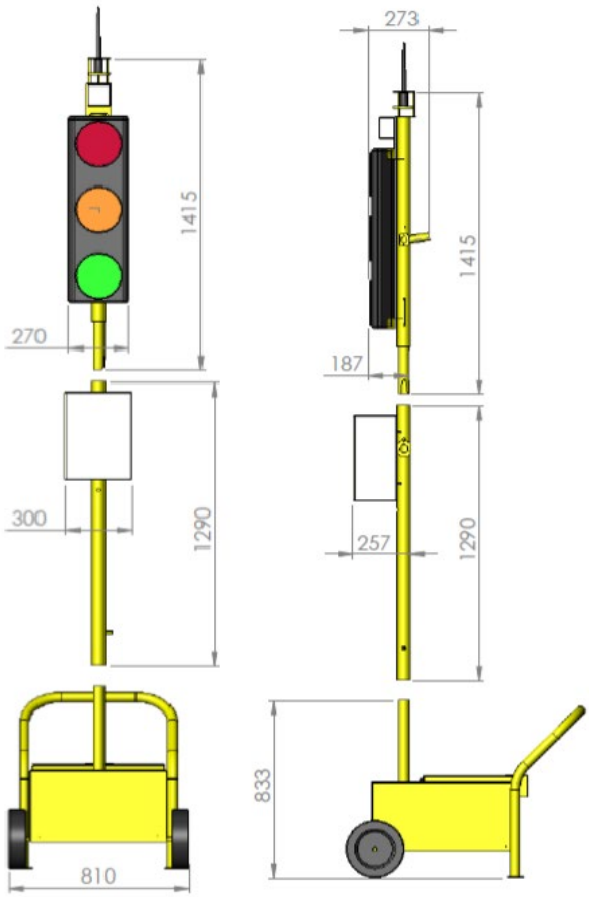
SSVA PORTABLE TRAFFIC LIGHTS

11 Boeing Place, Mount Maunganui 3116 Ph: 07 575 0505
2/11 March Place, Belfast, Christchurch 8051 Ph: 03 323 7507
Email: admin@trafficsigns.co.nz www.trafficsigns.co.nz PO Box 4366, Mount Maunganui South 3149

Traffic Signs New Zealand-Smart Switch Vehicle Activated Traffic Lights

NZTA Compliant, Tested & Approved-AS4191-1994

USER MANUAL



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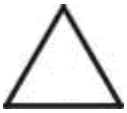
SSVA PORTABLE TRAFFIC LIGHTS
Technical Specs & User Information

To ensure proper use of this product, please read this manual carefully and retain for future reference.
This document will give you information on how to use, install and service the unit. In case of unit failure and required service, contact Traffic Signs NZ Ltd: 07 575 0505

Symbols used in this Manual:

Indicates that personal injury or electrical or mechanical damage of the unit can result if proper precautions are not taken.



Indicates important information.

1. Technical Specification

Electrical data

Nominal voltage:	12VDC
Maximal power consumption	
Traffic lights + Master command box	11W
Traffic lights + Second command box	9.6W
Remote control	0.8W
Solar panel maximal power generation	45W
Solar charger rating	6A max
Communication interface:	RS232, RF, Wi-Fi, Ethernet

Working frequencies

Remote control or Master/Second comm.	140—175 MHZ
Wi-Fi	2400MHz-2483.5MHz
Radar unit	24125MHz +- 100MHz

Optical characteristics

Lantern:	210 mm in diameter
In accordance to standard	EN12368

Environmental data

Master command box:	IP65
Second command box:	IP65
Radar box:	IP65
Lantern:	IP55

2. General Information

2.1 Main features

- Two-way lights system for temporary road work or another occupation of road
- Wireless or cable connection between lights on both approach
- Green to green protection
- Red light fail monitoring
- All lights fail monitoring
- Wireless Master – Slave communication between two lights, up to 2000m
- Wireless remote control for manual controlling, range up to 500m
- Easy to use tablet application for controlling sign via Wi-Fi with range up to 100m

SSVA PORTABLE TRAFFIC LIGHTS

Operational Modes

- Vehicle activated green light extension
- Battery power supply with solar recharging system
- Light weight parts, ideal for transportation and installation
- Predefined security sequence of lights on mode changing
- Hazardous situations monitoring with warning flashing lights activation

2.2 Operation Modes

2.2.1 Automatic Mode (Fixed timer)

In this mode, cycle of RED, YELLOW and GREEN lights for both approaches is successively activated. There are user defined time durations for all lights.

Light sequence is:
Green light is followed by yellow. Yellow light is followed by red. Red light is followed by green light.

Red light duration is the same as green light on another approach + clearance time. Minimal red time is 5 sec.
Clearance time is needed for vehicles to pass from one side to another.

Clearance time is depended on two variable parameters: vehicle speed and distance. This will be different for every site. User will need to make test runs of the system for every site in order to determine optimal clearance time.

In control tablet application there is automatic recommendation for clearance time. User need to enter parameters: distance between two lights and average vehicle speed. Calculated value for clearance time is then multiplied by two and this is recommended value for clearance time.

Minimal clearance time is 5sec.

Clearance time is added to red light time, so we have minimum red light for 10sec in any configuration.

Green light is set by user, but it is minimal 5sec.

2.2.2 Vehicle Activated option

Vehicle activation works with Automatic and Manual modes only.
When there is a green light on one approach and if vehicle is detected in oncoming direction, green time will be extended while vehicle is detected, but not longer than maximal green extended time which is defined by user.

If vehicle is still detected but extended time has run out, portable light system starts with pass closing procedure and opens another approach.

2.2.3 Manual Mode

Manual mode could be activated by Remote control and by Tablet Traffic Light console.
In manual mode one cycle of automatic light sequence can be started. Manual mode let vehicles from both approaches to pass successively and then system turns on red lights.
Lighting periods are the same for both Manual and Automatic mode.

2.2.4 All Red Mode to Stop Traffic

This mode stops the traffic on site. Red light is activated on both approaches.

2.2.5 Flashing Yellow Mode

This mode activates yellow lanterns flashing.
This mode could be user choice or is automatically started when any hazardous situation occurred. For example, if red lamp fails.

2.2.6 Off Mode

Lights go off after predefined light sequence is run out.

Every changing of operation mode activates predefined light sequence on both approaches:
- Yellow lights flashing for 5 sec
- Yellow lights steady for 5sec
- Red lights steady for 10sec

3. Controlling the System

System could be controlled directly over interface on Master unit, remotely via wireless remote control or via tablet Traffic Light application.

System consists of two signal lights (red, yellow and green lamp), supplied with solar panels and batteries, vehicle detector, remote control and tablet with Traffic Light Console on it.
There is a master unit and slave unit.

Master and slave units are communicating via radio communication at 2,4GHz.
Remote control is communicating with the master via radio communication at 2,4GHz.
There is a Wi-Fi access point established within Master unit. It is used for tablet to communicate with the system.

3.1 Powering Up the Lights

Start procedure is as follows:
- Connect battery cable to the battery.
- Open the cabinet of Second Unit and turn on the power switch. On LCD display should be message “start-up no conn”.
- Wait few seconds.
- Open the cabinet of Master Unit and turn on power switch. On LCD display Should be “start-upConnected”

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User Manual - Remote

3.2 Controlling the Sign Using Remote Control

By using Remote control unit, it is possible to choose and set operation mode remotely.
Also, it is possible to monitor light status.

Remote control communicates with Master unit only, so user should near master unit in order to control light system.

There are four buttons on remote control:

- Menu button - choosing operation mode
- Up button - used for going through the menu
- Down button - used for going through the menu
- Enter button - used for action confirmation

3.2.1 Power Up and Connect

- Stand near Master Unit
- Turn on/off switch on, on the console to turn on
- On start-up software number and software date is shown
- 12VDC is your charging point
- Make sure channel matches signal heads

3.2.2 Automatic Mode Activation

- Press **Menu** and then go up or down until arrow marker is on Automatic
- Press **Enter** to confirm **AUTOMATIC** mode activation
- While predefined light sequence is running, there will be WAIT message on the LCD
- When Automatic mode is active, message “ready” will be shown on the LCD

3.2.3 Manual Mode Activation

- Press **Menu** and then go up or down until arrow marker is on Manual
- Press **Enter** to confirm **MANUAL** mode activation
- While predefined light sequence is running, there will be **WAIT** message on the LCD

When Manual mode is active, message “ready” will be shown on LCD.

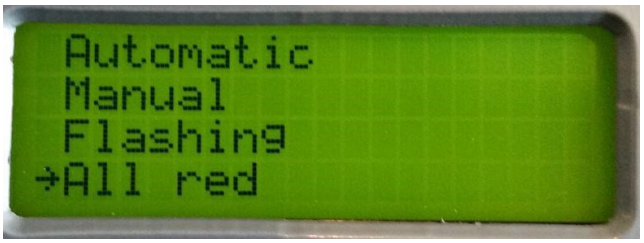
When ready, each press of the “Enter” button will activate one cycle of a light sequence

3.2.4 Flashing mode activation

- Press **Menu** and then go up or down until arrow
- marker is on Flashing.
- Press **Enter** to confirm Flashing mode activation.

3.2.5 All red mode activation

- Press **Menu** and then go up or down until arrow
- marker is on All red
- Press **Enter** to confirm all red mode activation



3.2.6 Turning OFF signal lights

- Press **Menu** and then go up or down until arrow
- marker is on OFF
- Press **Enter** to confirm OFF mode activation

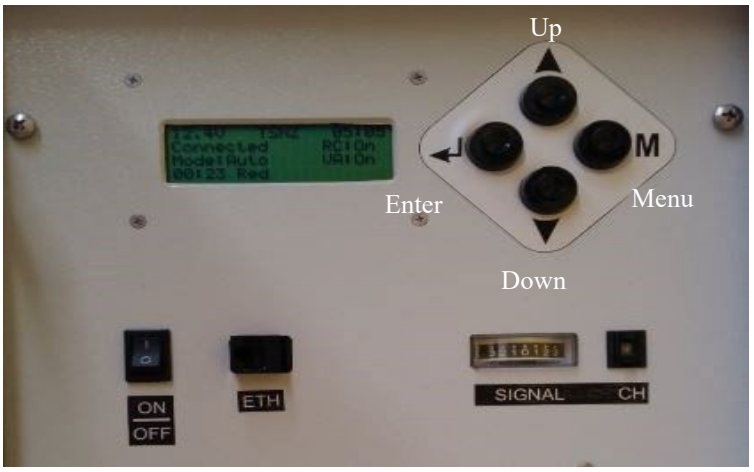
3.2.7 LCD screen information

- On the right side of the screen, there is light status shown
- Master unit is labelled with M
- Slave unit is labelled with S
- Red, yellow and green lights are labelled with R, Y and G respectively

On the left upper side of screen: there is information if operation mode is ready or not.
On the left bottom side of the screen, there is information about active mode selected.

3.3 Controlling the sign using Traffic Sign Console on Tablet

- For this operation, signal units should be turned on by accessing the communication box at the rear of the lights in the master control box
- Make sure both units are on the same channel or they will not connect to each other



3.3.1 Power up and connect

- Power on the tablet and wait for system to be loaded
- In Wi-Fi settings of the tablet choose TRS-??????? ??= individual serial number.
- Start the application **SSVATL** on the tablet

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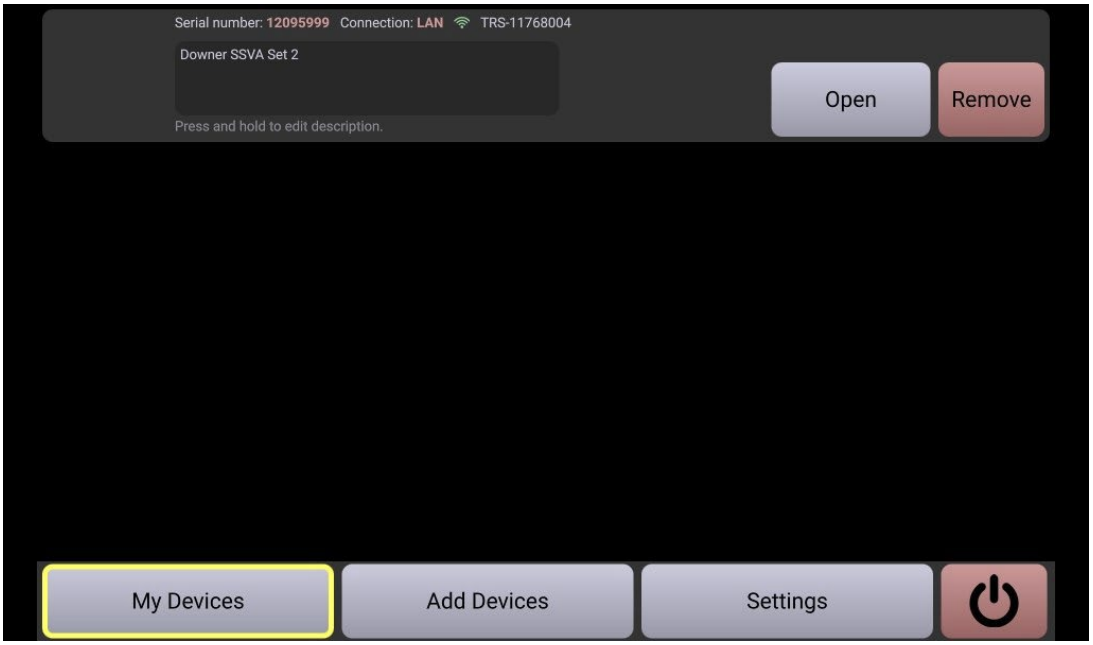
User Manual - Tablet

After opening the app, the window will appear:



Choose Open icon in main window. Now we are in main control window:

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User Manual - Tablet

On this display you can see live feed of programme setting of SSVA light units. Left hand side of display status of both - M - and - S - units indicating what colour lights should be displayed and how long for. Also, battery voltage; In this sample - M - 12.3V and - S - 12.8V both shown in green as the voltage drops in the battery these will change from green, orange, Red.

*** IMPORTANT NOTE ***
THESE WILL SHUT DOWN AT +/- 10% OF 11.6V RECHARGE BATTERY IF THIS HAPPENS.

As shown in Photo Three:

Ensure in "Mode" that [A] is marked in yellow box and ticked in the corner.

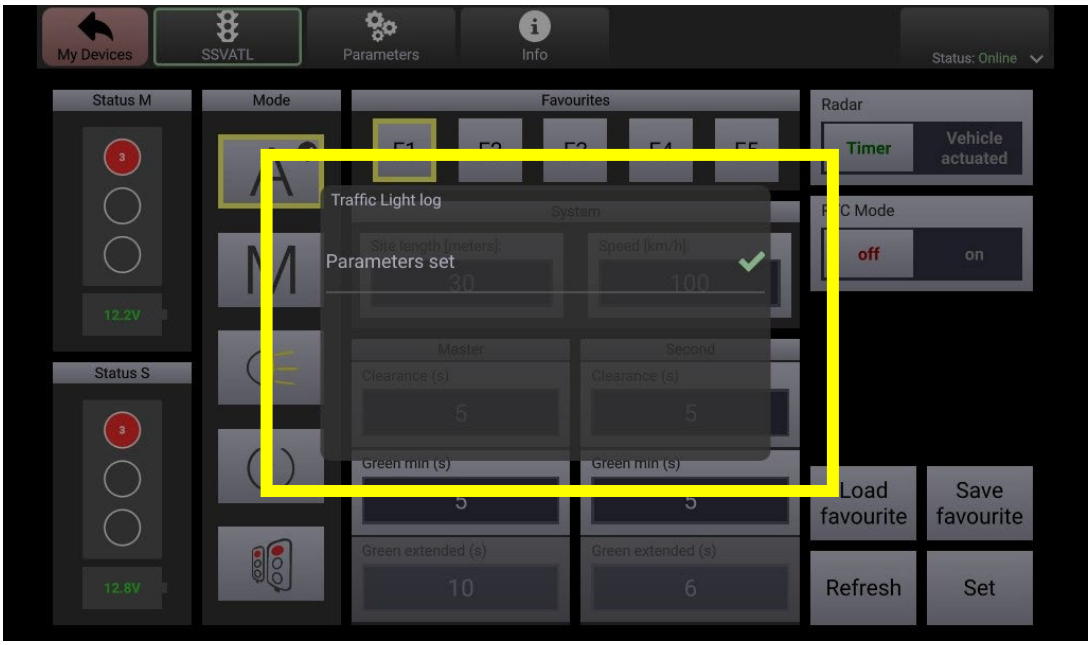
Right hand side of display;

"Radar" should be on "Timer"

"RTC" Mode should be "Off"

If these are not - TAP to change and then TAP at [SET] bottom right of the Display, A pop up screen will appear as shown on the next page.

SSVA PORTABLE TRAFFIC LIGHTS
User Manual - Tablet



Tap on “Site Length” to set this (highlighted in the green box) . A on screen keyboard will display. Use button indicated (as seen in the red circle) to delete numbers already in place. Input new numbers and then tap on the blue tick. Repeat this for settings of “SPEED” for your work site.

The programme will automatically set clearance times for both units. This can be changed if needing longer Red-light time. Use the same method as setting “site Length” and “Speed”. Green light time can also be changed to suit traffic flow for either unit. *** 5 seconds is minimum***

After setting these, tap SET located at the bottom right of the display screen (refer to page 9).

SSVA PORTABLE TRAFFIC LIGHTS
User Manual - Tablet

FUNCTIONS

"Radar Functions" located at the top Right of the display screen .

"Timer" uses programmed times as set by operator.

"Vehicle Actuated" uses programmed times as set by operator, with the extra option of "Green Extended" times of operator choosing. This extra time will only happen when a vehicle is detected by the radar unit.

*** Any change to programming must be** SET **to SSVA units.**

SSVA PORTABLE TRAFFIC LIGHTS
User Manual - Tablet

RTC MODE - OFF/ON

This function can be used when exceeding the radio range of the SSVA light units. In poor or no radio communication between the SSVA light units. For example; In a gorge, or behind hills. In normal operation this should be “OFF”. To activate this function, bring SSVA light units to within a range of which radio communications is remaining connected to each other. Then tap to “ON” position and tap **SET** at the bottom right of display. All “MODE” functions will grey out as shown in Photo Eight and pop up screen as shown in Photo Four, will display indicating “MODE” active.

If in the event of loss of power to one unit, the other unit will continue to operate.

Before turning light units off it is important that you turn this function to the “OFF” position and tap **SET** This will turn lights back to automatic programme mode. The light units do however need to be within radio communication range of each other again.

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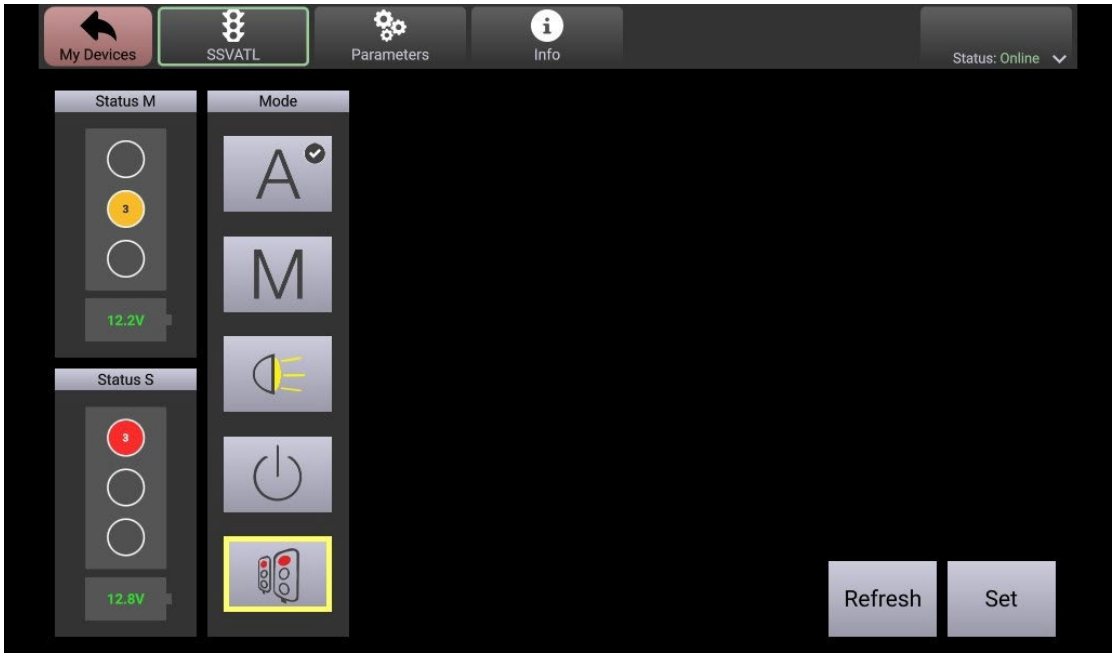
User Manual - Tablet



"ALL RED FUNCTION" Tap this button and tap **SET** this activates both units to hold Red. This is displayed in "STATUS" on left side of display screen. To deactivate this mode, A and then **SET** tap This will put SSVA light unit back into automatic cycle.

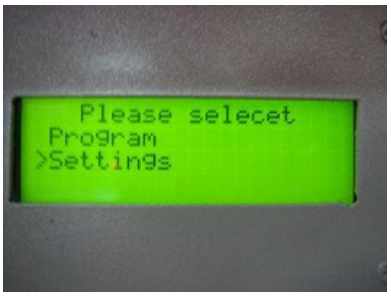
 # Turning off these units at the end of the day or job is in reverse order as you would set up #

SSVA PORTABLE TRAFFIC LIGHTS
User Manual - Control Unit

- **Menu** (**M**) button – choosing operation mode
- **Up button** – used for going through the menu
- **Down button** - used for going through the menu
- **Enter button** – used for action confirmation

3.4.2 Automatic Mode Activation

- Press **M** and then go up or down until arrow marker is on Program, then choose **AUTOMATIC**
- Press **Enter** to confirm **AUTOMATIC** mode activation
- While predefined light sequence is running, there will be start-up message on the LCD
- When Automatic mode is active, message "**AUTOMATIC** will be shown on the LCD



3.4.3 Vehicle ACTIVATED Mode

- Vehicle **ACTIVATED** option can be activated by **Entering MENU,** Settings and then Vehicle **ACTIVATED** (See 3.4.8)
- There is status information on LCD, showing **ON** if activated or **OFF** if not activated

Also, there is an option to configure Green extended time for Master and Second Unit.

3.4.4 Manual Mode Activation

- Manual mode can be activated via Remote control or Tablet application only

3.4.5 Flashing Mode Activation

- Press **M** and then go up or down until arrow marker is on Program, then choose **FLASHING**
- Press **Enter** to confirm **FLASHING** mode activation
- While predefined light sequence is running, there will be start-up message on the LCD

3.4.6 All Red Mode Activation

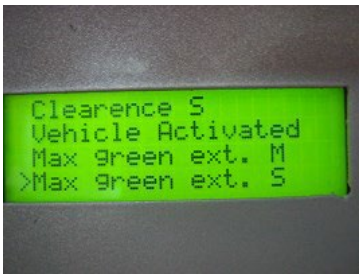
- Press **M** and then go up or down until arrow marker is on program, then choose All red
- Press **Enter** to confirm All red mode activation
- While predefined light sequence is running, there will be start-up message on the LCD
- When All red mode is active, message **"ALL RED"** will be shown on the LCD

3.4.7 Turning Off Signal Lights

- Press **M** and then go up or down until arrow marker is on Program, then choose **Off**
- Press **Enter** to confirm All red mode activation
- While predefined light sequence is running, there will be start-up message on the LCD
- When **Off** mode is active, message **"OFF"** will be shown on the LCD

3.4.8 Setting Time Parameters

- Press **M** and then go up or down until arrow marker is on Settings
- Press **Enter** to enter settings menu



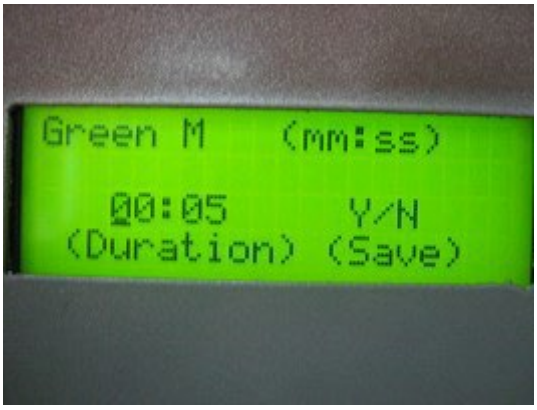
Here is a list of parameters that could be set:

- Green **M** – green light duration on Master unit (range 00m:05s – 99m:99s)
- Green **S** – green light duration on Second unit (range 00m:05s – 99m:99s)

- Clearance M – Clearance for Master unit (range 00m:05s – 99m:99s)
- Clearance S – Clearance for Second unit (range 00m:05s – 99m:99s)
- Vehicle Activated – Activates Vehicle ACTIVATED option (ON or OFF)
- Max green ext. M – Max. time for extending green light (range 00m:01s – 99m:99s)
- Max green ext. S - Max. time for extending green light (range 00m:01s – 99m:99s)

3.4.9 How to set parameter Green M (example)

- Press pushbutton M
- Select Settings with UP or DOWN pushbuttons
- Press Enter to confirm
- Go UP or DOWN until Green M is marked
- Press Enter to confirm
- Screen like this is shown
- Cursor is blinking for editing digit
- To change value press DOWN
- To go to the next digit, press UP
- To Save press UP until you get cursor to the Y
- Then press Enter



4. Installation

Only qualified and authorized staff shall do installation, maintenance and service work.

Use proper tools for connection and maintenance of device.

When mounting the sign on the carrier construction make sure to provide a stable carrier construction.

LED signs must be installed onto a structure designed to withstand wind load, seismic events, weight load of ice in wintertime, or any other live load the structure might bear. The structure must comply with all national and local codes. Because every sign installation is unique, there is no single procedure for mounting the signs. Here is explained installation on a pole as this is most common installation.

4.1 Electrical Installation

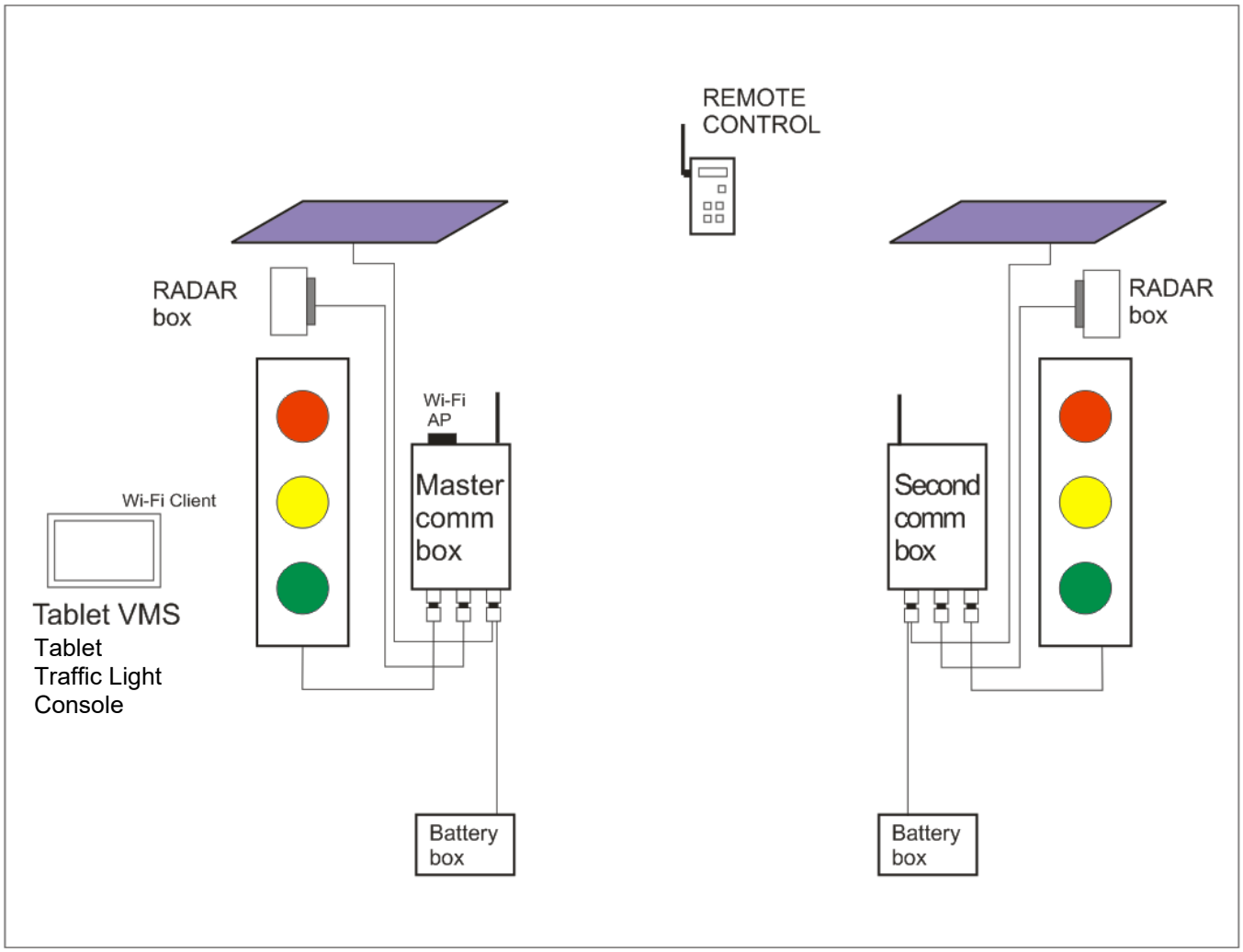
Carefully read the instructions for installation before switching on the device.

SSVA PORTABLE TRAFFIC LIGHTS
Installation Principal Connection

While closing the front door it is necessary to take care on tight fitting.

Sign is powered from 12VDC battery. Battery is charged from solar power via solar charger.

4.1.1 Principal Connection Diagram



4.1.2 Cable Connectors for easy transport

4.1.3 Battery Connection Clamps

.4 Connection Terminals Inside Command Box

5. Maintenance

5.1 Cleaning

For good visibility of the Traffic Light regular cleaning of front plate is necessary. The frequency of cleaning is dependent from the pollution of the environment in which sign is used. We suggest cleaning of the front plate with warm water (temperature around 40 °C) and soft brush. If necessary, a neutral detergent can be added to warm water. In case that this is not sufficient, we advise use of cleaning alcohol.
High-pressure cleaners may be used with a maximum working-pressure of 80 Bar at a distance of 150 cm. It is not allowed to direct the jet of water directly onto rubber sealing or ventilation openings.

The device must not be cleaned with aggressive detergents or solvents!

Use only original spare parts recommended by the manufacturer of the TRS for replacement.

SSVA PORTABLE TRAFFIC LIGHTS
User Manual- Maintenance

When replacing spare parts device must be disconnected from power supply!

Before starting any service try to connect to the sign, download "All Data" tables into excel file and save it. Data downloaded from the sign (LED error table, temperature table, event table), can help to find the cause of the problem and to prevent the same problem happen again!

Explain any non-trivial problem shortly and make few pictures of the device. Send the explanation to the manufacturer or supplier, along with the pictures, serial number of the device and "All Data" tables downloaded from the sign.

Carefully read the instructions for installation before switching on the device.

While closing the front door it is necessary to take care on tight fitting.

Service is performed on the level of parts replacement. Part replacement is usually done in following steps:

Switch OFF the main power supply.
Open the sign.
Check there are no phase voltages on the terminals.
Remove the mechanical parts and connectors.
Replace the faulty module.
Close the sign.
Switch ON the main power supply.

In order to open and close the sign use locker key (see picture below):

To disassemble faulty module from the board, unscrew nuts and remove star washers.

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SSVA PORTABLE TRAFFIC LIGHTS
User Manual- Maintenance

During the service, special measures of ESD protection must be taken. Recommended regulations of EN 61340-5-1 and EN 61340-5-2 "Protection of electronic devices from electrostatic phenomena" should be applied

Do not touch any of electronic parts inside the device without proper ESD protection.	

Use antistatic wrist straps to ground personal to common ground point.	
Use antistatic gloves.	
Use only ESD packaging for transport.	

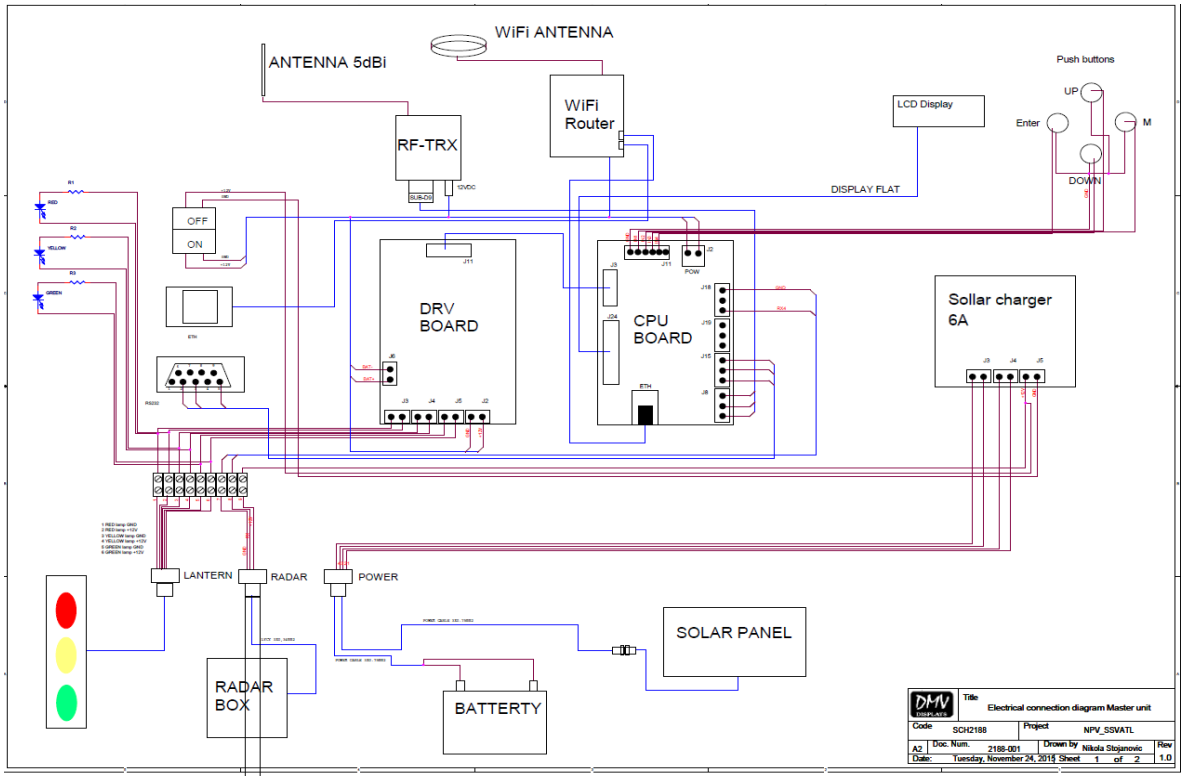
5.3 Troubleshooting List

Symptom	Cause	Inspection and correction
Few or more LED's are not lighting	LED fault or display PCB damage	Remove faulty display PCB and replace with new one
Sign doesn't Display anything	Power is disconnected	Check if red led on CPU board is lighting. If not, connect power properly.
	DC/DC converter fault	Check if red led on CPU board is lighting. If not, disconnect sign from main supply and replace DC/DC converter.
Program cannot be read and written from / to device	Wrong connection	Please go to Communication settings and choose proper communication type.
	Wrong TCP/IP configuration	Check if correct IP address of sign is selected from list
	Wrong serial configuration	Please check if PC is properly connected to serial connector of the sign. Please ensure that proper COM port is selected in Communication & Monitor section.
LED brightness is low	Light sensor dirty	Clean light sensors

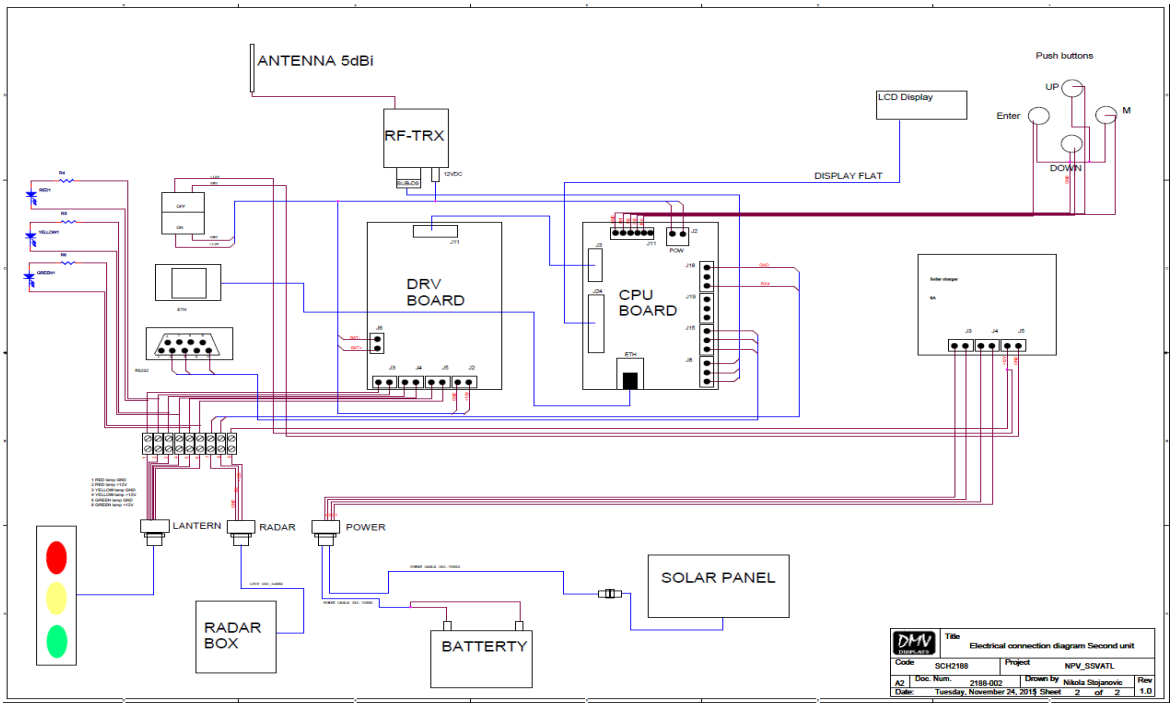
5.4 Technical Documentation

All technical documentation is available from the Traffic Light manufacturer.

5.4.1 Electrical diagram of Master unit



5.4.2 Electrical Connection Diagram of Second Unit



5.5 Safety

This product should be used only in accordance with the purpose of its manufacturing.

Unit must not be used in explosive atmosphere.

FIRE EXTINGUISHMENT: Devices under voltage must be extinguished with dust or CO2 fire extinguisher!

5.6 Decomposition

Parts made of steel and aluminium as well as all the cables can be recycled. Remove the filling material which is ecologically non-dangerous. Printed circuit boards are non-recyclable.

FOR TECHNICAL SUPPORT PLEASE CONTACT OUR ELECTRONICS TEAM

SERVICE PLANNER

M: 027 365 4452

E: service@trafficsigns.co.nz