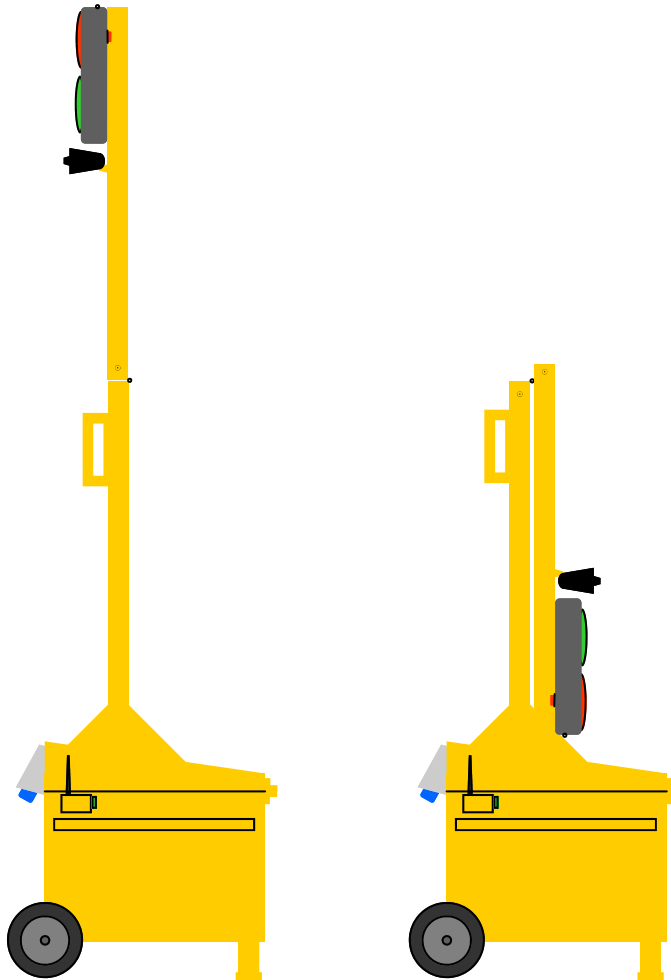




TS Remote Controlled Portable Traffic Light

Installation and Operating Instructions

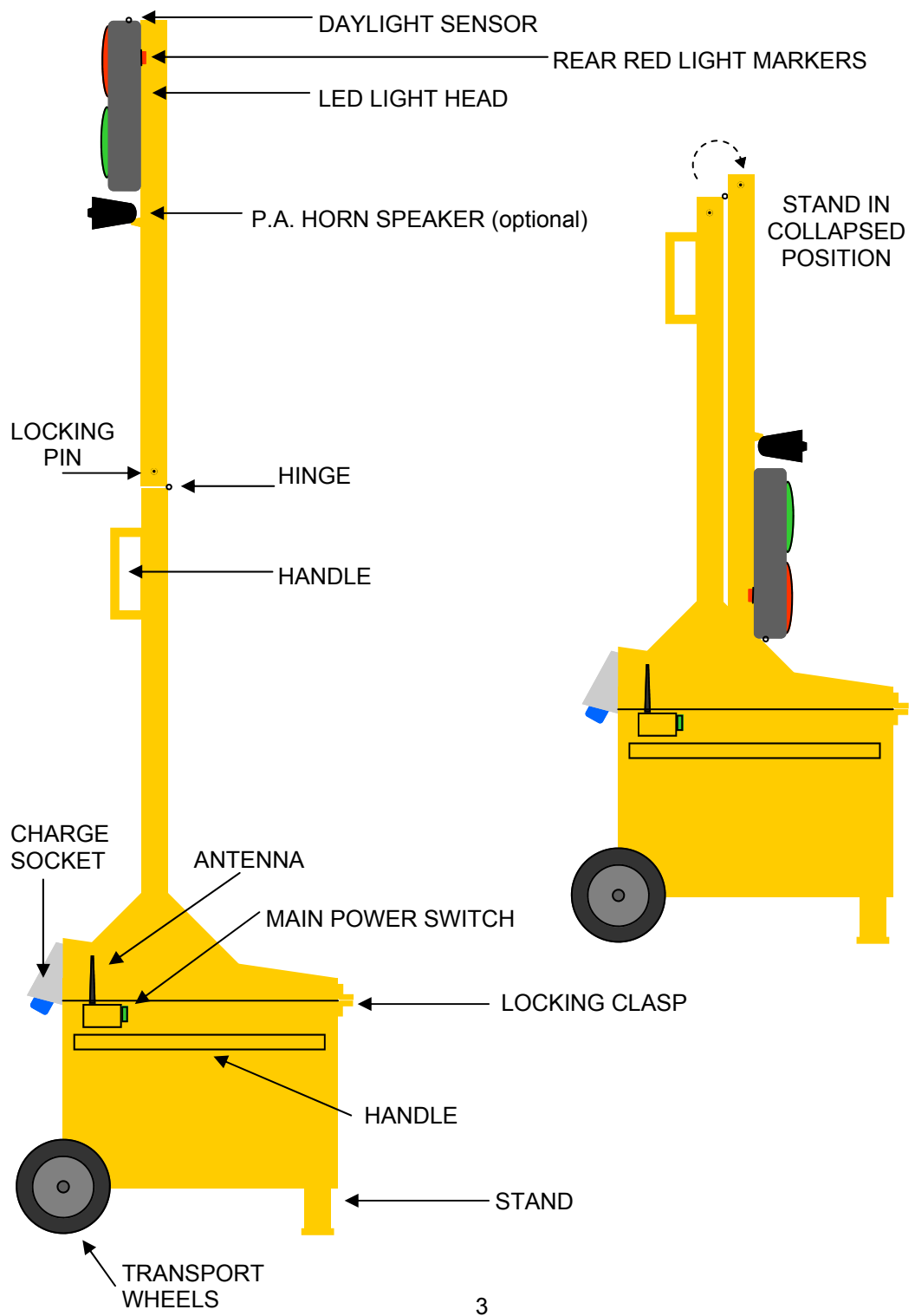


*System shown with optional parts.



IMPORTANT

- Read this manual thoroughly before installation and use, please pay particular attention to all of the precautions and instructions listed in the manual and marked on the product.
- It is recommended that installation is carried out by professional personnel.
- This manual only describes in principle the functions, installation, usage and precautions of the TS Remote Control Traffic Light system.
- Designs and specifications are subject to change without prior notice.
- It may happen that diagrams or pictures in this manual are different to the actual product.
- Although this product is described as 'man portable' it is particularly heavy. Care should be taken when lifting and moving the traffic light unit.
- The TS Remote Controlled Traffic Light contains a large lead acid rechargeable battery pack. Be aware of the following precautions.
 - **DO NOT SHORT CIRCUIT THE BATTERY. THIS MAY RESULT IN FIRE OR EXPLOSION!**
 - Take care not to damage the battery or overturn it as it contains acid and other dangerous chemicals which may leak out. IF THIS HAPPENS CONTACT YOUR SUPPLIER OR THE TRANSPORT SUPPORT SERVICE DEPARTMENT FOR ADVICE. **DO NOT TOUCH ANY MATERIAL WHICH MAY HAVE LEAKED FROM THE BATTERY. IF CONTACT HAS OCCURRED WASH OFF WITH CLEAN WATER AND IMMEDIATELY SEEK MEDICAL ADVICE.**
- Do not charge the battery within a sealed enclosure as dangerous levels of hydrogen gas can accumulate. **Hydrogen gas is highly flammable.**
- To prevent electric shock hazard charging should only be carried out in a dry area.
- If water has entered the battery compartment, switch off all power at the main switch and contact your supplier or the Transport Support Service Department for advice.
- **WARNING! MAKE SURE THAT THE TRAFFIC LIGHT HEAD IS FULLY SUPPORTED BEFORE REMOVING THE LOCKING PIN.**



Specifications

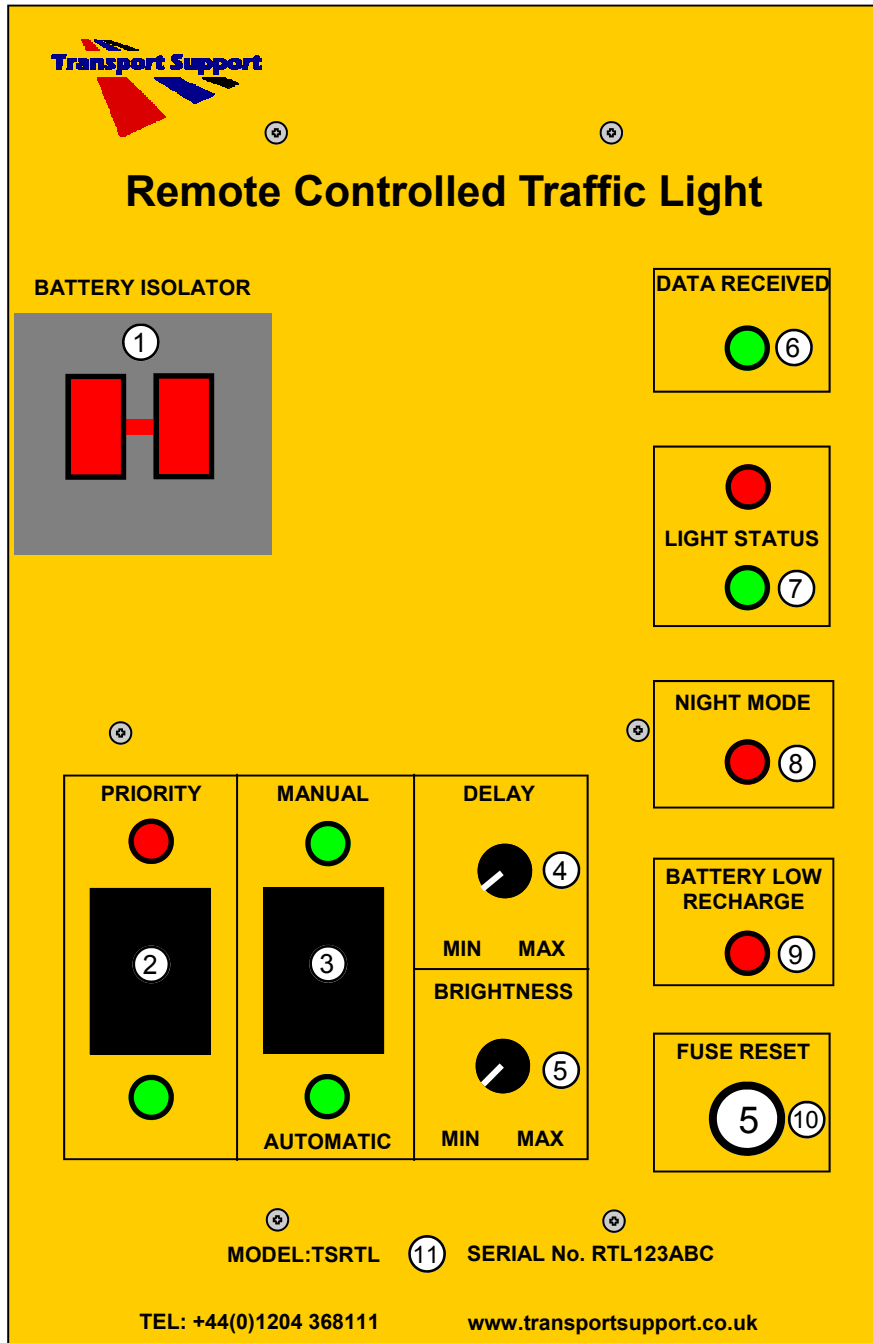
REMOTE CONTROL

Range	1000mtrs line of sight
RF Output	10mW
Transmission Frequency	434.075Mhz
Battery	1 x 9v PP3 Battery
Working Temperature	0°C ~ +55°C
Storage Temperature	-10°C ~ +70°C
Dimensions (maximum)	(L)145x(W)75x(D)40mm Antenna:165mm
Weight	260 g

TRAFFIC LIGHT

Battery Voltage	12v DC
Battery Capacity	110amp/hr
Fuse Rating	5A Thermal fuse - Resettable
Maximum Working Current	1A
Mains Charger Voltage	240V AC
Dimensions (maximum)	(L)2500x(W)550x(D)525mm
Collapsed Height	1600 mm
Maximum Height	2500 mm
Average Runtime Between Charges	Approx. 7 days based on 8hr average daily use.
Maximum Light Output	RED: 10,000 Lux GREEN: 7,600 Lux
LED Light Head	76 High intensity LED's per colour
Night Mode Activation Level	4-5 Lux
Battery Auto Cut Off Voltage	10.5 v +/- 0.5v
Light Switching Time Delay	Min: 1 second Max: 80 seconds
Maximum working speed of transport wheels	<5kph on flat level surface. DO NOT TOW!

Light Control Panel



1. BATTERY ISOLATOR

Isolates the traffic light control panel and LED light head from the battery. It disconnects both + and - supply. NOTE: The main ON/OFF Switch and Fuse are **NOT** isolated.

2. PRIORITY CONTROL

Switches the light priority between RED and GREEN. For example, when in automatic mode and the priority is set to RED the light will normally be on RED until the remote control button is pressed when it will then change to GREEN for the pre-set delay before automatically returning to RED.

3. MANUAL/AUTOMATIC CONTROL

Switches between manual operation and automatic time delay operation. In manual mode the light changes colour with each press of the remote control button. In automatic mode the light will change from the priority colour when the remote control button is pressed for the pre-set time delay then automatically change back.

4. DELAY CONTROL

Sets the time delay for the light to change back to the priority colour when in automatic mode.

Min = 1 Second Max = 80 Seconds

NOTE: When using the light in manual mode the delay control should be set to minimum for correct operation.

5. BRIGHTNESS CONTROL

Sets the brightness of the LED light head. This should be set to a level where the light can be clearly seen but not be dazzling or distracting to oncoming traffic.

6. DATA RECEIVED INDICATOR

This will flash green when a signal is received from the remote control handset. To be used for checking that the traffic light is within range of the remote control handset.

NOTE: It should only flash when the button on the remote handset is pressed. If it is flashing at any other point it could indicate interference from another remote handset operating on the same channel.

7. LIGHT STATUS INDICATOR

Shows the colour of the light which is currently on.

8. NIGHT MODE INDICATOR

Lights red when the traffic light has automatically gone into night mode. The traffic light is fitted with a daylight sensor which is mounted at the top of the traffic light head. When the ambient light drops below the factory pre-set level (Normally <4-5 Lux) the brightness will be automatically dimmed to prevent dazzling.

9. BATTERY LOW INDICATOR

Lights red when the battery level drops below 10.5v (+/-0.5v). When this is active the power to the traffic light is automatically switched **OFF** to prevent deep discharge of the battery which can damage both the battery and charger. If the battery low indicator is ON then the main power switch to the traffic light should be switched to OFF and the unit charged for a minimum of 12hrs (**but no more than 24hrs**) See section on charging controls.

10. RESETTABLE FUSE

The traffic light is fitted with a trip fuse set at 5A. In normal operation the fuse should not trip as the maximum current draw is around 1A. If the fuse has tripped the white button will be fully extended and there will be no power to the unit. You should visually check for damage, short circuit of the battery, or water ingress then wait 30 seconds before pressing the fuse re-set button. If the button will not lock in or the fuse trips again then a serious fault has developed on the traffic light.

IMPORTANT!

DO NOT MANUALLY HOLD THE FUSE RE-SET BUTTON IN IF A FAULT HAS OCCURRED AS THIS COULD RESULT IN A FIRE OR EXPLOSION!

DO NOT ATTEMPT TO RE-SET THE FUSE MORE THAN TWICE IF IT HAS TRIPPED AND ALWAYS LEAVE AT LEAST 30 SECONDS BETWEEN ATTEMPTS!

CONTACT YOUR SUPPLIER OR THE TRANSPORT SUPPORT SERVICE DEPARTMENT FOR ADVICE AND REPAIR.

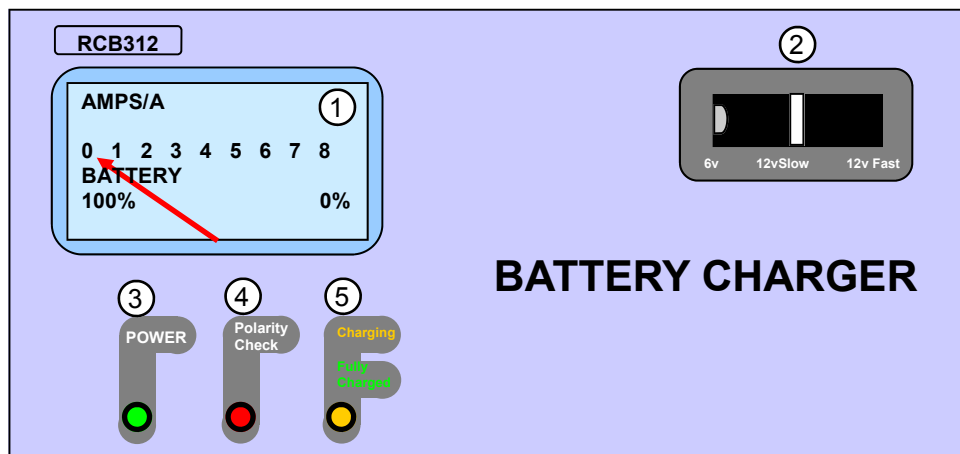
11. MODEL & SERIAL No.

Please quote this number when contacting your supplier or the Transport Support service department.

12/13.REMOTE P.A. CONTROLS *Optional

This is an optional extra. See section on Remote P.A. System

Charging Controls



1. BATTERY CHARGE INDICATOR

The battery charge meter shows the current charge level of the battery and amps being delivered from the charger. As the battery becomes fully charged the indicator needle should be pointing towards '0'.

NOTE: THE BATTERY CHARGE INDICATOR WILL ONLY BE ACTIVE WHEN THE UNIT IS CONNECTED TO THE MAINS SUPPLY FOR CHARGING.

2. CHARGE SELECTOR SWITCH

The charge selector switch has 2 functional settings (the 3rd, 6v has been blocked and should not be used). Normally the unit should be charged on the '12v Slow' setting until the battery charge indicator shows fully charged. If a rapid re-charge is required then the '12v fast' setting can be used to reduce the overall charge time. However, it is not recommended that this setting is used on a regular basis as this may reduce the life of the lead acid battery pack and will increase the running temperature of the charger unit.

3. POWER INDICATOR

Lights green when the unit is connected to a mains supply for charging.

4. POLARITY CHECK

THIS WILL ONLY LIGHT IF THE BATTERY HAS BEEN CONNECTED IN REVERSE. IMMEDIATELY SWITCH OFF THE POWER AT THE MAIN SWITCH AND AT THE CONTROL PANEL BATTERY ISOLATOR. CONTACT YOUR SUPPLIER OR TRANSPORT SUPPORT SERVICE DEPARTMENT FOR ADVICE.

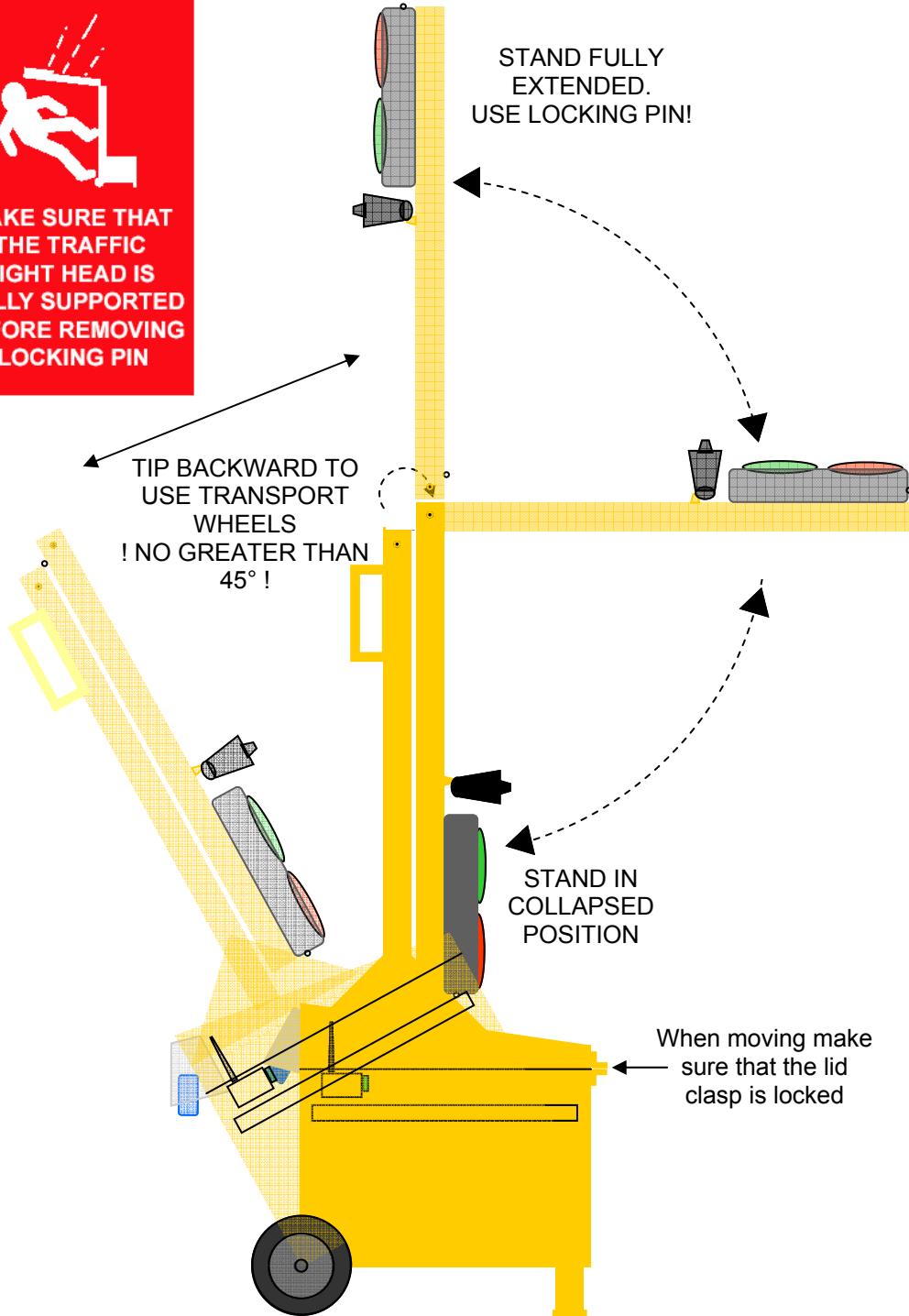
5. CHARGER STATUS INDICATOR - Amber when charging.
Green when fully Charged.

WARNING!



MAKE SURE THAT THE TRAFFIC LIGHT HEAD IS FULLY SUPPORTED BEFORE REMOVING LOCKING PIN

Set up and moving



Using two traffic lights to control two way traffic.

Two traffic lights can be used together for basic two way traffic control operated via the remote control handset.

1. Position each remote traffic light at either end of the stretch of road to be controlled. Each side facing the oncoming traffic for that particular lane.
2. Power up each unit and activate the following settings in each controller.

<u>Setting</u>	<u>Traffic Light 1</u>	<u>Traffic Light 2</u>
Priority	GREEN	RED
Mode	MANUAL	MANUAL
Delay	MINIMUM	MINIMUM
Brightness	AS REQUIRED	AS REQUIRED

3. You should now have one of the lights showing RED and the other showing GREEN. Using only one of the remote control handsets the lights can now be alternated with each press of the button.
4. If you require both sides to be on the same colour at once set the priority setting the same on both lights.

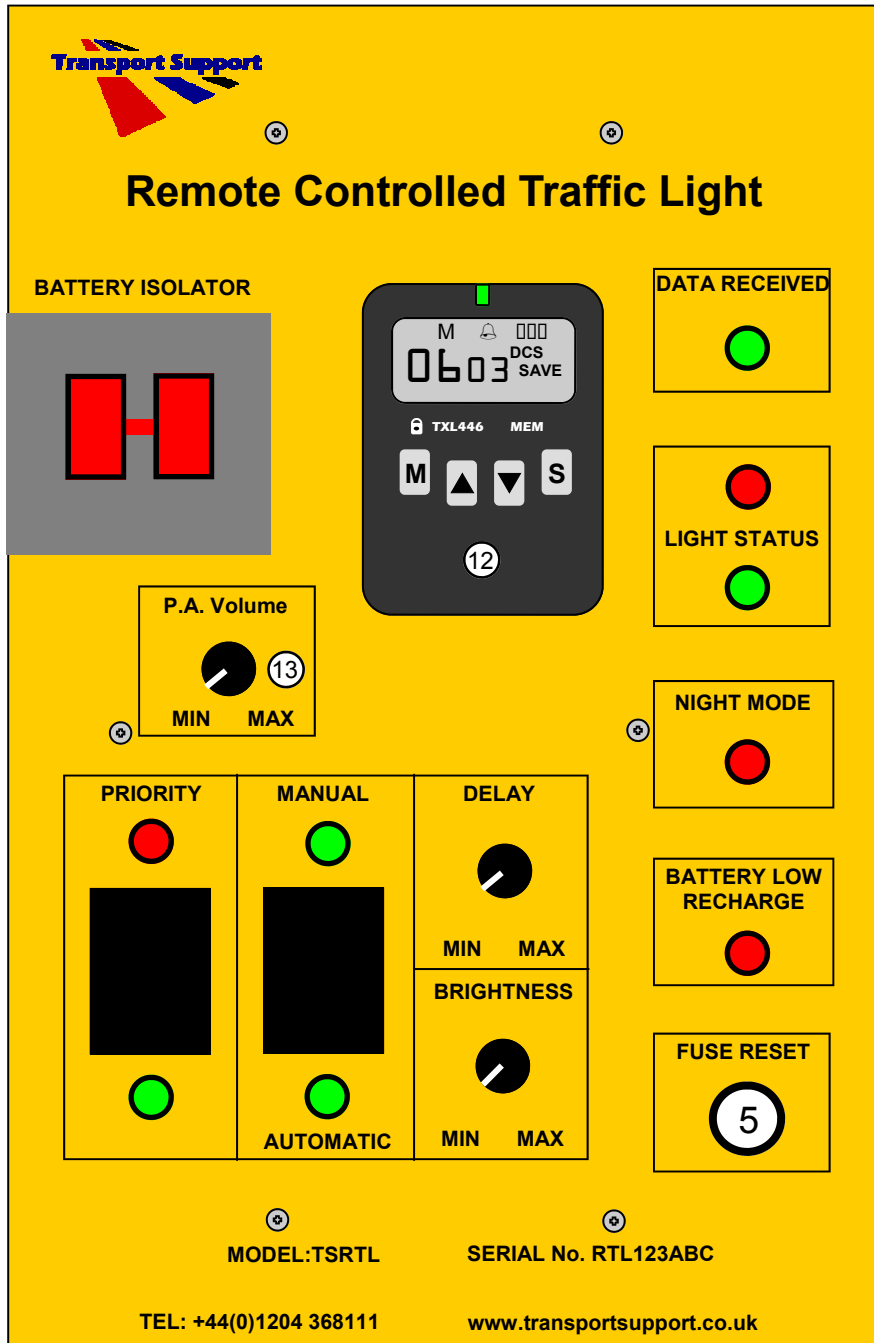
NOTE: USING MORE THAN 1 HANDSET IN THIS CONFIGURATION WILL CAUSE THE LIGHT TO GO OUT OF SEQUENCE. I.E. BOTH LIGHTS WILL CHANGE TO THE SAME COLOUR AND VICE VERSA.

BOTH LIGHTS MUST BE IN RANGE OF THE CONTROLLING REMOTE HANDSET. THIS CAN BE TESTED BY WATCHING THE DATA RECEIVED INDICATOR ON EACH LIGHT WHEN PRESSING THE REMOTE BUTTON.

ALWAYS ALLOW 1 SECOND FROM PRESSING THE REMOTE CONTROL BUTTON FOR THE LIGHTS TO CHANGE IN THIS CONFIGURATION.

RED LIGHT MARKERS ARE FITTED TO THE REAR OF EACH LIGHT HEAD TO ALLOW THE OPERATOR TO SEE WHEN THE TRAFFIC LIGHT IS ON RED.

Remote P.A.System *Optional Extra*



Introduction

The TS RTL can also be supplied with an integrated remote Public Address (P.A.) system. The remote P.A. System consists of an integrated radio receiver, handheld radio transceiver, and a P.A. horn speaker which is mounted just below the LED light head.

This system allows spoken instructions to be relayed from the person controlling the light operation to traffic waiting at the traffic light when on stop. For example, a quarry shovel driver could be controlling the traffic light from his cab in the quarry and the traffic light is on the approach road. The shovel driver could tell the next tipper truck waiting at the traffic light exactly which loading area to proceed to along with any further safety instructions such as areas that must be avoided. The shovel driver can now press the remote control button and allow the vehicle to proceed. This feature further improves traffic movement and safety, particularly when used in areas where traffic movements are constantly changing.

If your TS RTL is fitted with the optional remote P.A. system then the traffic light control panel will have the components marked 12 and 13. See page 11.

P.A. Controls

12. P.A. Radio Receiver Control Panel

This is used to alter the radio channel that the P.A. system is tuned to. It is normally factory set to channel 06 DCS Code 03. If during operation interference is heard from other radio transceivers operating on the same channel, the channel will need to be changed to a free one. The P.A. system will only work if the receiver and transmitter are both set to the same channel. See section on radio settings.

13. P.A. Volume Control

Controls the audio output volume from the P.A. horn speaker.

NOTE: If the volume is set too high and the handheld transceiver is being used too close to the P.A. horn then feedback may occur. This is the loud high pitched echoing tone usually heard when a microphone is too close to a speaker. If this happens either reduce the volume or operate the handheld transceiver further away from the traffic light.

Radio Function and Settings

Radio Transmitter (Tx) Receiver (Rx) Specifications

Radio System	PMR446 Licence Free
No. of Channels	Tx and Rx: 8
No. of Sub Channels	Tx and Rx: 38 CTCSS / 104 DCS
Frequency	Tx and Rx: 446.00625 - 446.09375 MHz
Power Output Transceiver	Tx: 500mW
Power Supply	Tx 7.4V / 1000mAH Li-ON battery pack Rx Powered from traffic light
Size	Tx 90 (H) x 55 (W) x 30 (D) mm
Backlit Display	Tx and Rx: YES

Traffic Light P.A. Receiver Control Settings

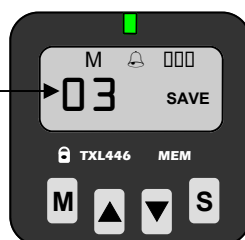
Changing the receiver channel

The radio receiver operates on 8 channels in the 446Mhz PMR band it is also capable of receiving CTCSS and DCS privacy codes. Using this code system allows the user to find a channel without interference from other PMR radio operators.

To change the main channels 1-8...

1. Turn the power on to the traffic light - The receiver control panel should be on and showing the current channel setting.
2. Press the ▲ or ▼ key to change the channels up or down. If only the main channel is active (i.e. no CTCSS or DCS code in use) it will be displayed as below.

Display showing main channel 3



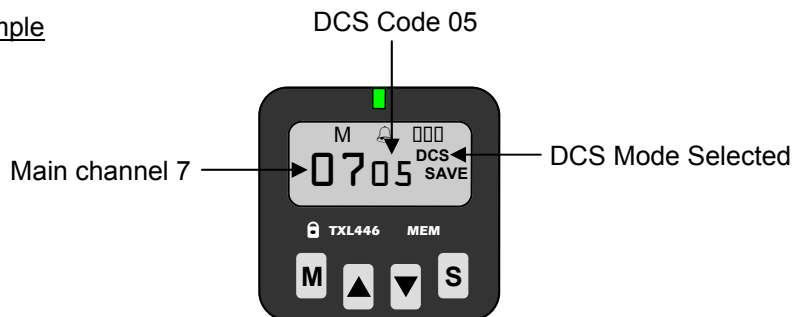
To change the CTCSS and DCS codes...

If you are experiencing other radio traffic on the channel that you are using it is advisable to use a one of the main channels (1-8) with an additional privacy code. Both the receiver and handheld transceiver feature 38 CTCSS tone codes and 104 DCS (digital privacy codes). By using these codes all interference from other operators should be eliminated.

1. Turn the power on to the traffic light - The receiver control panel should be on and showing the current channel setting.
2. Press the ▲ or ▼ key to change the main channels up or down. Pick a main channel that has low radio traffic.
3. Press the 'M' (menu) button once to select CTCSS codes or twice to select DCS codes. The display will flash either 'CTC' or 'DCS'
4. Press the ▲ (up) or ▼ (down) key to change to the required code number.
5. If you do not press any buttons for 15 seconds the settings will be stored to memory.

NOTE: The channel and privacy code MUST be the same on both the receiver (traffic light) and the handheld transceiver for the system to work correctly.

Example



NOTE: Pressing the 'M' button more than twice will enter the other functions of the radio receiver. These features are not relevant to the Remote P.A. system and should not be altered.

Further details on the radio system can be found in the instruction manual that is supplied with the handheld transceiver.

Handheld P.A. Transceiver Settings

The TS Remote P.A. System is supplied with a sophisticated industrial grade PMR446 radio transceiver with high capacity 7.4v 1000mAh Li-ion battery and desk top rapid charger.

It has a maximum range of 5km line of sight and is designed to integrate with the P.A. receiver unit in the TS Remote Traffic Light.

Full operating instructions are supplied with each handheld transceiver and these should be carefully read and understood before operating.



Troubleshooting Guide

<u>PROBLEM</u>	<u>REASON</u>	<u>SOLUTION</u>
There is no power to the traffic light	<ul style="list-style-type: none"> • Battery power is below 10.5v. Battery low indicator lit. • The main power switch is OFF or the traffic light controller isolator is off. • The 5Amp re-settable fuse on the traffic light control panel has tripped. • Power connection to battery terminals is open circuit. 	<ul style="list-style-type: none"> • Re-charge the battery until the charge indicator shows 'FULLY CHARGED'. • Check switch positions. • Wait 30 seconds and attempt a re-set. SEE PAGE FOR FULL DETAILS OF FUSE RE-SETTING. • Check that the connecting cables are secure and not corroded. Make sure the polarity is correct.
When the remote control button is pressed the traffic light does not change colour	<ul style="list-style-type: none"> • The battery in the remote handset may be low. • The remote control handset is out of range of the traffic light. 	<ul style="list-style-type: none"> • Replace the 9v PP3 battery. Test by pressing the button. The red LED on the handset should flash. • Test that the signal is being received by watching the 'DATA RECEIVED' indicator when the remote control button is pressed.
When the traffic light is in manual mode there is a delay between pressing the remote button and the light changing.	<ul style="list-style-type: none"> • The delay control is not set to minimum. 	<ul style="list-style-type: none"> • In most cases the delay should be set to minimum when in manual mode. At minimum setting the will reaction time should be 1 second.

Troubleshooting Guide

<u>PROBLEM</u>	<u>REASON</u>	<u>SOLUTION</u>
After switching from MANUAL mode to AUTOMATIC the colour of the traffic light does not match the priority setting.	<ul style="list-style-type: none"> This is normal and should only happen if the switch from MANUAL to AUTOMATIC has been done with the power on. As soon as the power is switched off or the remote button is pressed the system will reset and go back into sync with the priority setting. 	<ul style="list-style-type: none"> Press the remote button or turn the power OFF wait 5 seconds then turn the power ON.
The brightness control is not working.	<ul style="list-style-type: none"> The unit is in night mode (the night mode indicator should be lit) . Night mode activates when the daylight sensor measures <4lux. In night mode the brightness control is overridden. 	<ul style="list-style-type: none"> If the system is in night mode during the day check that the daylight sensor is free from obstruction.
The battery does not seem to be charging.	<ul style="list-style-type: none"> Fault with mains charger lead or mains supply. Possible fault with the charger unit. In normal charging operation the 'Power' LED should be lit green. The Polarity indicator should NOT be lit and the charge indicator should be green or amber 	<ul style="list-style-type: none"> Check 13amp fuse in mains charger plug and check 240v supply. When connected the green power LED on the charger should be lit. There is a fault with either the charger unit or the battery pack. Contact your supplier or the Transport Support Service department for advice.

Troubleshooting Guide

<u>PROBLEM</u>	<u>REASON</u>	<u>SOLUTION</u>
<p>When using two traffic lights as a pair they sometimes go out of sync.</p>	<ul style="list-style-type: none"> • One or more lights is not getting a signal from the remote control handset. • More than one remote control handset is being used. • There may be radio interference. • The remote control button is being pressed too often, too quickly. 	<ul style="list-style-type: none"> • Replace the battery in the remote handset. Then check that each traffic light is receiving a signal by watching the 'DATA RECEIVED' indicator in each traffic light when the remote control button is pressed. • Using two or more remote control handsets in this configuration will cause the traffic lights to go out of sync. Only use one handset. • Carry out checks as above. Check that the remote control button is not stuck in transmit i.e. red LED on handset constantly lit. • The remote button should be pressed once with a definite push. Then the operator should wait for the lights to change (no more than 1 second) <p style="text-align: center;">SEE PAGE 10 FOR FURTHER DETAILS.</p>

Troubleshooting Guide
Optional P.A. System

<u>PROBLEM</u>	<u>REASON</u>	<u>SOLUTION</u>
<p>There is no audio output from the P.A. System but there is power to the traffic light.</p>	<ul style="list-style-type: none"> • The channel on the P.A. receiver does not match the channel set on the handheld transceiver. • The handheld transceiver is out of range of the traffic light. • There is radio interference blocking the channel. 	<ul style="list-style-type: none"> • Check that the channel numbers on the receiver control panel and the handheld transceiver match. (Main channel and CTCSS or DSC Code) • To check that you are in range watch the green receive LED on the top of the receiver control panel when the push to talk button is pressed on the handheld transceiver. • Try switching to a different channel. SEE PAGES 11-15
<p>The audio from the P.A. Speaker is unclear, echoing, or making a high pitched tone.</p>	<ul style="list-style-type: none"> • This is usually due to audio feedback. A phenomenon which occurs when a sound loop exists between an audio input such as a microphone and an audio output such as a loudspeaker. 	<ul style="list-style-type: none"> • Try turning the volume down on the P.A. System or using the handheld transceiver further away from the P.A. horn speaker. The audio clarity will also be improved if the operator is position behind the speaker. SEE PAGE 12. <p>Contact your supplier or Transport Support for further advice.</p>



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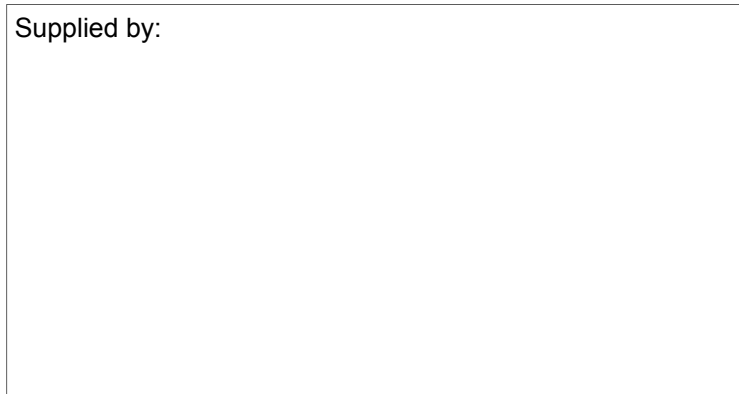
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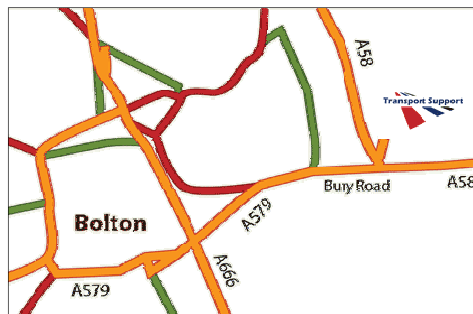
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