



St Cross
Electronics



SPEED MARSHAL

THE CODE 60-VSC DRIVER INDICATOR SYSTEM





WHAT IS CODE-60?

Code-60 is a flag system used to neutralise a race allowing marshals to safely attend to on-track incidents. Code-60 operates in a similar manner to deploying a Safety Car but with the following advantages:

- 1. A race can be neutralised immediately a Code-60 command is issued by the Clerk of the Course whereas there can be a noticeable delay in deploying a Safety Car while it starts up, joins the track and waits to pick up the race leader.**
- 2. Once the on-track situation has been removed then racing can resume immediately the command to withdraw Code-60 is issued whereas there can be another delay while a Safety Car circulates back to pitlane before racing can continue.**
- 3. Race positions and gaps between cars are maintained throughout the Code-60 period meaning no driver is disadvantaged or gains an advantage while marshals are attending to an on-track incident.**

WHAT ARE THE PROBLEMS WITH CODE-60?

Code-60 has been used successfully in Europe for several years but mainly in endurance racing where drivers have on-board communication systems such as pit-to-car radio or cockpit lights. When it was introduced in the UK at the start of the 2017 season for club level sprint racing several problems were encountered:

- 1. Many club level race cars are not equipped with accurate speedometers, many not having a speedometer at all. As such, it was not possible for these drivers to maintain a steady 60Km/h as required by the Code-60 flag.**
- 2. Marshals and officials had no way of determining which drivers were adhering to the Code-60 speed and which were not. If a gap between two cars closed during Code-60 then it could not be determined if one car was exceeding 60Km/h or if it was another that was driving below the required 60Km/h.**
- 3. Some drivers complained that, after an incident was removed and Code-60 flags were withdrawn then those drivers who happened to be in sight of a marshal post would be able accelerate and begin racing ahead of those who were not in sight of a marshal post thereby gaining an advantage.**

THE SPEED MARSHAL SYSTEM

The Speed Marshal System has been created to allow Code-60 to be used safely, reliably and accurately in all categories of circuit racing allowing marshals and drivers at all levels to benefit from all of the safety advantages that the Code-60 flag offers.

The C60IS consists of 3 elements:

DRIVER DISPLAY

Central to Speed Marshal is the Driver Display which incorporates a GPS receiver and 6 multi-coloured LEDs. Speed Marshal is enabled by the driver pressing the pushbutton on the front of the unit whereupon the LEDs will begin to indicate to driver if they are driving above, below or at 60Km/h.

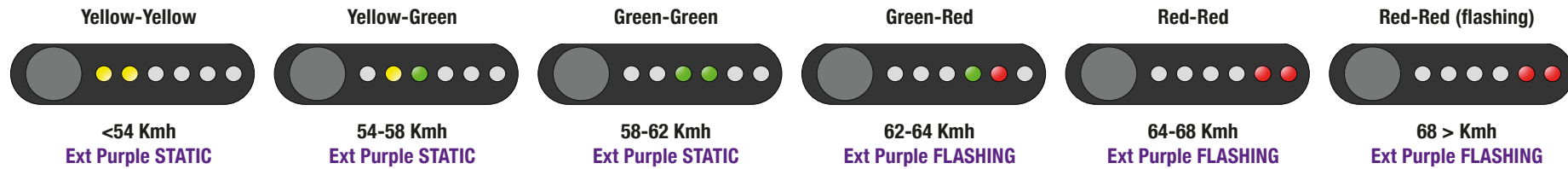
SIDE LIGHTS

Speed Marshal is capable of controlling two side mounted, high intensity purple lights which can indicate to marshals and officials that the driver has responded to Code-60 flags. The purple light will operate as follows:

OFF:	Code-60 <u>NOT</u> enabled.
ON (Static):	Code-60 enabled <u>AND</u> speed is at, or below, 60Km/h.
ON (Flashing):	Code-60 enabled <u>AND</u> speed is above 64Km/h.

RAIN LIGHT

Speed Marshal also includes a single coloured, rear mounted Rain Light. This Rain Light uses a high intensity, red light which complies with FIA Technical List 19.



HOW IT WORKS

The Speed Marshal Driver Display incorporates a satellite GPS receiver, which it uses to accurately determine speed, and 6 high brightness, multicoloured LEDs. The device is simply activated by pressing the button when Code-60 flags are spotted, whereupon the unit will immediately indicate to the driver their speed relative to the required 60Km/h as shown below. The target for the driver is then to drive at a speed where the two centre Green LEDs are lit indicating they are driving between 58Km/h and 62Km/h.

The driver can activate and deactivate the Speed Marshal display at any time by pressing the button. However, once activated, and the car is driven at 60Km/h, then the system will automatically deactivate when the driver accelerates past 80Km/h on noticing Code-60 flags being withdrawn. This prevents the driver accidentally leaving it activated when the Code-60 period had ended.

Once Speed Marshal is activated the side mounted, purple LED lights will provide an external indication of the speed of the car relative to the required 60Km/h. These lights will be in static ON if the speed is at, or below, 60Km/h and Go to flashing mode if the car is travelling above 60Km/h. There will be a tolerance ± 4 Km/h. This will enable marshals and officials to spot any car, at any position around the circuit, that is exceeding 60Km/h during a Code-60 period. It can also be used to police 60Km/h pit lane speed limits. As these lights will not be illuminated when Speed Marshal is not activated then this also alerts marshals and officials to drivers that have failed to acknowledge the Code-60 flags.

The rear mounted, Rain Light will also provide an external indication of the speed of the car relative to the required 60Km/h to any cars driving behind. Irrespective of whether the race is dry or wet the Rain Light will flash Red slowly if the speed is at, or below, 60Km/h and display static Red if the car is travelling above 60Km/h.

By indicating to cars behind that a driver has activated Code-60 it can help prevent rear end shunts when other drivers have not noticed Code-60 flags being waved and will also notify other drivers when Code-60 has ended if they are not in sight of a marshal post at that time.

RAIN LIGHT SWITCH

The Speed Marshal Driver Display also has a 3 position Rain Light Switch connected to it which allows the driver to operate the rear Rain Light in 3 modes when Code-60 is not in use:

Wet race -

Dry race -

Hazard warning -

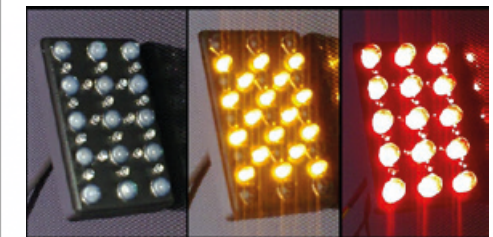


The Hazard Warning feature allows the driver to manually override it if they encounter a problem with their car. e.g. if the driver finds they have stalled on the grid, suffered an engine failure or has a puncture, then by flicking the switch to Hazard Warning mode so the rear light will display a highly visible, Red flashing sequence to indicate to all other drivers that their car is stationary or moving slowly. This helps reduce the risk of rear end crashes.

ADDITIONAL SAFETY BENEFITS

Speed Marshal monitors the speed of the car at all times, not just when Code-60 is activated. As such it can determine if the car is travelling at racing speed, below normal race speed or is stationary.

Speed Marshal therefore has the capability to automatically indicate to other drivers if the car is stationary or moving slowly via the rear mounted Rain Light.



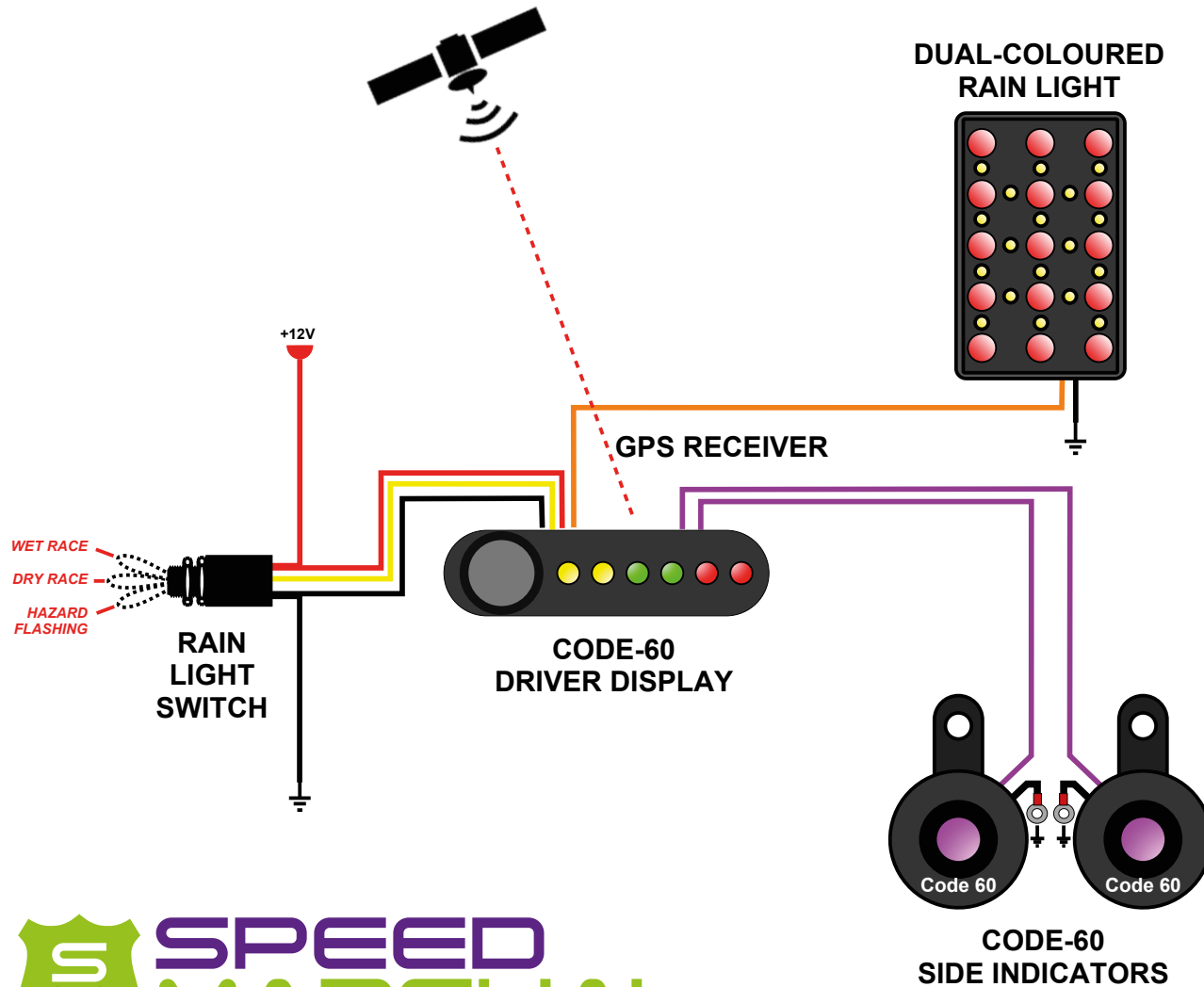
Dry race - OFF

Wet race - Static RED

Wet race, slow or stationary - Flashing RED (rapid)

Dry race, slow or stationary - Flashing RED (rapid)

Hazard warning - Flashing RED + YELLOW (rapid)




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