# PTL Compact Type 1 Operations and Maintenance Manual

Your Portable Traffic Lights are compact lightweight traffic lights. As such correct operation for Set-up and Take-down procedure is essential. Please ensure this manual is read and understood before attempting to operate the Data Signs' Portable Traffic Lights (PTL).

Set-up and Maintenance requirements of the PTL are covered by this Manual.

For the purpose of this manual, the PTL-Compact controller must be set to Type-1 operational mode. See *page 17* for more information on how to set this mode.

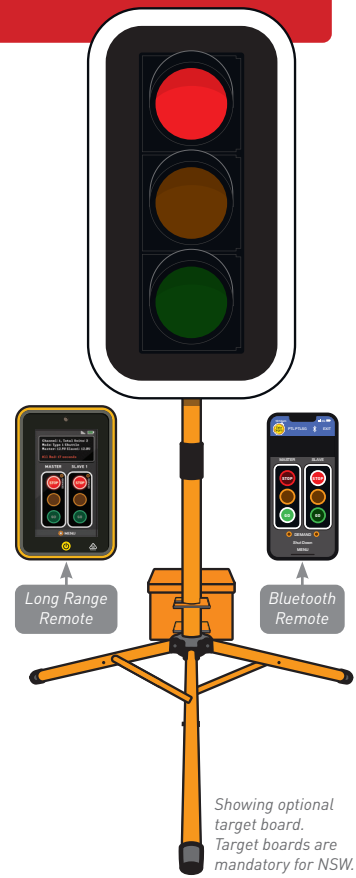
**CAUTION:**

***The Data Sign Portable Traffic Lights should only be operated by qualified traffic managers.*** *If you have hired out this PTL, contact the Hire Company for assistance.*

*The PTL Compact is intended to be used to control localized vehicular traffic flow as a safer substitute for STOP/SLOW (lollipop) signs. It is part of the Data Signs series of PTL Products and is a up scaled version of the PTL-Stop-n-Go Traffic Light product.*

*It is powered by a maintenance free battery that needs to be recharged at the end of the day. It is not intended to be left unattended on site and can only be operated via the Remote Control which places a safe distance between the actual Traffic Light and the operator.*

*An overview of the layout of the PTL Compact equipment is shown here.* →




*Showing optional target board. Target boards are mandatory for NSW.*

*The PTL Compact can operate when set to TYPE-2 with all the features of the Trailer mounted Traffic Lights, see the PTL Compact Type 2 Manual for operational mode when set to Type 2 Mode.*

*For the PTL-Stop-n-Go, which is an exclusively Type-1 product, refer to that product manual*

# Installation - Setting Up for Operation


**Step 1:**


**Step 2:**
Unpack the light and take out the stand.

**Step 3:**
Loosen locking tab, lift the post to the pin-hole & place pin.

**Step 4:**
Pull out spring pin and slide the tripod legs down to the first hole.

**Step 5:**
Release the spring pin and ensure the tripod is locked.

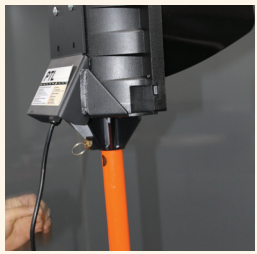
**Step 6:**
Fit Battery Box.

**Step 7:**
Twist and fit around the post.

**Step 8:**
Lock the holding bracket with a padlock or similar.

**Step 9:**
To fit the lights, pull spring pin and lower onto post.

Release the pin into the fixing hole.



**Step 10:**
Run cable down to base of stand.

Wrap cable around the pole to keep it tidy

**Step 11:**
Lift the flap and plug the cable in as shown.

Connect the aerial cable.

**Step 12:**
Completed setup.


**Step 13:**
To open control / battery box slide the locking pin underneath to the right.

**Step 14:**
Open control panel to access PTL-Remote.

**Step 15:**
PTL Remote taken out.


**Step 16:**
Set controller to desired mode.


**Step 17:**
Refer to Manual to use the PTL Remote.

*To dismantle the unit use reverse process.*

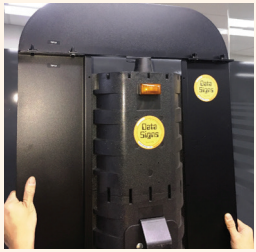
# Installation - Target Board Setup (if optioned)

**Step 1:**
Remove the four side from the side pocket.

**Step 2:**
Assemble this way.

**Step 3:**
Attach top section to the 2 sides.

Line up the tick marks.



**Step 4:**
Place the assembled sections over the lamps as shown


**Step 6:**
Now, assemble the bottom panel as shown.

# PTL Compact Controller Type 1 QuickStart Guide

*NxG*


**This QuickStart Guide covers the PTL Controller Operation as per Australian Standards *AS-4191:2015* plus QLD *MRTS264, TSI-SP-049,050,062* and Various State Authority requirements.**

*Ensure the units are setup as described in the first section of this booklet. This User Manual applies to Controllers operating on firmware 07.01.xx or later.*

## Contents



## Turning the Controllers On

Operational control is ONLY possible via the Remote Controller.

Press the ON key ON / OFF (and enter the code if required).

When configured for master and slave the controllers will begin to establish a radio link as indicated by the **TX** and **RX** indicators on the controllers.

The Lights will remain blank until the Remote is switched on and the lights ON sequence is selected. After this the Lights will show Flashing Yellow and progress to showing RED, during this process the Controllers and Lights will complete a self-diagnosis.

**SHUTTLE** or **PLANT CROSSING** Control is selected Using the PROGRAM MODE SELECT button (and code if required), and the Shuttle or Plant buttons: SHUTTLE PLANT

**GATING MODE which is single light use** is selected via the MAIN MENU Screen. Scroll down until the GATING CONTROL menu is shown and select ON/OFF.

***For Gating Mode see page 16.***

If PROGRAM MODE FLASH PROGRAM MODE SELECT is activate, the Controller will wait for further input and all connected traffic lights will remain blank.

# Controller:
# Operational MODE SELECT

Press the PROGRAM MODE SELECT button FLASH PROGRAM MODE SELECT (and enter code if required), which allows you to select all other controller programmable functions.

Use the Up ↑ or Down ↓ buttons to scroll through the MENU selection, then press the ENTER Button to select the MENU item.

Press the Program Menu PROGRAM MENU button to exit the selected MENU.

```
MAIN MENU
  VIEW PTL STATUS
* QUICK START
  UNIT SETTINGS
```

## QuickStart

This MAIN MENU item lets you quickly set up to get the PTL sets ready for operation.

1. Master or Slave.
   Select Unit 0 (Master) or Unit 1 (Slave)
   Press the ENTER button to save the selection.

2. Select RF channel.

3. Select Shuttle SHUTTLE or Plant Crossing PLANT button to Begin operation
   *(To set Gating Mode see page 15)*

```
SETTINGS COMPLETE
Turn key switch
to desired operating
mode to begin
```

Note: The MODE SELECT buttons DEMAND (VEHICLE SENSE) AUTO (TIMED) MANUAL are not used for Type 1 operation.

# Startup


To switch the actual PTL-Remote on, press and hold the button for one second.

The unit will beep twice and the startup screen will appear after a few seconds.

To put bring the remote in and out of STANDBY mode, press the button briefly.

To SHUTDOWN the PTL-Remote, press and hold the button, the unit will give a two second beep and shutdown.


Use the Power Saving Menu option and recommended operation mode to manage the Battery duration (see Data Signs YouTube videos).

## LIGHTS STARTUP

Select **Type 1 Power On/Off** from the menu.

To startup press the button on the screen for 5 seconds.

*In shutdown state, the lights are disabled.*

# Self-Test


When the **SELF-TEST** button is pressed, the following sequence is run on the PTL Compact to test the aspects, on any connected units:

Green signal, yellow signal, red signal and blank for 0.2 seconds.

Note: the Red and Green Times are reset to the default times of Green = 1 Second.

***It is advisable that the self-test not be carried out while the PTL Compact are setup on the roadway.***

## SETTING THE RF CHANNEL ON THE REMOTE CONTROL.

To set the RF Channel on the Remote Control, follow these instructions.

1. Press the MENU button on the bottom of the screen to go to settings.
2. Press the RF Channel option.
3. Enter the new channel number.
4. To re-start normal operation, press the BACK button.

Note: The Actual PTL-Compact must be set to the same RF Channel.

# PTL Remote Usage


Use the PTL Remote to control, set the Red and Green times, test or power off (blank) the Lights.

The top of the screen shows the battery level of the PTL Remote. The signal strength between the Master and the PTL Remote is also indicated.

The status box shows current operational type and the countdown timer for the currently displaying Lights.

The main section of the screen shows the state of the connected devices.

Press the Green or Red Light buttons on the main section of the screen to change the lights being displayed.



Use the MENU button on the bottom of the screen to open the SETTINGS menu screen.

From the menu screen, the operator can Power On/Off the connected PTL Compact units, change the pre-set times, and request a PTL Compact self-test to be performed on the connected PTL Compact units.

The RF Channel as well as the STATUS is also selected from this menu.

Press BACK to return to normal operating mode.

**Data Signs can supply a fully configured, DEDICATED Bluetooth device as part of your PTL-Compact purchase.**

# Bluetooth Remote

**For use with Bluetooth enabled devices.**

The PTL Compact Lights are fitted with a Bluetooth interface. This allows for connection to a Bluetooth enabled phone or device.


1. Press the PTL Connect Icon. If it is the first time enter the password *(The default is 123456)*.
2. The Password is set by using the Menu on the controller. This is covered on page 17.
3. Press Scan on the screen. Your device will now look for the Bluetooth in the PTL controller.
4. Once the PTL is found the Logo and the PTL Serial number will appear on the screen. Press the Logo. The screen will then Prompt for the Password. Enter this and press the Connect button. Your device will now show the Remote operation screen.
   *(Note next time you activate your device to use as a Remote, a password is not needed as it is now stored in the device.)*

*Note, the light and any other actions work by taping the screen. i.e. to change to a RED light, tap the Red light on the screen.*

## Status screen.

The top line shows date and time, if this count is active your device is connected.

The second line shown how many units are connected. i.e. 1 Unit(s) - Type 1

The third line shows the Mode the PTL Compact is operating as currently, i.e. Gating Control

The fourth Line show the remaining time for the phase.

## The Main Screen.

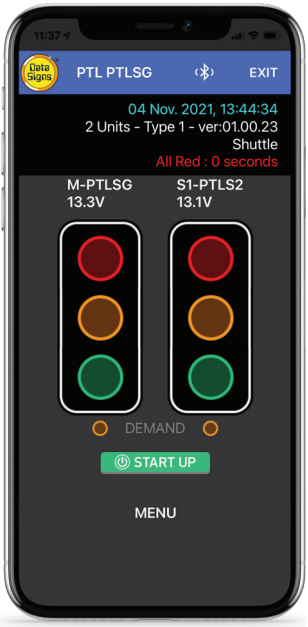
The Main screen will display the light for the Master on the left and the Slave on the right side of the screen.  If in Gating mode only one PTL will be visible.

The Battery voltage of the PTL is shown below each PTL Master or Slave Label.

An Alarm will indicate if the battery reaches a too low level.

Tap the STOP Red lamp to change to Red if the light are on Green

Same operation applies for GO Green lamp.




## Shut Down

To Shut the lights down or Start them up again, select Yes to confirm the Shut Down or Start Up.

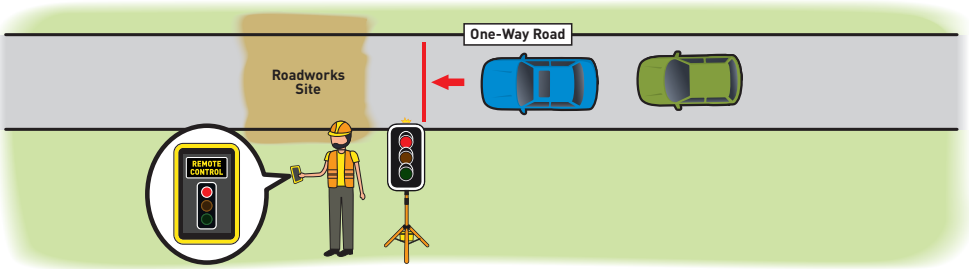
The Light will go blank, or start up whichever the case might be.

**For a more descriptive manual, please scan this QR code:**
(datasigns.com.au/documents/HelpDesk/Local-Bluetooth-Connect-Manual.pdf)

# Gating Control Mode

**Single PTL unit use only.**

Gating Control is used to control the flow of traffic from a single traffic flow direction only.



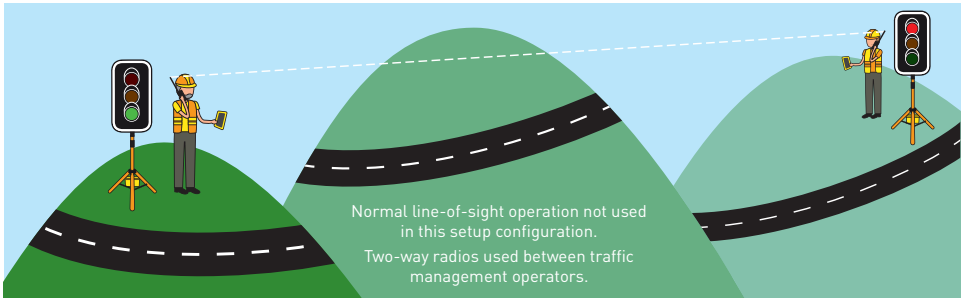

**Note: The Gating Operation Mode can only be selected on a controller set up as a MASTER, to activate this mode:**

1. Press the PROGRAM MODE SELECT (FLASH PROGRAM MODE SELECT) button.
2. Use the ↓ button to Select GATING CONTROL and select ON.
3. Press the SHUTTLE (SHUTTLE) button.

| | |
|---|---|
| MAIN MENU [ TYPE 1 ] | GATING CONTROL |
| QUICK START | |
| UNIT SETTINGS | OFF |
| * GATING CONTROL | * ON |

To switch off Gating Operation Mode, follow the same process as above, selecting OFF in step 2.

Gating control can also be used with 2 PTL units operating independently by two traffic operators using a Walky-Talky to communicate with each other.




Note: If using 2 PTL Compact in Gating Mode, each PTL must be set on its own unique RF channel number as there in NO radio-link communication between each unit and also to eliminate risk of possible interference between the two units.

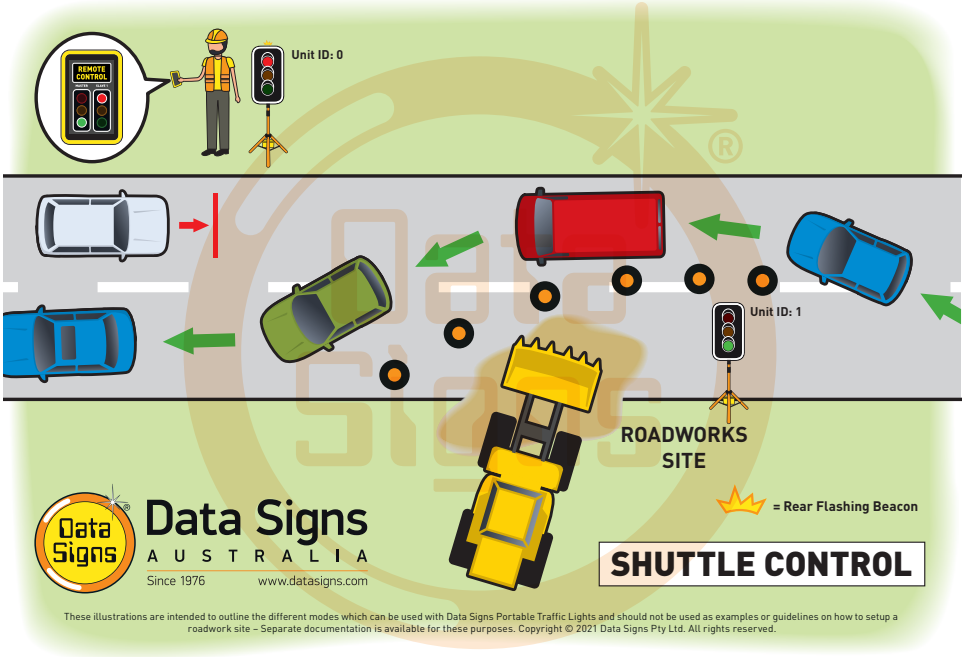
In this mode, the line of sight or distance limit does not apply.

Note: Two independent PTL Remotes and operators are required for this operation.

# Shuttle Control – Single Lane Usage

Shuttle Control is a form of traffic control used where a portion of the roadway is closed so that only a single lane can be used alternatively by traffic from opposite directions. Only one Traffic Light unit can show the Green signal phase at any time; either the Master or the Slave. The diagram below illustrates the traffic control scenario where Shuttle control would typically be used.

*Note: This diagram should not be used as a guideline for setting up a roadwork site, it is provided as an example only.*




Each PTL unit will go to the Green signal phase in turn.
*See timing diagram Appendix A on page 23.*

## SHUTTLE MODE.

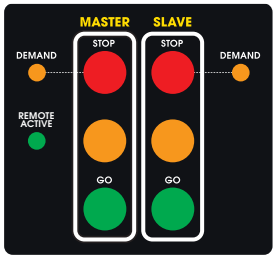
Buttons used:

STOP 

or GO 


A demand for Green or Red signal phase on the Master or Slave is entered on the Remote Control unit. For Shuttle Control, on start-up, both the Master and Slave will rest on Red until a demand for Green is entered.

To enter a demand for either Red or Green, press the **STOP** or **GO** buttons on the Remote Control. The DEMAND LED is activated indicating a demand for either the Master or Slave.




**Master / Slave Controller**
For display purpose only


**PTL Remote Screen**

**Shuttle Control example:**

1. Slave unit is currently showing the Green signal.
2. To change the Master to the Green signal, first change the SLAVE to RED, then select the Master GREEN.

*The **REMOTE ACTIVE** indicator lights up on both the Master and Slave controllers when the PTL remote is connected.*

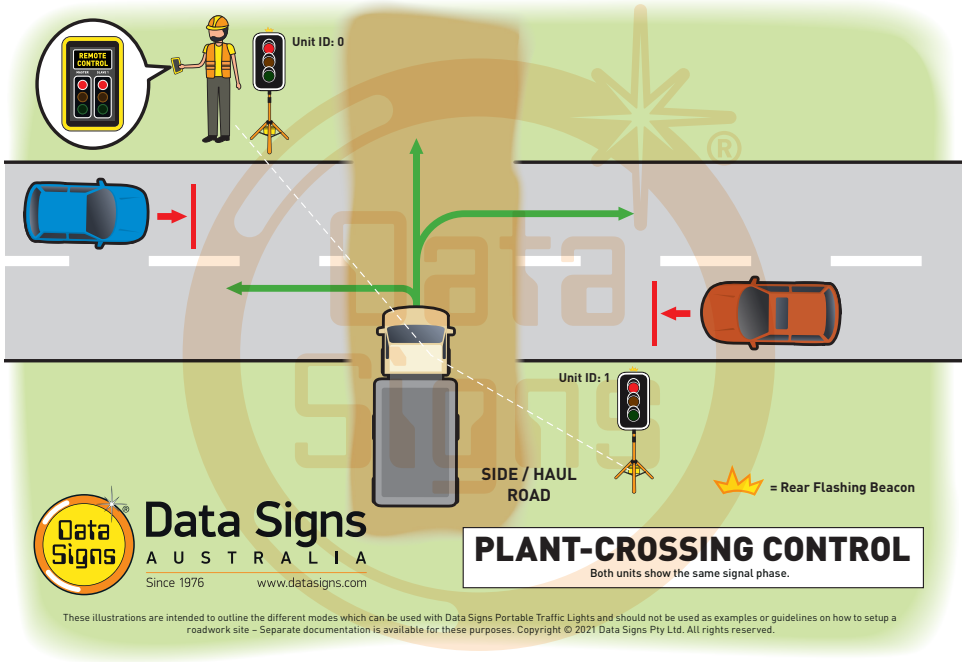
## REAR BEACON LAMP:

The Beacon Lamps mounted behind the Traffic Lights flash on each unit when the Red Lights are ON.

# Plant-Crossing Control 2-Way Traffic

Plant-Crossing control is used to enable both directions of traffic flow along a roadway to be simultaneously stopped, e.g. to allow road construction vehicles to cross. The diagram below illustrates Plant-Crossing control usage.

*Note: This diagram should not be used as a guideline for setting up a roadwork site, it is only provided as an example.*




## REAR BEACON LAMP

The Beacon Lamps mounted behind the Traffic Lights flash on each unit when the Red lights are ON. This acts as a visual indicator to the Plant (vehicles) Crossing the road that it is safe to do so.

## PLANT CROSSING MODE.

Buttons used:

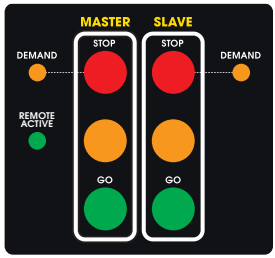
STOP 

or GO 


On start-up, both the Master and Slave will rest on Green signal phase for Plant-Crossing Control until a demand for Red signal is entered by the operator.

The operator can enter a demand for Red signal using either **STOP** buttons on the Remote. Both the Master and Slave units will then cycle to Yellow and the Red signal phase.

To change back to Green signal, either the Master: **GO** or Slave: **GO** button is pressed.




**Master / Slave Controller**
For display purpose only


**PTL Remote Screen**

**Plant-Crossing Control, Manual mode example:**

1. Both the Master and Slave are on Green.
2. Either the Master: **STOP** or Slave: **STOP** buttons can be pressed on the PTL Remote.

*The **REMOTE ACTIVE** indicator lights up on both the Master and Slave controllers when a button is pressed on the PTL Remote.*

# Controller Program Main Menu

**On Master or Slave Controllers.**

While the Controller is in the PROGRAM MODE FLASH PROGRAM MODE SELECT setting, use the Up ↑ or Down ↓ buttons to navigate forward and back through the MENUs to select all other programming functions.

## MENU: **VIEW PTL STATUS**

When this menu item is selected, all the current settings and status of the PTL controller are shown.

Use the Up ↑ or Down ↓ buttons to navigate forward and back through the list.

## MENU: **QUICK START**

Use the **Quick Start** Menu item, this will guide you through the process to set the Master or Slave.

## MENU: **UNIT SETTINGS**

Use this menu to set the Unit ID and Communications settings.

### SUB-MENU: **ID**

For the PTL-Type-1 this is the same function as QUICK START.
***ID:0*** is the Master. ***ID:1 or higher*** is Slave.

### SUB-MENU: **COMMUNICATION**

There are two options: RF or Direct Link, which is hard wired connection between the two PTL's.

### SUB-MENU: **PING INTERVAL**

This is the interval between communication packets.

## MENU: **GATING**

Set gating mode from this menu, ON or OFF.
Select SHUTTLE 

button.

## **WIRELESS LINK (RF)**

Enter the ***RF channel*** then press the ENTER button.
*Note: you will also need to change this value to match on the other unit(s) communicating with a Master unit.*

## MENU: **FAULT LOG**

**Sub-menu: VIEW LOGS**

Select this menu item to scroll through the fault log file.
*More information regarding the fault log file is provided in the Fault Conditions section of this manual.*

**Sub-menu: ERASE ALL**

Selecting this menu item deletes the fault log file that is stored on the SD memory card

## MENU: **ASPECT TEST**

Press Master Red, Yellow, Green or Slave Yellow for Beacon Lights.
Press PROGRAM MENU button to exit.

## MENU: **RF RANGE TEST**

This allows you to check the RF range between the PTL and the Long Range Remote.
The lower the DB level, the better. The signal strength is also shown, i.e. (5/5)

## MENU: **BT LOGIN PIN**

This allows you to set the Password for an optional Bluetooth Remote.

## MENU: **FACTORY SETTING**

This menu item is restricted to Data Signs internal factory use.

## MENU: **CONTROLLER TYPE**

### SET TYPE-1 OPERATION

Use the MAIN MENU and scroll down to CONTROLLER TYPE

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | A | I | N | | M | E | N | U | | [ | | T | Y | P | E | | 1 | ] |
| | F | A | C | T | O | R | Y | | S | E | T | T | I | N | G | S | | |
| * | C | O | N | T | R | O | L | L | E | R | | T | Y | P | E | | | |
| | F | A | C | T | O | R | Y | | R | E | S | E | T | | | | | |

Then select Type 1 and press ENTER

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | O | N | T | R | O | L | L | E | R | | T | Y | P | E | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | T | Y | P | E | | 2 | | | | | | | | | | | |
| * | | T | Y | P | E | | 1 | | | | | | | | | | | |

Then press the PROGRAM MENU PROGRAM MENU button.

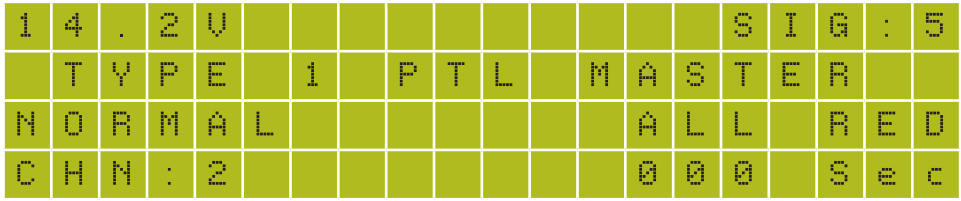
## MENU: **FACTORY RESET**

This resets all timing and setup parameters back to the Default values.

*For GATING CONTROL see section on page 11.*

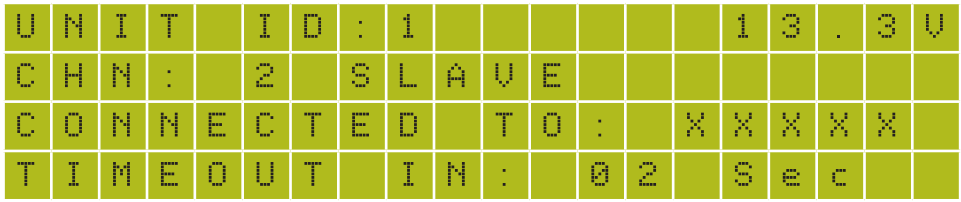
# Controller display screens for Master and Slave

**Master ID=0** The following values will be shown on the display panel during normal operation




**First line:** Master Battery Voltage.
On the right side, Slave Battery Voltage. Alternates with Signal Strength
**Second line:** Shows Type 1 PTL Master.
**Third line:** Control Type (i.e. NORMAL). Right side, Current light sequence
**Fourth line:** Current RF Channel. Right side, Current state remaining time

**Slave ID=1.** The following values will be shown during normal operation:




**First line:** The ID of this unit. Right side, current Battery Voltage.
**Second line:** RF Channel set on this unit. Slave.
**Third line:** The Serial Number of the Master Controller this unit is connected to.
**Fourth line:** The current RF timeout value. If this starts to count down there are interruptions to the RF communications.

# Wireless Link (RF) Explained

Each Traffic Light is fitted with an aerial located on the top of the lights. This will provide Wireless Radio (RF) communication between the PTL units; however, the units still need to be positioned in line-of-sight to each other.

The maximum distance between the Master and Slave PTL's is about 500m, depending on surrounding environment.

The radio link module fitted to the PTL unit communicates on one of eight channels. This must be set to the same channel on each unit to maintain wireless communication. This applies to the Master, Slave, and the Remote Control.

## Radio Link Operation

If the radio link between the Master and a Slave unit is disrupted for a continuous 2 second period (the default time) all units will revert to red lights and the system will restart, however if the radio link is lost for more than 1 minute the, system will restart in Startup Mode and all lights will be blank.

## Signal Strength

The Remote Control will display the signal strength of the Master Controller to the PTL Remote as a Graphic symbol in the top right corner on the display. The Master and Slave Controllers display the Signal Strength and the Battery Level on the display. The RF Signal Strength is a value out of 5, where 5 is the strongest value.

See also, *MENU: RF RANGE TEST.*

# Fault Conditions

If any fault conditions occur as discussed throughout this document, the Portable Traffic Lights will go to Red.

All critical faults are logged to a file on the SD card fitted to the Master Controller.

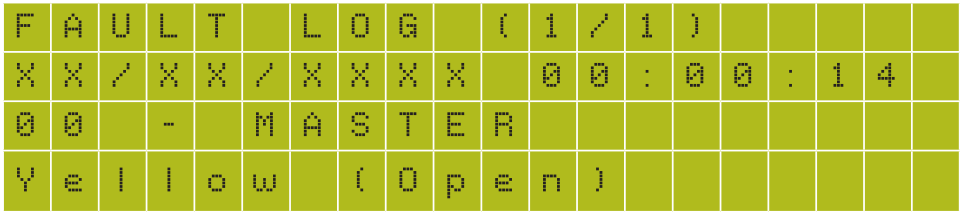
The faults logged are outlined below. Reference back to the Australian Standard is provided in the table.

| Fault ID | Description |
|---|---|
| 0 | Yellow |
| 1 | Red |
| 2 | Green |
| 3 | Beacon |
| 6 | Excessive Link |
| 7 | Conflicting Link |
| 8 | Link Timeout |
| 10 | Low Battery |
| 11 | Tilt |

To view the current fault log file, select **FAULT LOG → VIEW LOGS** from the PROGRAM MENU. Use the ↑ and ↓ arrow buttons to move through the fault log entries.

The last fault logged is shown first.

A sample fault log entry may be:




The time shown with each fault log entry is the time that this fault occurred since the Master Controller was powered up. The second part is the Portable Traffic Light unit affected (i.e. Slave#2 or Master). The last part of the entry is the fault description.

You can also use an SD card reader on a laptop/PC to read the fault log files from the SD card. The file will be in the LOGS directory on the SD card.

**Turn the Master Controller OFF and remove the SD card from its slot, leave the power OFF while re-inserting the SD card.**

# Troubleshooting Guide

This section contains some tips on handling some of the issues that may arise when using the Traffic Lights. If you cannot resolve the issue you are experiencing using the information below, please contact Data Signs on the Help Desk Via datasigns.com.au. As discussed above, the Fault Log stored on the SD card in the Master Controller may assist in issue diagnosis.

## Turning the Controller On

If the POWER light does not come on when the key-switch is turned to **ON:**

- Check that the controller connector is inserted properly.
- Check the fuse inside the keypad controller (next to the 16 pin connector) and on the battery fuse board.
- Check that the battery voltage is above 10.5 Volts.

## Radio Wireless Link failure

If the radio wireless link fails regularly, try changing the Channel set on all Controllers, as some interference may be occurring on the operating channel. Power-cycle each unit after the Channel has been set correctly

## SD Card Failure

**Never insert or remove the SD-Card with the power on, switch key to OFF first.**

In the case of SD card failure, you will be notified on the display. Default values will be used if the SD card fails. All parameters can be changed, however they will not be saved, so you will need to enter your desired parameters each time the Master Controller is turned on, until the SD card is replaced.

*Note: the SD card must only be 2GB Max. To replace the SD Card purchase this from Data Signs, Parts online.*

## Lights Not Working

Check the connections on the controller or the lights.
See also Aspect Test Menu item on *pages 7 & 17*.

# Maintenance

1. **Battery level.** Always ensure unit is fully charged for a full days work. Charge overnight, including the PTL-Remote.
2. **Keep Clean.** Always keep the light lenses clean.
3. **Cables.** Ensure cable are secured and not frayed or loose from the connectors.
4. **Test and Tag Battery Charger.** Use an authorised service provider to regularly test and tag the battery charger.

# Glossary of Terms and Abbreviations

**Aspects**
The actual lights or housing that contains the Lights.

**Lights**
Actual Traffic signal Lamps.
Red, Yellow and Green.

**PTL**
Portable Traffic Light.

**PTSU**
Portable Traffic Signal Unit.
This term is interchangeable with PTL.

**PTL Remote**
This term in interchangeable with HRC.
This is the Hand Held Remote that is used to exclusively control all the PTL Signal changes, control the Lights ON/OFF function as well as other functionality as described in this Manual.

**HRC**
Hand-Held Radio Controller.
This term is interchangeable with PTL Remote.

**LiPo**
Lithium Iron Phosphate.
A lightweight high energy density battery that powers the PTL.

**RF**
Radio Frequency used for the Radio Link.

**Beacon**
The orange indicator on the BACK of the Traffic lights.
This is to indicate (from the back) when the RED Aspect is ON.

**ID**
Identification Number
0 = Master. 1 or Higher = Slave.

**CHN**
Chanel Number used for the Radio Link.

**SIG**
Signal Strength used for the Radio Link.

**SD**
Storage Device Memory Card. Used for setup, fault logs, firmware upgrade, Bluetooth PIN.

**Advanced Manual**
Manual to assist with higer level set up and configuration, test processes.

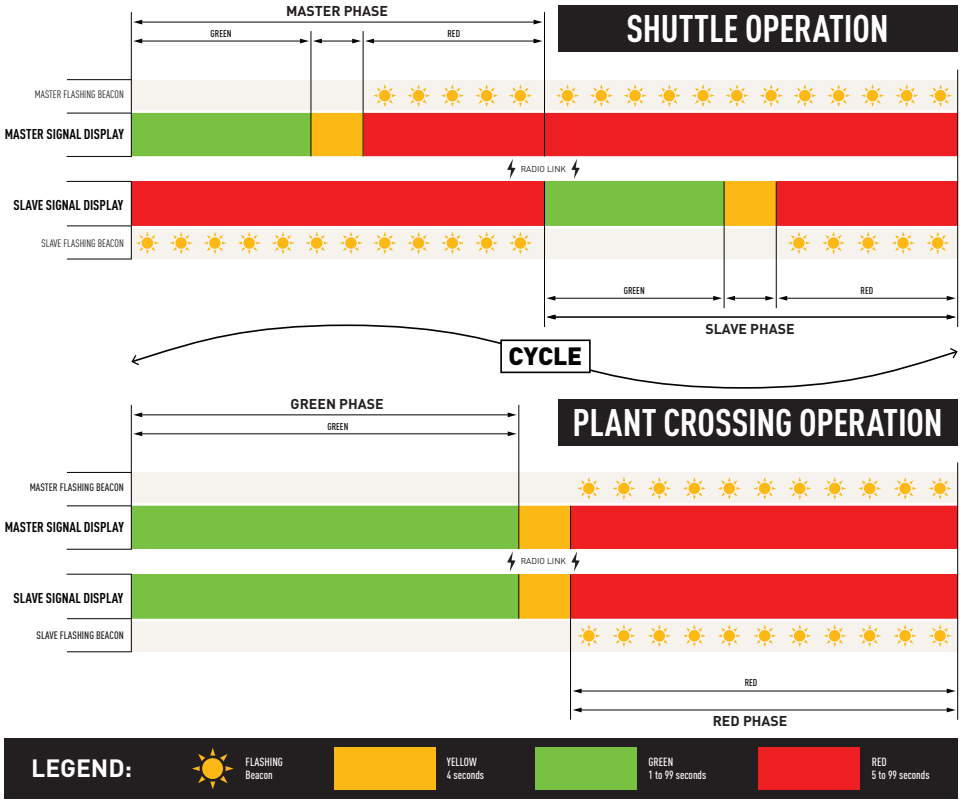
**PTL-Stop-N-Go**
A simplified version of the PTL series of products. Can 'only' operate PTL-Type-1.

**PTL-Compact**
This particular variant of Portable Traffic Light System.
The PTL-Compact can be set up to operate as either:
Type-1 (This manual), or
Type-2 (see PTL-Compact Type-2 Manual)

**PTL-Trailer**
A fully autonomous solar powered Traffic Light consisting of a Master and Slave set.

APPENDIX A

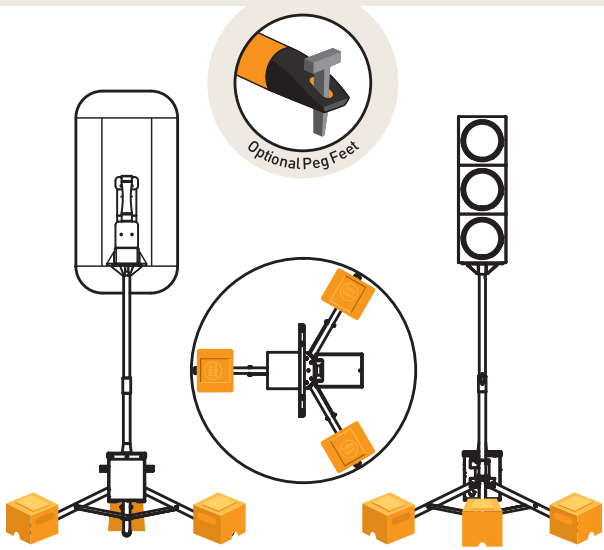
# Cycle and Phase Intervals for Shuttle and Plant Crossing Modes



# WIND LOADING

## RATING FOR 20M/SECOND (72 Kph)

If the PTL is fitted with optional Peg Feet, where suitable you can secure it with pegs instead of weights.




Note: Your PTL has a TILT sensor which will indicate on the PTL-Remote if the unit is tilted by more than 20 degrees ***(i.e. It has fallen over)***.

This manual complies with the Specification *MRTS264 Type-1 Portable Traffic Signals* and TSI-SP-062,049 and 50 where relevant *AS4191-2015 Portable Traffic Signals.*

**Suggestions & Improvements**

Data Signs develops its products with the end users in mind. As such, we are always open to suggestions for product improvement. Contact Data Signs, Head Office in Australia at: datasigns.com.au/help

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