

OPERATION MANUAL

Lap Counter– Chronograph

DS – 300 “ PRO Series “

DS Electronic Racing Products

www.mrrc.com

DS.300 SUPER COMPUTER – PRO SERIES-

GENERAL FEATURES:

- 10 different race programmes (see advanced programming)
- 4 displays per lane. Easy and quick reading of laps and time with only one key push.
- Time Programming: maximum 10 hours (less 10 seconds), minimum 10 seconds.
- Lap Programming: Maximum 9999 laps, minimum 1 lap.
- Programming minimum time gap between 2 laps (to test motors, calculate top speeds, checking section time)
- **PERMANENT programming**. Memorize a programme until new change (keeping the programme even without power on lap counter)
- **TOTAL or INDEPENDENT** lane control can be selected on any race programme.
- Race start with power on track (**time off**, waiting for the green light but with power on, when jump the start gets penalized without counting the lap it does) or without power on track (**time on**, all cars get the power when green light is on)
- All cars will stop at the end of race when “**stop and go box**” (DS.21) or “**PRO stop and go box**” (DS.61) is connected. For INDEPENDENT lane control is needed to use “PRO Stop and go box” because it has a double relay included.
- Pause key, keeping in memory the actual race time and continue from it later.
- Upgrade up to 8 lanes.
- Exit RS-232C to computer with free software and transmission codes for own software manufacturing
- Shows:
 - o Lap timing each time a car crosses the sensor.
 - o Spend time or left time to end of race, during or at the end of the race.
 - o 2 fastest laps per lane during the race or at the end.
 - o Race timing for each lane (INDEPENDENT mode).
 - o Timing in 1/10000 of seconds
 - o Winning lane blinks
 - o Fastest laps on the race blinks.
- Track power control through control boxes: “Stop & go box” and “**PRO stop & go box**”
- Individual red/green traffic light for visual control of race start.
- Beep signals when: programming, start, last lap, end of race, pause, fastest lap.
- Easy connection to own “DS-Card control” system for racing or rental use.

INSTALLING AND CONNECTIONS:

The main difference of this lap counter and other is the possibility to grow up in number of lanes until 8 without the need of changing the lap counter system at all. The

main Ds.300 (lane 1+2) have a connector on the base to connect into the DS.3340 (lane 3+4) and this into the ds.3560 (lane 5+6) and at the end to DS.3780 (lane 7+8).

Each 2 lane module have at the back 2 conector to connect the sensor for the lanes and for the control boxes. The main unit (lane 1+2) have an extra plug to connect RS.232C directly into the computer, and to the power unit.

IMPORTANT:

TRACK, CONTROL and INTERFACE connectors needs to be plug before power (12V) is connected.

CONNECTORS:

TRACK: Let you connect the sensor for lane 1 and 2, different options are available: dead strip (available on most track systems, only 1 direction of running), infrared bridges (available on most track systems and for 2,4,6, and 8 lanes and works in both ways of running).

To PC (RS-232-C): Let you connect the Super-Computer DS.300 into any PC throught a COM (RS-232C) and use the free software for controlling the races (is needed the conexion wire DS.0052)

CONTROL: TO connect the control boxes “Stop and Go box” with one relee (DS.0021), and “**PRO Stop and Go box**” with double relee for individual lane control (DS.0061).

The control boxes allows a easy connection of controllers, track power units. Each box is valid for 2 lanes. Independent controller for each lane can be plugged using international 4mm. plugs .

Used for any controller type (MRRC, PARMA, CARRERA; SCALEXTRIC, NINCO, etc...) with or without electrodynamic brake. Traffic light in red/green big LED . Includes all wiring and connectors for transformer, independent wiring to track (with easy lane direction change). Control on start and end of race, giving power to the track when start and cutting the power off when race is over.

POWER: To connect a power unit for the lap counter, to allow the control 8 lanes is needed the 3 amp and 12 Volts minimum. DS manufacturer one power unit for this (ref. DS.0051)

KEYS and FUNCTIONS:

START – STOP KEY:

Allow to start and stop/abort the race. When a race is over the winning lane blinks and the lap counter stops counting. There is always 2 second of time just after the end that keep counting if any car crosses the sensor because of it inertial movement.

DATA KEYS:

LAPS/ TIME: Clock key.

During the race:

If race is programmed at a fixed time: With that key you can see the race time at the moment (1st. push) or the time left to end. (2nd push).

If race is programmed at laps: Shows laps to end (1st. push) or race time until that moment. (2nd push)

At the end of the race:

If race is programmed at laps:

- With **total control** shows **total time** of the race just untill the **first car** crosses the sensor in the last lap.
- With **individual control** shows the **total time of each lane** to cover the fixed programming.

IF race is programmed at a fixed time:

- Shows the total time that the race have been programmed and the time left (0). If the race is aborted it shows the time spend from start to the abort (1st. push) and the time left untill end of race (2nd push).

If race is programmed in F-1:

- When the race is over you can see the lap difference from the winner, with a 1st. push shows the time spend on the race on the winning lane (blinking) and the time spend on the lap after the winner finish on each lane (indicates who made faster the following lap after the winner).

CHRONOS:

Shows the best time (1st. push) and 2nd best time (2nd push) of all lanes. During the race or at the end. If pushes the key “0000” while the fastest lap is shown you can see the 1/10000th of second.

PROGRAMMING KEYS : “MODE”. “0000”, and “0-9”

MODE:

First key to start programming. When pushes you can see the different race programmms :

Time programation : (P-ti) : maximum 9 hours, 59 minutes and 50 seconds, minimum 10 seconds.

Laps programation: (P-LA): maximum 9999 laps, minimum 1 lap.
F-1 programation : (P-F1): maximum 9999 laps, minimum 1 lap.
Minimum time gap between laps: (Pt) : See advanced programation.

0000:

When push of this key, the digit will start blinking on lane 2, one after the other after each push of this key, you always can modify (with the key 0-9) the one is blinking to obtain the programming needed.

If there is no key push during 3 second, the blinking stops and shall be pressed the key again, leaving the actual view as the programmed one (**not** in memory) only during the following race.

0—9:

Allows to grow up the numbers on the blinking digit while the programm “0000” is activated.

This key also **activate** and **disactivate** the sound (beep) system. This function works always when no programming functions is activated.

PAUSE (memory):

- a) **During programming** (blinking) this key works as a **memory** key, when the programming is done and **while the numbers are still blinking**, if you push this key the actual programm is saved in permanent memory. This allow to disconnect the lap counter and connect it again without the need to programm again.
- b) **During the race** this key works as a pause key, stopping the system to count laps and if the “stop and go box” (Ds.21) or “**PRO Stop and go box**” (DS.61) are connected also stops the cars it the same moment when the key is pushed. There is a beep signal during the first 20 seconds of the pause. A **second push** of this key **continue** again **the race**, giving power to the track and continue the lap counter with the same data as before the pause stop.
- c) Allow to programm the race in “**time on**” or “**time off**”. See advanced programming.

ADVANCED PROGRAMMATION:

Programming gap time between laps **“Pt”**

You can use this key for **2** main **functions**:

- a) Programming a minimum time gap, you can avoid false lap counting to other lanes (because of lane changing), then is only needed to programm “pt” to a little less than the fastest lap in the circuit.

- Example: If the fastest lap is 8,426 seconds , we can programm the “pt” to 7,500seconds then when the is a lane changing because a car goes out of the lane and inside another lane, it will cross infraredbrige only one time between the following 7,500 seconds. So the rafe director only have to add a lap on the car that goes out and crosses by another lane. Also avoid that somebody try to mark laps with the hand throught the infrared bridge.
- b) It is also usefull for testing motor or cars, So programming a minimu “Pt” (like 0,05 seconds) and setting up a doble sensor in the middle of the straight separated for example 1 meter between them, when you run between the sensors, you have a fast lap (time between the 2 sensors) so pushing Chronos key you will have a time , that you can compare with other cars/motors, knowing then which is the faster car/engine. Also you know the speed (meter/ seconds).
- Is needed to buy a “V” wire (ref. DS.18) to connect doble sensor.

Programming especial control *TOTAL* or *INDIVIDUAL* on racing.

How it works ?

TOTAL Control: Indicates that the computer will stop / start all cars at the same time, something usuall in Slot racing competition.

INDIVIDUAL Control: Indicates that the computer will Stop/ start the cars one by one when they finish the programmed mode. This is a must programm to use the new features Formula1, as at the end of the race , the winning car stops and in the following lap the rest of the cars stops when they cross the sensor, knowing the rest of race places because of lap difference and time spend on the last lap.

It is also usefull to do racing to a determinate laps and know the time spend on **each car** to cover the full programmed laps. It is needed that all cars finish the race to know all timing. Only pushing the LAPS/TIME key we will know all time spend on all lanes.

For **INDIVIDUAL** control is needed to have the new “**PRO-STOP and GO box**” (DS.0061)

Programming:

- 1-. Must disconnect the power from the lap counter.
- 2-. Keep the key “pause / memory” pushed while the power is connected to the lap counter (12V) , you will see on display lane1 “**Ctrl**” (control) and on lane2 display “**ttAL**” (total)
- 3-. Leaving the ”pause/memory” key, push the key “MODE”, the lane2 display will switch from “**ttAL**” (total) to “**Indi**” (Individual), leave the one you need
- 4-. Press the “Pause/memory” key to validate the programming.

This mode will keep permanent in memory , untill new change.

Programming “time on” and “time off”

- a) With “time on” the lap counter will **start** counting the **race time** when the **green light** is on and activate the relee “STOP and GO “ box (DS.21) or “**PRO-Stop and Go**” box (DS.61) giving power to the track , so all cars will start at the same time.
- b) With “time off“ the lap counter give power to the track showed with a blinking “----“ in the displays. After it the red light is on for few seconds (**NOT COUNTING** laps if crosses, and if it is the driver gets penalized with the complete lap), When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross. This new start is a system not used before but that gives a real free start on the races.

This system is normally used for Rally-slot with lap programming.

With the advantage that the cars (using “stop & go box” or “**pro Stop &go box**”) will always stop at the end of the race.

Programming:

- 1-. Keep pushed the “**pause/ memory** “ key during 4 seconds and then on lane1 display shows “**Ti**” (time and on lane2 display shows “**on**”.
- 2-. Leaving the ”**pause/memory**” key, push the key “**MODE**”, the lane2 display will switch from “**on**” to “**off**”, leave the one you need
- 3-. Press the “**Pause/memory**” key to validate the progammation.

This mode will keep permanent in memory , untill new change.

ALL DIFFERENT PRORAMMS YOU CAN DO:

Mostly used program MODES:

<u>Racing mode:</u>	<u>Programm number</u>	<u>Optional accessories</u>
Rallye-Slot racing	Programm #4	“Stop and Go box” (1 relee)
Hillclimbing	Programm #2 or #4	“ Pro Stop and Go box ” (2 relee)
Endurance or speed racing	Programm #5 or #7	“ Pro Stop and Go box ” (2 relee)
Formula 1 style	Programm #10 or #12	“ Pro Stop and Go box ” (2 relee)
Comercial or rental use	Programm #2 or #10	“ Pro Stop and Go box ” (2 relee)

1-. LAP programmed racing with time in “ON” and “ TOTAL CONTROL”

The start of the race is with **all cars at the same time**. Race timing starts to count when the **green light is showed** in the lap counter. **All** the cars will **stop** in the place they are when the first car reach the programmed laps. Race total time is the one done by the

winner. Start-stop functions will work only when “Stop & go box” or “**Pro Stop and go box**” are connected to the lap counter.

2-. LAP programmed racing with time in “ON” and “INDIVIDUAL CONTROL”

The start of the race is with **all cars at the same time**. Race timing starts to count when the **green light is showed** in the lap counter. All the cars will **stop one after the other** while they reach the total programmed laps. Race total time is showed on all lanes , blinking the winning lane. If some of the cars are retired the race director must stop the race (start/stop key), this car will not have total race time.

This system is used for Hillclimbing.

Start-stop functions will only work when “**Pro Stop and go box**” is connected to the lap counter.

3-. LAP programmed racing with time in “OFF” and “TOTAL CONTROL”

The **start is free**, when the racer wants, the lap counter give power to the track showed with a blinking “----“ in the displays just after the **start / stop** key push. After it the red light is on for few seconds (**NOT COUNTING** laps if crosses, and if it is the driver gets penalized with the complete lap), When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross.

Power on track allow to verificate the correct running of the car before starting the race and to do a more real start. **All the cars** will **stop** in the place they are **when the first car** reach the programmed laps. Race total time is the one done by the winner

Start-stop functions will only work when “Stop and Go” (DS.21) or “**Pro Stop and go box**” (DS.61) is connected to the lap counter.

4-. LAP programmed racing with time in “OFF” and “INDIVIDUAL CONTROL”

The **start is free**, when the racer wants, the lap counter give power to the track showed with a blinking “----“ in the displays just after the **start / stop** key push. After it the red light is on for few seconds (**NOT COUNTING** laps if crosses, and if it is the driver gets penalized with the complete lap), When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross.

Power on track allow to verificate the correct running of the car before starting the race and to do a more real start. All the cars will **stop one after the other** while they reach the total programmed laps. Race total time is showed on all lanes , blinking the winning lane. If some of the cars are retired the race director must stop the race (start/stop key), this car will not have total race time.

Usefull for Rallye-slot and hillclimbing.

Start-stop functions will only work when “Pro Stop and go box” (DS.61) is connected to the lap counter.

5-. **TIME** programmed racing with time in “**ON**” and “**TOTAL CONTROL**”

The **start** of the race is with **all cars at the same time**. Race timing starts to count when the green light is showed in the lap counter. **All the cars will stop** in the place they are **when** the **first** car reach the programmed time. The winner is that lane who did more laps. This is the most used system.

Start-stop functions will work only when “Stop & go box” (DS.21) or “Pro Stop and go box” (DS.61) are connected to the lap counter.

6-. **TIME** programmed racing with time in “**ON**” and “**INDIVIDUAL CONTROL**”

Works in the same way as with “TOTAL CONTROL” program num.5

7-. **TIME** programmed racing with time in “**OFF**” and “**TOTAL CONTROL**”

The **start is free**, when the racer wants, the lap counter give power to the track showed with a blinking “----“ in the displays just after the **start / stop** key push. After it the red light is on for few seconds (**NOT COUNTING** laps if crosses, and if it is the driver gets penalized with the complete lap).

When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross.

Power on track allow to verificate the correct running of the car before starting the race and to do a more real start. **All the cars will stop** when reach the **time is off**, blinking the winning lane. If some of the cars are retired the race director must stop the race (start/stop key).

Start-stop functions will only work when “Stop and Go” (DS.21) or “Pro Stop and go box” (DS.61) is connected to the lap counter.

8-. **TIME** programmed racing with time in “**OFF**” and “**INDIVIDUAL CONTROL**”

Works in the same way as with “TOTAL CONTROL” program num.7

9-. **F-1** programmed racing with time in “**ON**” and “**TOTAL CONTROL**”

In the **F-1 race style**, the leader lane display **blinks** with the number of laps it did, the rest of lanes displays shows the **lap difference** respect the leader.

In this **F-1 race style**, when the first car that reach the programmed laps, **stops the race total time, but not the car**. The rest of the cars continue racing the actual lap (stop counting after this lap), and while they cross the sensor the lap counter counts the time difference from the winner on this last lap. When the **last car** cross the sensor in the

following lap from the winner it **will stop all cars** whatever they are. Race final position is fixed with the **lap difference** respect the leader and the **time spend** on actual lap after the race is won by the leader.

Start-stop functions will work only when “Stop & go box” (DS.21) or “**Pro Stop and go box**” (DS.61) are connected to the lap counter.

10-. F-1 programmed racing with time in “ON” and “INDIVIDUAL CONTROL”

In the **F-1 race style**, the leader lane display **blinks** with the number of laps it did, the rest of lanes displays shows the **lap difference** respect the leader.

In the **F-1** race style and individual control, the **first car** that reach the programmed laps, **stops himself and stops the race total time**. The rest of the cars continue racing the actual lap (stop counting after this lap), and while they cross the sensor the lap counter **stops each car that arrives**, counting the time difference from the winner on this last lap. Race final position is fixed with the **lap difference** respect the leader and the **time spend** on actual lap after the race is won by the leader.

Also is the best for **rental tracks** where is needed that all the cars stops on the winning lane and start a new race immediately without the need of going for the cars around the circuit. Usefull also for **F-1** racing.

11-. F-1 Programmed racing with time in “OFF” and “CONTROL TOTAL”

Works in the same way than programm **num.9** but with **free start**, when the racer wants, the lap counter give power to the track showed with a blinking “----“ in the displays. just after the **start / stop** key push. After it the red light is on for few seconds (**NOT COUNTING** laps if crosses, and if it is the driver gets penalized with the complete lap), When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross.

In this **F-1 race style**, when the first car that reach the programmed laps, **stops the race total time, but not the car**. The rest of the cars continue racing the actual lap (stop counting after this lap), and while they cross the sensor the lap counter counts the time difference from the winner on this last lap. When the **last car** cross the sensor in the following lap from the winner it will stop all cars whatever they are. The **final place** is fixed with the **lap difference** and the **time difference** on the last lap of all them.

Start-stop functions will work only when “Stop & go box”(DS.21) or “**Pro Stop and go box**” (DS.61) are connected to the lap counter.

12- . F-1 programmed racing with time in “OFF” and “INDIVIDUAL CONTROL”

Works in the same way than programm **num.10** but with **free start**, when the racer wants, the lap counter give power to the track showed with a blinking “----“ in the displays just after the **start / stop** key push. After it the red light is on for few seconds (**NOT**

COUNTING laps if crosses, and if it is the driver gets penalized with the complete lap), When red light is over will start counting time when a car cross for first time the sensor, starting to count the fist lap at the first cross.

When the first car that reach the programmed laps, **stops himself and stops the race total time**. The rest of the cars continue racing the actual lap (stop counting after this lap), and while they cross the sensor the lap counter **stops each car** that **arrives**, counting the time difference from the winner on this last lap. The **final place** is fixed with the **lap difference** and the **time difference** on the last lap of all them.

This the most used **FORMULA 1** racing style.

Start-Stop functions will work only when “**Pro Stop and go box**” (DS.61) is connected to the lap counter.

SPECIALS:

To start racing with time in “**OFF**” when the lap counter is programmed time is in “**ON**” , there is a **hot key** , keep pushed **memory** key and push **start** key, then the start is **free** just for this race and when the start key is pushed again , the time will continue in “**ON**” .

This is very usefull to racing with lane changing, where the first start is with all cars together the race director can start it **free** with time in “**OFF**” and then when the lane changing can contineu the race without the free start.

To inrese the **timing** spend for the **free** start (between the start key push and when the red light is over) when on the displays shows “**----**” , while it is showed push the start key.

To decrease the **timing** spend for the **free** start (between the start key push and when the red light is over) when on the displays shows “**----**” , while it is showed push the 0000 key.