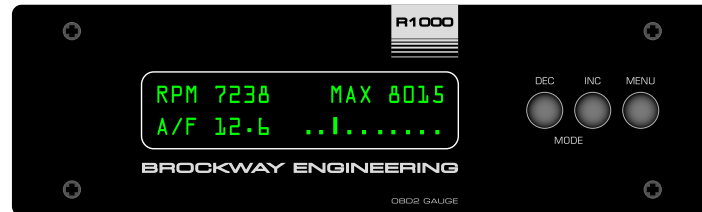


## R1000 User Manual

**v2.5.7**



**Compatibility:** ISO9141, ISO14230 (KWP2000) and ISO15765 (CAN)

### Installation

The R1000 only requires one cable. Connect the 8-pin connector to the middle header on the back of the R1000. The other end of the cable connects to the vehicle Data Link Connector. This is usually located under the dash on the drivers side of the vehicle.

The R1000 should power up immediately if the vehicle ignition is on. If the vehicle ignition is not on, then the R1000 will go to sleep after about 5 seconds. After the ignition is turned on and the R1000 starts communicating with the ECU, then it will initialize and start retrieving sensor data.

### Operation

To change the screen display mode, press the INC or DEC buttons. The display will increment or decrement to the next or previous screen mode. Here is a list of the available screen modes.

**MODE 1** - Any, Any (custom screen mode)

**MODE 2** - RPM, VSS and RPM MAX Hold (displays peak RPM for about 5 seconds)

**MODE 3** - ECT, IAT

**MODE 4** - RPM, O2 (voltage or A/F ratio)

**MODE 5** - RPM and RPM Bar Meter

**MODE 6** - RPM, MAP/MAF (boost pressure available on vehicles with a MAP sensor)

**MODE 7** - VSS and 0-60 Acceleration Timer

**MODE 8** - VSS and 60-130 Acceleration Timer

Note: The unit will display either the MAP or the MAF if available. If the vehicle has a MAF sensor, then it will be displayed. Otherwise the unit will default to MAP. If the vehicle has both a MAP and a MAF sensor, then you can choose which one to be displayed in the option menu. If a MAP sensor is present, then you can select either kPa or psi values to be displayed.

### Limited 1 Year Warranty

Brockway Engineering, LLC hereby warrants that this product will be free of defects in materials and workmanship for a period of 1 year after date of purchase.

At it's option, Brockway Engineering, LLC will repair or replace the defective product.

## Sensor Description

RPM - Engine RPM.

TPS - Throttle Position Sensor. Displayed in %. Most vehicles read around 8% at closed throttle and around 90% at full throttle. This is perfectly normal and actually recommended in the OBD-II specification.

MAP - Manifold Absolute Pressure. Displayed in kPa (kiloPascals) or psi.

MAF - Mass Air Flow. Displayed in g/s (grams per second).

IGN - Ignition timing advance. Displayed in degrees.

ECT - Engine Coolant Temperature. Displayed in degrees (Celsius or Fahrenheit).

EOT - Engine Oil Temperature. Displayed in degrees (Celsius or Fahrenheit).

IAT - Intake Air Temperature. Displayed in degrees (Celsius or Fahrenheit).

O2 - Oxygen Sensor. Displayed in volts or A/F ratio. There is also a A/F ratio conversion available for Honda/Acura vehicles with K-series engines. Vehicles factory equipped with wideband O2 sensors will always display A/F ratio. Bank 2 O2 is available on vehicles with 2 cylinder banks.

VSS - Vehicle Speed Sensor. Displayed in mph or km/h.

STFT - Short Term Fuel Trim. Displayed in %.

CLV - Calculated Load Value. Displayed in %.

ALC - Fuel Alcohol Level. Displayed in %. This is the amount of alcohol in the fuel.

BAT - Battery Voltage. Displayed in volts.

Note: Some of the above parameters may not be available on some vehicles. During initialization, the R1000 requests the data that is available from the ECU. Only the available sensor data can be displayed.

## Option Menu

To select an option, press the MENU button. The display will increment through the options and then return back to the previous screen mode. To change an option value, press the INC or DEC buttons.

## Available Options

Metric/English Units - Metric or English. This option effects VSS, ECT, EOT and IAT.

Mode 1 Gauge 1 sensor selection and Mode 1 Gauge 2 sensor selection.

Shift Light RPM setting - 3000 to 9900 - increments/decrements by 100 rpm.

Vehicle Speed Correction - 75% to 150% - increments/decrements by 1%.

O2 Sensor Display - Voltage or Honda K-Series A/F (only available if standard O2 sensor is reported).

MAP Units - kPa or psi (only available if a MAP sensor is reported).

ECT Alarm - Adjustable in 1° increments from 25° to 250° (C or F).

LCD Backlight - Brightness adjustable from 30% to 100% in 10% increments.

Stored DTCs

Clear DTCs and DTC status (this menu option is automatically skipped if no DTCs are found).

## Shift Light

The shift light illuminates whenever the engine rpm is above the RPM setting. The shift light will work in any screen mode except the acceleration timers. The shift light output is intended to be used with the SL2 LED shift light.

## Acceleration Timers

**0-60:** This acceleration timer is active in screen mode 7 and is completely automatic. The timer resets when the vehicle speed is at 0. The vehicle must be stopped for about a second before the timer is ready, at which time an "R" will be displayed in the upper rightmost position of the display. The timer starts as soon as the vehicle starts moving and stops at either 60 mph or 100 km/h. The value is then displayed in seconds, tenths and hundredths of a second. This value will continue to be displayed until the vehicle comes to a complete stop, at which time it will be reset to 0.

**60-130:** This acceleration timer is active in screen mode 8 and is completely automatic. The timer resets when the vehicle speed is less than 30 mph, at which time an "R" will be displayed in the upper rightmost position of the display. The timer starts as soon as the vehicle hits 60 mph and stops at 130 mph. The value is then displayed in seconds, tenths and hundredths of a second. This value will continue to be displayed until the vehicle speed drops below 30 mph, at which time it will be reset to 0.

The timers are exceptionally accurate and very repeatable, however the "true" accuracy is dependant on the accuracy of the VSS readings. For this reason, the user should use the VSS correction feature to compensate for any error. This can be done by comparing the VSS reading with a radar or GPS based clocking system.

## Stored DTC's

If there are no DTC's stored, then 0 is displayed. If there are DTC's stored in the ECU, then the number of DTC's is displayed on the first line and "Retrieve DTC's?" is displayed on the second line. Pressing the INC button will retrieve the DTC's and display them. Up to 6 DTC's will be displayed.

## Clear DTC's

If there are DTC's stored in the ECU, then pressing the MENU button will increment to this screen. "Clear DTC's?" is displayed. Pressing the INC button will clear the DTC's (and turn off a CEL). After the DTC's have been cleared, then "DTC's Cleared" is displayed. Pressing the MENU button exits the Option Menu.

## ECT Alarm

The ECT Alarm is active whenever the ECT value is displayed. To the right of the ECT value will be sequential arrows whenever the alarm setting is exceeded. The setting is adjusted in 1° increments from 25° to 250° (C or F).

## O2 Sensor Display

The O2 sensor display option is only available if the ECU reports that a standard type O2 sensor is used for A/F tracking. In this case, there will be the option to select a calculated A/F display for early Honda/Acura K-Series engines (2002-2003). These vehicles use a wideband O2 sensor but the ECU does not report the wideband sensor data.

**Bank 1 and Bank 2 O2 Sensors:** The O2 sensor data defaults to bank 1. If the engine has a second cylinder bank, then this data will be available to select in the custom screen mode as well as data for bank 1. Bank 1 data has a **1** after the parameter tag and bank 2 has a **2** after the parameter tag.

## Vehicle Speed Correction

The vehicle speed (VSS) can be corrected by entering a percent change. The range is 75% to 150%. If a smaller than stock tire is used then a % less than 100 is needed. If a tire larger than stock is used, then a % greater than 100 is needed. To calculate the tire diameter % difference, use this formula:

$$(\text{new tire diameter}) / (\text{stock tire diameter}) * 100$$

*example: 35 / 31 \* 100 = 113 (round to nearest whole number)*

To calculate gear ratio % difference, use this formula:

$$(\text{stock gear ratio}) / (\text{new gear ratio}) * 100$$

*example: 3.73 / 4.10 \* 100 = 91 (round to nearest whole number)*

Note: The speed displayed on the unit will be corrected, however the vehicle speedo will still be *off*.