



Installation and User Manual

Quick start guide

Determine mounting location

We recommend your Tach Emulator be mounted in the cab of the vehicle. The module is water-resistant and can also be mounted in the engine bay away from exhaust components

Running and splicing wires - Run wires from your Novak Tach Emulator to the following locations

Red - 12V key on power source

Black - Ground

White - This is the input tachometer signal
GEN III PCM - Red or Green connector pin 10
GEN IV PCM - Black pin 48

Green - Emulated CKPS signal to the Jeep PCM
TJ/XJ 1996 to 2004 - GY / BK pin A8 of Black Cxn
TJ/JK 2005 to 2010 - BR / LB pin 35 Orange Cxn

Orange or Brown - Emulated CMPS to the Jeep PCM
TJ/XJ 1996 to 2004 - TN / YL A18 of Black Cxn
TJ/JK 2005 to 2010 - Not Needed

Pg. 1

Start vehicle to verify tachometer calibration

Monitor the Engines' actual RPM through the GM OBDII port using a capable scanner (not supplied)

If the Tachometer gauge does not match the actual engine RPM, follow these steps

1. **Move the Jumper** from the run position to the setup position
2. **Start vehicle and compare tach** with actual RPM
3. **Adjust the tach output** with the small brass screw (potentiometer). Turn the screw in the direction you want the tach needle to move

Pro tip - Raise your engine rpm to 2000 when adjusting your Tach emulator. This will improve accuracy through the entire range of the gauge

4. **Move the jumper** from the top setup pin to the bottom run pin

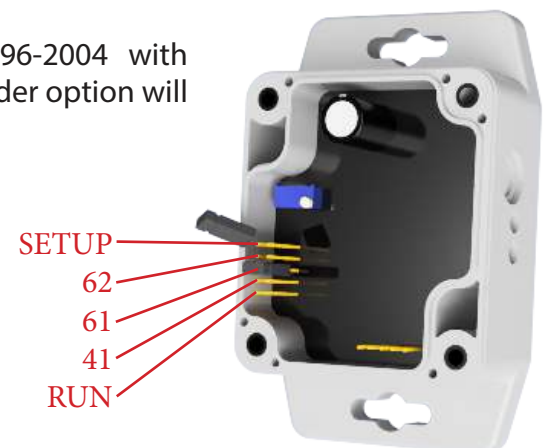
Pg. 2

Run Modes

TJ/JK from 2005 - 2010 will use 62 mode

XJ/TJ from 1996-2004 with the 4.0L 6 cylinder option will use 61 mode

XJ/TJ from 1996-2004 with the 2.5L 4 cylinder option will use 41 mode



If you are experiencing difficulties & need help further troubleshooting your Tachometer Emulator Module, refer to troubleshooting. If problems persist, you may call our Technical/Sales Staff at (877)602-1500 9am-5pm MST, Monday-Friday.

©Novak, Inc.

www.novak-adapt.com
support@novak-adapt.com

Pg. 3

Problem	Cause	Possible Solutions
1. Tach needle has no response to engine speed and the tach emulators LEDs do not light up.	A. No power to the unit.	1. Turn the key to the on position and double check with a 12v check light or voltmeter that the Tach module is receiving 12v power. 2. Check continuity with the Tach modules ground and the vehicles negative battery terminal. 3. Make sure the jumpers are fully seated and positioned in the correct mode for your vehicle.
2. Tach needle has no response to engine speed. Red LED is solid on and the Green LED is not flashing.	A. Not receiving the correct or any input from GM PCM.	1. If the GM PCM was not programmed by Novak, the Tach output must be adjusted in the PCM programming. Adjust the tach output resolution to "3 HI" and "3 LOW" for 24x crank reluctor rings or "7 HI" and "8 LOW" for 58x crank reluctor rings. If the option is there, set the tach output to "CRANK". (The Gen III engines (LS1/LS6/LQ4, and early LS2) came with a 24x (24 tooth) reluctor wheel while the Gen IV engines (LS7/LS3/LS9, and later LS2) were fitted with a 58x wheel. One easy way to tell which reluctor wheel you have is to look at the crankshaft sensor. If it's black, you have a 24x wheel; if the sensor is gray then you have a 58x wheel. 2. Double check the white wire is connected to the correct GM PCM pin. GEN III use pin 10 on the red/green connector. GEN IV use pin 48 on the Black connector.
3. Tach needle has no response to engine speed. Red LED is lit and the Green LED flashes to the engine speed.	A. Potentiometer is out of adjustment. B. Signal from Emulator is not reaching the Jeep PCM. C. Jeep dash is not receiving signal from Jeep PCM. D. Jumpers are in the wrong position. E. Gauge cluster or Jeep PCM need replacing	1. If the potentiometer is adjusted too far out of range, the needle will sit at or near 0 RPM or maxed out around 7400 RPM. Follow the standard steps to put the module into setup mode. If the needle is at 0, turn the coarse screw clockwise to see if the needle slowly starts to come up. If the needle is maxed out, turn the coarse screw counter-clockwise till the needle falls into range. Proceed with adjustments to fine tune the tach to the engines actual RPM's. If you reach the limits of the adjustment screw, the RED LED on the tach module will begin flashing. Refer to BLINKING RED LED below. 2. Double check that the Green (for all models) and Orange (61 and 41 modes only) wires, are connected to the correct pins in the Jeep PCM and that they haven't backed out of the connector. 3. Be sure the Jumpers are in the correct mode for your year and model of Jeep.
4. BLINKING RED LED.	A. The adjustment screw is too far out of adjustment.	1. 3 flashes indicate you have tightened (turned to the right) the potentiometer too far. 4 flashes indicate you have loosened (turned to the left) the potentiometer too far. Turn the potentiometer back until the RED LED stops flashing. Restart the vehicle.
5. None of the gauges are working.	A. Communication error between Jeep PCM and Gauge cluster. B. Missing power or ground to PCM or Gauge cluster.	1. Check with your vehicles specific service manual and find and verify that the "PCI bus" or "CCD Bus+/-" circuit wires are still installed. This circuit carries sensor data from the Jeep PCM to the gauge cluster. Also verify that all 12v+ power and Ground connections are still installed. *The oil pressure gauge will not work until the tachometer gauge is functioning and the stock oil pressure sender is installed.
6. Emulator only works sometimes.	A. Emulator power up is interrupted by losing power while cranking. B. Loose or dirty power connections.	1. Check that the emulator remains powered while the engine starter is cranking. Some ignition sources will cut power while the engine is cranking and this can interrupt the important startup procedures the emulator goes through. 2. Make sure your power and ground connections are clean.