The RCA60 Series of Lap Timers

The RCA60 Series of Lap Timers are designed for cars, bikes and karts. There are four versions of the lap timer, the RCA60, RCA61, RCA65 and the RCA66. The RCA65 and RCA66 have the new Delta Time Function.

Lap times are measured when the car passes through an infra red beam across the track. The beam can be from the Farringdon Beacon supplied with the RCA61 and RCA66 or the PI Track Beacon installed at most UK circuits.

Lap times are displayed to the nearest one hundredth of a second. The use of advanced infra red signalling electronics gives the system a range of greater than 50 metres when used with the low power Farringdon beacon.

The RCA60 and RCA61 Lap Timers

The Lap Timer consists of the display head, illustrated above and the Infra Red Detector. A two metre flying lead from the Display Head terminates with two waterproof Mini Sureseal connectors. The four pin socket accepts the two metre flying lead from the IR Detector and a three pin plug connects to a socket supplying the vehicle 12 volts. The RCA61 is supplied with a Farringdon Beacon.

Display

All the Farringdon Lap Timers are designed around a high resolution, high contrast graphic display. This allows the characters to be better formed and to be of variable size. As shown above, the most important numbers, the lap time, are the largest and less important numbers, the elapsed time and lap number are smaller. The transflective display gives good contrast in direct sunlight and in both open and closed cars. The backlight allows the display to be read at night but also greatly improves legibility in closed cars.

What is Displayed

The screen shows the lap time, the elapsed time, the number of laps completed and the lap number and time for the best lap so far. The lap time starts counting up as soon as the lap timer is turned on. When the Infra Red Detector sees the beacon for the first time, the lap time freezes and the lap number changes to 1. The lap time shown is the Out Lap time. The Lap Time remains frozen on the screen for the “Hold Time”. After the hold time has expired, the running time from the beacon is displayed. When the beacon is seen for the second time the lap time is again frozen showing the time for the first complete lap and the lap number changes to 2.

The Elapsed Time simply shows a running time. This time starts at zero when the timer is switched on but can be cleared to zero by pressing the bottom two buttons. If the elapsed time is cleared when leaving the collection area for qualifying, the elapsed time will show the driver the time into the qualifying period. Essential information for the serious competitor.

An option allows the elapsed time to be displayed in hours and minutes rather than the usual minutes and seconds which can be useful for endurance races.

Best Lap

The small display at the bottom of the screen shows the best lap number and time. When a new best lap is completed, this displayed is reversed – that is light characters on a dark background - so that even if the characters themselves are not easily read, the driver will see the dark background and know that a new best lap has just been driven.

The “IN” Function

When the control knob on the Farringdon Beacon is turned to the IN position, a special code is superimposed on the infra red beam. When the detector passes through the beam, the lap time is replaced by a flashing **IN**. Although not strictly legal for races under the control of the MSA, this feature is very useful for testing and makes the pit board largely redundant.

Recall Mode

Pressing both right hand buttons together enters the Recall mode. The most recent lap time and number is shown on the screen. Pressing the top or bottom left hand button "scrolls" through the laps recorded by the timer. Up to 1500 laps can be stored in the lap timer memory.

Set Up Mode

Pressing the two left hand buttons together enters the Set Up mode. The screen changes and a list of set up options are displayed - for example, the infra red channel number. These can be changed with the two right hand buttons. Once all the set up parameters have been set, the two left hand buttons are pressed again to leave the set up mode.

Power Supply

The RCA60 and RCA61 lap timers are powered from the car (bike or kart). A nominal +12 volt supply is required. The lap timer takes a very small current – about 60 mA – so using the car supply removes the need for an ON/OFF switch and a battery enclosure. It also means that you do not have to remember to turn off the lap timer – it will be turned off with the master switch or perhaps the ignition.

The Farringdon Beacon

The Farringdon Beacon is a small plastic box containing a 9 volt PP3 battery which is sufficient for powering the beacon for about 24 hours. The control knob turns on the beacon and allows one of four main channels to be selected for lap timing. Turning the control knob to the IN position causes the IN display to be shown to the driver when the car passes through the beam.

The IR Detector

The Infra Red Detector is a small metal block with a lens at one end and the cable at the other. It contains an Infra Red Control Receiver that receives the Farringdon Beacon signals and another small microprocessor based circuit with a separate photocell to detect the PI Track beacons. The detector does not accept any infra red signal but rather detects both pulse width and pattern of the PI and Farringdon beacons and discriminates against other signals.

Mounting

The display head and the IR detector are mounted with 3M Dual Lock tape. A length of this very strong Velcro like tape is supplied with the lap timer. The tape serves as an insulator and allows the IR detector to be switched around to face the pit wall – on the right at Silverstone, on the left at Donington.

The RCA65 and RCA66 Lap Timers with Delta Function

In addition to all the features described above, the RCA65 and RCA66 lap timers are able to show times relative to your best lap as you drive round the lap. After the hold time has expired, the display stops showing the lap time for the last lap and changes to show the "Delta Time" for the rest of the lap. This is the difference, at this point on the track, between your best lap and the current lap. The picture above shows that at this point on the track, you are 0.25 seconds faster than your best lap.

Massive improvements in lap times can be found with the Delta Timer.

After passing the beacon, the lap time is displayed as normal. The Delta function is switched on or off in Set Up mode. The Delta function needs a wheel speed (in this case more a wheel position) sensor to determine where the car is on the track. This is supplied with both the RCA65 and RCA66.

Specification

The table below shows the different models of the RCA60 Lap Timer.

Model	Beacon Supplied	Delta Time Function
RCA60	No	No
RCA61	Yes	No
RCA65	No	Yes
RCA66	Yes	Yes

Range	>50 metres with Farringdon Beacon
Power Supply	12 volts nominal from car
Current Draw	60 mA
Dimensions (W x H x D) Display Head	97 x 39 x 25 mm
IR Detector	19 x 22 x 40 mm
Beacon	20 x 65 x 35
Total Weight excluding Beacon	300 grams