QUICK START

The RAC Plus I - Quick Start for Installation & Use

This Quick Start provides basic instructions for getting your RAC Plus installed and operating. For more detailed instructions, the complete User's Manual can be downloaded at *www.jamartech.com/manuals*.

WARNING – Use of the RAC Plus I while driving could cause an accident, resulting in serious injury or death. As with any in-vehicle instrumentation, the information provided by the RAC Plus I should be observed as part of the normal operation of the vehicle. Changes to the RAC Plus I should only be done in a safe manner.

What is the RAC Plus I?

The JAMAR Technologies Road Analysis Computer (RAC) Plus I is an accurate, easy-to-use distance measuring instrument (DMI) that uses state-of-the-art microprocessor technology. It has been designed with features to provide you with a versatile and functional instrument that can be learned in a very short time.

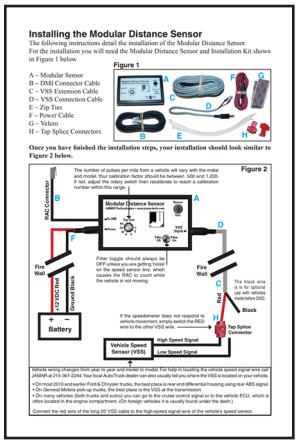
How does it work?

The RAC Plus I is installed in your car along with a **distance sensor**. Distance sensors do the behind-the-scenes work of the RAC Plus distance measuring instruments. Connected between your vehicle and the RAC Plus head unit, these sensors read and modify the data coming from your vehicle and send a signal to the RAC telling it when to count distance.

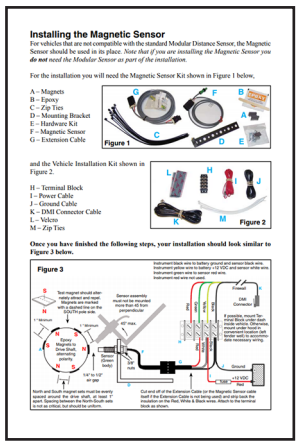
There are currently three types of distance sensors that are used with the RAC Plus I – the AutoLink OBD sensor, the modular sensor and the magnetic sensor. The simple breakdown of the three is that the AutoLink sensor is the newest and easiest to install (plug and play, no tools required), but that ease of install trades a degree of accuracy. The magnetic sensor is the most precise, but much more intensive to install than the AutoLink, while the modular sensor has accuracy similar to that of the magnetic sensor and is somewhat easier to install, but is not compatible with all vehicles.

Installing Distance Sensors

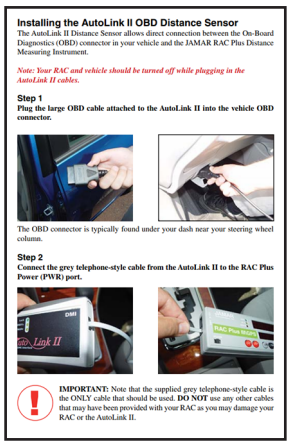
The three different types of distance sensors each have their own separate installation procedures. Follow the instructions that came with the sensor you received to install your particular sensor.



Modular Sensor



Magnetic Sensor



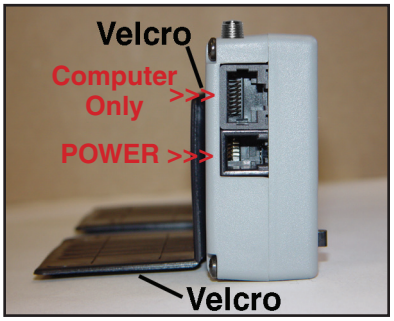
OBD Sensor

- **Do not** install wires near any object that could cause stray pulses to be picked up, such as the alternator, spark plugs or engine coil.

- **Do not** install the wires or sensor near any objects that will get hot, such as the manifold. The installation wires or sensor can melt if they are too close to a heat source.

- **Do not** install wires near any objects that could vibrate and cut the wires.

Installing the RAC Instrument



The compact case design of the RAC Plus allows mounting of it in a number of convenient locations. Popular locations include on the front of the dashboard, above or below the dashboard, or on the windshield using the optional windshield mounting bracket. Wherever you decide to mount the instrument, remember it should be within easy reach and the display should be visible without obstructions.

It is most common to mount the RAC to the front of the dashboard using the Velcro provided. Two plastic 'L' brackets are also provided to facilitate mounting to the top of the dashboard if that is your preferred location. For best results, attach the 'L' bracket so that the bottom of the 'L' is facing away from the RAC as shown in the figure here.

Using the two 'L' brackets allows you to compensate for curved dashboards even if it requires the RAC to be mounted on a left or right slope.

Note: While the RAC Plus I is designed to withstand very high temperatures, we recommend disconnecting the RAC and storing it in the glove box or below the dash if the vehicle will be left for long periods of time in direct sunlight and high temperatures.

Power On & Start Up

Your RAC Plus DMI has been designed for simple operation, using large individual keys which provide a click and tone feedback.

The two 6-digit high-intensity LED display windows allow flexibility in displaying data to you. The upper, larger display window (referred to as D-1) is primarily used to display distance. It is also used to indicate menu locations, time and GPS coordinates. The lower, smaller display window (referred to as D-2) is used to display count status, speed, interval distance, menu descriptions, etc.

OFF/ON

This is the slide switch which provides power to the RAC Plus. When turned on, the RAC will go into GPS Sensor start-up mode.

Calibration – Your RAC Plus must be calibrated in order to accurately measure distance.

In order to accurately measure distance, your RAC Plus must know the exact distance that the vehicle will travel based on pulses from the vehicle's speed sensor. The calibration number is the automatic calculation that represents the number of pulses received over a set distance. This number, once calculated, will remain accurate until a change to the vehicle occurs, such as different size tires are put on the vehicle, tire wear, tire pressure change, etc. Such changes will require a re-calibration in order to maintain proper accuracy.

The RAC Plus has the ability to store four (4) separate vehicle calibration numbers in memory. This simplifies sharing one instrument between up to four different vehicles.

In order to calculate the calibration number for your particular vehicle, you must first establish a **calibration course**. The length of the course can be any known distance more than 500 feet. One thousand feet is ideal, but the course can be any distance over 500 feet (for example, 623 feet from pole to tree). Your course should be **straight** and **accurate**, so take the time to measure the course using a 100' tape or hand wheel. Mark the beginning and ending points so they can be seen from inside your vehicle. Remember, the course length can be any **accurate** distance over 500 feet, so for convenience you could use a telephone pole or other marker as reference point.

Note: If you are using the Metric unit of measuring, laying out the calibration course in feet is required to obtain the most accurate calibration number.

Step 1

Slide the ON/OFF switch to ON. Your RAC will perform a brief Self Test. The current calibration number will be shown in the larger, upper display (D-1) and CF U(vehicle 1, 2, 3 or 4) in the smaller, lower display (D-2). This is displayed for 3-4 seconds while a tone sounds, then **0** is shown in D-1 (0.000 if the mile or meter unit of measurements is selected) while **CH** is shown in D-2.

Step 2

Press the **Menu** key, the **# 1** key and **Enter**. At this point, the unit of measurement will automatically change to feet. You can then select the vehicle number that this calibration will be for by using the 1 through 4 numeric keys.

Step 3

Once the vehicle number has been selected, press **Enter**. Key in the course length (in feet) to be used for the calibration using the number keys, then press **Enter** again.

Step 4

Using a reference point on your vehicle (i.e. the window post, door handle, your shoulder, etc.), align your vehicle to the beginning course marker.

Step 5

Press the **CH** key and drive away. As you drive, the pulses received from the vehicle are being shown in D-1. This is not the distance being traveled, so don't panic when the display doesn't equal the actual length of your calibration course. When you reach the end of the course, stop your vehicle so you are exactly aligned (using the same reference point in the vehicle) with the end course marker.

Step 6

Press the **CH** key. The calibration factor will then be shown in D-1. You should record the calibration number in a place easy to access, such as on a piece of tape attached to the inside of the vehicle's glove box.

Step 7

Press **Enter** and the unit of measurement will return to your desired unit of feet, mile or meter. Press **Enter** again to exit the menu function and return to normal operation. Your calibration number for the vehicle selected is now stored in the RAC's permanent memory. The calibration number will stay in memory for more than 50 years, or until you re-calibrate or manually change the data. You are able to view the calibration number and unit (vehicle) number every time you power up the RAC.

You should rerun the calibration course, in the normal mode, to verify the calibration for your vehicle. Press the CH key prior to measuring. If this is the first time you have calibrated a DMI, you may want to run the course a couple of times to practice being properly aligned when starting and stopping at the course markers.

If your RAC fails to calibrate, refer to Chapter 3 of the full User's Manual for troubleshooting steps.

Important: Ideally, the calibration number used should be between .500 and 1.200. If your calibration number is below this range, you need to use a higher division factor such as 16 on the Modular Distance Sensor (MDS). Of course, if your calibration number is too high, you can lower the number by using a lower number such as 1 on your MDS. This is done by adjusting the rotary switch on the MDS so the slot points to 1, 2, 8, 16, 32 or 64.

Note: The adjustable rotary switch is only available on Modular Distance Sensors. If you are using an OBD or Magnetic sensor there is no adjustment to be made.

Any time you adjust the rotary switch setting, **you must re-calibrate** to get the correct calibration number. Changing the switch setting **will not** change the calibration number, only the number of pulses being received by the RAC.

Menu Functions

The Menu key allows you to select a variety of functions. After pressing the Menu button, the Add and Sub keys can be used to scroll through the options, which are displayed in D-2. To select an option, press the ENT (Enter) key. Below listed with the Menu key is a brief description of each menu item. Refer to the full User's Manual for more detailed instructions.

Key Functions

Count Hold

The Count Hold key will start or stop the computation of distance pulses. When in Count Hold, **CH** will be displayed in D-2 and the RAC will not accumulate any distance. If speed is also being displayed, it will continue as CH **does not** stop the computation of vehicle speed. When released, CH in D-2 will go out and distance computation will resume.

Display Hold

Display Hold will stop the display from updating while the RAC will continue to accumulate distance internally. When in Display Hold, **DH** will be displayed in D-2. If speed is also being displayed, it will continue as DH **does not** freeze the speed display. **Note:** You cannot put the RAC in both Count Hold and Display Hold at the same time. Count Hold will take precedence over Display Hold.

Unit

The Unit key allows you to select the desired unit of measurement. This can be selected/changed while moving or at rest. When pressed, the distance will cycle from total feet to miles to kilometers/meters. The LEDs to the left of D-1 indicate which unit is currently being used.

The Speed key allows you to turn on or off the display of speed (mph or kph) in D-2. The display of speed is not interrupted by either the Count Hold or Display Hold keys.

Menu

The Menu key allows you to select from a variety of functions. After pressing the Menu button, the Add and Sub keys can be used to scroll through the options, which are displayed in D-2. To select an option, press the ENT (Enter) key. The options are:

Menu 1 - Auto Calibration (A-CAL)
Menu 2 - Manual Calibration (E-CAL)
Menu 3 - Pre-Distance (P-diS)
Menu 4 - Clock Set (CLoSEt)
Menu 5 - Distance Pulse Output (dPO)
Menu 0 - Return to Normal Operation (rEturn)

Add

The Add key instructs the RAC to count **up**. It is also used in the Menu function to scroll up through the various options, and is used in the Pre-Distance function.

Subtract

The Sub key instructs the RAC to count **down**. When in this mode, the LED indicator for the active unit of measurement will flash to indicate that you are subtracting distance. Should you count down to zero (0), the RAC will provide a tone and automatically begin counting up.

The Sub key is also used in the Menu function to scroll down through the various options, and is used in the Pre-Distance function to subtract a desired distance from the displayed distance.

Dim

The Dim key allows you to select from four (4) levels of display brightness to best suit the ambient light conditions. Full bright is best for daylight conditions while full dim may best suit night conditions. Each time the Dim key is pressed, the brightness will drop one level until the lowest level is reached. It will then jump back to the high brightness level. Both D-1 and D-2, as well as the LED indicators, are controlled by the Dim key.

Clear

The Clear key is normally used to clear the D-1 distance display as well as the Interval Distance in D-2 if that function has been selected. Clear can be used on the run (while measuring), which allows you to establish a zero starting point without having to stop your vehicle in traffic or the center of a busy intersection. Clear will not reset the Time Counter in normal mode.

Enter

The Enter key instructs the RAC to accept the previously keyed value currently on the display. It is also used in the Menu function and Interval Distance application.

Numbers 0 - 9

The numeric keys are used to identify menu options and select numbers desired for calibration, pre-distance, distance pulse output, clock set, etc.

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