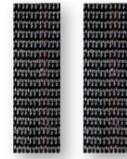


# WHAT IS IN THE BOX



APEX timer



3M Dual Lock SJ3551 400 density strips



Device mount base with silicone pad



Device mount plate with 3M Dual Lock SJ3550 250 density pads



Device mount extension arm



Bolts



Hex key



Device mount velcro



Aluminum sensor plate



Sensor



3M VHB tabs for sensor



3M VHB tabs for cable head



Stickers



User manual

The device mount is GoPro mount compatible.

## DEVICE

1. Assemble the device mount and fasten it on the triple clamp with velcros. Add the extension arm if needed.



2. Adhere the two 3M Dual Lock 400 strips to the back of APEX.

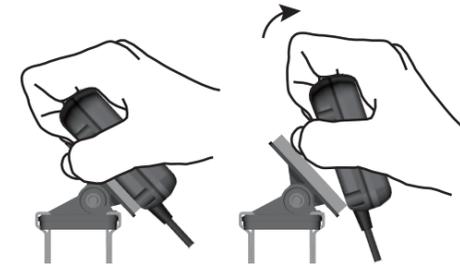


APEX timer mount uses 3M Dual Lock 400 strips and 250 pads, which is the strongest bonding combination of the Dual Lock system. DO NOT replace the 400 strips with 250 strips or pads.

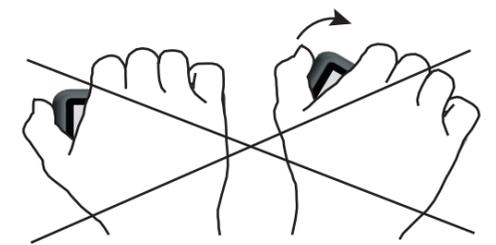
3. With both hands holding the sides of APEX and the upper mount plate, squeeze until you hear a click.



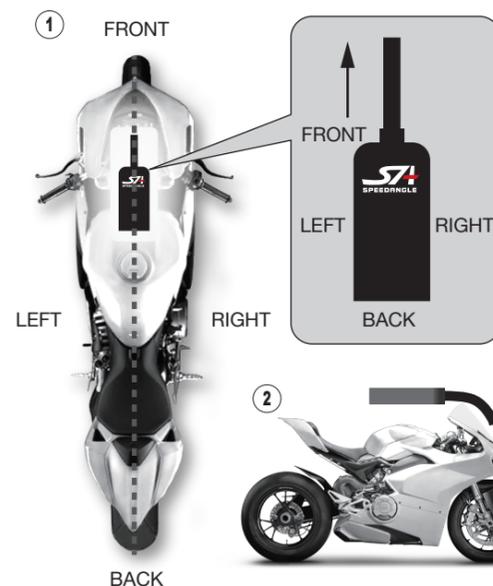
4. To remove APEX from the mount, wrap your fingers around its upper front. Use your thumb base as a pivot and prise the upper end up.



DO NOT twist the timer off the mount.



## SENSOR - TWO WAYS TO DO IT!



### HORIZONTAL

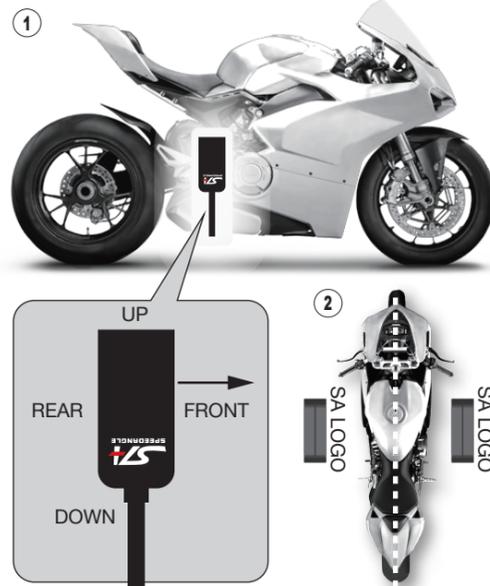
Keep both bike wheels on a horizontal ground.

Use the 3M double-sided tab to attach your sensor to a flat surface on your bike frame that is

- horizontal to the ground, and
- parallel to the bike longitudinal center line.

The air duct is fine if the vibration is not too much. Fuel tank is recommended only if it is firmly fastened on the bike frame.

Use the 3M double-sided tab to secure the sensor cable head to your bike.



### VERTICAL

Keep both bike wheels on a horizontal ground.

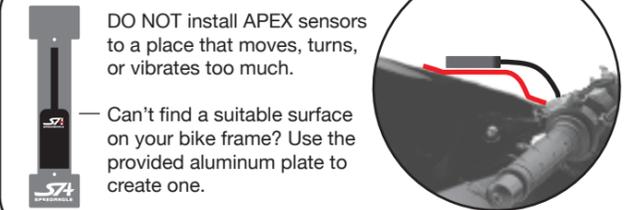
Attach your sensor to a flat surface on the bike frame that is

- vertical to the ground, and
- parallel to the bike longitudinal center line.

Above foot peg is recommended.

Use the 3M double-sided tab to secure the sensor cable head to your bike.

Use a USB extension cable (not included) if the installation location is too far.



Connect the sensor with device BEFORE powering the device on.



### SETUP

1. Press to turn the power on.
2. Press for 2 sec: **MAIN MENU**
3. Press select **SYSTEM SETTING** ←
4. Press select **SENSOR** ←
5. **DETECT ORIENTATION?** press ←
6. Press x 2 to exit menu.

# APEX INSTALLATION

Very easy. No drilling required.

# HANDS-FREE TIMER

The best way to use it is DO NOTHING.

## POWER ON



PLEASE CHOOSE SAFETY OVER PERFORMANCE WHILE RIDING. BY USING THIS DEVICE, YOU AGREE TO ASSUME ALL RISK AND RESPONSIBILITY RELATED TO ITS USAGE.

- : Press to turn the power on, or, in a menu, to exit immediately. Press for 2 sec to enter MAIN MENU. Press for 4 sec to power off APEX.
- : Press to enter LAPTIMER MENU / PERFORMANCE MENU, or to go to the next menu item.
- : Press to change menu item values, or to confirm selection.

You can press or to skip the welcome screen and liability screen.

Except for the step marked with an asterisk, you don't have to do anything or press any key to run APEX. It will enter the next stage automatically. Just focus on your ride. APEX will take care of itself.

## AUTO SEARCH

SEARCHING FOR TRACKS...  
SENSOR: HORIZONTAL

NO TRACK FOUND  
PRESS ANY KEY TO AUTO SET

NEAREST TRACKS:  
SA CIRCUIT E  
NOT LISTED, USE AUTO-SET

PLEASE SELECT ONE:  
SA CIRCUIT E  
SA CIRCUIT W  
08\_17\_17-05\_51  
NOT LISTED, USE AUTO-SET

APEX will enter the display mode you used last time and start GPS positioning.

Then APEX will search for and list the tracks nearby as Search Result (5 at most) for 60 seconds.

Press any key or make a selection to skip the wait. Or, do nothing. APEX will enter Standby after the 60 seconds.

For best GPS signal strength, turn APEX on at least 5 minutes before riding.

**No track found**  
APEX will Auto set an FL before starting timing.

**One track found**  
APEX will use it directly when timing.

**Multiple tracks found**  
Press to go to the track you want. Press to confirm.

If none has been selected, APEX will Auto set a new FL before starting timing.

If starting speed is reached during Search Result, APEX will use the track found or Auto set a new one according to the rules above and start timing immediately.

## STANDBY

Display 1  
Lap time + Speed

LAP 1 0KMH  
0:00.000  
SA CIRCUIT E  
TIMER STARTS AT 90 KMH

Display 2  
Lap time + Sector L / S  
\* L: Lap time at main area. S: Sector time at main area.

LAP 1 0:00.0  
0:00.000  
AUTO SET  
TIMER STARTS AT 90 KMH

Display 3  
Lap time + G/angles

10 0KMH 0:00.0  
SA CIRCUIT E AT 90 KMH

Display 4  
Lap time only + real time gap

0:00.0  
SA CIRCUIT E AT 90 KMH

Display 5  
No Distraction (LED will keep flashing)

\*

1. Speed
2. Lap time
3. L: Sector time, S: Lap time
4. L: Lap time, S: Sector time
5. Lap time
6. Max right angle
7. Current angle
8. Max left angle
9. Longitudinal G
10. Speed
11. Lap time, real time gap from Start against best lap updated at sectors.
12. Predictive time gap in bar (Bar = the progression of your bike, 0 mark = the best lap bike. The gap between Bar and 0 mark = the seconds you are ahead of or behind best lap)
13. The line ahead
14. Predictive time gap in digits
15. Max angles of the last three turns (Only max angles greater than 16 will be updated.)

## AUTO START/AUTO SET

LAP 5 128KMH  
0:51.926

LAP 5 S2 0:51.9  
0:13.847  
-0.334

128KMH 0:51.9  
48 55  
54 55 52

0:51.9  
LAP 5 SECTOR 2  
-0.013

**AUTO START:** Once the Starting Speed (90KMH/60MPH by default, configurable) is reached, APEX will start timing and logging automatically.

**AUTO SET:** If Auto set was selected at Search Result, APEX will set a Finish Line where the starting speed is reached before starting timing.

**FREEZE TIME:** The lap/sector time will be static for a period of time (configurable) everytime a line is crossed.

**BEST LAP:** If a best lap/sector is created, the screen color will be reversed to black for the freeze time period.

**PREDICTIVE TIME GAP:** After finishing a complete lap, APEX will keep comparing your location with that of your best lap at an 1 second to 25 second interval, depending on the lap length, and predict the time gap in digits or with the progress of a bar.

To stop timing manually, press to stop and enter menu, or press to stop and see session summary.

## AUTO STOP/REVIEW

Session summary

LOG 33 EXIT PGUP PGDN  
LAP COUNT 10. BEST AT L4  
BEST 0:50.381 117 164  
AVE 0:52.467  
IDEAL LAP 0:49.433  
SESSION 8:43.116  
TOP SPEED 169KMH  
AVE SPEED 115KMH

lap detail

EXIT PGUP PGDN  
1 0:55.001 130 162  
2 0:53.030 137 166  
3 0:52.675 136 164  
4 0:51.749 140 169  
5 0:50.381 139 169  
6 0:51.216 136 168  
7 0:52.805 140 168

Log list

LOG 037-031 EXIT PGUP PGDN  
2308 0954 SA CIRCUIT E  
2308 1120 SA CIRCUIT E  
2308 1333 SA CIRCUIT E  
2308 1441 SA CIRCUIT E  
2208 1008 SA CIRCUIT W  
2208 1138 SA CIRCUIT W  
2208 1426 SA CIRCUIT W

**AUTO STOP / AUTO REVIEW:** Once SA timer has been idle for a preset period of time, it will stop timing and logging automatically, and then display the summary of this session.

To view the detail of each lap, press at PGDN.

To view other logs, press to go to EXIT, and press to confirm, or just press . This will bring you to the log list.

You can always press to exit to the upper level.

Wherever you are, once the starting speed is reached, APEX will start timing/logging automatically again.

## POWER OFF



\* New features of firmware ENGR018

You will see Main Menu when you have pressed for 2 seconds. Keep pressing to power the device off.

FAQ and Troubleshooting:  
[www.speedangle.com/FAQ](http://www.speedangle.com/FAQ)



# TIMER MENU

Press to enter Laptimer Menu.  
Press to adjust item value.  
Press to go to the next menu item.  
Press to save and exit immediately.

Select to enter log list. Then select a log to see its summary or detail.

to select a display mode:

lap time + speed  
lap time + sector time L / S  
lap time + angle and G  
lap time in large fonts  
no distraction (blank screen).

to set timer starting speed at:

10, 30, 60, 90, 120, 150, 180, or 210.

to set timer to stop when the speed stays below 6 for:

10, 20, 30, 60, 90, 180, or 240 sec.

to set the length of time the display is to stay frozen when a line is crossed.

10, 20, 30, 45, 60, 90 sec

[LAPTIMER MENU]  
REVIEW LATEST RECORDS  
DISPLAY: LAP TIME + SPEED  
START TIMER AT 10KMH  
STOP TIMER AT 180s IDLE  
FREEZE TIME 10s  
FREEZE UNTIL: TIME ENDS  
TIME GAP PREDICTOR: BAR  
LINE LENGTH: 100M  
66 LOGS, 93% LEFT. CLEAR  
TRACK LIST  
SET TRACK MANUALLY  
SAVE SETTINGS AND EXIT

Please see the separate sheet.

(available only for lap time + sector time mode) to unfreeze freeze time:

only when freeze time ends, or earlier if passing a line

to set to show predictive time gap in:

bar, or digits

to set the line length Auto Set is to use when setting a Finish Line:

10M, 20M, 30M, 40M, 60M or 100M (Use 20 or 30 for kart tracks.)

to clear ALL memory.

press to enter track list: indicates user track.

AVAILABLE TRACK LIST  
1 SA CIRCUIT  
2 02\_14\_18-10\_22  
3 MISANO  
4 THE AMERICAS  
5 SILVERSTONE  
6 VALENCIA  
PAGE DOWN

- User upload track
- User Auto Set track
- Factory preload track

press to use this track later or to delete this track permanently from this device.

USER TRACK 1  
SA CIRCUIT  
USE THIS TRACK  
DELETE FROM MEMORY  
BACK TO LIST

press to use this track later or to disable this track so that it will not show in Search Result.

PRELOAD TRACK  
MISANO  
USE THIS TRACK  
DISABLE FOR AUTO SEARCH  
BACK TO LIST

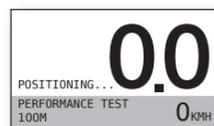
# HANDS-FREE PERFORMANCE METER

## POWER ON

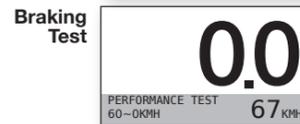
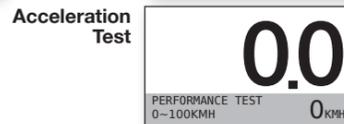
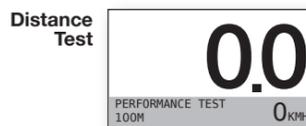


PLEASE CHOOSE SAFETY OVER PERFORMANCE WHILE RIDING. BY USING THIS DEVICE, YOU AGREE TO ASSUME ALL RISK AND RESPONSIBILITY RELATED TO ITS USAGE.

## POSITIONING

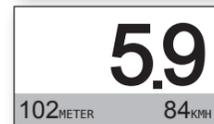
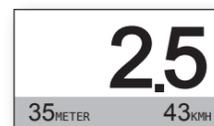


## STANDBY



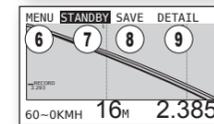
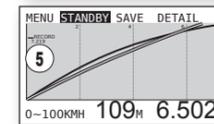
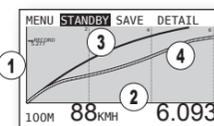
Test type can be selected in Performance Menu.

## AUTO START



Timer starts automatically when a valid acceleration has been detected or a speed threshold has been fallen through, even when you are in Review.

## AUTO STOP / REVIEW



A graph will be shown when a test is done, comparing the current result with the best or saved record in memory.

METER	SEC	KMH	MAX+G
60	4.102	72	0.95
80	5.262	80	0.42
100	6.093	88	0.15

KMH	SEC	METER	MAX+G
30	1.354	32	1.09
60	3.915	66	1.13
100	6.502	109	1.02

KMH	SEC	METER	MAX+G
30	1.402	9	0.95
0	2.385	16	1.13

Press ← on DETAIL to enter.

## POWER OFF



- Speed
- Time
- Best or saved record if available.
- Current result
- Best/saved record time
- Select to enter Performance Menu.
- Select to exit to Standby.
- Select to save the current result and overwrite the record in memory.
- Select to see the detailed breakdown of the current test result.

Any newly created best record of a test item will be saved in the memory and be displayed for comparison automatically. In this case, the old best or saved record will be overwritten.

Test logs are not downloadable for the time being.

# PERFORMANCE MENU

[PERFORMANCE MENU]  
TEST ITEM: 100M  
REVIEW RECORD  
ERASE RECORD  
BACK TO STANDBY: AUTO  
SAVE SETTINGS AND EXIT

Tests available:

Distance	Acceleration	Braking
100M	0~60KMH	60~0KMH
150M	0~100KMH	100~0KMH
200M		
400M		

Distance	Acceleration	Braking
330FT	0~60MPH	60~0MPH
1/8Mile	0~100MPH	100~0MPH
1000FT		
1/4Mile		

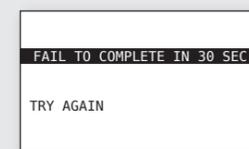
to view the best or saved record of the test above

to erase the best or saved record of the test above

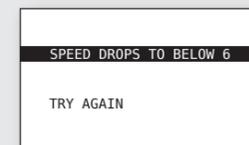
to set if APEX is to exit Review to Standby and Start automatically when the speed has dropped to 0, or only after the [MENU] or [BACK] key is pressed. Use AUTO unless you would like to see the Review later.

## TEST FAIL MESSAGES

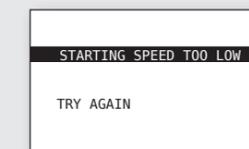
A test will fail if it is not completed in 30 seconds, or



the speed has dropped to below 6 mid-test (braking tests excluded), or



the speed in the first two seconds is too low.



In such cases, stop the bike to allow the timer to go back to Standby and try again.

Press [POWER] for 2 seconds to enter Main Menu. There you can switch between modes and change system settings.

[MAIN MENU]  
GO TO PERFORMANCE MODE  
LCD BACKLIGHT: 1  
SYSTEM SETTING >>  
POWER OFF  
EXIT

to switch to Performance Mode or Timer Mode.

to set the screen backlight level at: 1, 2, 3, or off.

Press [BACK] to enter System Menu:

[SYSTEM MENU]  
GLONASS: ON  
GPS SBAS: ON  
SENSOR: HORIZONTAL  
VIBRATION FILTER: LOW  
SPEED UNIT: KMH  
LCD CONTRAST: 5  
TIME ZONE GMT: -08  
SAVE SETTINGS AND EXIT

GLONASS on for faster positioning, off for better trace consistency across sessions.

SBAS on for Europe, the US, and Japan.

shows the orientation the system uses to interpret sensor data.

with dual orientation sensor:  
HORIZONTAL, VERTICAL, or NOT CONNECTED

with old single orientation sensor (has to be installed horizontally):  
CONNECTED or NOT CONNECTED .

If the system orientation does not match your sensor installation orientation, press [BACK] to reset. If it shows NOT CONNECTED, reconnect sensor and then reboot APEX.

to set sensor vibration filter level. Default is LOW.

If your angles are unreasonably small, change to MID or even HIGH. If the angles are unreasonably large, please check if the sensor installation is correct. If yes but the problem persists, find another installation location with less vibrations.

Press [POWER] for 2 seconds to enter Main Menu

# MORE

## BATTERY CHARGING

APEX can be charged with a certified smart phone charger or a computer.

Just plug the device cable to the charger or a USB port of a computer. The screen will light up, showing "USB CONNECTED, CHARGING BATTERY". APEX will go to sleep after charging for 10 minutes automatically.

It may take up to 4 hours for an empty battery to be fully charged.

DO NOT charge APEX with a quick charger.

## ICONS

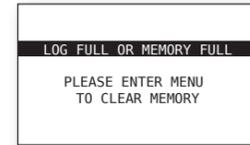


- GPS reception quality
- Flashes when data is logging.
- Flashes when the environmental temperature is above or below working range (2°C ~60°C).
- Battery icon
- Current time

## MEMORY FULL

The max memory capacity of APEX is 50 hours or 254 logs, whichever is reached first.

If the memory is full, APEX will display



Please enter Laptimer Menu and go to "# LOGS, #% LEFT. CLEAR" to clear ALL memory.

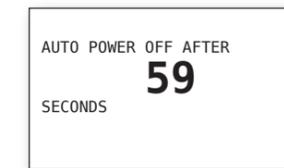
## WARMUP LAP

If you are in lap 2 but your speed stays below 5 for more than 20 seconds, APEX will assume that lap 1 is your warmup lap and you are now waiting in the grid to start racing. It will then set the lap count back to 1 so that you will start from lap 1. The logging will not be interrupted to make sure that your start will be captured.

Please note that if you stay idle for longer than your idle time (180 sec by default), APEX will stop timing and logging. If you may wait in the grid for more than 180 sec, change the idle time to 240 sec.

## AUTO POWER OFF

If APEX has been idle for 60 minutes, it will start counting down for 60 seconds and then switch the device off automatically.



If you would like to use it again, press to turn it on.

# SPECIFICATION

- Device dimension: 94.5\*70.5\*30.5mm
- Device weight: 150g
- Sensor dimension: 34.5\*16.5\*7mm
- Sensor weight: 25g
- 10 Hz GPS sampling rate
- GPS speed range up to 255 mph (410 kmh)
- Lean angle range up to R/L 69°
- Longitudinal G range up to ±1.5G
- LCD resolution 256\*128, readable in sunlight
- Water resistant
- GPS and GLONASS dual systems
- Sensitivity -167dBm, 72 channels
- Log time up to 50 hrs or 254 logs
- 3.7V Li-ion battery
- Battery life up to 17 hrs (backlit off)
- USB 2.0 compatible
- Dual sensor installation orientations

- Timing resolution 1/1000s
- Auto track search
- Auto Start/Finish setup
- Auto timer start / stop
- Auto data logging
- Auto session summary display
- Auto sleep
- Best lap and sector time
- Predictive and real time gap
- 5 display modes
- Local tracks preloaded
- 15 custom tracks in memory
- Manual track setup on site

- Performance tests in distance, acceleration, and braking
- Auto test start / stop
- Auto review in graph against best result
- detailed breakdown by speed or distance

- Free analysis software
- Google Earth 3D replay



FAQ and Troubleshooting:  
[www.speedangle.com/FAQ](http://www.speedangle.com/FAQ)

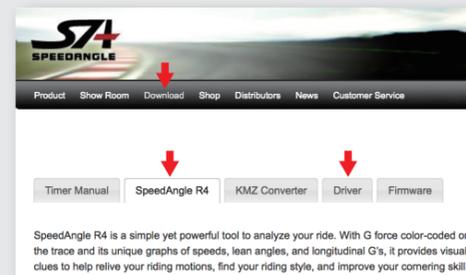
Specifications and package content subject to change without prior notice.

PLEASE CHOOSE SAFETY OVER PERFORMANCE WHILE RIDING. BY USING THIS DEVICE, YOU AGREE TO ASSUME ALL RISK AND RESPONSIBILITY RELATED TO ITS USAGE.

# DOWNLOAD

Please go to [www.SpeedAngle.com/Download](http://www.SpeedAngle.com/Download) to download the following:

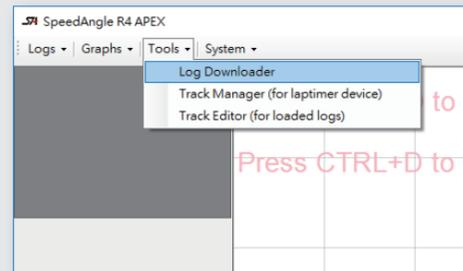
- USB driver (Double click to start installation.)
- companion software SpeedAngle R4 (No installation required. Unzip before use.)



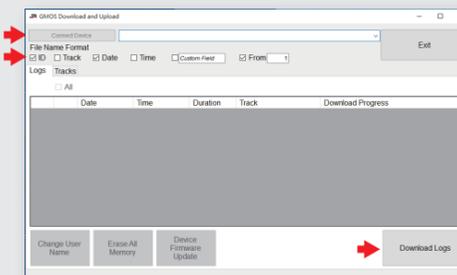
SpeedAngle R4 is a simple yet powerful tool to analyze your ride. With G force color-coded on the trace and its unique graphs of speeds, lean angles, and longitudinal G's, it provides visual clues to help relieve your riding motions, find your riding style, and improve your cornering skill.

Connect APEX to your computer with the device cable. It will turn on automatically. If this is the first time you connect to this computer, wait till Windows displays "This device is ready for use". Sometimes this may take a few minutes.

Launch SpeedAngle R4 and click on MENU -> TOOLS -> LOG DOWNLOADER to open the Download dialog.

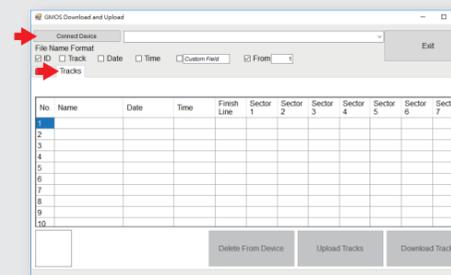


Click on CONNECT DEVICE to connect your timer. Select the items you would like to show in the filenames, and then click DOWNLOAD LOGS.



To upload/edit/download custom tracks to/from APEX, please click on the TRACK tab after device connection to use Track Manager.

Please note that preloaded tracks can not be viewed in R4 for the time being.



For more information, please watch the tutorial videos below or see the R4 user manual.



The topics in SpeedAngle R4 User Manual include:

### COMPUTER RELATED

- COMPUTER CONNECTION
- DOWNLOAD LOGS
- MANAGE YOUR APEX
- CONNECTION TROUBLESHOOTING

### REPLAY RELATED

- LOAD / UNLOAD LOGS
- LOG DASHBOARD
- MAP AREA
- REPLAY
- SELECT SINGLE LAPS
- TRACE SHIFT (align traces that are off from others)

### ANALYSIS RELATED

- GRAPHS
- USING GRAPHS TO SEE YOUR SKILL
- MAP AREA
- LAP REPORT AND AREA REPORT

### TRACK SETTING RELATED

- TRACK MANAGER (upload, download, create, edit, or save track setting to/from device)
- TRACK EDITOR (load, edit, create, or save a track setting directly on a trace in Map Area)

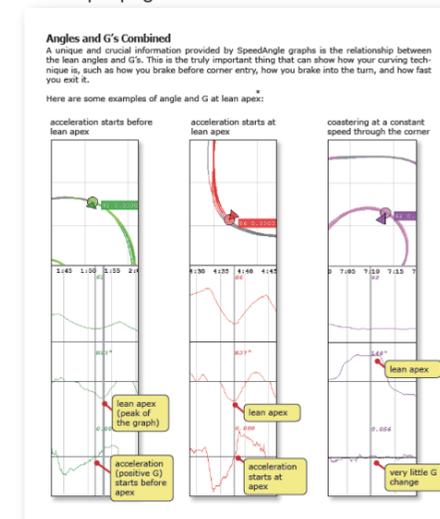
### OTHERS

- SET SPEED UNIT
- SA LOG FORMAT



SpeedAngle R4 Manual download link:  
[www.speedangle.com/downloadfile/1206/](http://www.speedangle.com/downloadfile/1206/)

A sample page from GRAPHS:



# SET A TRACK MANUALLY ON-SITE

After powering on, leave your APEX in view of sky for at least 5 min before setting up to ensure proper GPS signal strength.

[LAPTIMER MENU]  
REVIEW LATEST RECORDS  
DISPLAY: LAP TIME + SPEED

TRACK LIST  
**SET TRACK MANUALLY**  
SAVE SETTINGS AND EXIT

PLEASE SELECT LINE LENGTH:

**10M**  
20M  
30M  
40M  
60M  
100M  
QUIT SETUP

Choose one that is at least 10M longer than the lane width but not too long to extend to the second neighboring lane. We recommend 20M / 30M for kart tracks, 60M for most race tracks.

YOU ARE STANDING AT:

**RIGHT LANE EDGE**  
LANE CENTER  
LEFT LANE EDGE  
QUIT SETUP

Specify which side you are at.

FINISH LINE  
**SET LINE HERE**  
QUIT SETUP

Stand at the LINE location.  
Press ← .

FINISH LINE  
WALK ALONG THE TRAVELING  
DIRECTION FOR 10M.

Just walk along.  
No key pressing needed.

NEXT YOU WOULD LIKE TO:  
**SET SECTOR 1**  
SAVE SETTINGS AND EXIT  
CANCEL AND QUIT

The procedure is the same for sectors.  
Save the settings once you are done.