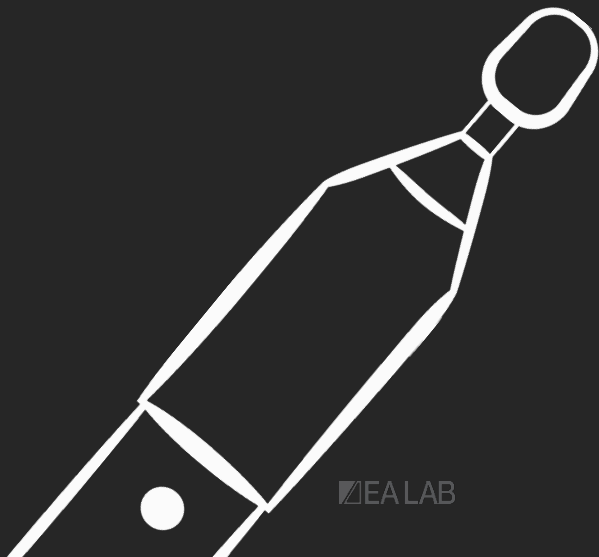


RACE PATROL *Lite*



EA LAB

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1 Let's get started

Congratulations! You have purchased Race Patrol Lite, a portable and easy to use motor bike noise measurement system. We are sure you can't wait to start using it, so we have prepared this booklet with information that will help you make professional measurements within minutes. Below is your device info. It is specific to your device and we recommend you save it.

If you need any further information, we will be glad to help you. Our contact information can be found at the end of this booklet.

We wish you a lot of successful measurements!

Sincerely,

EA LAB Team









2 Overview



Figure 1. Race Patrol Lite measurement instrument

2.1 LED indication

	The system is turned on and is ready for connection.
	The system is turned on and a client is connected to its Wi-Fi.
	An input overload. If this happens during a measurement, the microphone input was overloaded. It may also happen during connecting or removing the microphone.
	Same as the green blinking, except the battery is low.
	Same as the green blinking, except the battery is low.
	Firmware update in progress.

3 Race Patrol Lite setup

Before proceeding make sure that:

- Race Patrol Lite is turned on,
- You have an iOS device (iPod, iPad or an iPhone), which is updated to the latest version of the iOS and has the Race Patrol app installed. The app can be downloaded from Apple's App Store, free of charge.
- If you have the Bixolon SPP-R200III thermal printer, make sure it is charged and turned on.

3.1 Connecting Race Patrol Lite to iOS device

When the Race Patrol Lite is turned on, it will establish its own Wi-Fi network, to which an iOS device must connect. The network is called "RPLite SN", where SN stands for the serial number of your Race Patrol Lite device. The password is unique for each Race Patrol Lite device and can be found in the first chapter of this manual. When Race Patrol Lite is ready to be connected, the LED will start blinking green. Once Wi-Fi connection is established, the green LED will be lit constantly. Note that only one Wi-Fi client can be connected to Race Patrol

Lite at a time, and once connection is established all other connection attempts will be refused.

To connect to Wi-Fi, open the Settings app on your iOS device and go to the “Wi-Fi” section. Switch Wi-Fi to “on” if necessary, select the “RPLite SN” network from the list and use the password above.

3.2 Connecting the printer to iOS app

The thermal printer is connected to Race Patrol Lite via a Bluetooth connection. To pair the printer with your iOS device, go to the Settings app and go to the Bluetooth section. Turn Bluetooth on, if necessary, and wait until the printer is discovered. The printer will appear on the list of devices ready for pairing as “SPP-R200III”. Tap it and use the pin “0000” for pairing. When successfully paired and connected, the status of the device should display “Connected”.

The app connects to the printer automatically when launched. To test the printer connection, open the settings within the Race Patrol app, scroll down to the printer section and tap “Print test page”. The printer should print a test page with some information about the system.

4 Accessories

The following accessories are included with Race Patrol Lite:

- tripod holder with thread adapters,
- windscreen for the microphone,
- thermal printer (optional),
- printer paper (optional),
- printer charger (optional) and
- acoustical calibrator (optional).

4.1 Tripod holder

The tripod holder is used for mounting the Race Patrol Lite to a tripod used for photo cameras. The holder fits on a 5/8-inch thread tripod, but the threads can be adjusted to 3/8-inch threads and 1/4-inch threads, so it will fit on any standard photo or video camera tripod.

See figure 2 for information on how you can combine thread adapters to fit the tripod holder to any tripod.



Figure 2. Tripod holder and thread adapters

4.2 Windscreen

The windscreen must be on the microphone during the measurements, as it reduces the effects of wind induced noise on the microphone and protects the microphone from accidental damage. The use of a windscreen is strongly recommended.



Figure 3. Protective windscreen for measurement microphone

4.3 Thermal printer (optional)

The SPP-R200II is a thermal printer, that connects directly to an iOS device (iPod, iPad or iPhone) and works together with the Race Patrol app to print the noise measurement results.



Figure 4. Thermal printer

Using the printer

To turn on the printer, press the power ON button. To turn off the printer, press and hold the power OFF button.

When a Bluetooth connection is established, the status LED will be green.

The status LED flashes red when the printer is out of paper and the battery status LED will display how much battery there is left.

If you want to manually feed paper from the printer, press the “Feed paper” button and hold it as long as required.

To replace an empty paper roll, open the paper roll compartment, by pressing the “Paper eject” button. Insert the paper roll so that the paper unrolls at the front side of the compartment. Make sure the paper sticks out of the compartment when you close it. The printer uses 48mm wide paper.

Use only the original charger to charge the printer.

4.4 Acoustical calibrator (optional)

An acoustical calibrator is a device that generates a reference sound pressure level of 114 dB (1 Pa) at a frequency of 1 kHz. During the calibration, the microphone is inserted into the calibrator and exposed to a reference sound pressure level, which enables Race Patrol Lite to determine the reading deviation and correct it. The calibrator is turned on by pressing the power button and turned off by long-pressing the power button. The LED indication shows the calibrator is turned on.

Microphone socket
(with 1/4-inch adapter)

Battery cover



Figure 5. Acoustical calibrator

5 Acoustical calibration

5.1 Acoustical calibration

For the purpose of acoustical calibration, you may use any acoustical calibrator which generates 94 dB or 114 dB sound pressure level at 1 kHz. Put the coupler onto the microphone and make sure the microphone fits tightly in the microphone cavity. Note that you must use 1/4-inch microphone adapter together with i436 microphone.

Turn the calibrator on.

In the Race Patrol app, open settings and tap calibration. Select the desired sound pressure level. Tap the start button and wait until the calibration is finished. The acoustical correction is displayed and is also stored in the Race Patrol Lite device, meaning it will be used by any other iOS device that connects to it.

6 Maintenance

6.1 Charging the Race Patrol Lite

Race Patrol Lite uses a Li-Ion rechargeable battery.

To charge the battery, please connect the supplied Race Patrol Lite charger to the designated charging port (as documented in Figure 1.) and connect it to a mains power supply.

6.2 Replacing the batteries of the calibrator

The SV34 uses two 2 x LR03 (IEC) / AAA (ANSI) alkaline batteries. Place the calibrator cavity side down on a flat surface and remove the rubber cover on the side with the power button and LED diodes. Holding the cover carefully, unscrew the four fixing screws with your fingers, take off the cover and remove both of the discharged batteries and replace them with new ones, ensuring the polarization is correct.

7 Race Patrol Lite Setup Guide

1. Plug in your microphone
2. Turn on the Race Patrol Lite
3. Turn on Wi-Fi and connect to the Race Patrol network:
 - a. Name: "RPL <Serial Number>"
 - b. Password is included in this booklet
4. Open the Race Patrol app on your iOS device
5. If you have a calibrator, make a calibration before measuring
6. If you have a wireless printer, set it up in accordance with the procedure described in section 4.3

7.1 Calibration procedure

1. Open the Race Patrol App
2. Tap the cogwheel to go to settings
3. Under the system settings, select “Race Patrol Lite RP-305” and wait for the device to connect
4. Tap “Calibration”
5. Turn on the calibrator
6. Set calibrator level to 114 dB, tap the start calibration button, and wait for it to finish



MX/SX



LAF [dB]

Tap to go back to settings

< Settings



Calibration

Stroke

2 4

Calibration Level

67.2

Bike

1 2

Set appropriate calibration level

Microphone

i436

114 dB >

Correction

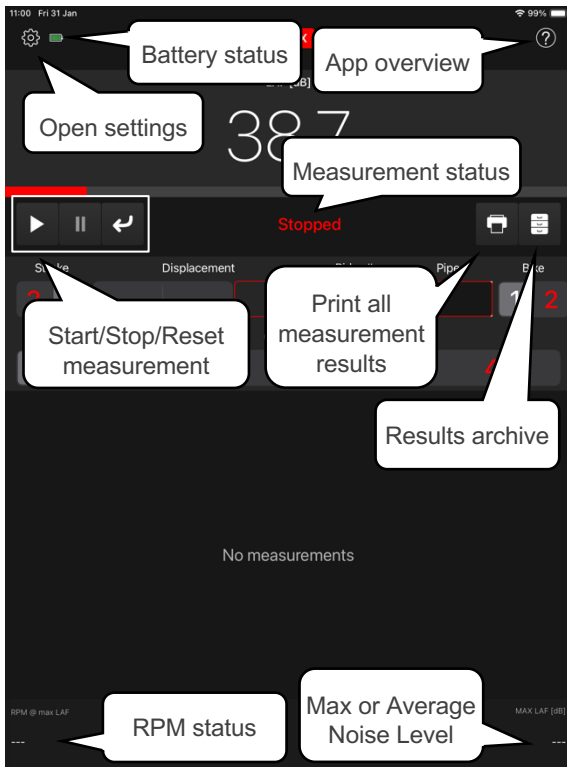
-1.3 dB

Put calibrator on the microphone, switch it on and tap start when ready.



Tap to start calibration

7.2 Overview of controls





MX/SX



LAF [dB]

Displacement
settings

Displacement

Enter pipe
manufacturer/number

Stopp

Stroke

Displacement

Rider #

Pipe

Bike

2

4

250

450

...

1

1

1

2

Cylinders

Engine type

Enter rider number

Bike number

No measurements

LAF [dB]

37.9

Add displacement setting

When the sound level exceeds this threshold, the measurement is triggered

+ Edit

Stroke

2 4

Detection threshold

100

-

+

Bang det. level

118

-

+

Bike

1 2

If the sound level exceeds this threshold, a bang is detected

000 RPM, 114.0 dB >

000 RPM, 114.0 dB >

Tap "Edit" to reorder displacement settings as you want them to appear on the measurement entry screen. The top two settings will be displayed on the main screen.

Tap to adjust displacement settings



MX/SX



LAF [dB]

37.9

< MX/SX

Adjust displacement setting

Limits

Stroke

Displacement

250

Strokes

4-stroke >

Noise limit

114.0 dB

-

+

Minimal RPM

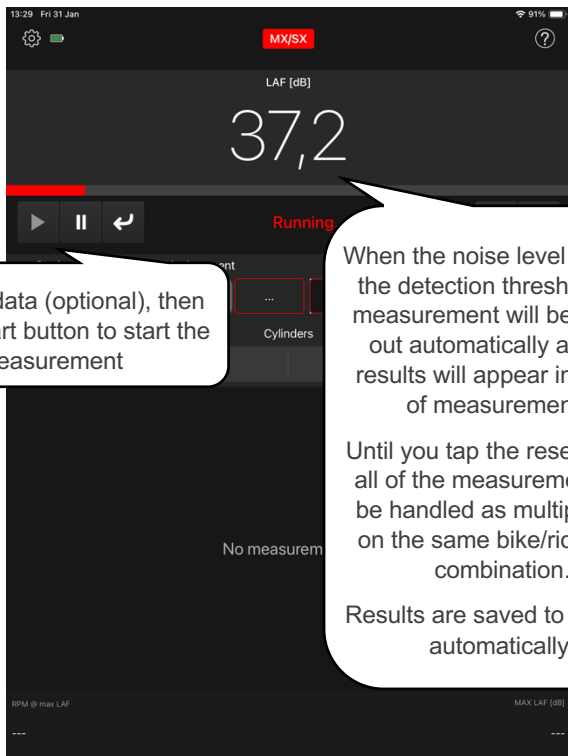
10000 RPM

-

+

Select strokes

7.3 Measurement overview



Set metadata (optional), then tap the start button to start the measurement

When the noise level exceeds the detection threshold, the measurement will be carried out automatically and the results will appear in the list of measurements.

Until you tap the reset button, all of the measurements will be handled as multiple runs on the same bike/rider/pipe combination.

Results are saved to archive automatically.

LAF [dB]

42,0



Running...



Stroke

Displacement

Rider #

Pipe

Bike

2 4

250

450

...

1

1

1 2

Cylinders

1

2

3

Noise level

8355 RPM ▼

0.2 104.6

BANG

Bang detection icon

0.7 ▲ 123.2

10743 RPM

0.7 105.9

RPM level

Duration of wide open throttle in seconds

Pass/Fail indicator





Search

LAF [dB]

38.2



Export

Archive

Done



31 JAN 2025

Stroke

2

4

Rider: 1

Bike: 1 Pipe: 1



Bike

1

2

Rider: Unknown

Bike: 1 Pipe: Unknown



28 JAN 2025

Rider: Unknown

Bike: 1 Pipe: Unknown



Rider: Unknown

Bike: 1 Pipe: Unknown



Rider: Unknown

Bike: 1 Pipe: Unknown



Rider: Unknown



Multi-select

LAF [dB]

61,5

< All

Details

Stroke

METADATA

2 4

Stroke

-stroke

Bike

1 2

Displacement

450 cc

Cylinders

1

Bike

1

Rider No.

1

Swipe for full results



Print



Delete

7.4 Exporting your measurements

To access test results from another device (any device that is running a web browser and can connect to the same network as the iOS device running the Race Patrol app;

On iOS device running Race Patrol app:

1. Connect to a wireless network (not Race Patrol Lite network).
2. In the Race Patrol app open Archive, then tap Export.
3. A pop-up will generate an IP address.
4. Do not tap “Dismiss” until you have successfully exported and stored your results on your second device.

On another device:

1. Make sure it is connected to the same network as your iOS device running the Race Patrol app.
2. Open your browser and enter the address shown on your device running the Race Patrol app.
3. Determine the time frame on the web page.
4. Click export, and save the results as a .csv file to your desired location. You can open this file with e.g. Excel.

8 Technical specification

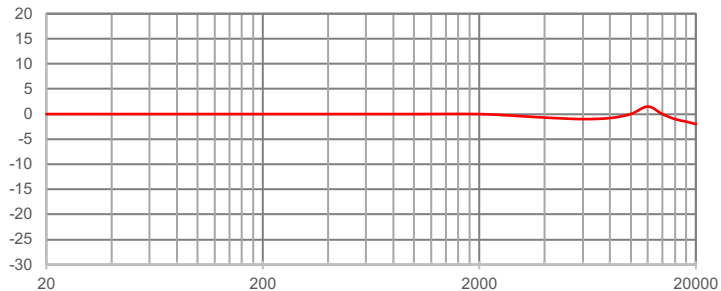
8.1 Race Patrol Lite

Type	RP-305
Manufacturer	EA LAB d.o.o.
Settling time	<5 s (from power-on)
Battery type	Rechargeable Li-Ion battery
Battery lifetime	Typically >12 h of continuous operation.

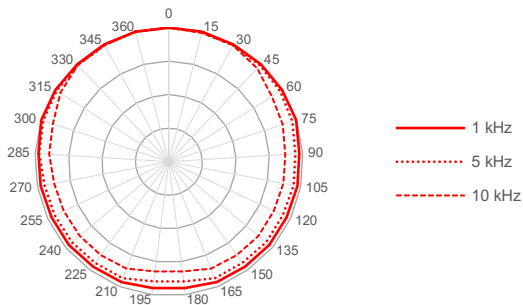
8.2 Measurement microphone

Manufacturer	Mic-W
Type	i436 1/4-inch electret condenser microphone
Sensitivity	-44 dB re 1 V/Pa or 6.3 mV/ Pa (nominal)
Frequency range	20 Hz to 20 kHz (response within ± 1 dB)
Polar pattern	Omnidirectional
Signal to noise ratio	62 dB

Frequency response



Directional response



8.3 Acoustical calibrator

Manufacturer	Svantek
Type	SV-34B
Standard	IEC 60942: 2003 standard, Class 2, ANSI S1.40:2006 Class 2
Sound Pressure Level	114 dB, ± 0.4 dB re. 20 μ Pa
Frequency	1000 Hz ± 0.2 %
Microphone diameter	According to IEC61094-4: 1/2 and 1/4-inch
Harmonic Distortion	<0.75 % Stabilization Time: <15 s
Eq. Free-field Level	-0.2 dB for 1/2-inch Microphones
Reference Conditions	Ambient Temperature: 23 °C (73.4 °F), Ambient Pressure: 101.3 kPa, Humidity: 30 - 80 % RH, Effective Load Volume: 250 mm ³
Environmental Conditions	Temperature: 0°C - 40°C (32°F - 104°F) Pressure: 65 kPa to 108 kPa Humidity: 25 to 90 % RH (non-condensing)
Battery type	2 x LR03 (IEC) / AAA (ANSI) alkaline batteries
Battery lifetime	30 hours for 114 dB level
Dimensions	65 x 65 x 70 mm
Weight	330 g (including batteries)

8.4 Thermal printer

Manufacturer	BIXOLON
Type	SPP-R200III
Paper width	Up to 48mm
Printable area	50 or 58 mm
Resolution	203 dpi
Dimensions	79.5 x 126.7 x 43.6 mm
Weight	228 g (including batteries)
Battery	7.4 V Li-Ion, 1,200 mAh, Rechargeable
Voltage	7.4 V
Peak consumption	0.4 – 0.7 A

9 General info

9.1 Support



Cesta Ljubljanske brigade 23A
1000 Ljubljana
Slovenia

✉ support@ea-lab.eu

RP
Lite