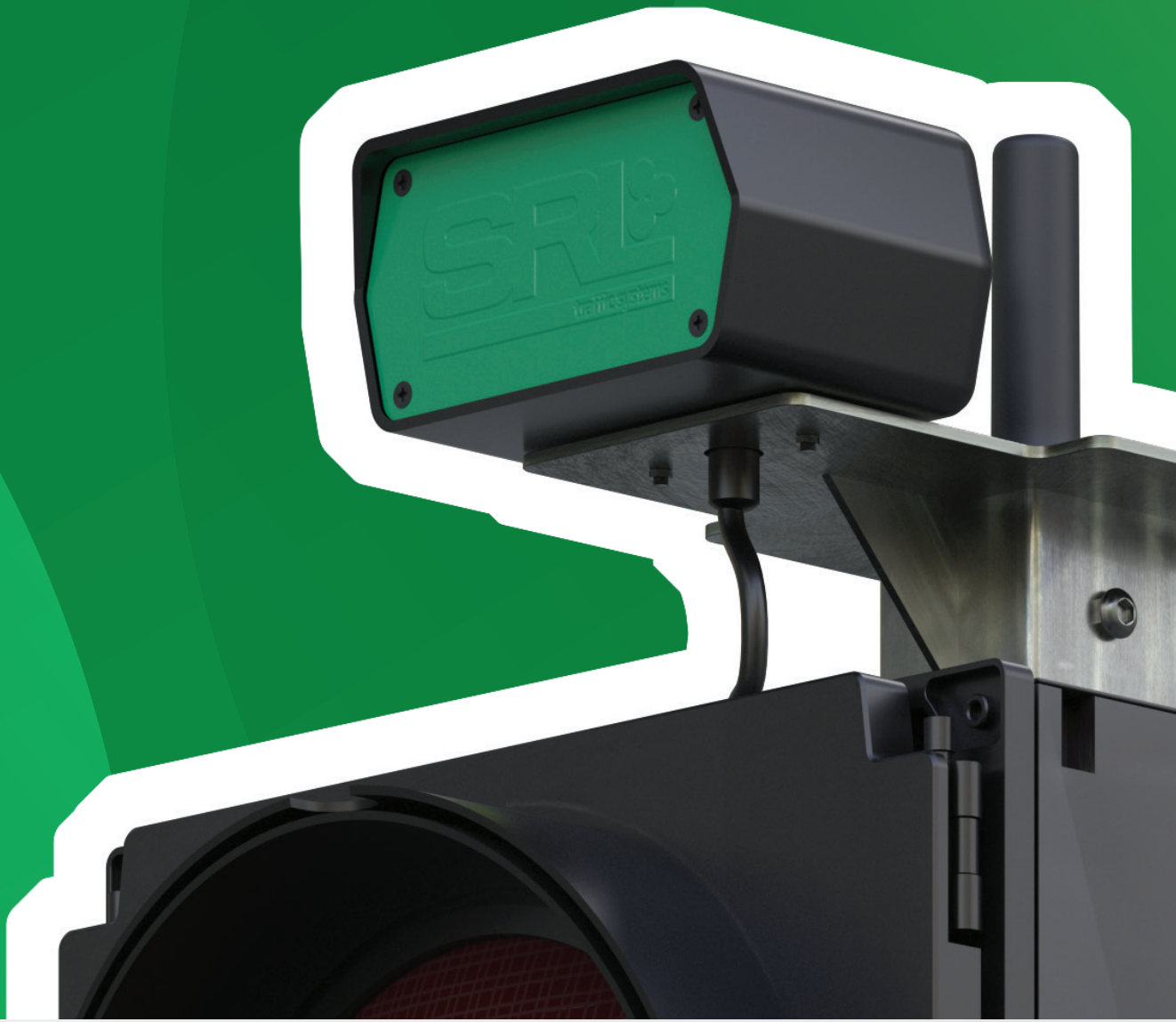




Multiphase ADS



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Multiphase ADS

Introduction

Multiphase ADS (Adaptive Detection System) is an advanced model of vehicle actuation, that uses deep learning algorithms and a high-precision radar detector to automatically adjust green times, accurately interpreting traffic volume and speed for optimal flow management.

Multiphase ADS is the only solution capable of 2, 3 and 4-way control.

Key benefits

- **Adapts to present traffic conditions**
- **Can be used up to 4-way control**
- **Rapid installation**
(only basic timings required)
- **No site visits to make timing alterations**
- **50% more efficient than standard portable signals**
- **False start rectification**
(no stuck reds from vehicles failing to move first time)

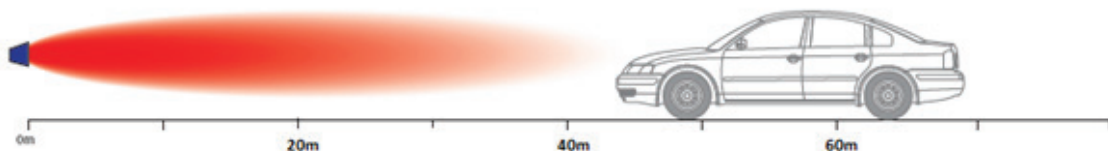


How does it work?

Once **Multiphase ADS** is set up it begins to optimise max set timings, adding time to each approach when it has reached its saturation point. The system also allows for HGV start lag (HGVs slow off the mark) allowing extra time to get moving and clear the site. Multiphase ADS will adapt aligned to morning peak and evening peak to allow greater volumes of traffic to pass through the site more efficiently. The greater the demand, the greater the benefit of using Multiphase ADS.

The system uses FMCW (Frequency-Modulated Continuous Wave) radar and FSK (Frequency Shift Keying) radar, as a hybrid system, to determine range and speed of the vehicles. It is configured to ignore vehicles going away from the signals, so there are no more false detects from vehicles on the opposite carriageway.

The system relies on the detector's high accuracy to detect vehicles and cyclists at the farthest point of 60m and track them to the stop line (the point where vehicles and cyclists must stop when red light shows) this will track multiple vehicles through each zone allowing the system to identify platoons of vehicles and identify any gaps in traffic. This will allow for the signals to gap off (go to red) and allow vehicles green on another phase as efficiently as possible.



Detection:

The radar has three detection zones:

Det 1 zone - 60m extend only, 8kph

Det 2 zone - 40m demand and extend, 8kph

Det 3 - 20m demand only (stop line), 4kph

- Falling relay 500ms
- Radar GAP time is 2s

Important Notes:

- Multiphase ADS cannot be used with Pedestrian set ups. Red times are not auto-adjusted and should be set as per site specifics.
- Multiphase ADS can only be used on EuroLight, SolarLight, UltraLight and REMOS signals.
- Multiphase ADS is autoconfigured in UltraLight and REMOS but must be set up in EuroLight.
- Multiphase ADS is the default mode of operation in REMOS and SolarLight.
- A site can only be configured for Multiphase ADS, if all signals present utilise the ADS detector. All primary signals must use ADS in order for the system to function. If the set up exceeds ADS capabilities (4-way control and pedestrian) or it is manually overridden, Multiphase ADS will not be configured.

Controller Logic

1. Logic allows the green time to increase incrementally to the absolute maximum green time, dependent on traffic flow.
2. There is an absolute max which is configurable with 100s limit.
3. The default absolute max is 60s.
4. The starting max is 30s.
5. The increment counter is a fixed value once configured i.e. it is static set to 3.
6. The decrement counter is a fixed value once configured i.e. it is static set to 1.
7. The green timer for each approach operates independently, dependent on logic. I.e. approach 1 has a green time of 13s, and approach 2 has a green time of 26s.
8. In the absence of an extend, the green time will be closed early and will be reconfigured on the subsequent cycle.

Working Example

The controller runs to its max of 20 seconds for 1 cycle, if the max is met the max will increase by 3 making the new max 23 seconds.

The controller runs to its new max of 23 seconds, again if the max is met it will increase by 3 making 26 seconds.

This would then continue extending the green time, up to the absolute max (if the approach keeps extending i.e. add 3 seconds for every max cycle).

OR

If the max is not met the max will decrement by 1 second and so on.

False start correction

If a phase has a demand and det 3 (stop line) isn't activated on green, there will be a latched demand for the next cycle. This is often referred to as demand revert - when the ADS programme sees no movement on a cycle while green, causing it to reactivate said phase on the following cycle.

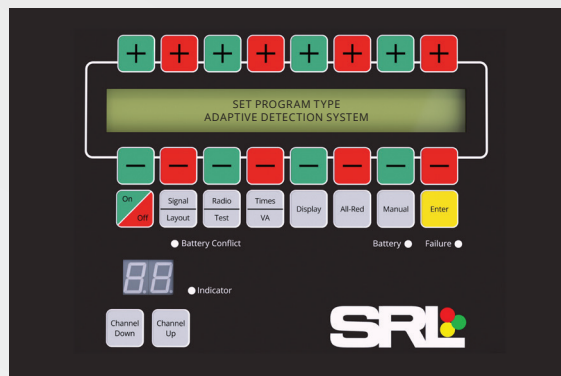
Multiphase ADS Set Up

The below steps are applicable to EuroLight and SolarLight, only.
Multiphase ADS is auto-configured.

Step 1

Ensure the batteries are fully charged and all connections are secure, turn on the controller via the On/Off button.

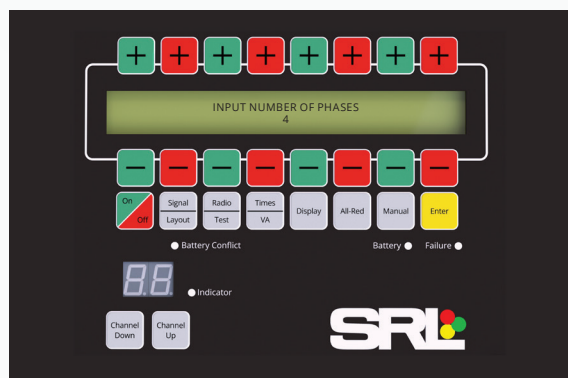
- Using Signal/Layout for Signal and any + or - button to set to Signal 1, also known as the Master, followed by Enter to save.
- Using Signal/Layout button, for set program type then any + or - button to set to 'Adaptive Detection System'
- Press the Enter to save.



Step 2

In this example we will be setting up for 4-way. Achieve this by pressing the Signal/Layout for 'Input number of phases'.

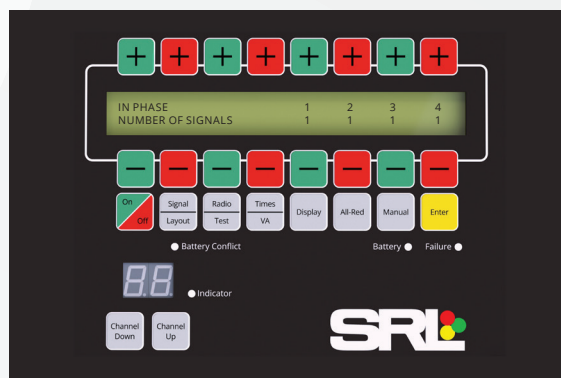
- Using the + and - buttons select the number of phases you require. For this example we will select 4.
- Press the Enter to save.



Step 3

Using the Signal/Layout button again for 'In Phases Number of Signals'. This will default to 1 signal per phase, unless you have multiple signals in each phase then input accordingly.

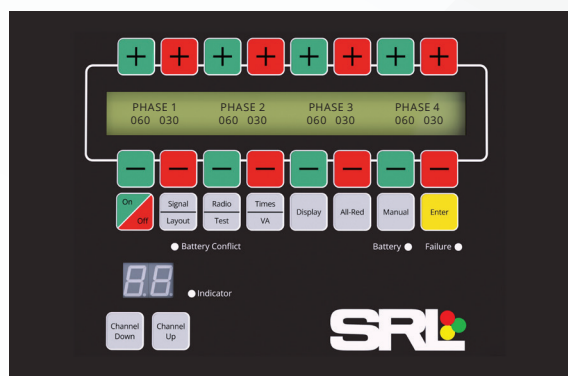
- Press Enter to save.



Step 4

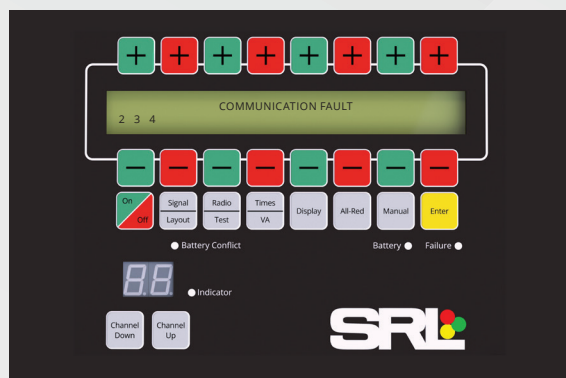
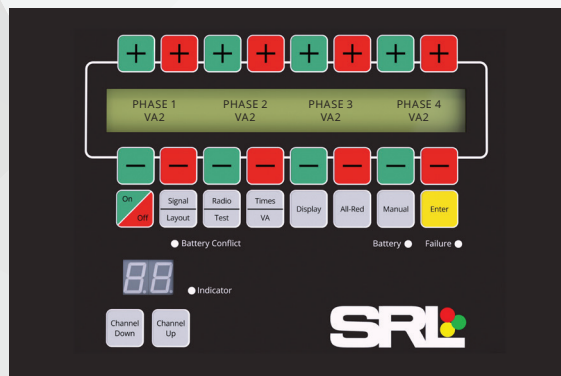
Using the Times/VA button, leave green times at 60 and change **red times to your desired site specifics.**

- Press Enter to save changes.



Step 5

Using the Times/VA button, check that all phases are set to VA2. This is the default setting for ADS to work correctly and this shouldn't need to be changed.



Step 6

Press the Display button to display communication fault

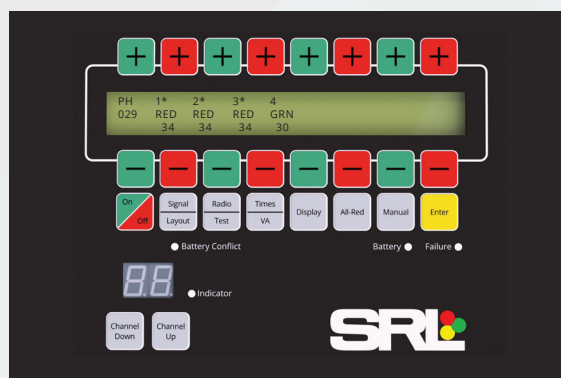
Press START, all the signal numbers will disappear, and the signals will begin to run, initially running through all phases.

On the first cycle, the third line will show 0 until each phase has gone to green for the first time.

The following screen will now be displayed, explaining which state each signal is in; this also includes whether a phase has a demand or is demanding.

A third line is provided to show the ADS systems current MAX green timer.

The only way to determine if your signals are running Multiphase ADS is by the numbers on the third line of the display screen as shown.



UltraLight and REMOS follows a similar setup using the master programme

The system will always start on 30s max green and increase by 3 seconds every time the approach reaches its max. If the traffic then reduces, the system will then drop 1 second every time the approach does not reach its max. If the traffic reduces, The max timer will reduce by 1 second every time the max green is not reached.

One asterisk (*) means there is a demand for that phase and the signals will service this phase.

Two asterisks (**) mean there is a current demand, and the VA detector is seeing traffic.

**For further assistance, please contact your nearest SRL depot.
You can find your nearest depot by scanning the QR code**

