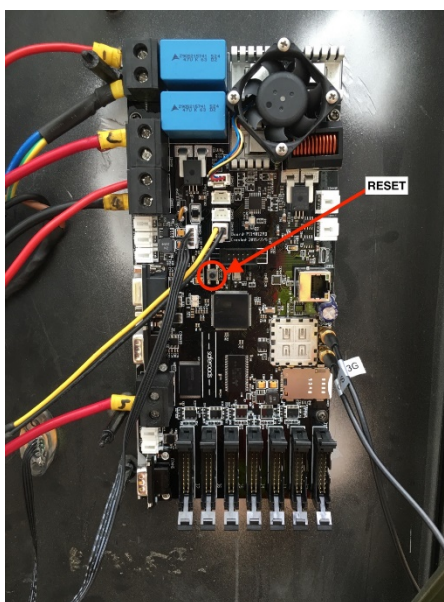


Figure 69

4. Close Display Panel Case and latch the Display Panel Locks.

Motherboard (CPU) Removal

1. Open the display case as outlined on page 43 of this manual.
2. Using needle nose pliers remove the two fuses located at the bottom right hand corner of the Display Panel Case to ensure no power is connected to the circuit.
3. Label the eight wires on the terminals on the motherboard as in Figure 70.
4. Using a small Phillips head screwdriver unscrew, disconnect the wires from the motherboard (CPU) in the following order:
 - a. Battery Power Red (+)
 - b. Battery Power Black (-)
 - c. Solar Panel Power Red (+)
 - d. Solar Panel Power Black (-)
 - e. Load Red (+)
 - f. Load Black (-) (if 150MM VMS)
 - g. LED Sign Black (-) (if 150MM VMS)
 - h. LED Sign Red (+)

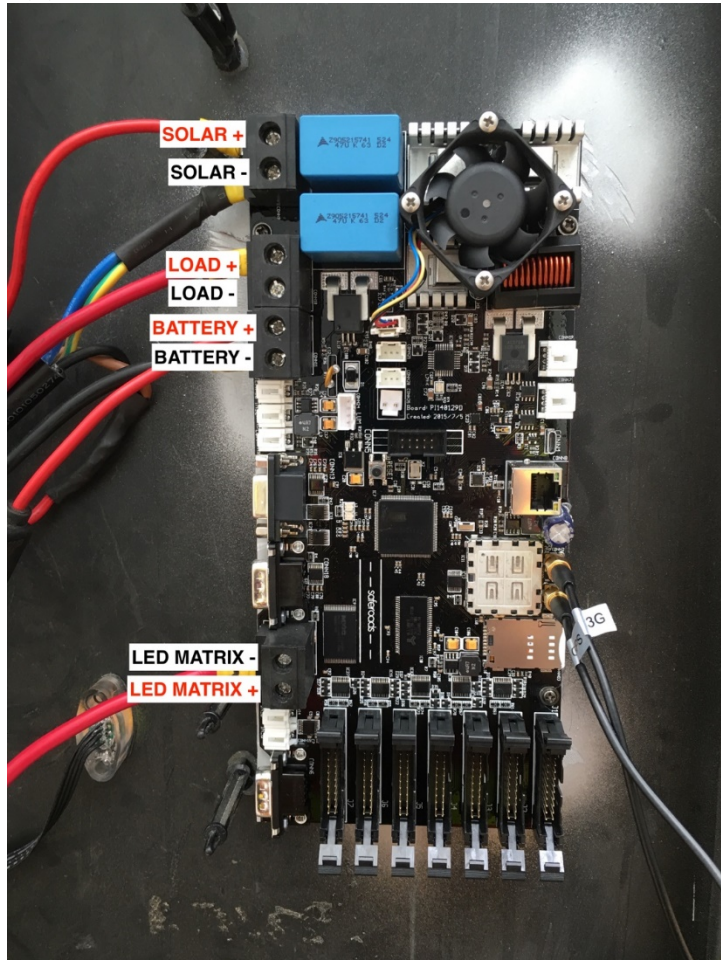


Figure 70

5. Unplug the connections in the following order:
 - a. Fan
 - b. LED lighting panels, numbered 1-7 from right to left
 - c. Light sensor
 - d. Message Manager
 - e. GPS
 - f. Radar (if fitted)

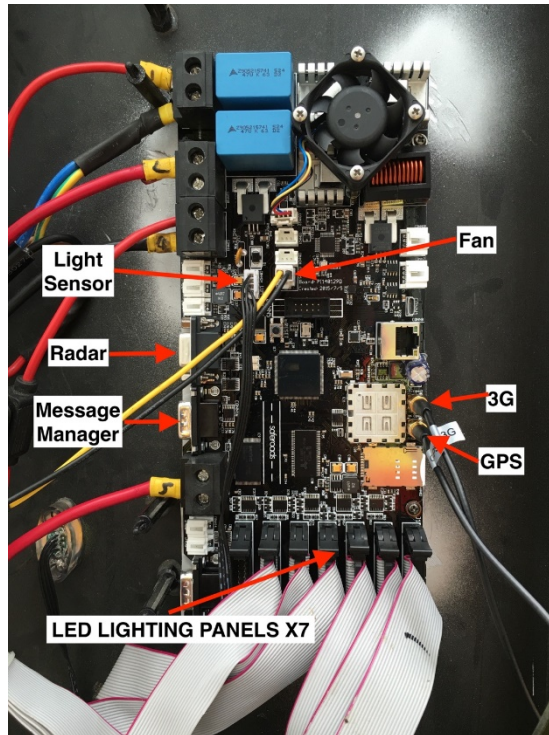


Figure 71

6. Unscrew the four screws located in each corner of the circuit board (CPU).
7. Remove motherboard from Display Panel Case.
8. Replace fuses.
9. Close Display Panel Case and latch the Display Panel Locks.
10. For installation procedure, complete steps in the reverse order.

Modem Removal and Installation

1. Open the Display Panel Case as outlined on page 43 of this manual.
2. Using needle nose pliers remove the two fuses located at the bottom right hand corner of the Display Panel Case to ensure the main source of power is disconnected from the circuit. See Figure 63 on page 44.
3. To remove the modem, follow this procedure:
 - Use the specific Snap-in removal tool to dismount the cover (P/N: 306CLE-001-00E).

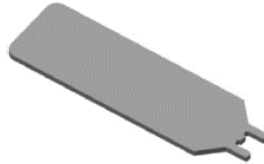


Figure 72

- To dismount the cover from the Snap-in socket, insert the Snap-in removal tool in the socket cavity, and then smoothly push the tool to pull the cover and disengage the cover holes from the socket bumps.

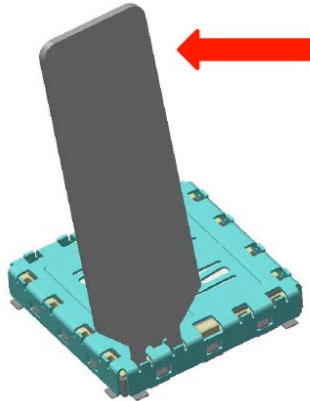


Figure 73

- Repeat the same operation on each side of the cover. Do not apply excessive force that may damage the cover or the socket.
- Remove the modem from the socket as illustrated in Figure 74.

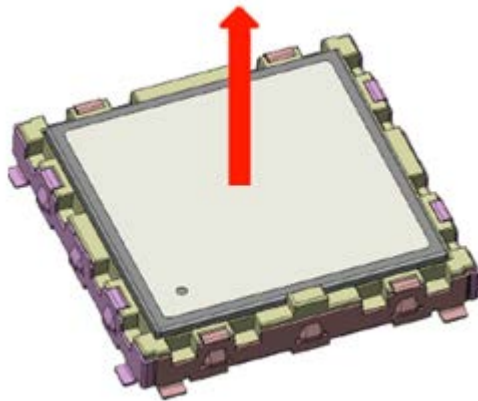


Figure 74

4. To insert the modem, follow this procedure:

- Check the alignment of pin 1 on both the module and the Snap-in socket.

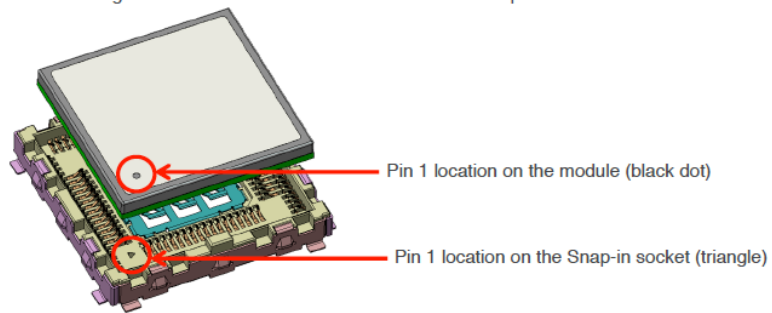


Figure 75

- Put the module down in the socket. Use vertical motion to insert the module.

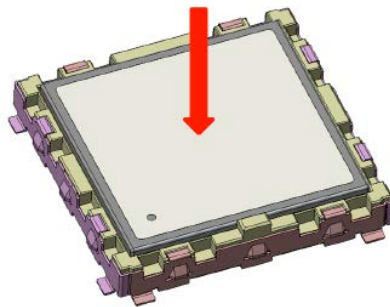


Figure 76

- Check the orientation of the cover based on the location of pin 1.

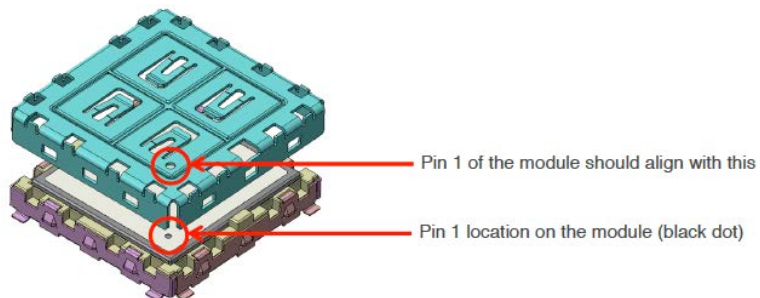


Figure 77

- Smoothly press the cover onto the Snap-in socket. The cover should be properly aligned with pin 1 of the module.

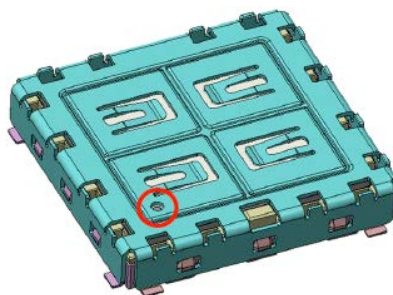


Figure 78

- Check that the cover holes are locked on the socket bumps on all sides.

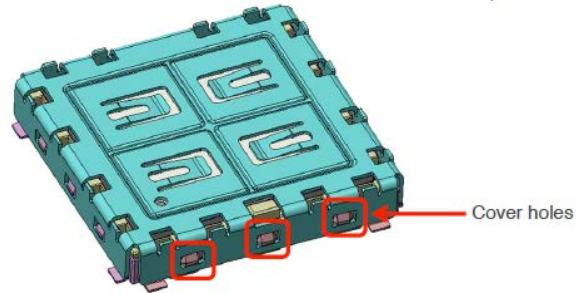


Figure 79

5. Replace fuses and close Display Panel Case and latch the Display Panel Locks.
6. Reset CPU as per the reset procedure for VMS as detailed in Figure 67 on page **Error! Bookmark not defined.** of this manual.

Reset Procedure for VMS Board (CPU)

1. Open the display case as detailed on page 43 of this manual.
2. Push the reset button on the motherboard, as shown in Figure 69 on page 46.
3. Close the display case and latch the Display Panel Locks.
4. Wait approximately five minutes and if the reset procedure was successful, the CPU should now be online and communicating.

Testing

Testing the Battery Voltage

To test the battery voltage, complete the procedure:

1. Open the toolbox containing the batteries.
2. Obtain a multimeter.
3. Set the multimeter to DC voltage.
4. Place the black lead of the multimeter on the black terminal of the battery and the red lead of the multimeter on the red terminal of the battery.
5. The multimeter should now display the battery voltage.
6. If the battery voltage is greater than 10.5V the batteries are serviceable.
7. If the battery voltage is less than 10.5V it is recommended to put the batteries on charge.

Testing SIM Card Serviceability

To test the serviceability of the SIM card, complete the following procedure:

1. Complete the SIM card removal and installation procedure outlined on page 46 to obtain the SIM card from the VMS board for testing.
2. Fit the removed SIM card to a working phone.
3. Send a text message from that phone to any other working mobile phone – this is testing the SIM card can send messages.
4. Reply to that message – this is testing the SIM card can receive messages.
5. If messages can be sent and received with the SIM card removed from the VMS board, then the SIM card is functionally correctly.



Troubleshooting

If issues arise with the VMS display, follow the LED indicators on the CPU which will help to determine the fault.

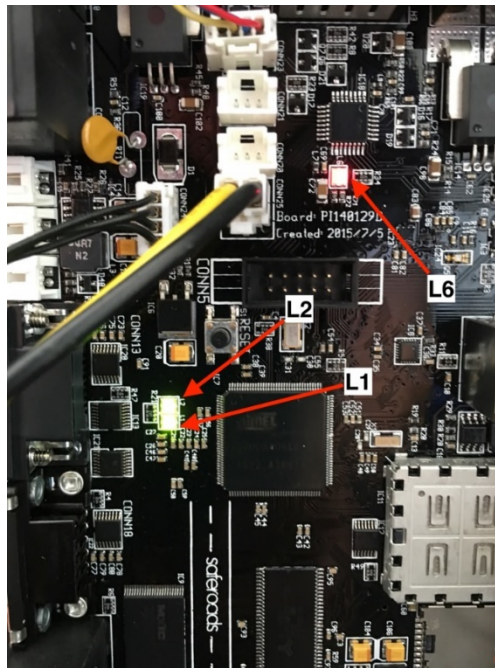


Figure 80

Solar LED indicator (L6)

- RED – indicates issue with solar charge.
 - Check solar connections to CPU.
 - Check solar voltage readings.
 - If voltage present, contact Saferoads support.
 - If no voltage present, there is likely to be a wiring or solar panel issue.
- GREEN – solar charge working.

3G connection LED indicator (L2)

- RED – communication issue with modem.
 - Possible 3G network issue/unable to connect to Telstra network. Confirm connection to network.
 - If network connection OK, contact Saferoads support.
- GREEN – Connection to 3G network OK.

Data communication indicator

- RED – SIM card failure.
 - Confirm SIM card plan with Telstra. SIM card needs to be a Telstra M2M (Machine 2 Machine) SIM card.
- GREEN (FLASHING) – Data communication OK. VMS CPU communicating.



Message Manager

Introduction

The onboard message manager system is a programmable message unit integrated into the trailer toolbox and connects directly into the motherboard via a RS232 cable.

The message manager is equipped with a built-in library of over 100 single and multi-frame VMS files and can create, modify, save and delete new VMS files.

With its own power supply and hardwired input into the motherboard, the message manager will always be available to display VMS files sent directly to the VMS board.



Figure 81

The message manager has connections located on the top side of the unit:

- COM IN: Used to communicate directly with the VMS board.
- COM OUT: Used to program messages into the built-in library from a computer.
- DC10~30V: Power supply input.
- Power: Power switch required to turn power either on or off.



Power On

To apply power to the message manager unit, flick the Power Switch to the “I” position (as shown).



Figure 82

When switched on a loud beep will sound and the user will be taken to the password screen. Using the keys, input the password (if required), then push enter– the default password for all message manager units is ‘000000’.



Figure 83

Once the password has been entered, the F1 shortcut screen will be visible.



Figure 84

Pushing the escape key will return the user to the menu option area.

Button Description

There are 26 programmed buttons that can be operated when using the message manager.



Figure 85

Their function/s are as follows:




	Not used in the current set up.
	Not used in the current set up.
	Exit the Current Menu.
	Shortcut Menu.
	Send the current VMS file to the VMS display.
	Preview the current VMS file on the Message Manager display
	Change the font when creating a new message.
	Delete the previous character.
	'', ' ', '?', '!', ':', '"', '1', '(', ')', '%'
	A, a, B, b, C, c, 2, @, #, \$




	D, d, E, e, F, f, 3, ^, &, *
	Save the current VMS file.
	Move Cursor Arrow UP.
	Add line (Enter)
	G, g, H, h, I, i, 4, -, _, =
	J, j, K, k, L, l, 5, +, /, <
	M, m, N, n, O, o, 6, >, `, ~
	Move Cursor Arrow LEFT.
	Move Cursor Arrow DOWN.
	Move Cursor Arrow RIGHT.
	P, p, Q, q, R, r, S, s, 7, {
	T, t, U, u, V, v, 8, \, , }
	W, w, X, x, Y, y, Z, z, 9, "
	0, <space between characters>
	Skip line
	Enter the information.







Built in Library Picture Selection


See Send Built-In Library file to the VMS Display on page 71 for detailed instructions on how to use this feature.

		
001	002	003
		
004	005	006
		
007	008	009
		
010	013	014
		
016	017	018
		
019	020	021



		
022	023	024

		
025	026	027







		
028	029	030

		
031	032	033













		
034	035	036







		
037	038	039

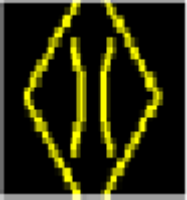
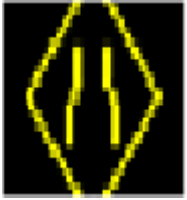




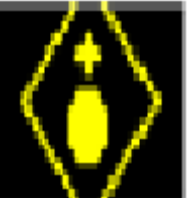


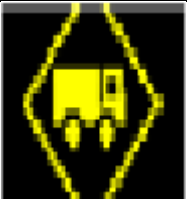


		
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040	041	042
		
043	044	045
		
046	047	048

		
049	050	051
		
052	053	054
		
055	056	057
		
058	059	060

		
061	062	063
		
064	065	066
		
067	068	069
		
070	071	072

		
073	074	075
		
076	077	078

		
079	080	081
		
082	083	084
		
085	086	087
		
088	089	090

Menu Options

In the main menu, there are four different options:

1. File - manage files including built-in library and new files.
2. Operate – manage details about the current file and VMS display.
3. Set – configure the message manager settings.
4. Help – basic descriptions of the keys used on the message manager.



Figure 86

File Menu

The file menu has six selectable options:

1. Program Message
2. Creat/Modi Message
3. Add to Program Msg.
4. Previews Message
5. Delete File
6. Back

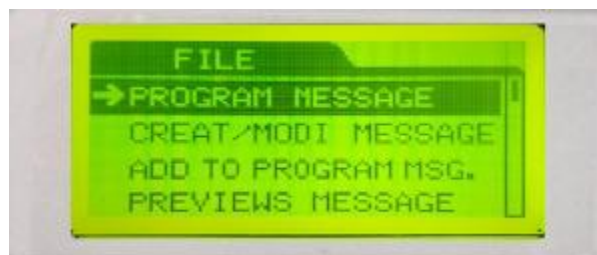


Figure 87

Program Message

Push enter with this option highlighted to go to the built-in library list where pre-programmed VMS files can be sent to the VMS display.

Note: See the Send Built-in Library File to The VMS Display section on page 71 for detailed instructions on how to use this feature.



Figure 88

Create/Modify Message

The create/modify message option will take the user to a new screen where they can create a 'New File'.

Note: See the Create a New VMS File section located on page 73 for detailed instructions on how to use this feature.



Figure 89

Add to Program Msg

The add to program message will add the selected frame to current message on the VMS display. This feature is used to join multiple built-in library pictures.



Figure 90

Preview Message

The preview message option allows the user to preview the built-in library files based on their name. (e.g. F:\L\001.PMG will display 001 [40km sign]).



Figure 91

Delete File

This option allows the user to scroll through the list of files and personalise the built-in library by deleting some of the built-in library files that are not required.



Figure 92

Back

This option will take the user back to the menu screen.



Figure 93

Operate Menu

The operate menu has 10 selectable options:

1. Playing File Name
2. Del Play List
3. Del All Messages
4. Sign Config.
5. Sign Information
6. Sign Test
7. Brightness Adj.
8. Flash Light
9. Speed Limit
10. Back



Figure 94

Playing File Name

The playing file name option will read the data from the motherboard and will display the current file sent to the VMS display.



Figure 95

Del Play List

Delete playlist will delete the current file playing on the VMS display.



Figure 96

Del All Messages

Delete all messages will delete all messages currently saved to the internal memory of the message manager.



Figure 97

Sign Config

The sign configuration option allows the user to view the following information from the CPU:

- Firmware
- Hardware
- Name
- Width
- Height
- IP address
- GGUU settings



Figure 98

Sign Information

The sign information option allows the user to view the following information from the CPU:

- Stats
- Inside temperature
- Outside temperature



Figure 99

Sign Test

The sign test option allows the user to complete three individual tests on the VMS display. Check the horizontal and vertical alignment and ensure all LEDs are working by selecting 'All On'.



Figure 100

Brightness Adj

The brightness adjust option allows the user to set a maximum brightness to the LED panels or set the brightness to 'Auto'.

Note: The recommended setting for Brightness Adjust is 'Auto'.



Figure 101

Flash Light

This feature is currently not used.



Figure 102

Speed Limit

This feature is currently not used.



Figure 103

Back

Select this option to return to the menu screen.



Figure 104

Set Menu

There are eight selectable options in the set menu:

1. Select Language
2. Config. Sign
3. Set Date and Time
4. LCD Set
5. Display Format
6. Beep On/Off
7. Password Setting
8. Communication Test



Figure 105

Select Language

The language select option allows the user to change the language set up on the message manager. The available languages are Chinese, English, Spanish, German and Portuguese.

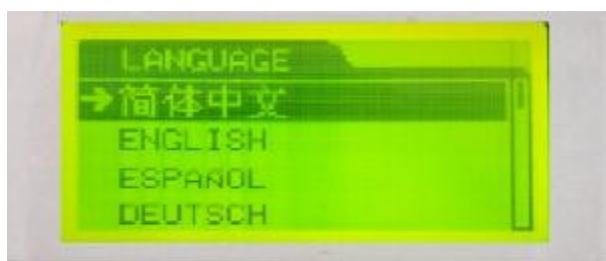


Figure 106

Config Sign

The configure sign option allows the user to change the size of the sign based on the number of pixels.

Note: This option should not be tampered with unless advised by a technical staff member.



Figure 107

Set Date and Time

The set date and time option allows the user to change the date, time and time zone relative to where the user is located.

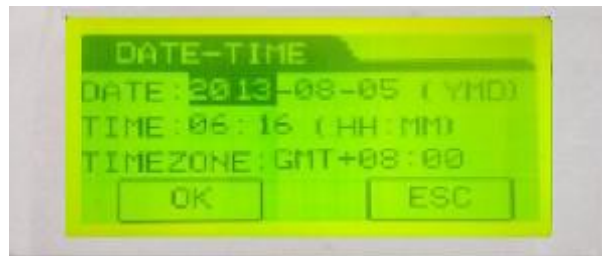


Figure 108

LCD Set

The LCD set option allows the user to either turn on or off the backlight on the message manager display.



Figure 109

Display Format

The display format option allows the user to enable or disable the zoom feature when scrolling through the built-in library.



Figure 110

Beep On/Off

The beep on/off option allows the user to enable or disable an audible 'beep' for every button selection on the message manager.



Figure 111

Password Setting

The password setting option allows the user to either amend the current password or turn the current password on or off when applying power to the message manager.



Figure 112

Communication Test

The communication test option allows the user to test the connection between the message manager and the CPU.



Figure 113

Help Menu

The help menu displays basic descriptions of the keys used on the message manager.



Figure 114



Figure 115

Sending Files to the VMS Display

The onboard message manager can send built in library files and newly created VMS files to the VMS display. The user can also save custom made files created on the message manager to the library to provide easy access to frequently used files.

Send Built-In Library File to the VMS Display

To send a built-in library file to the VMS display, complete the following steps:

1. Power on the message manager as per the power on section.
2. Push enter on 'Program Message' to enter the library selection page.

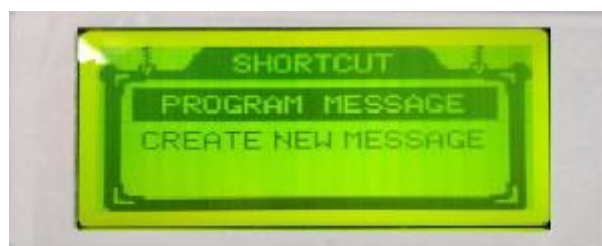


Figure 116

3. Scroll through the built-in files by using the up and down arrow keys to find the desired frame to be displayed on the VMS board.



Figure 117

4. If a second frame is available, a black arrow will appear in the bottom left hand corner above the file path area.
Use the left and right arrow keys to view each frame.



Figure 118

5. Once the desired file has been located, the user can then:
 - a. Push enter and a new screen will appear requesting 'Send It'. Push enter again to send the file.



Figure 119

- b. Push send to immediately send the file to the VMS display.



Figure 120

6. After the message manager completes a series of tests, the VMS display will change to the selected file.



Figure 121

Create a New VMS File

To create a new VMS file, complete the following steps:

1. Power on the message manager as per the power on section.
2. Push the down arrow key to highlight 'Create New Message'.



Figure 122

3. Push 'Enter' to display a blank frame.

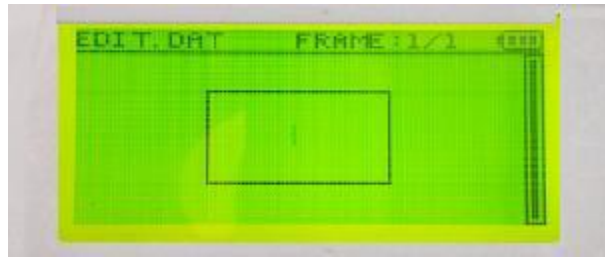


Figure 123

4. Before entering any text, ensure the correct font size is selected.
Push 'Font' to select the desired font size.



Figure 124

5. Use the number keys to select the desired characters to create the frame.
Note: See button description for the list of the function of each key.

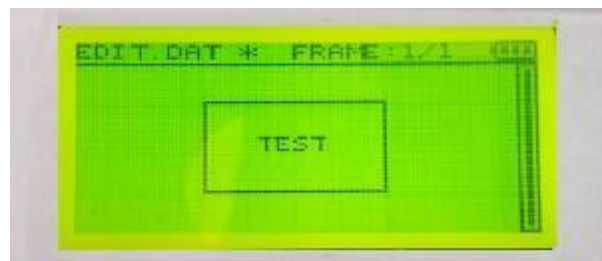


Figure 125

6. Push 'Enter' on the following keys to obtain the desired result:
 - a. Enter = New frame



Figure 126

- b. Add = New line



Figure 127

- c. Del = Delete previous character

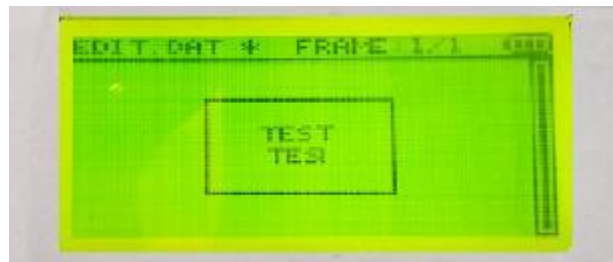


Figure 128

- d. Save = Save the file to the library

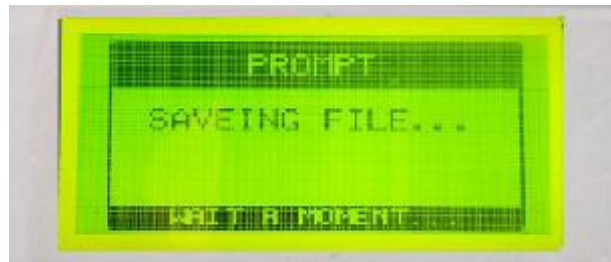


Figure 129

- e. Send = Send the file to the VMS display



Figure 130

Personal Protective Equipment

To reduce the risk of injury or death when using this product, please ensure the correct PPE and safety equipment is used. Saferoads recommends the implementation of the following PPE in order to best minimise safety hazards:

- Steel cap boots
- Gloves
- High visibility clothing



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