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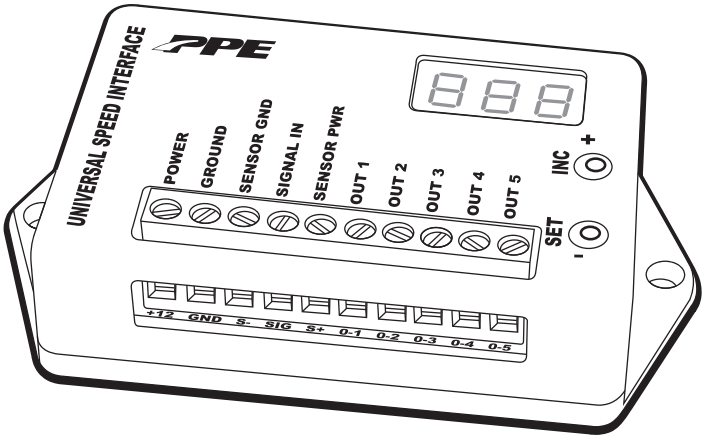


Speedometer Interface Module

(122010000)

Installation Guide

Universal Signal Interface

This unit is designed to recalibrate a speedometer signal or correct sine wave (AC)/squarewave ('oc') signal incompatibilities.

Here are some typical applications:

1: *Recalibrate a high speed (32,000ppm - 250,000ppm) signal for an OEM speedometer.* ***Do not use this unit to adjust a signal going to an anti-lock braking system.***

2: *Recalibrate a low speed (32,000ppm - 4,000ppm) signal for an OEM or aftermarket speedometer or fuel injection computer.*

3: *Convert a high-speed signal found on newer GM transmissions down to a low speed signal to run a speedometer, cruise control, or fuel injection computer.*

4: *Convert an 8000ppm signal from an aftermarket signal generator to a 4000ppm or 2000ppm to run an OEM cruise control or fuel injection computer.*

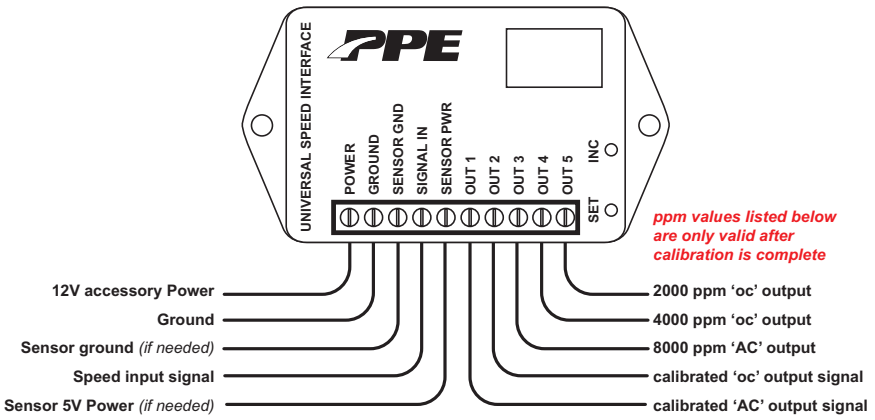
5: *Convert a 16000ppm signal from a VDO Hall Effect signal generator to an 8000ppm, 4000ppm, or 2000ppm to run a cruise control or fuel injection computer.*

6: *Convert a 4000ppm signal from an OEM transmission speed sensor or ECM out put to an 8000ppm signal for an aftermarket speedometer.*

7: *Convert an 8000ppm or 16000 ppm signal up to a high-speed 128,000ppm signal for a newer fuel injection computer.*

Wiring connections:

NOTE: This is a technically advanced product and if not installed correctly may cause incorrect vehicle operation and/or damage to vehicle components.



Setup tips:

If, without the interface, your speedometer reads much too fast, then you will most likely need to use application 3.

If, without the interface, your speedometer reads about ½ what it should, then you will most likely need to use application 6.

If your speedometer reads close to actual speed, you will probably need application 1 or 2.

If, without the interface, your speedometer reads much too slow, then you will most likely need to use application 7.

Here is a general overview:

Each of the different applications below will be described in detail starting on page 4 in this manual.

Set-up:

Set output mode: *Select the output mode depending on your application.*

H-H: *high speed in, high speed out. OUT3& 4 = 1/2 of OUT1, OUT5 = 1/4 of OUT1*
H-L: *high speed in , low speed out.*
OUT3 = 1/16 of OUT1, OUT4 = 1/32 of OUT1, OUT5 - 1/64 of OUT1
L-H: *low speed in , high speed out. OUT3& 4 = x16 of OUT1, OUT5 = x8 of OUT1*
L-L: *low speed in , low speed out. OUT3& 4 = 1/2 of OUT1, OUT5 = 1/4 of OUT1*

1: *Begin with the key off.*
2: *Press and hold the SET switch while turning the key on. The display will show the current version code.*
3: *Release the SET switch. The display will show "OUT"*
4: *Press and release the SET switch. The current output mode will be shown,*
H-H, H-L, L-H, L-L
Press and release the INC switch to change the output mode. Press and release the SET switch to save.

Advanced set-up:

Change input signal settings: *These settings are set automatically when the output mode is selected. If needed, they can be manually changed. The signal type can be changed between low voltage and high voltage signal types. The input pullup can be turned on or off.*
5 ,9: Lo or HI
P-U: ON or OFF
1: *Begin with the key off.*
2: *Press and hold the SET switch while turning the key on. The display will show the current version code.*
3: *Release the SET switch. The display will show "OUT".*
4: *Press and release the INC switch until "IN" is shown.*
5: *Press and release the SET switch. Press and release the INC switch to select "5 19", "P-U" or "END".*
6: *Press and release the SET switch. Press and release the INC switch to change the setting, press and release the SET switch to save it.*

Calibration

Adjust while driving:

To increase the speedometer reading, press and hold the "+" push button switch. To decrease the speedometer reading, press and hold the "-" push button switch. The calibration will only change when the vehicle is in motion and a speed signal is present.

Preset or adjust while parked:

The calibration value can be set from 0.250 - 4.00. Values below 1.00 will display as three digits with no decimal point. (0.250 = 250)

1: *Begin with the key off.*

2: *Press and hold the SET switch while turning the key on. The display will show the current version code.*

3: *Release the SET switch. The display will show "OUT".*

4: *Press and release the INC switch until "CAL" is displayed, then press and release the SET switch..*

5: *The display will show the one digit of the currently stored calibration value. Press and release the INC switch to set this from 0.-4. for your desired calibration value.*

6: *Once finished, press the SET switch to move to the tenths digit. Press and release the INC switch until your value is shown.*

7: *Press the SET switch to move to the hundredths digit. Press and release the INC switch until your desired value is shown.*

8: *Press the SET switch to save the hundredths digit. If the value is 1.00 or higher the calibration value will be saved. The calibration set is done.*

9: *If the value is 0.99 or lower the thousands digit will now be set. Press and release the INC switch until the desired value is shown. Press the SET switch to save and finish.*

10: *The display should not show the next menu option "IN". Turn the key off.*

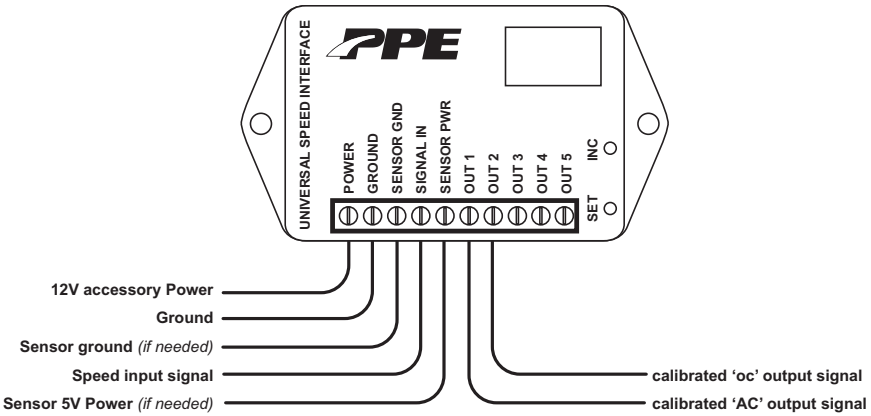
APPLICATION #1 (H-H)

Recalibrate a high speed (32,000ppm –250,000ppm) signal for an OEM speedometer or engine/transmission computer. ***Do not use this unit to adjust a signal going to an anti-lock braking system****. Anti-lock braking systems may not operate correctly or behave erratically due to the signal processing done to recalibrate the speed signal.*

These speed sensors have a two-pin connector that plugs into the transmission or transfer case. One of the wires will be a ground and the other will be the signal wire. The wires will usually go up under the dash and into the speedometer, vehicle speed buffer, or engine/transmission computer. The signal wire (signal high) will need to be cut so the Unit can recalibrate it. The sensor side of the wire will go to the SIGNAL IN terminal. The speedometer or buffer side will go to the OUT1 terminal. If the speedometer does not operate correctly after installation of the Unit you may need to switch to OUT2 instead of OUT1. Connect the POWER terminal to a 12-volt accessory wire and connect the GROUND terminal to a good ground location.

You can determine how far the speedometer is off by having it checked with radar, a GPS unit, or following another vehicle going at a set speed. Once you know how far it is off at a certain speed, you can use the push button switches to adjust the speedometer while you drive or use the following equation and then follow the instructions for calibration preset on page 3.

$$\frac{\text{Actual speed}}{\text{Speedometer reading}} \times \text{current Cal ratio} = \text{new Cal ratio}$$



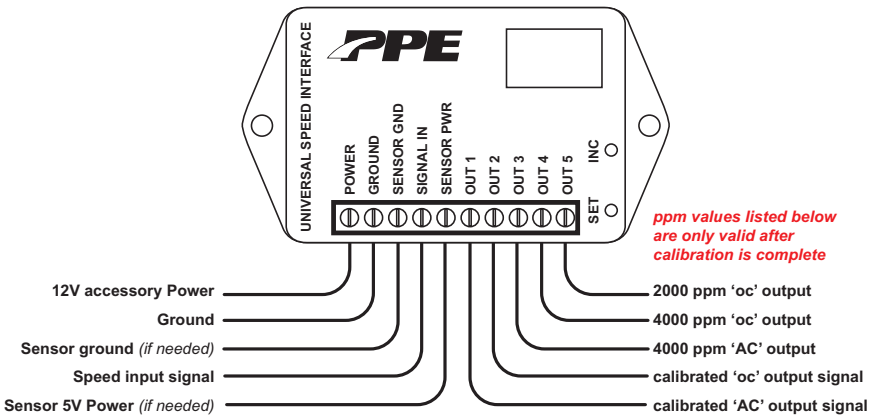
APPLICATION #2 (L-L)

Recalibrate a low speed (32,000ppm –4,000ppm) signal for an OEM or aftermarket speedometer or fuel injection computer.

Either two wire or three wire sensors can be recalibrated with this unit. Two wire sensors will typically have one wire as a ground and the other as the signal. Three wire sensors will have an additional power wire. You must first determine which wire is the signal. The signal wire will need to be cut so the Unit can recalibrate it. The sensor side of the wire will go to the SIGNAL IN terminal. The speedometer or computer side will go to the OUT1 terminal. If the speedometer does not operate correctly after installation of the Unit you may need to switch to OUT2 instead of OUT1. Connect the POWER terminal to a 12-volt accessory wire and connect the GROUND terminal to a good ground location.

You can determine how far the speedometer is off by having it checked with radar, a GPS unit, or following another vehicle going at a set speed. Once you know how far it is off at a certain speed, you can use the push button switches to adjust the speedometer while you drive or use the following equation and then follow the instructions for calibration preset on page 3.

$$\frac{\text{Actual speed}}{\text{Speedometer reading}} \times \text{current Cal ratio} = \text{new Cal ratio}$$



APPLICATION #3 (H-L)

Convert a high-speed signal found on newer GM transmissions down to a low speed signal to run a speedometer, cruise control, or fuel injection computer.

These speed sensors have a two-pin connector on the transmission or transfer case. One of the pins will be a ground and the other will be the signal. The ground pin will go to the GROUND terminal along with the ground wire. The signal pin will go to the SIGNAL IN terminal. It is best to twist the signal and ground wires from the sensor around each other. This helps eliminate any electrical interference. If nothing else is connected to the speed sensor it does not matter which pin is used as the ground. Connect the POWER terminal to accessory power. The output connections will depend on your particular application. Here are some typical examples:

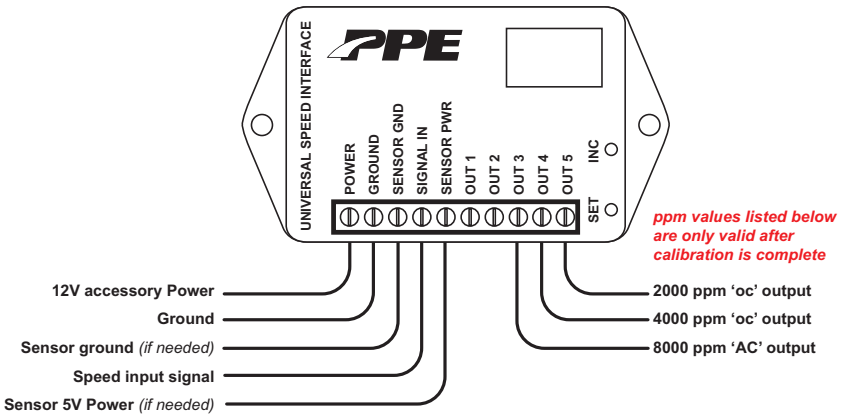
OUT3, 8000ppm AC: most aftermarket speedometers and cruise controls

OUT4, 4000ppm oc: most TPI computers and some OEM cruise controls

OUT5, 2000ppm oc: most TBI computers and some OEM cruise controls

You can determine how far the speedometer is off by having it checked with radar, a GPS unit, or following another vehicle going at a set speed. Once you know how far it is off at a certain speed, you can use the push button switches to adjust the speedometer while you drive or use the following equation and then follow the instructions for calibration preset on page 3.

$$\frac{\text{Actual speed}}{\text{Speedometer reading}} \times \text{current Cal ratio} = \text{new Cal ratio}$$



APPLICATION #4 (L-L)

Convert an 8000ppm signal from an aftermarket signal generator to a 4000ppm or 2000ppm to run an OEM cruise control or fuel injection computer.

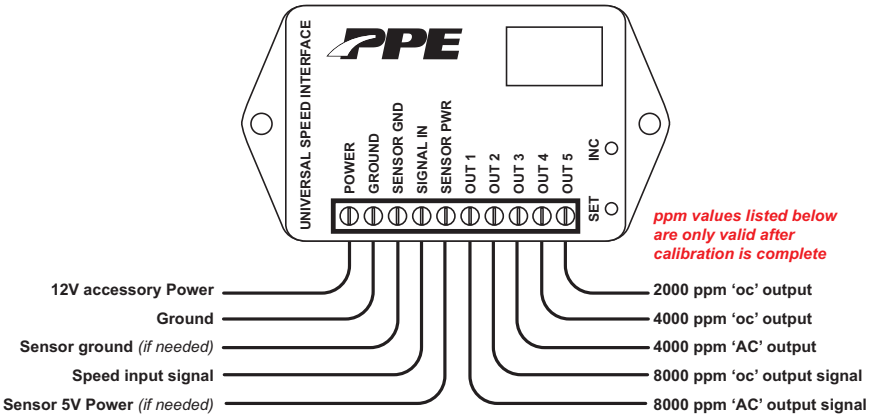
Either two wire or three wire sensors can be recalibrated with this unit. Two wire sensors will typically have one wire as a ground and the other as the signal. Three wire sensors will have an additional power wire. You must first determine which wire is the signal. The signal wire will be tapped into so the Unit can read it. The sensor signal wire will go to the SIGNAL IN terminal. Connect the POWER terminal to a 12-volt accessory wire and connect the GROUND terminal to a good ground location. If using a Jeep or Chrysler 3-wire, 8000ppm generator the Sensor Power wire can be used to feed power to the POWER terminal If nothing else is connected to a two wire sensor, then connect one wire to the GROUND terminal also. The output connections will depend on your particular application.

Here are some typical examples:
OUT3, 4000ppm AC: most TPI computers and some OEM cruise controls
OUT4, 4000ppm oc: use this if OUT3 does not provide a good signal
OUT5, 2000ppm oc: most TBI computers and some OEM cruise controls

APPLICATION #5 (L-L)

Convert a 16000ppm signal from a Hall Effect signal generator to 8000ppm, 4000ppm, or 2000ppm to run a cruise control or fuel injection computer. The Hall Effect sensor will have three wires. The white wire is the signal. The signal wire will be tapped into so the Unit can read it. The sensor signal wire will go to the SIGNAL IN terminal. Connect the POWER terminal to a 12-volt accessory wire and connect the GROUND terminal to a good ground location. The output connections will depend on your particular application. The CAL ratio should be set to 0.500 as a starting point.

Here are some typical examples:
OUT1, 8000ppm AC: most aftermarket cruise controls
OUT3, 4000ppm AC: most TPI computers and some OEM cruise controls
OUT4, 4000ppm oc: use this if OUT3 does not provide a good signal
OUT5, 2000ppm oc: most TBI computers and some OEM cruise controls



APPLICATION #6 (L-L)

Convert a 4000ppm signal from an OEM transmission speed sensor or ECM output to an 8000ppm signal for an aftermarket speedometer. The speed sensors have a two-pin connector on the transmission or transfer case. One of the pins will be a ground and the other will be the signal. The ground pin will go the GROUND terminal along with the groundwire.

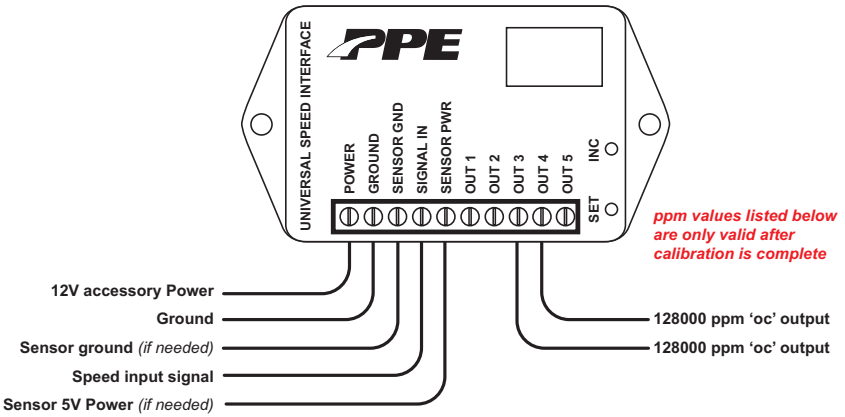
The signal pin will go to the SIGNAL IN terminal. It is best to twist the signal and ground wires from the sensor around each other. This helps eliminate any electrical interference. If nothing else is connected to the speed sensor it does not matter which pin is used as the ground. If you are picking up a signal coming out of the ECM there will be only one wire to the SIGNAL IN. Connect the POWER terminal to accessory power and the GROUND terminal to ground. The CAL ratio should be set to 2.000 as a starting point. Connect OUT1 to your aftermarket electric speedometer.

APPLICATION #7 (L-H)

Convert a 8000ppm or 16000ppm signal from a cable drive speed sensor to a 128000ppm signal for an OEM speedometer or ECM.

Either two wire or three wire sensors can be recalibrated with this unit. Two wire sensors will typically have one wire as a ground and the other as the signal. Three wire sensors will have an additional power wire. You must first determine which wire is the signal. The signal wire will be tapped into so the Unit can read it. The sensor signal wire will go to the SIGNAL IN terminal. Connect the POWER terminal to a 12-volt accessory wire and connect the GROUND terminal to a good ground location. If nothing else is connected to a two wire sensor, then connect one wire to the GROUND terminal also. The output connections will depend on your particular application. With an 8000ppm signal the CAL ratio can start out at 1.00. If starting with a 16000ppm signal the CAL ratio should be set to 0.500 as a starting point.

Here are some typical examples:
OUT3, 128000 ppm AC: most common if OEM sensor connected to ECM directly
OUT4, 128000 ppm oc: most common if an ECM was fed by another electronic module



Diagnostic Testing

The basic power up and operation can be verified with the display on the Unit. The dot in the upper left corner will be on steady when the unit is powered up and not getting a speed signal. The dot will be flashing when a speed signal is present. When the key is first turned on, the display will show the current CAL value for a few seconds. If both switches are pressed at the same time the current, incoming speed signal frequency will be displayed. If the frequency displayed has a decimal point, then the reading is kHz, otherwise the reading is Hz.

Both the input and outputs can be tested with special diagnostic modes.

To test the outputs and speedometer reading while sitting still:

1: *Begin with the key off.*

2: *Press and hold the SET switch while turning the key on. The display will show the current version code.*

3: *Release the SET switch. The display will show "OUT".*

4: *Press and release the INC switch until "REF" is shown.*

5: *Press and release the SET switch. The display will show "33" and be supplying a 33Hz signal on OUT1 and OUT2.*

6: *Press and release the INC switch to select "33", "6+7", "133, or "533". The output signal will change immediately.*

7: *Press and release the SET switch to quit.*

To test the input while driving:

1: *Begin with the key off.*

2: *Press and hold the INC switch while turning the key on. The display will show "TST".*

3: *Release the SET switch. The display will show "- - -".*

4: *Anytime either switch is pressed the display will update and hold the frequency. This can be done while driving at a specific speed (like 30MPH or 60MPH) to determine the type of signal being fed to the Unit E. This information can be supplied to tech support to assist in setup and configuration of the unit.*

5: *The unit will remain in this mode until the key is turned off.*

Troubleshooting Guide

Problem	Possible cause	Solution
Speedometer does not work. No lights on display.	No power to unit	Check the POWER and GROUND terminals on the unit. Should be 11-15Vdc
Speedometer does not work. Dot on steady.	No input signal. Unit set for wrong input type. Grounding interference.	Test for 1-20 volts AC at the signal in terminal with the wheels spinning. Check output type setup. Make sure both speed sensor and the unit are grounded at the same point.
Speedometer does not work. Dot is flashing.	Wrong output type.	Try switching from an oc to AC output or from an AC to oc output.
Speedometer will not read at low speeds.	Unit set for wrong input type. Speed signal too low.	Change input signal setup to LO. Check speed connections for ground problems or shorts. Test the ground connection between the unit and the sensor.
Speedometer will read when vehicle is sitting still.	Tach wore too close to speed signal wire. Signal IN and OUT wires routed too close. Ground interference. Sensitivity set incorrectly.	Route the speed sensor and the tachometer wires away from each other to avoid interference. Route the input wires away from each other to avoid feedback. Make sure the speed sensor and the unit are grounded together. Change signal setup to HI
Transmission does not shift properly, or not at all.	Wired improperly. Incorrect application. Input pullup interfering.	Contact Technical Support. Change input pullup setup to OFF.

DISCLAIMER OF LIABILITY

Performance products can increase horsepower above and beyond factory specifications. Additional horsepower creates more stress on the drive-train components, which could result in drive-train failure.

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