

RACESENSE

TYRE GAUGE

User Manual v1.4



FASTMATERACING.COM

- Units of pressure: bar / psi / kPa / kg/cm²
- Unit of temperature: Deg C / Deg F
- Maximum pressure: 6.89 bar / 100 psi
- Pressure accuracy better than +/- 0.01 bar or 0.1 psi over normal ambient temperatures and up to 60psi (over 60 psi accuracy typically better than 0.2 psi).
- Temperature accuracy: 1 deg C

INTRODUCTION AND FEATURES



CHARGING

RaceSense has a rechargeable battery. To charge, turn off then plug into a powered USB port for > 2 hours.
Battery life > 3 months in standby or 24 hours continuous use.

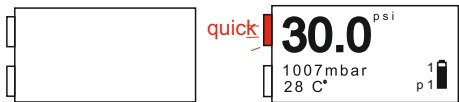
IMPORTANT: When the battery runs out you may need to set the time and date

- 1, Plug the RaceSense into a PC
- 2, RaceSense will appear as a USB Drive
- 3, Open the ReadMe.txt file in notepad and save.

STARTING UP

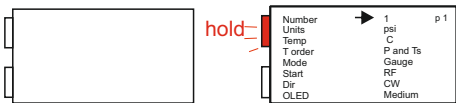
RaceSense has 2 modes of operation, gauge mode for single readings and multi-tyre mode for full vehicle readings (2 or 4 tyres)

- 1 **If RaceSense is OFF**
Press ON briefly to turn on



or

Hold ON to enter SETUP

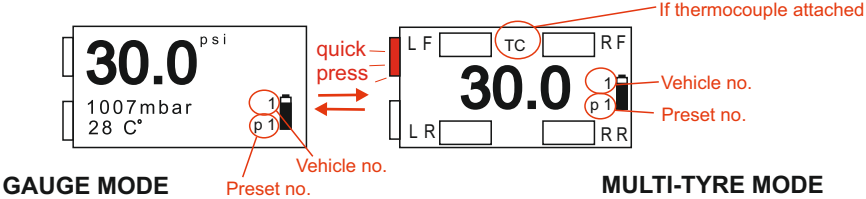


To turn OFF press and hold ON

MODES

If RaceSense is ON

Press ON to CHANGE MODE between gauge and multi-tyre modes



FOR SINGLE READINGS

Apply chuck to tyre and sample pressure, adjust with bleed valve.

FOR COMPLETE VEHICLE READINGS

Record pressures on all tyres without pressing any buttons.Saves data for upload.

see Multi-tyre mode instructions

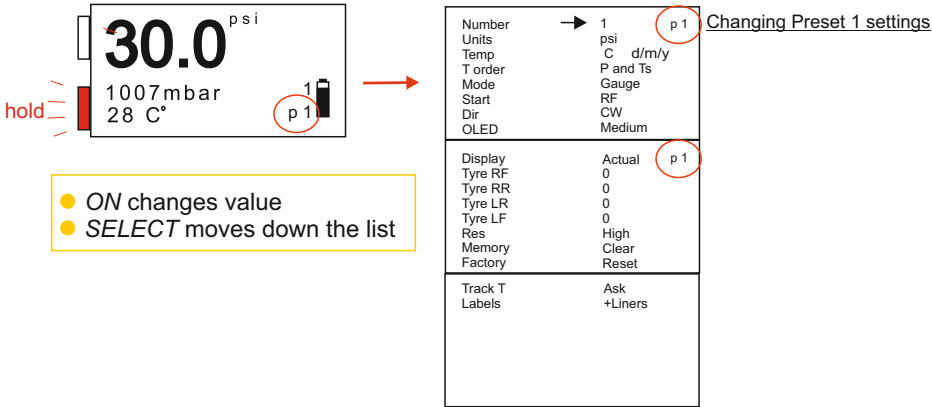
SETTINGS

RaceSense can store up to 7 Presets. Each preset can have many different options set. You can use these for different vehicles for example.

In GAUGE mode you will see vehicle number and PRESET number next to the battery icon. To change Preset number press SELECT.



To change Preset settings, select Gauge mode, make sure you have the desired Preset selected and then hold SELECT.
(or turn OFF and hold ON when powering up)



1 NUMBER

OPTIONS: 0 to 255

Press *SELECT* until select arrow is against Number. Press *ON* and the Car no. will flash. *ON* will increase value, *SELECT* will decrease. Holding either button adjusts for larger steps.

Once required value is achieved wait a few seconds until it stops flashing.

2 UNITS

OPTIONS: psi, bar, kg/cm² or kPa

3 TEMP & DATE FORMAT

OPTIONS: centigrade or Fahrenheit
d/m/y m/d/y or y/m/d

4 T ORDER

OPTIONS: Ps and Ts, Ts first, Ps first, Ts only

Ps and Ts- will prompt for Pressure then Temperature measurements on each tyre

Ts first- measure temperatures on all tyres before pressures

Ps first- measure pressures on all tyres, then temperatures

Ts only- measure temperatures on all tyres

NOTE if no temperature probe is attached then RaceSense will just measure pressures

5 MODE

OPTIONS: Gauge, 4 tyre or 2 tyre

see MULTI-TYRE MODE operation

6 START

OPTIONS: 4 Tyre: RF, RR, LF or LR
2 Tyre: FRONT or REAR

Select starting tyre

7 DIR

OPTIONS: 4 Tyre: CW clockwise or CCW counterclockwise
2 Tyre: N/A

Select sampling direction.

8 OLED

OPTIONS: Low, Medium, Bright

Display brightness

9 DISPLAY

OPTIONS: Actual or OFFSET

In offset mode RaceSense will show any deviation from your desired pressures rather than absolute values. **No one can tell what pressures you are running.**

- Set Display to Offset
- Set tyres offset values

Press *SELECT* until arrow is against Tyre RF. Press *ON* and the RF offset value will flash. *ON* will increase value, *SELECT* will decrease. Holding either button adjusts for larger steps. Once required value is achieved wait until it stops flashing. Repeat for all other tyres.

10 MEMORY CLEAR WARNING: This will delete all the current records permanently

RaceSense stores up to 64 sets of recordings, once the memory is full it automatically deletes the oldest logs so you always have the newest readings.

Should you want to delete the entire memory- Press *SELECT* until select arrow is against Memory Clear. Press *ON* and you'll see confirmation screen.
Hold ON to clear, *press SELECT* to cancel or wait a few seconds.

11 **FACTORY RESET** WARNING: This will delete all records and presets

Press *SELECT* until select arrow is against Factory Reset.
Press *ON* and you'll see confirmation screen.
Hold ON to clear, *press SELECT* to cancel or wait.

12 **TRACK T** OPTIONS: Ask or User

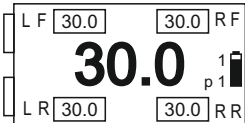
Ask- will prompt for track temperature measurement at end of temperature recordings.
User- can interrupt temperature measuring at any time to add track temperature.

13 **LABELS** OPTIONS: None, Hot/Cold, +TyreSet, +Liners

These are extra flags that the gauge will prompt for after P and T readings.
Hot/Cold- Prompts to mark record as a cold or hot run.
+TyreSet- as well as Hot/Cold this will prompt for the Tyre Set number (useful if you are running multiple tyre sets on one vehicle).
+Liners- as well as the above this option prompts for whether the measurements are for tyres or liners (e.g. for Nascar racing where each tyre has an inner liner).

MULTI-TYRE MODE

PRESSURE MEASURING (NO THERMOCOUPLE ATTACHED)



IN SETUP

- Set starting tyre
- Set direction
- 2 or 4 tyre mode

Fit the chuck on first tyre valve, adjust pressure until correct, no need to press any button just move onto next tyre, adjust pressure and repeat.

- If you need to redo a reading, press *SELECT* and it will jump back to the previous tyre.
- After all tyres have been measured the data will be saved automatically- Initial and adjusted pressures, time, date, ambient temperature and pressure.
- To *RECALL* last pressure measurement set after completion press *SELECT*

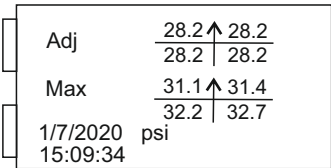


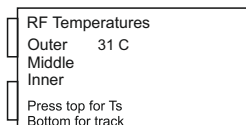
Diagram shows last pressures at a glance as pictured from above the vehicle.

PRESSURE AND TEMPERATURE MEASURING

RaceSense will measure bulk or internal tyre temperatures if a type K thermocouple probe is attached. It should always be attached BEFORE powering RaceSense on.

Make sure you've chosen the desired order in the setup. You can choose to measure temperatures before or after pressures or just measure the temperatures.

For example if **Ts first** is selected, and a probe is attached, you can measure Internal, middle and external temperatures of each tyre before reading the pressures of each tyre.



IN SETUP

- Set starting tyre
- Set direction
- 2 or 4 tyre mode
- Set T order

Track temperature can be recorded at any time in this process by clicking SELECT.

TYRE PROBE INSTRUCTIONS

- **Safe operation:** The probe needle is very sharp. After extending the lead do not let it go as the lead will spring back. Do not put the probe in a pocket. When not in use set the adjuster so that the needle is not exposed.
- **Probe depth adjustment:** There is a screw adjuster and locking nut so that the tyre can be probed at a consistent depth. A depth of between 3 and 5mm is recommended. The probe can be adjusted up to 15mm which will puncture most tyres. To avoid punctures the needle should obviously not be inserted too deep and the probe should be inserted into the tyre blocks only and not the grooves/voids or sides. Take care with very worn tyres.
Note: thermocouple position can be 1 or 2mm from the needle tip due so poor response may be seen if the depth is set too low.
- **Heat sources:** Temperature accuracy will be affected if e.g. the gauge or probe are heated (or cooled). So, do not leave the gauge and probe near sources of heat or where large thermal gradients may be expected e.g. in direct sunlight, on top of engine, near heaters or fans etc.
- **Response time:** After insertion it typically takes 2 seconds for the probe to reach 90% of the final temperature, 3 seconds for 95% and 4 seconds + for the temperature response to level out.
The gauge shows ↓ or ↑ if the temperature is changing. These will disappear when stable.

Car setup, tyre pressures, track conditions and driving style will all affect the bulk tyre temperatures.

It does not make sense to compare readings from different car or tyre types or different probe depths.

APP



Download the RaceSense app from the app store or google.play.

Suitable for Phone 7 and above, Android 5.5+ with NFC (make sure to click allow this app to monitor location when installing).

1 TO SCAN

- **iPhone:** press SCAN so you see the scan popup window to enable scanning
Android: no need as scanning is always available if turned on in your settings.
- Hold the top of your phone to the NFC label in the centre of your RaceSense (some phones may have a slightly different nfc antenna location).
- Once synced you'll hear a beep and the phone will upload your data (if you don't hear a beep then move your RaceSense a little so it's closer to the NFC antenna in the phone).
- You can now view the data (the location will be marked as where you were when you synced the data).



2 DATA

- **SORT:** tap on any column header in the data table to sort by that one.
- **DELETE:** select the record by tapping it and click the Delete record button:
NOTE that this cannot be undone.
- **EDIT LOCATION AND NOTES:** tap on the appropriate cell in the data table and the edit dialogue will appear (sometimes the GPS location doesn't correspond to the track name, for instance location says Fawkham when at Brands Hatch, you can map this so any future uploads at Brands Hatch show as this-just tick the "always change this location" check box. Anytime you upload from this location it will be saved as the edited text).

(landscape orientation not available in Android)

DELETE ROW EXPORT													
Date	Location	RFMaxP	RFEndP	RRMaxP	RREndP	LRMaxP	LREndP	LFMaxP	LFEndP	RFQOut	RFMid	RFIn	RRQOut
01-12-2019	Brands Hatch	31.8	30.1	33.4	31.2	32.8	31.7	34.5	32.0	33	44	44	23.7
05-12-2019	Brands Hatch	31.8	30.1	33.4	31.2	32.8	31.7	34.5	32.0	33	44	44	23.7
01-12-2019	Brands Hatch	55.6	30.1	36.7	34.1	35.3	33.8	35.7	32.0	23.7	24	23.7	24
03-12-2019	Silverstone	39.1	31.3	36.2	33.4	41.5	31.2	40.6	32.4	33	44	44	23.7
08-11-2019	Knockhill	39.1	31.3	36.2	33.4	41.5	31.2	40.6	32.4	33	44	44	23.7
10-11-2019	Silverstone	44.3	29.5	36.3	30.5	35.8	32.5	34.5	33.4	44	43	45	44
05-12-2019	Cadwell Park	45.1	31.3	46.2	32.5	45.5	31.3	44.5	32.0	33	44	44	23.7
11-11-2019	Cadwell Park	45.1	31.3	46.2	32.5	45.5	31.3	44.5	32.0	33	44	44	23.7

RFIn	RRQOut	RRMid	RRIn	LRQOut	AmbP	Car	Notes	Weather	WindSpeed	WindDir
44	23.7	24	33	44	1100	1	Finished 10th	Wet	10.9	NE
44	23.7	24	33	44	1007	2	New tyres	Wet	10	W
23.7	24	23.7	24	23.7	1099	1	n/a	Dry and sunny	25.8	SSE
44	23.7	24	33	44	1288	1	Race 1 position2	Few clouds	10	N
44	23.7	24	33	44	1125	1	n/a	Few clouds	30	NNE
45	44	45	46	39	1054	3	Very slippery	Wet	10	SSW
44	23.7	24	33	44	1022	2	Coached	Wet	10	SSE
44	23.7	24	33	44	1228	1	n/a	Scattered rain showers	14	SSE

- **VIEW** a single page for each record by tapping on the first column (Time). Or tap the **LAST RECORD** button to get the page for the latest record. Add Notes here too.

3 OPTIONS

- **CHOOSE DATA TO VIEW:** RaceSense gives you a lot of data, if you want to hide any columns you can set these or choose to hide all temperature readings by checking “hide temperatures”.
- **SELECT UNITS:** RaceSense syncs data in default units of psi and centigrade. To view in different units select the required ones here.
- **EXPORT:** email a csv file of your data to yourself or anyone else.
- **DELETE:** Clear the data and settings in the app.

01-07-2020 14:54:54

Save Notes

Adj

27.6

23.2

12.8

19.7

Max

27.6

23.2

13.2

20.1

Temps

20.0

20.0

20.0

29.2

30.5

29.0

20.0

20.0

20.0

29.6

30.4

27.8

Vehicle 1

psi

Horton

centigrade

Scattered clouds Hum: 52% Wind: 3.6km/h WSW

FIRMWARE UPGRADING

The firmware on the RaceSense Tyre Gauge can be upgraded as new releases become available.

Please see <https://fastmateracing.com> for our latest release and upgrading instructions.

WARRANTY AND CARE

RaceSense is water resistant but should never be immersed in water or left in very wet conditions for any length of time. Never attempt to dismantle or service your RaceSense yourself as it will void the warranty.

RaceSense is rugged but always try to protect your RaceSense from shocks, hard and sharp objects, extremes of heat and prolonged exposure to direct sunlight.

If not in use, store your RaceSense in a clean, dry environment at room temperature.

Do not expose to strong chemicals and cleaning products as they may damage the seals, case and finish.

If this product should fail due to defects in materials or workmanship, FastmateRacing will repair or replace it free of charge for a period of 12 months from the date of purchase. This warranty is only extended to the original purchaser and covers failures due to defects in materials or workmanship that occur during normal use. It does not cover damage or failures resulting from neglect, accident, misuse, mishandling, alteration or modifications of the product or any failure caused by the operation of the product outside the scope of its published specifications. FastmateRacing shall in no event be liable for any incidental or consequential damages arising from the use or inability to use the product. FastmateRacing do not assume any responsibility for losses or claims by third parties that may arise through the use of this product.

If a claim under warranty appears to be necessary email hello@fastmateracing.com (or telephone +44 (0)1784 481562) to obtain a returns number before returning your RaceSense.

This User Manual and its contents are intended solely for the use of our customers to obtain knowledge regarding the operation of the RaceSense tyre gauge. The contents shall not be disclosed or reproduced without the prior written consent of Swimovate Ltd. Great care has been taken to ensure the accuracy of this documentation but it's contents are subject to change at any time without notice. The latest version of this documentation can be downloaded from <https://fastmateracing.com>.



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