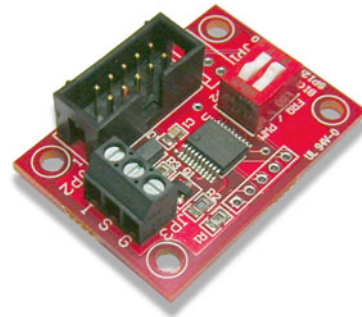


The SPI2FREQ adapter can be used to convert SPI digital signals to a PWM (Pulse Width Modulation) or Frequency output suitable for controlling real electronic aftermarket automotive gauges.

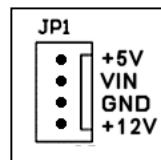


### Features:

- Analog or digital SPI input
- Frequency output suitable for most electronic 4/6/8 Cylinder Tachometers and Programmable Speedometers
- PWM output suitable for controlling standard electronic gauges: Fuel Level, Fuel Pressure, Water Temp, Oil Temp, Oil Pressure, Turbo & Voltage (0-12V)
- Compatible with all modules with SPI support

### Connecting the SPI2FREQ Card:

**JP1 ANALOG Input:** Set the dipswitch selector to *JP1*. Connect *JP1* to any 0-5V DAC output using a maximum cable length of 36" (22-24 AWG stranded wire).



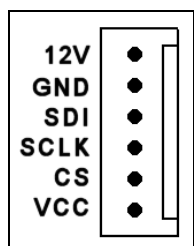
**12V:** +12VDC

**GND:** Ground pin

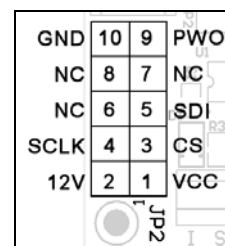
**VIN:** 0-5VDC input pin

**NC:** No contact. Leave this pin unconnected.

**JP2 SPI Input:** Set dipswitch selector to *JP2*. Connect *JP2* to any SPI compatible output using a maximum cable length of 36" (22-24 AWG stranded wire).



R1.00



R1.10

**GND:** Ground pin.

**PWO:** No contact. Leave unconnected.

**12V:** +12VDC

**VCC:** +5VDC

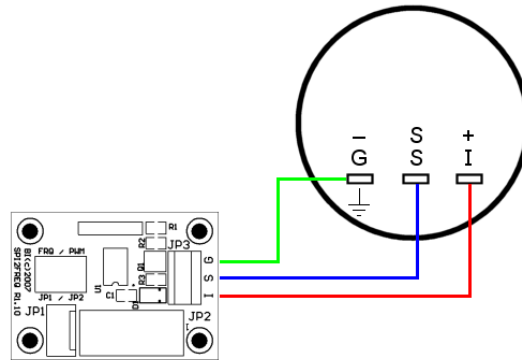
**CS:** Chip Select line. Set CS Line to LOW in device manager.

**SCLK:** SPI clock line.

**SDI:** SPI Data In line.

**NC:** No contact. Leave this pin unconnected.

## Connecting Electronic Gauges:

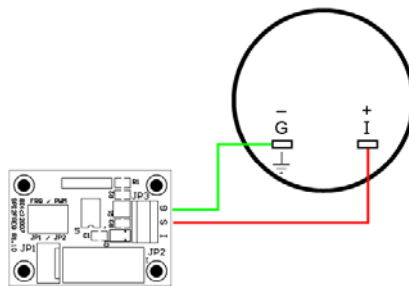


**G/-:** Ground  
**S:** Sensor or Sender Input  
**I/+:** +12VDC

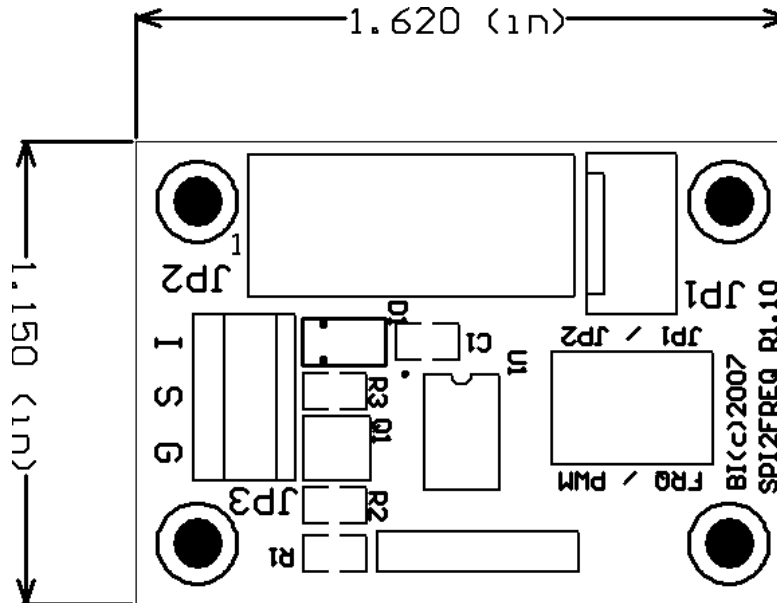
**IMPORTANT: DO NOT CONNECT GAUGE BACKLIGHT to the SPI2FREQ adapter. Use an external 12V power supply for all gauge backlights.**

## Jumper Settings

Gauge	Dipswitch Setting	Instructions
Speedometer	FREQ	Using the USBSPIDAC.exe utility set the output to the max value.  Set the speedometer to manual calibration and set the pulse-per-mile or pulse-per-km to a value that will move the pointer just beyond the maximum position on the dial. A typical starting value of 20000 pulses is common for most speedometers.  For maximum compatibility, choose a programmable speedometer capable of reading a pulse rate of 500 to 400000.
Tachometer	FREQ	Using the USBSPIDAC.exe utility set the output to the max value.  If the pointer does not reach the max position on the dial, change the setting to 4, 6 or 8 cylinders on the TACH so that the pointer moves beyond the maximum position on the dial.
Fuel	PWM	
Fuel Pressure	PWM	

Water Temp.	PWM	
Oil Temp.	PWM	
Oil Pressure	PWM	
Turbo	PWM	
Voltage	PWM	<p>The Voltage gauge will not have an "S" pin. Connect the meter as follows:</p> 

**Mechanical Specifications:**



Visit [www.betainnovations.com](http://www.betainnovations.com) for the availability of expansion modules and accessories.