

# SIRHC LABS

## SPEED SENSOR ADAPTER V2 INSTALLATION INSTRUCTIONS

Revision 2.0.0

### DEVICE OVERVIEW

#### COMPATIBLE SENSOR TYPES

- All magnetic/variable reluctance (VR)/inductive sensors (transmission speed, wheel speed, cam/crank position).
- Most two-wire hall effect ABS wheel speed sensors.

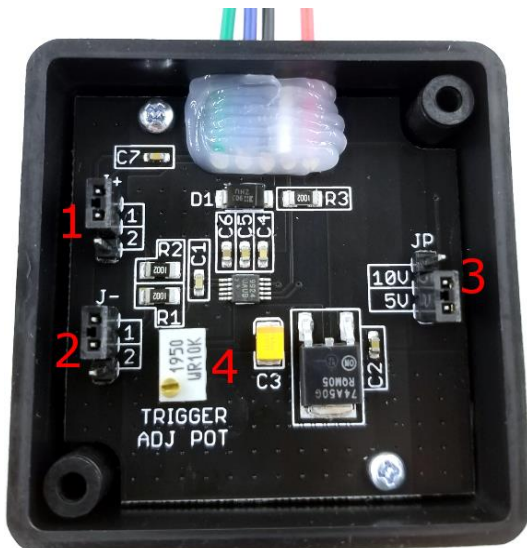
#### ELECTRICAL SPECIFICATIONS

<b>Supply Voltage</b>	12-40 V
<b>Output</b>	10 k $\Omega$ pull-up to 5V (Produces 0-5 V Square Wave) 10 k $\Omega$ pull-up to 10V (Produces 0-10 V Square Wave) Open-drain (External pull-up required to create square wave)
<b>Maximum Input Signal Voltage</b>	+/- 200 V

#### WIRE COLOR / EXTERNAL CONNECTIONS

<b>Red</b>	12-40 V Supply Voltage
<b>White</b>	Output
<b>Black</b>	Ground
<b>Blue</b>	Sensor IN-
<b>Green</b>	Sensor IN+

#### COMPONENT IDENTIFICATION



1. IN+ Configuration Jumper (J+)
2. IN- Configuration Jumper (J-)
3. Pull-Up Configuration Jumper (JP)
4. Trigger Adjustment Potentiometer

## INSTALLATION INFORMATION


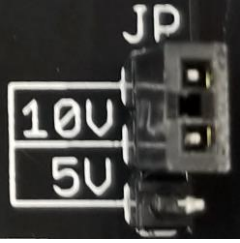
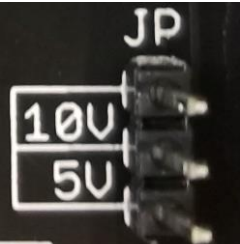
### OUTPUT CONFIGURATION

The output of the Speed Sensor Adapter V2 can be configured to provide a 5V or 10V square wave using an internal 10kΩ pull-up resistor, or it can be configured as an open-drain output for applications that already have an existing external pull-up resistance. In the open-drain configuration the output will switch between an open-circuit and ground instead of producing a square wave.

When using the Speed Sensor Adapter V2 with the Cortex EBC the output should be configured for 5V output.

When connecting to devices other than the Cortex EBC the device input may have an existing pull-up resistance in place. This can be checked by measuring the voltage between the device input and ground with nothing connected to the input. If a voltage of 5 V or higher is measured the input has an internal pull-up resistance and the adapter should be configured for open-drain output.


The output configuration for the device is determined by the position of the Pull-Up Configuration Jumper.

	<b>0-5 V SQUARE WAVE OUTPUT</b>
	<b>0-10 V SQUARE WAVE OUTPUT</b>
	<b>OPEN-DRAIN (REMOVE JUMPER)</b>

## GENERAL VR SENSOR CONFIGURATION AND WIRING

To connect the Speed Sensor Adapter V2 to a VR type sensor use the information provided in the following tables. For optimal performance try to keep the length of the wires between the adapter and sensor as short as possible and twist the wires around each other to create a “twisted pair.”





	<b>IN+ CONFIGURATION JUMPER (J+): POSITION 1</b>
	<b>IN- CONFIGURATION JUMPER (J-): POSITION 1</b>

<b>Red Wire</b>	Connect to 12-40 V voltage source.
<b>White Wire</b>	Connect to RPM or vehicle speed input on Cortex EBC, or digital input on other device.
<b>Black Wire</b>	Connect to clean chassis ground.
<b>Blue Wire</b>	<b>NON-INVERTED OUTPUT:</b> Tap into +/HI sensor wire. <b>INVERTED OUTPUT:</b> Tap into -/LO sensor wire.
<b>Green Wire</b>	<b>NON-INVERTED OUTPUT:</b> Tap into -/LO sensor wire. <b>INVERTED OUTPUT:</b> Tap into +/HI sensor wire.

## ALTERNATIVE NOISE REDUCTION VR SENSOR CONFIGURATION AND WIRING

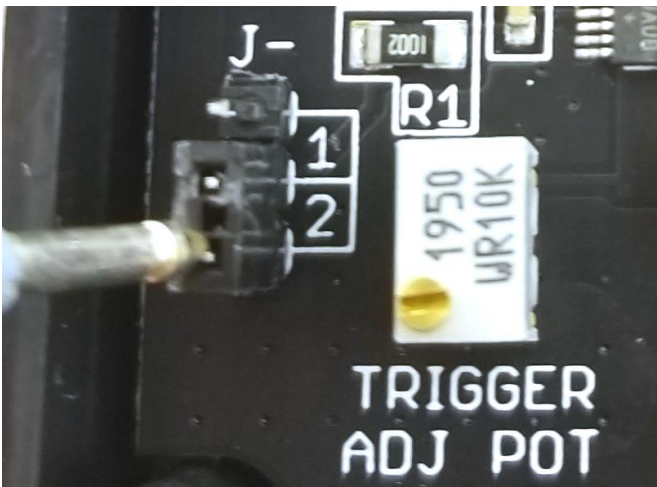
When using the Speed Sensor Adapter V2 to interface with a vehicle speed sensor electrical noise may cause the adapter to output pulses while the vehicle is stationary. This behavior can be eliminated in most cases by connecting one lead of the sensor to chassis ground and using a voltage to bias the adapters trigger point.

**WARNING: THIS METHOD SHOULD NOT BE USED IF THE VR SENSOR IS CONNECTED TO ANY OTHER DEVICES BESIDES THE SPEED SENSOR ADAPTER V2!**

	<b>IN+ CONFIGURATION JUMPER (J+): POSITION 1</b>
	<b>IN- CONFIGURATION JUMPER (J-): POSITION 2</b>

<b>Red Wire</b>	Connect 12-40 V voltage source.
<b>White Wire</b>	Connect to vehicle speed input on Cortex EBC, or digital input on other device.
<b>Black Wire</b>	Connect to clean chassis ground.
<b>Blue Wire</b>	Leave floating.
<b>Green Wire</b>	Connect to Lead 1 from VR sensor.

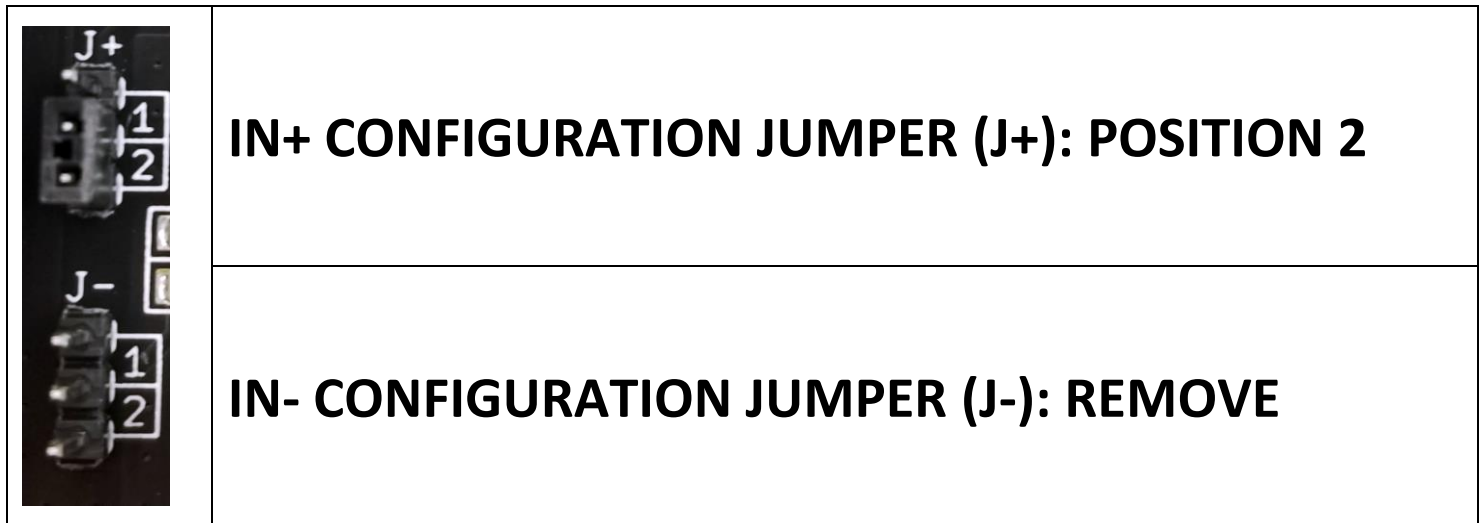
<b>Sensor Lead 1</b>	Connect to green wire on Speed Sensor Adapter V2.
<b>Sensor Lead 2</b>	Connect to ground.

	After setting the IN- Configuration Jumper to position 2 the trigger voltage must be adjusted using the Trigger Adjustment Pot. Turning the potentiometer adjustment screw clockwise will increase the trigger voltage. The trigger voltage can be measured by touching the positive multimeter probe to the opening in the top of the J-jumper (as shown in picture to left) and touching the negative multimeter probe to ground. A higher trigger voltage will result in improved noise rejection but will increase the minimum speed that must be achieved before the adapter will output a signal. The trigger voltage is set to 0.25 V during production and this is usually a good starting point.
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## 2-WIRE HALL TYPE ABS SENSOR INTERFACING

To determine which sensor wire carries the signal from a 2-wire Hall type sensor use a multimeter to measure the DC voltage between each sensor wire and ground. These measurements must be taken with the sensor connected to the vehicle's ABS system and the ignition must be set to the 'on' position.

- If you measure around 11 V on one sensor wire and 0 V on the other sensor wire the signal is on the high voltage wire.
- If you measure 11 V on one sensor wire and 0.5-1.5 V on the other sensor wire the signal is on the low voltage wire.



<b>Red Wire</b>	Connect 12-40 V voltage source.
<b>White Wire</b>	Connect to RPM or speed input on Cortex EBC, or digital input on other device.
<b>Black Wire</b>	Connect to clean chassis ground.
<b>Blue Wire</b>	Leave floating.
<b>Green Wire</b>	Connect to ABS sensor signal wire.