TPRS-002, RPM Window Switch with Throttle Position Input.

Description, The TPRS-002 RPM Window Switch provides a +12 volt output that is controlled by RPM and/or a Throttle Position Sensor signal (0 to 5 volt). The Throttle Position Input function can be turned OFF to provide a RPM Window Switch controlled output. The RPM Window function can also be turned OFF to provide a Throttle Position Switch controlled output. Or, both control functions can be used together to control the +12 volt output based on Engine RPM and Throttle Position.

The Throttle Position Input has been designed to tolerate a +12 volt input signal. This allows a Typical Nitrous Wide Open Throttle Switch to be used with the RPM Window Switch function.

The TPRS-002 has been designed work to with several different types of engines. There are five different RPM Input options for each of the three RPM ranges.

1—One input pulse for every two crankshaft revolutions. (Newer sport bikes)
2—One input pulse for each crankshaft revolution. (typical single and twin cylinder)
3—Two input pulses for each crankshaft revolution. (typical 4-cylinder operation)
4—Three input pulses for each crankshaft revolution. (typical 6-cylinder operation)
5—Four input pulses for each crankshaft revolution. (typical 8-cylinder operation)

The TPRS-002 provides three different RPM ranges.

Low Range—3,000 RPM to 9,250 RPM in 250 RPM increments.
Mid Range—6,000 RPM to 12,500 RPM in 250 RPM increments.
High Range—6,000 RPM to 16,000 RPM in 500 RPM increments.

Table of Contents,

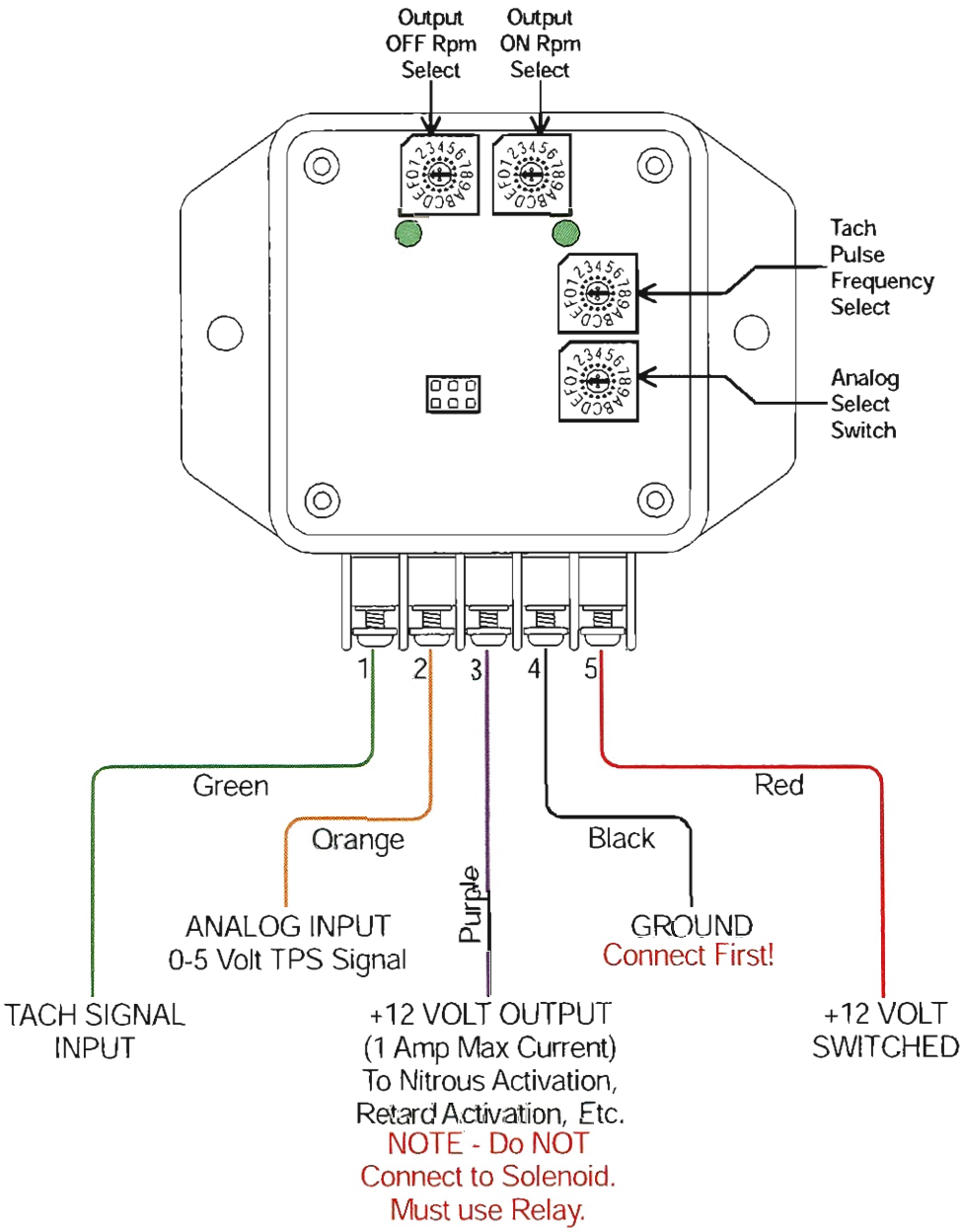
Description and Warranty Information	Page 1
Wiring Diagram	Page 2
Example Dry Nitrous Diagram	Page 3
Setting the Analog Select Switch (throttle position input)	Page 4
Setting the Tach Pulse Frequency Select Switch	Page 5
Setting the RPM Window Switches for Low RPM Range	Page 6
Setting the RPM Window Switches for Mid RPM Range	Page 7
Setting the RPM Window Switches for High RPM Range	Page 8
Example Settings…	Page 9

WARRANTY—Schnitz Motorsports warrants to the original purchaser that the TPRS-002 shall be free from defects in parts and workmanship under normal use for 90 days from the date of purchase.

Schnitz Motorsports obligation under this warranty is limited to the repair or replacement of any component found to be defective when returned postpaid to Schnitz Motorsports. The Controller must be returned with evidence of place and date of purchase or warranty will be void. The warranty will not apply if the TPRS-002 has been installed incorrectly, repaired, damaged, or tampered with by misuse, negligence or accident.

IMPORTANT— The TPRS-002 must be used with Static Suppression Ignition Wires! If an ignition wire (sparkplug wire) is used that contains a Metal Core or is NOT listed as a Static Suppression wire the TPRS-002 will NOT function correctly and permanent damage may result.

TPRS-002 Wiring Diagram, See pages 4-8 for information on Setting the Programming Switches.



1—TACH SIGNAL INPUT, Connect to Ignition coil negative terminal or Ignition Tach Signal Output.

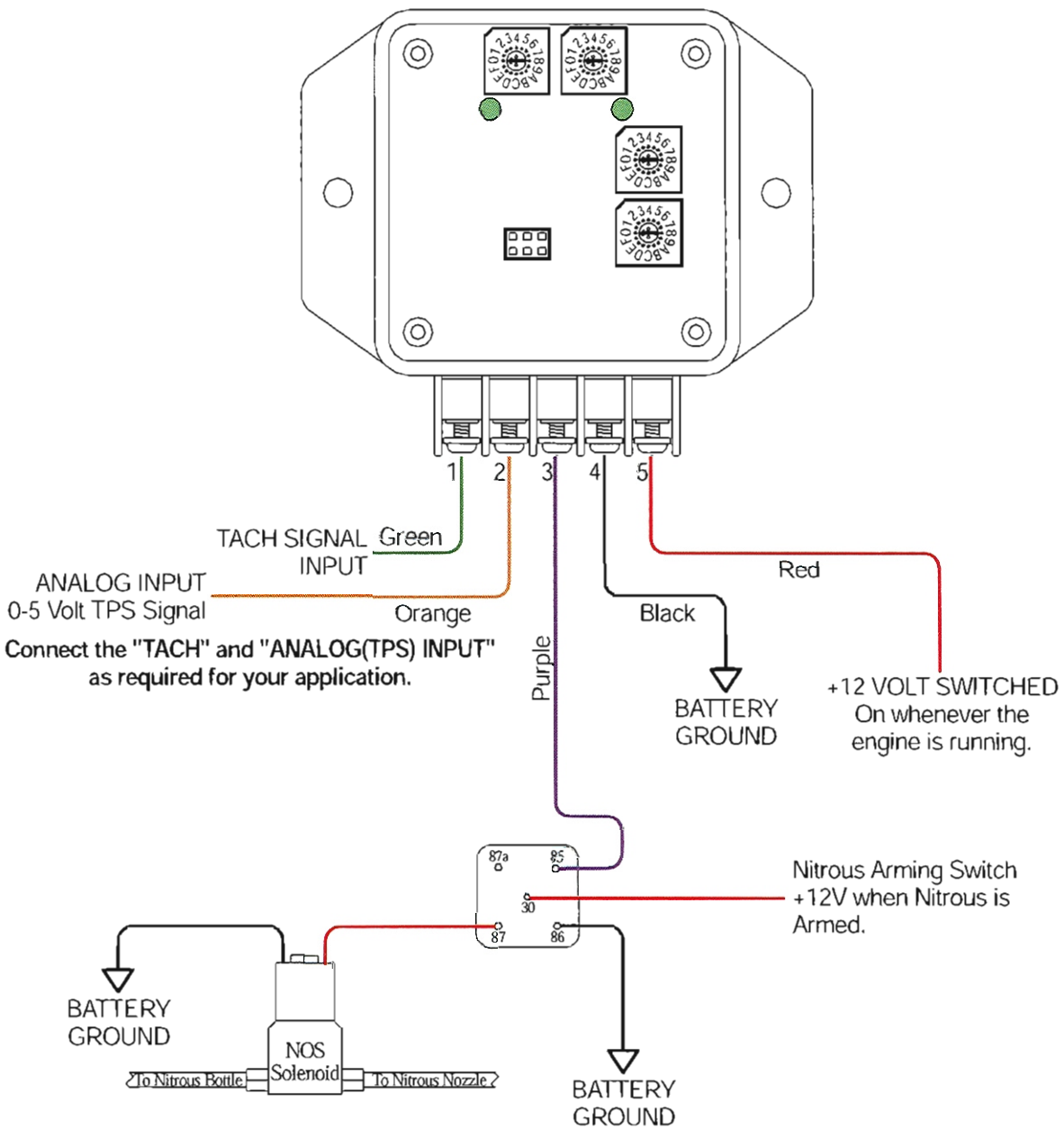
2—ANALOG INPUT, Connect to Throttle Position Sensor signal wire(0 to 5 volt). A +12V signal can also be used with this input to enable-disable the +12V Output. Example-Connect to Wide Open Throttle switch.

3—+12 VOLT OUTPUT, Use to control Nitrous Activation or ?

4—GROUND, Connect directly to Battery Negative Terminal if possible.

5—+12 VOLT SWITCHED, Connect to a Switched +12V source (Ignition switch, the TPRS-002 should be powered any time it is connected to TPS signal).

TPRS-002 Example Wiring Diagram



Setting the Analog Select Switch (throttle position input)

F—Disable ANALOG INPUT (throttle position input).

0 = **1.00 volts**

1 = **1.50 volts**

2 = **2.00 volts**

3 = **2.25 volts**

4 = **2.50 volts**

5 = **2.75 volts**

6 = **3.00 volts**

7 = **3.25 volts**

8 = **3.50 volts**

9 = **3.75 volts**

A = **4.00 volts**

B = **4.25 volts**

C = **4.50 volts**

D = **4.75 volts**

E = **4.90 volts**

How to Set and Test the ANALOG INPUT

1st—Connect the ANALOG INPUT to the TPS (Throttle Position Sensor) signal wire as outlined in the Wiring Diagram section. You will need to use a factory wiring diagram for each system to determine which wire is the TPS signal wire.

2nd—Set the Analog Select switch to the desired turn-on voltage. Turn on the TPRS-002 and slowly apply the throttle until left (Analog Input) Green LED light turns ON. If the throttle is NOT at the desired position for Activation then adjust the Analog Select switch as needed. You must turn OFF the TPRS-002 and turn it back on to read a new switch position.

NOTE—Set the Analog Select switch to F to disable the Analog Input (TPS) function.

CAUTION—When both the LED's are ON the +12 Volt Output will also be ON.

Setting the Tach Pulse Frequency Select Switch

F—Disable Window RPM function.

0 = **Low Range**, 1 pulse per 2 crankshaft revolutions.

1 = **Low Range**, 1 pulse per crankshaft revolution.

2 = **Low Range**, 2 pulses per crankshaft revolution.

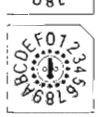
3 = **Low Range**, 3 pulses per crankshaft revolution.

4 = **Low Range**, 4 pulses per crankshaft revolution.

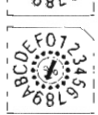
5 = **Mid Range**, 1 pulse per 2 crankshaft revolutions.

6 = **Mid Range**, 1 pulse per crankshaft revolution.

7 = **Mid Range**, 2 pulses per crankshaft revolution.



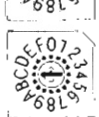
8 = **Mid Range**, 3 pulses per crankshaft revolution.



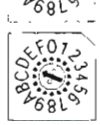
9 = **Mid Range**, 4 pulses per crankshaft revolution.

A = **High Range**, 1 pulse per 2 crankshaft revolutions.

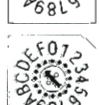
B = **High Range**, 1 pulse per crankshaft revolution.



C = **High Range**, 2 pulses per crankshaft revolution.



D = **High Range**, 3 pulses per crankshaft revolution.



E = **High Range**, 4 pulses per crankshaft revolution.

How to Set and Test the TACH PULSE FREQUNCY.

1st—Connect the TACH SIGNAL INPUT as outlined in the Wiring Diagram section.

2nd—Determine how many Ignition Signals per crankshaft revolutions your engine/ignition produces. Refer to the chart below for the most common configurations.

EFI Sport Bike—1 pulse per two revolutions.
Single, Twin, and Four cylinder motorcycles connected to just one coil negative terminal—1 pulse per revolution.
Four Cylinder Motorcycle using ignition Tach Output signal wire—2 pulse per revolution.
Four Cylinder Car with Distributor—2 pulse per revolution.
Six Cylinder Car with Distributor—3 pulse per revolution.
Eight Cylinder Car with Distributor—4 pulse per revolution.

3rd—Determine which RPM range is desired.

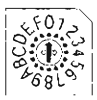
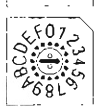
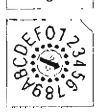
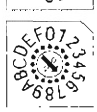
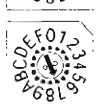
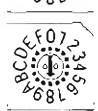
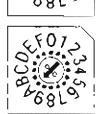
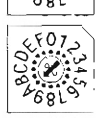
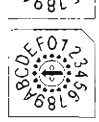
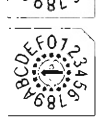
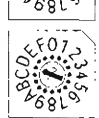
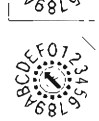
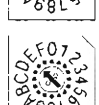
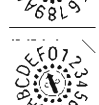
Low Range—3,000 RPM to 9,250 RPM
Mid Range—6,000 RPM to 12,500 RPM
High Range—6,000 RPM to 16,000 RPM

4th—Set the Tach Pulse Frequency Select switch to proper setting. Example-1 pulse per revolution, High RPM Range = B.

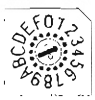
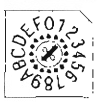
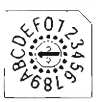
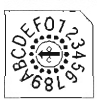
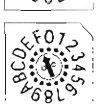
5th—The Window RPM function may be tested by Setting the TPRS-002, starting the vehicle and watching the right (Window RPM) Green LED. When the Engine RPM is above the ON RPM Setting and below the OFF RPM setting the Green LED will light up. If the LED fails to light or comes on at the wrong RPM, the Pulse Frequency setting is NOT correct.

CAUTION—**When both the LED's are ON the +12 Volt Output will also be ON.**

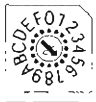
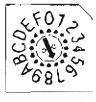
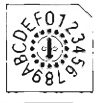
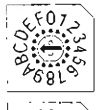
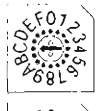
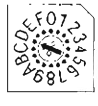
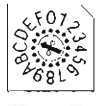
Setting the RPM Window Switches for Low RPM Range

ON RPM	OFF RPM
 0 = 3,000 RPM	0 = 5,500 RPM
1 = 3,250 RPM	1 = 5,750 RPM
2 = 3,500 RPM	2 = 6,000 RPM
3 = 3,750 RPM	3 = 6,250 RPM
 4 = 4,000 RPM	4 = 6,500 RPM
 5 = 4,250 RPM	5 = 6,750 RPM
 6 = 4,500 RPM	6 = 7,000 RPM
7 = 4,750 RPM	 7 = 7,250 RPM
8 = 5,000 RPM	 8 = 7,500 RPM
9 = 5,250 RPM	9 = 7,750 RPM
 A = 5,500 RPM	 A = 8,000 RPM
B = 5,750 RPM	B = 8,250 RPM
 C = 6,000 RPM	 C = 8,500 RPM
 D = 6,250 RPM	D = 8,750 RPM
 E = 6,500 RPM	 E = 9,000 RPM
 F = 6,750 RPM	F = 9,250 RPM

Setting the RPM Window Switches for Mid RPM Range

ON RPM	OFF RPM
0 = 6,000 RPM	0 = 8,750 RPM
1 = 6,250 RPM	1 = 9,000 RPM
2 = 6,500 RPM	2 = 9,250 RPM
 3 = 6,750 RPM	3 = 9,500 RPM
4 = 7,000 RPM	4 = 9,750 RPM
5 = 7,250 RPM	5 = 10,000 RPM
6 = 7,500 RPM	6 = 10,250 RPM
7 = 7,750 RPM	7 = 10,500 RPM
8 = 8,000 RPM	8 = 10,750 RPM
9 = 8,250 RPM	9 = 11,000 RPM
A = 8,500 RPM	 A = 11,250 RPM
B = 8,750 RPM	B = 11,500 RPM
 C = 9,000 RPM	 C = 11,750 RPM
D = 9,250 RPM	D = 12,000 RPM
E = 9,500 RPM	E = 12,250 RPM
F = 9,750 RPM	 F = 12,500 RPM

Setting the RPM Window Switches for High RPM Range

ON RPM	OFF RPM
0 = 6,000 RPM	0 = 8,500 RPM
1 = 6,500 RPM	1 = 9,000 RPM
2 = 7,000 RPM	2 = 9,500 RPM
3 = 7,500 RPM	3 = 10,000 RPM
4 = 8,000 RPM	4 = 10,500 RPM
5 = 8,500 RPM	5 = 11,000 RPM
6 = 9,000 RPM	 6 = 11,500 RPM
 7 = 9,500 RPM	7 = 12,000 RPM
8 = 10,000 RPM	 8 = 12,500 RPM
9 = 10,500 RPM	9 = 13,000 RPM
A = 11,000 RPM	A = 13,500 RPM
B = 11,500 RPM	B = 14,000 RPM
 C = 12,000 RPM	 C = 14,500 RPM
 D = 12,500 RPM	 D = 15,000 RPM
E = 13,000 RPM	E = 15,500 RPM
F = 13,500 RPM	F = 16,000 RPM

Example settings…

Typical Suzuki Hayabusa Settings for Nitrous Activation

These settings allow the nitrous to be activated only when the engine is between 8,000 and 10,500 RPM's and the throttle is at or above 90% open. This is the safest time to activate nitrous oxide in this application.

Analog Select Switch	**D** (4.80 Volts) About 90% Throttle
Tach Pulse Frequency Select	**5** (Mid Range) 1 pulse per 2 Crankshaft Revolutions
On RPM Select	**8** (8,000 RPM)
Of RPM Select	**7** (10,500 RPM)

Typical Suzuki Hayabusa Settings for Shift Light Activation

Analog Select Switch	**F** (Disabled)
Tach Pulse Frequency Select	**A** (High Range) 1 pulse per 2 Crankshaft Revolutions
On RPM Select	**9** (10,500 RPM)
Off RPM Select	**F** (16,000 RPM)

Typical Setting for any Throttle Position Sensor for Wide Open Throttle (WOT) Activation

Analog Select Switch	**D** (4.80 Volts) About 90% Throttle
Tach Pulse Frequency Select	**F** (Disabled)