INSTALLATION AND USER MANUAL

1 INTRODUCTION

Thank you for your purchase of the VCMTUNER II. The kit contains 3 pieces that should be included in your package.
Package Contents

1. Wing nut for mounting on battery bracket
2. VCM Controller Unit with assembled mounting bracket
3. Removable Fuse (1A). Fuse should be located under the fuse cover on the +12v wire.

1.1 READ - WARNING- Before you install the product

When installing the product, be careful not to over-stress the connectors on the wire harness during installation. If a wire comes loose from the harness, you will need a replacement harness. The VCMTUNER II requires no seasonal adjustment unlike the original analog version of our product (e.g. VCMTUNER I).

This product is CARB Exempt by an executive order issued from the State of California E.O. D-809-1 and is 50 state legal in the USA and Canada.
Product SKU: VCMTD1000 / VCMTD1000-0506

1.2 Points of Contact

If you need assistance with this product, you may reach out to us via e-mail – info@vcmtuner.com. Please see our website or FAQ for additional information including installation videos.

1.3 Legal/Indemnity

You agree that by using this product you indemnify Eastman Research, LLC (further referenced as (ER) and/or any person associated with (ER) including affiliates, employees, etc from any and all legal liability associated with your use of this product. You use this product at your own risk. If you do not agree to these terms, ship the product back to us for a refund minus shipping expenses within 5 business days of receiving this product.

1.4 Product Warranty

This product contains a 1 year warranty. To claim a warranty, you will need to ship the product back to us for repairs at your shipping expense. Problems caused by misuse and acts of god are not covered under the warranty. Connecting any wire other than the red wire to a +12v source may damage the unit and will not be covered under the warranty.

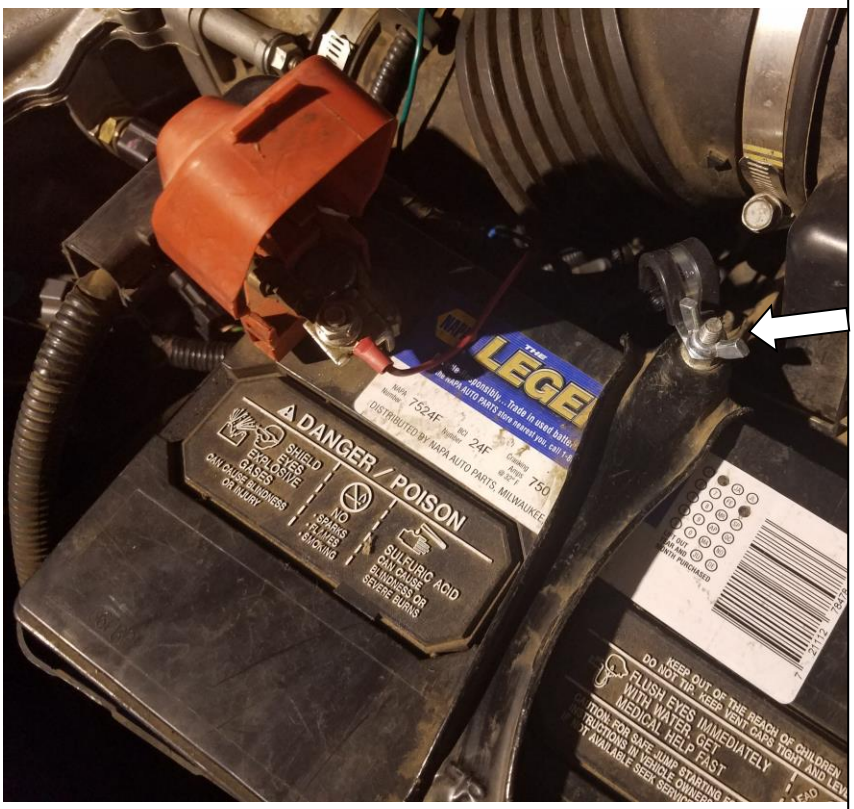
INSTALLATION

1.5 Tools

Before installing this product, ensure you have the required tools to install this product.

1. A 10mm wrench for connecting the red wire to a +12v connection to the battery
2. The included wing-nut is used to connect the VCMTUNER II bracket to the battery post bracket.

Mount the bracket portion connected to the VCMTUNER II on a 2017+ Odyssey/Pilot/Ridgeline here to the battery post shown and secure with the provided wing-nut. Note: the +12v red wire connector from the VCMTUNER II box will need to be connected to the positive terminal on the battery. The picture here uses the side-battery bracket post. See the picture below for 2005-2016 style battery bracket post. The air intake cover residing over the battery may need to be removed in some model years to access the positive battery terminal.



2005-2016 Odyssey/Pilot/Accord style shown to the left. Place the mounting bracket over the battery bracket post as shown with the wing-nut in the picture. Note: the +12v red wire connector from the VCMTUNER II box will need to be connected to the positive battery post as shown using a 10mm wrench to loosen the battery nut. The bracket provided is flexible and can be slightly bent to get the VCMTUNER II mounted in the gap between the air box and the battery. In the picture left, the bracket is turned about 60 degrees left as shown. The air intake cover residing over the battery may need to be removed in some model years to access the positive battery terminal (2012-2016). Some model years may have a plastic retainer clip on the battery harness connected to the rear post. You can unscrew this and re-attach after the VCMTUNER II is in place.

Note: the VCMTUNER II box should be secured well to the battery bracket post as to minimize vibration. The wires coming from the bottom of the VCMTUNER II should be facing down when mounted. The built-in accelerometer can detect when the vehicle is moving and will automatically show the real temperature for diagnostics such as a TPS re-learn procedure or an engine coolant flush when the temperature exceeds 194F for two consecutive minutes and the vehicle is stopped with the parking brake engaged and the transmission in park. You may need to turn off the Air conditioning to perform a TPS re-learn. The VCMTUNER II requires zero manual intervention by the end-user once installed properly.

***** WARNING *****
Never connect the green or blue wire from the VCMTUNER II to the +12v source. You could damage the VCMTUNER II or cause a short on your vehicle's electrical system.

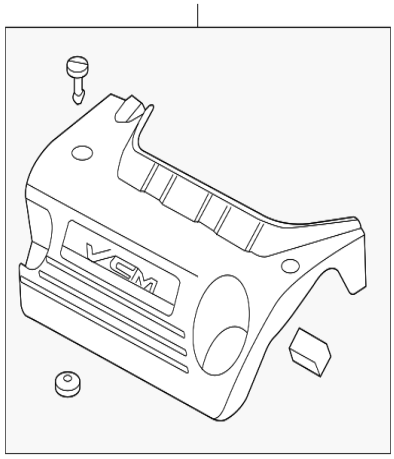
1.6 Order of Installation (overview)

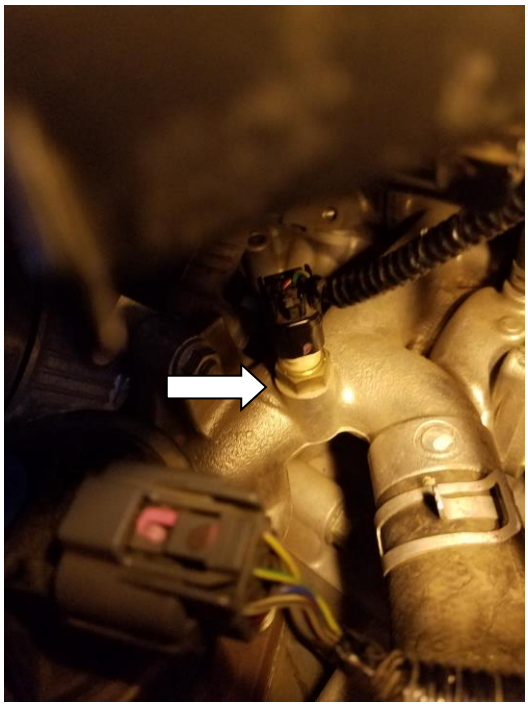
1. Pop the hood and leave up for 30 minutes, leave all doors closed.
2. Mount the VCMTUNER II mounting bracket to the battery bracket post
3. Find the ECT sensor, install the VCMTUNER II ECT connectors to the ECT sensor and ECT engine harness connector
4. Install the +12v connection last.

If you need to remove the unit, first remove the +12v connection, then ECT connectors and finally remove the unit from the battery bracket.

1.7 Find the ECT1 sensor

The ECT1 sensor is located on the drivers side of the engine between the lower engine block and the radiator hoses. For the first time installing this product, it is recommended you take off the plastic engine cover with a medium sized flathead screwdriver. Turn the two plastic screws on the cover in a 90 degree fashion until the cover becomes loose. Note: this may not be necessary on some models if the ECT1 sensor is readily accessible. Below is an example of the engine cover from a 2008-2012 Honda Odyssey w/ VCM.





Above: Left: Engine Cover, Right: ECT1 approximate location - This sensor can be difficult to see. Stand on the drivers side of the engine and look down between the battery tray and the engine to find the ECT1 sensor port as shown above. Get a flashlight and look for a white colored plug below the wire. You will need to press the clip on the black plug, then pull upwards until the connector is removed from the ECT1 sensor socket.

1.8 Install the new harness

After you have removed the factory Honda/Acura connector safely from the ECT1 sensor, it is time to install the VCMTUNER II. Plug the male end of the tuner harness into the ECT1 sensor port. Then plug the Engine harness female ECT1 connector plug into the unused male port of the tuning harness. You should hear a ‘click’ sound when the plugs are connected together properly. If no click is heard, your temperature gauge may not work properly and you may get a CEL (Check Engine Light) code on the dash.

CAUTION: On your first time installing, I recommend the engine has been cooled down for at least some 50-60 minutes for safety reasons as the engine compartment could still be hot enough to burn your skin.

On installation, you want to minimize the amount of movement on the engine harness ECT1 female connector plug. The factory harness may be brittle, burned, damaged or weakened from an overheated engine and should be treated as fragile. Portions of the engine harness ECT1 connector do not contain protective plastic wrap.

Above: Female ECT1 Connector Example

1.9 Mounting the bracket/connector to the battery bracket post

The VCMTUNER II should be mounted as secure as possible to the battery bracket post using the provided wing-nut and may require bending the bracket on the VCMTUNER II slightly on some model years. The unit has been designed to work plug-and-play on Honda/Acura with the battery located on the drivers side under the hood. If you have any problems mounting between the battery bracket post and the air intake box, the screw holding the air intake sensor above the battery may be used to secure the bracket as an alternative location and does not require the m6x1.0 provided wing-nut.

1.10 Connect +12v battery connection

Find the positive +12v terminal on the battery. You will need to connect the ¼" or 5/16" ring terminal provided on the red wire attached to the fuse harness on the VCMTUNER II to the battery after the ECT connectors are connected to the ECT sensor and ECT engine harness connector. The ground signal to power the unit comes from the ECT engine harness.

1.11 Avoid Check Engine light (P0118) code on installation

It is recommended you turn off the vehicle, pop the hood latch and leave the hood open some 15-30 minutes without the key in the ignition before installing the product. If you have a push button start, keep the keys some 30+ feet away from the vehicle, otherwise the ECU may be in an accessory on-state and throw a p0118 code. After some 15-30 minutes, the vehicle ECU will normally stop monitoring the ECT circuit and no code should be

generated while you install the VCMTUNER II. It is possible to receive a check engine light on some models if any portion of the harness is removed while the ECU is still activated; the computer will see the circuit disconnected and throw a CEL code in some circumstances. If this does happen, the code will clear itself at a later time. If you have a code reader or scanner, you can clear the code at your convenience.

1.12 Blue/Green/Red wire information

Green Wire: This wire should only be connected to a ground source, such as the battery bracket post. You can use a paperclip with the green connector when necessary. When connected to ground, VCM operation will be re-engaged. The green wire also can enable/disable feature codes by how many times it is connected to ground within a 90 second window. Do not connect the green wire to ground unless you want to re-enable VCM operation. See advanced features in the sections below.

Blue Wire: This wire is intended to be utilized with an optional add-on for an engine coolant level alarm which is in development. Do not ever connect this wire to a +5v or +12v source. It is to be used with an ER Engine Coolant in-line adapter which goes on your upper radiator hose. This is to alarm the vehicle owner of a busted hose in an emergency and audibly trigger a P0118 code while enabling the VSA/Check Engine light and may save your engine from thousands of dollars of damage. On Honda/Acura, any code triggered while the vehicle is operating will throw an audible VSA alarm to alert the driver to a problem. This may also show the temperature gauge needle all the way to the HOT portion of the gauge. This feature is not enabled until the engine coolant level alarm is purchased separately, but will auto-detect once the coolant level alarm is installed and the +12v red wire is disconnected and re-connected to the battery. A probe inside the inline pipe adapter makes contact with the engine coolant. See the website for more details.

1.13 Toggle/Feature Codes (Green Wire)

<u>Audible Engine Coolant Alarm</u>
The VCMTUNER II can provide an audible alarm by throwing the P0118 check engine code upon your vehicle reaching a temperature above 220F once per drive cycle. This will trigger the VSA/CEL on the dash. By default, this feature is disabled. To enable, simply touch the green wire to ground 10 times within a 90 second window after the product is successfully installed. A confirmation will have the check engine code set (P0118). This is recommended only for vehicle owners who are no longer under warranty. This audible alarm feature could save your engine from thousands of dollars in damage in the event of a major coolant leak or head gasket failure. To turn this feature back off, wait 3 minutes, and touch the green wire to ground again 10 times within a 90 second window. This feature is recommended for owners who wish to use non ACM engine mounts on 2005-2010 Honda Odyssey/Pilot/Accord saving them up to $3,000 when needing to replace worn ACM motor mounts.

<u>Auto Diagnostic Feature</u>

The VCMTUNER II will automatically turn off the temperature suppression (e.g. VCM disabled) when the vehicle sits for more than two minutes with the engine at idle in park with the E-Brake engaged and the real ECT temperature exceeds 194F over the two minute duration. Normally to run diagnostics the A/C needs to be off to reach the 194F temperature. By default, this feature is enabled. If a vehicle owner does not have the unit properly installed to a battery bracket post but is installed elsewhere (e.g. Acura), then disabling this feature may be necessary if VCM falsely re-engages with this feature. To toggle this feature, simply touch the green wire to ground 5 times within 90 seconds. You should verbally count how many times you touch the wire to ground. See our website for more information on the TPS-relearn feature in the FAQ.

Turn on/off VCM mode from the cabin

The green wire not only allows turning on/off special features, but can be used to turn on/off the VCM mode when wired into the cabin with a toggle switch (not provided). You can acquire a toggle switch from any auto parts store. This will require running a wire through the firewall and connect the green wire attached to the VCMTUNER II to a toggle switch. This toggle switch should connect the green wire to a ground source under the drivers dash. When the toggle switch is in the on position, normal VCM operation is engaged. When the toggle switch is not connecting the green wire to ground, VCM operation is disabled. Never connect a +12v source to the green wire, it will permanently damage the VCMTUNER II. There are additional diagrams available on our website to assist you with this. Owners who want full control to turn on/off VCM mode from the drivers seat may want to have a stereo shop install this toggle switch and wire if you have any concerns about doing this yourself.

1.14 Post Installation Testing

The temperature gauge on the dash should read approximately 3/8 of the way between the cold and hot level when warmed up and never halfway between hot and cold, there should be a slight visible difference in the needle location when the vehicle is warmed up with the product installed. If your engine is having an overheat symptom, the VCMTUNER II will automatically show the proper ECT temperature to the dash gauge if the engine exceeds the normal operating temperature of 212F, and re-engage VCM operation. On normal operation with VCM disabled, a scan-tool will show the reported temperature to the ECU between 161-165F (72-74c).

1.15 Minimal Battery Drain

Under normal operation while the vehicle is running, the VCMTUNER II utilizes a microcontroller with an accelerometer and can utilize up to 22mA. Once the vehicle key is shut off and the vehicle ECU no longer monitors the ECT circuit, the microcontroller goes into a sleep mode using between 8.5-9.5mA if connected directly to the vehicle battery. This amount of current draw is minimal (less than the power your vehicle uses to listen for your keyless entry system) and should not have an impact on battery life assuming the vehicle is started and utilized at least once a month. It is possible to run a +12v wire through

the firewall connected to the key-ignition source and connect this to the red wire on the VCMTUNER II instead of connecting the red wire to the battery. This will eliminate battery drain. As an example, most modern vehicles draw between 40 to 80mA in standby mode listening for keyless entry systems and security systems.

1.16 Troubleshooting

- **Temperature gauge does not move after 5 minutes of driving**
  Ensure all connectors are seated properly and connected to the system, including the red wire connected to the battery +12v. If the battery +12v is not connected to the red wire, this may generate a check engine code P0128. Remove the VCMTUNER II harness and ensure the factory connector works properly, then reinstall. If no temperature is available after some 5 minutes of driving, contact us for assistance. A replacement unit may be required from damage to the harness or wiring. You may also wish to check the in-line fuse on the red wire connected to the battery.

- **I have a check engine light P0118 ECT Sensor 1 Circuit High Voltage**
  Also can be seen as a "VSA WARNING" on the dash. This can occur if you remove the VCMTUNER II while the engine is still warm and the ECU is active. Even after removing the key from the ignition on the vehicle, there is still some residual voltage keeping the ECU awake for a period of time on some Honda/Acura models. If you have a code reader, you can clear it. Normally you want the engine cold before you remove the harness, like first thing in the morning to guarantee you do not trip this code. If the needle on the temperature gauge goes all the way to the hot level on the gauge, check for a damaged harness or the harness is not properly connected. This check engine code will normally go away after the problem is corrected within a few drive cycles. Make sure you clear the code w/ a code reader, if you do not have one autozone can sometimes do it for free. Select one of the options above and re-test to see if the check engine code persists.

  If you enabled the Engine Coolant Alarm feature as described above, in an overtemperature condition the VSA warning light will appear on the dash and the check engine code (p0118) will be set. The gauge will also go all the way hot. You will need to pull over, turn off the engine and key and restart the vehicle. The gauge will now work normally again. Once the check engine light is set the VCMTUNER II will show the normal operating temperature for that particular drive cycle. For the VCMTUNER II to re-enable VCM disabled operation, you will need to turn off the key for 5-10 minutes and then restart the vehicle.

1.17 Vehicle Fitment test groups CARB E.O. D-809-1 (ULEV through ULEVIII)

Make	Model	Engine Desc	Model Year
ACURA	MDX	3.5L NA	2005-2017
HONDA	PILOT	3.5L NA	2005-2017
HONDA	ODYSSEY	3.5L NA	2005-2017
ACURA	RDX	3.5L NA	2013-2017
HONDA	RIDGELINE	3.5L NA	2006-2017
HONDA	ACCORD	3.5L NA	2008-2017
HONDA	ACCORD CROSSTOUR	3.5L NA	2010-2011
HONDA	CROSSTOUR	3.5L NA	2012-2015
HONDA	TLX	3.5L NA	2015-2017

EXCLUDED TEST GROUPS (NON-ULEV EMISSION TEST GROUPS)

Make	Model	Engine Desc	Model Year	Test Group
HONDA	ACCORD	3.5L NA	2016	GHNXV03.5KK3
HONDA	ACCORD	3.5L NA	2017	HHNXV03.5GK3
HONDA	ACCORD	3.5L NA	2015	FHNXV03.5MK3
HONDA	ACCORD	3.5L NA	2014	EHNXV03.5SC3
HONDA	ACCORD	3.5L NA	2008	8HNXV03.5BMC
HONDA	ACCORD	3.5L NA	2009	9HNXV03.5EC3
HONDA	ACCORD	3.5L NA	2013	DHNXV03.5VC3