

HotShot™ Speedometer

Application Guide

Model HS-31

The **HotShot™ Speedometer** can reliably drive a variety of model railroad signals with its Over Speed Limit output. This guide goes beyond the Product Manual and demonstrates connections for common applications.

1. Output Summary

HotShot™ Speedometer connects its **Over Speed Limit** output (OV) to Ground (GND) when a speeding train is detected. You can connect other electronics to this output. Table 1 describes the two needed connections.

Table 1: HotShot™ Speedometer Over Speed Limit Connection

Label	Name	Function
OV	Over Speed Limit	Output pulled to Ground when a speeding train is detected; Otherwise open circuit. Do not exceed 12 volts or 200 mA.
GND	Ground	Common with other connected electronics.

Connecting these two terminals allows the **Speedometer** to interact with the outside world.

2. Driving LEDs with Over Speed Limit

Turning on one or more LEDs when the **Speedometer** detects a speeding train is straightforward.

Figure 1 shows how the Over Speed Limit (OV) output from the **Speedometer** circuit board can be wired to drive one LED. Resistor values (R) for common V+ voltages are shown.

You can drive more than one LED from the OV output. Simply duplicate the LED and resistor connection between V+ and OV for each LED. **Speedometer** will light up to 20 LEDs.

Warning: Do not exceed 200 mA LED current as this will damage the Speedometer circuit board.

Warning: V+ must not exceed 12 Volts DC as this will damage the Speedometer circuit board.

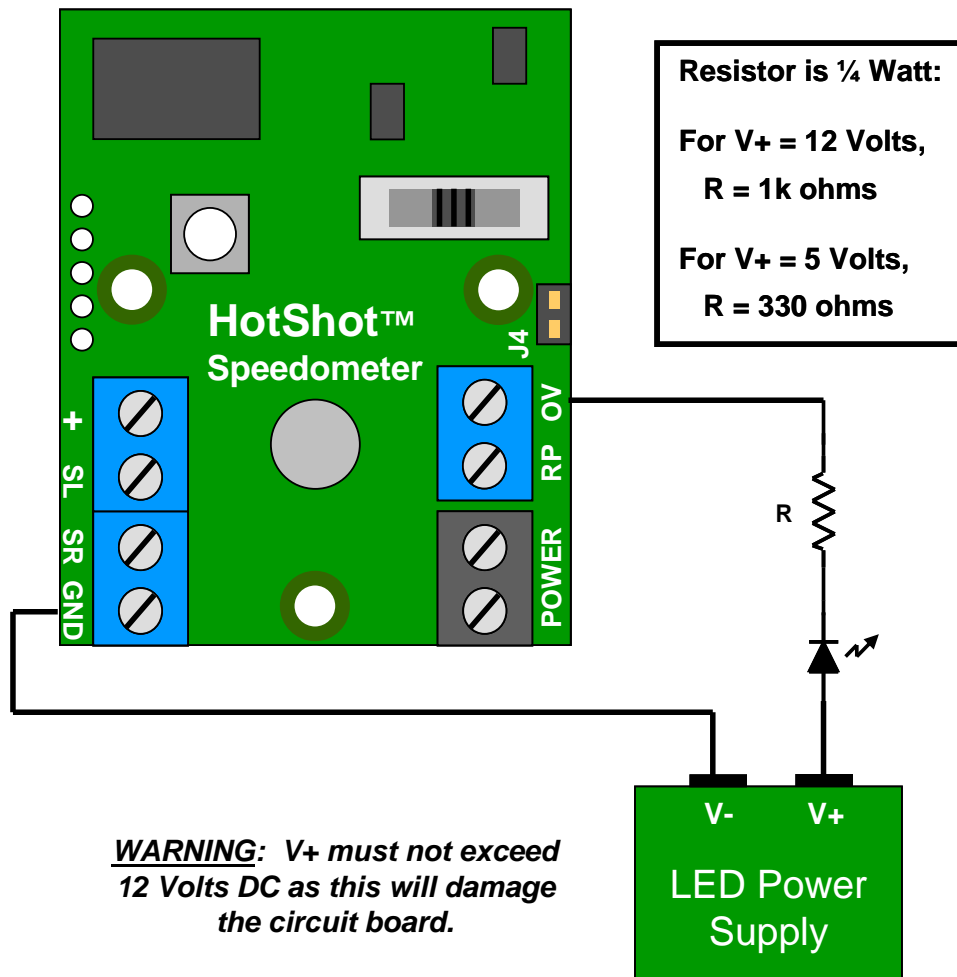


Figure 1: Driving an LED

3. Driving Relays with Over Speed Limit

For controlling very high currents or control signals such as DCC track signals, a relay is hard to beat.

Figure 2 shows how the Over Speed Limit (OV) output from the **Speedometer** circuit board can be wired to drive a relay.

You can drive more than one relay from the OV output. Simply duplicate the relay and diode connection between V+ and OV for each relay you wish to control. **Speedometer** will drive up to 200 mA of relay current from OV.

Warning: Do not exceed 200 mA coil current as this will damage the Speedometer circuit board.

Warning: Do not exceed 12 Volts DC for the relay coil power supply as this will damage the Speedometer circuit board.

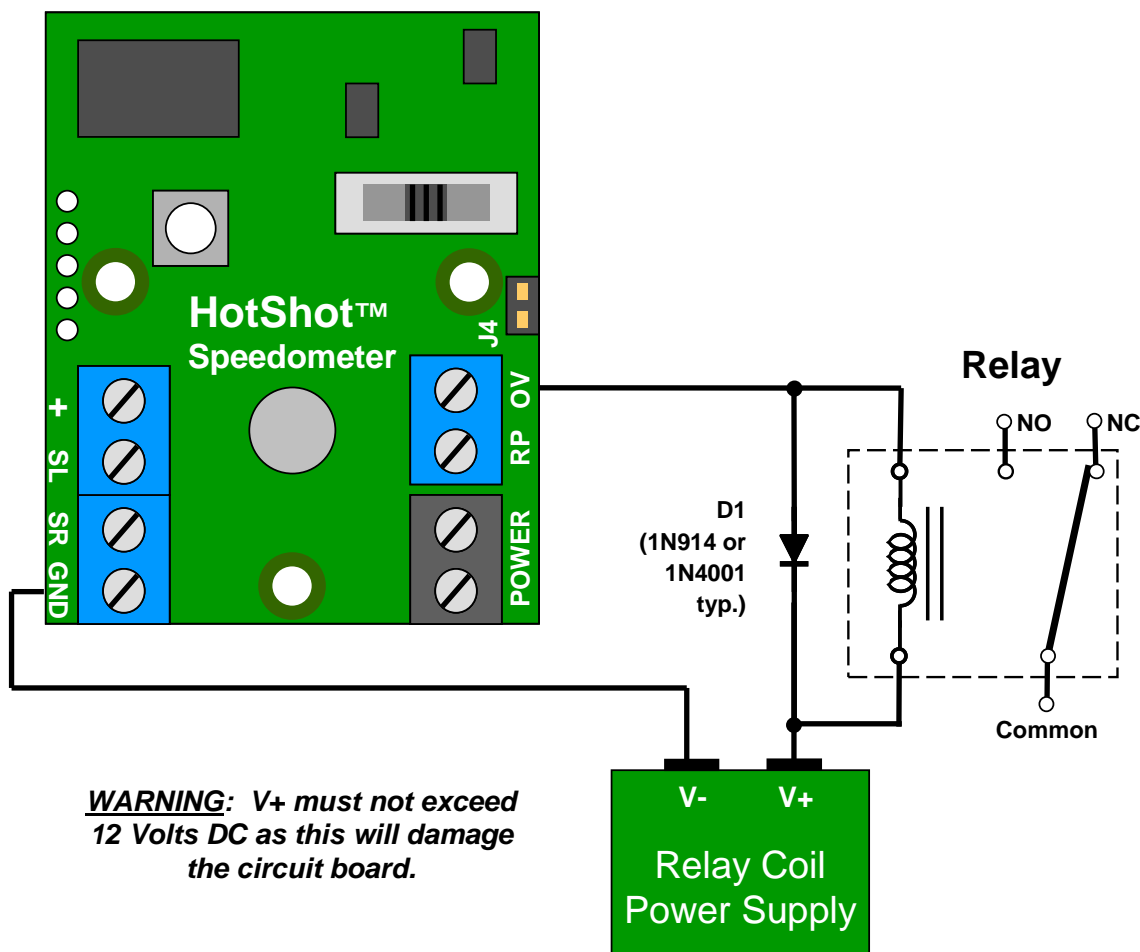
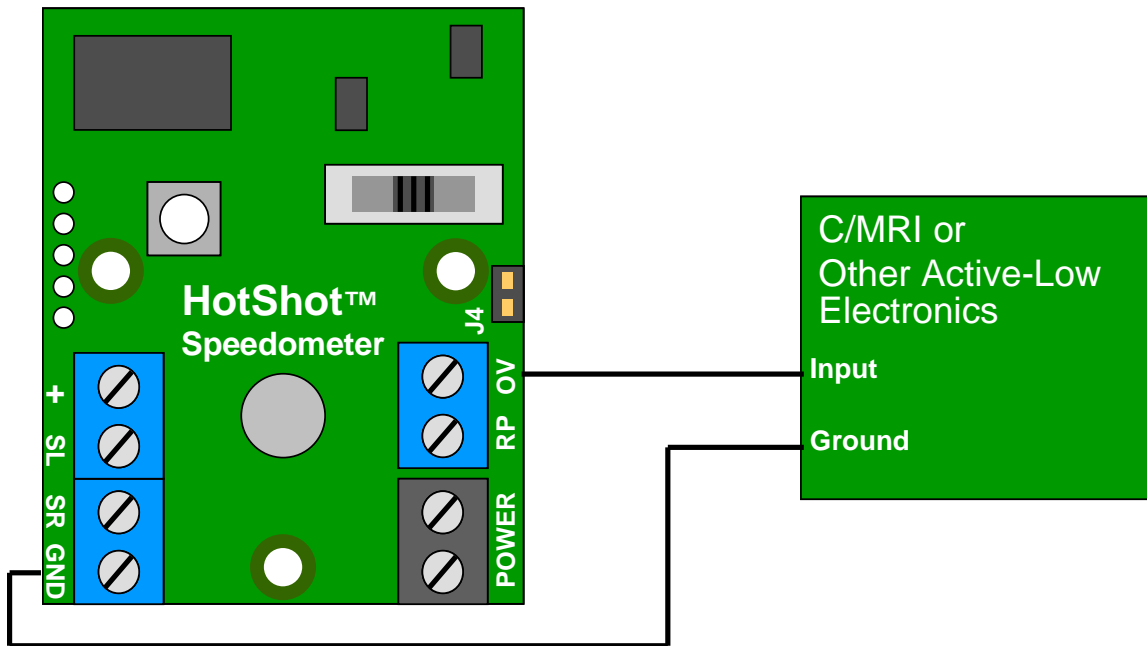


Figure 2: Driving a Relay

4. Connecting Over Speed Limit with C/MRI

Speedometer can notify external systems like C/MRI when a speeding train is detected. Connect Over Speed Limit (OV) to a C/MRI input as shown in **Figure 3**.

You can drive more than one C/MRI input from the OV output. Simply wire each C/MRI input directly to the OV output. **Speedometer** will drive up to 200 mA of current from OV.



WARNING: System power must not exceed 12 Volts DC as this will damage the circuit board.

Figure 3: Connecting to C/MRI

Warning: Do not exceed 200 mA output current as this will damage the Speedometer circuit board.

Warning: System power supply voltage must not exceed 12 Volts DC as this will damage the Speedometer circuit board.