

WARRANTY

S & M Electro - Tech, Inc. will warranty this unit for (3) three years from the original date of purchase. We will repair or replace your unit at no charge for parts and labor during the warranty period. Please contact us before sending your unit in for service. Be sure to include a copy of your original bill of sale. Units that require service after the expiration of the warranty period will be repaired for \$50.00 including return shipping. Send defective units to:

S&M ELECTRO-TECH, INC
8836 Xylite St NE
Blaine, MN 55449

(763) 780-2861

Turn Signal System Owners Manual

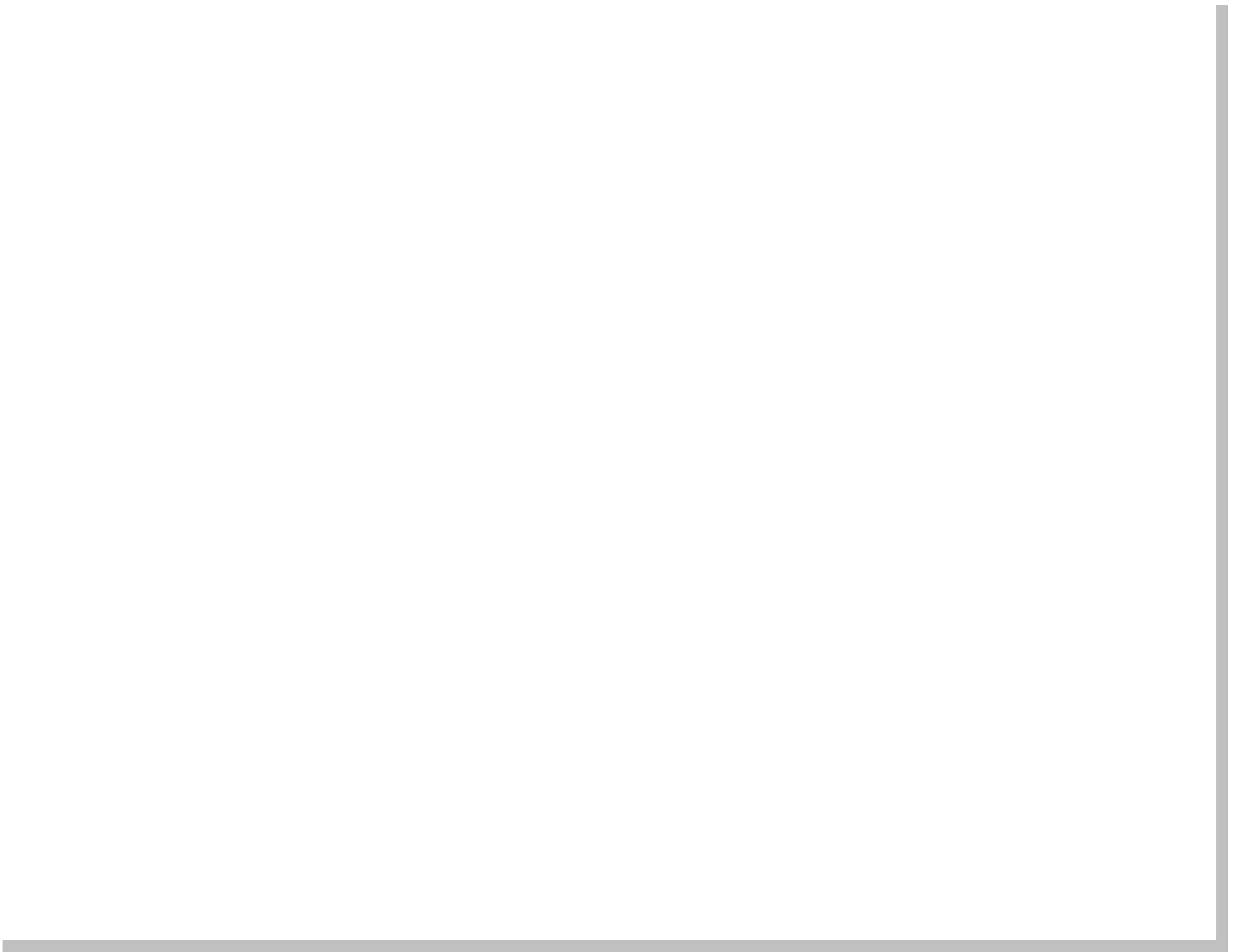
Model TSSWA4



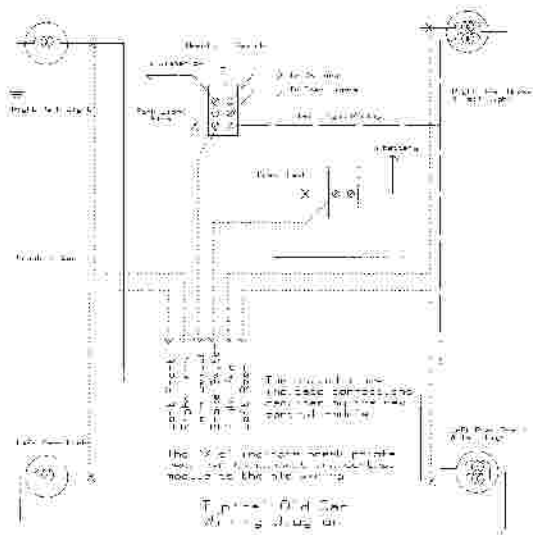
ELECTRO – TECH, INC.

8836 Xylite St NE * Blaine, MN 55449

www.turnswitch.com



Typical park and tail light wiring for older cars.



Headlight switch terminal locations will vary from car to car. These terminals are normally marked on the switch with letters. Park light terminal is usually marked with a "P". We recommend you run new wires for the controller and cutoff and abandon the old wires in the harness.

Thank You for purchasing your new **Auto Cancel Turn Signal System** from S & M Electro-Tech, Inc. We are confident that this product will enhance the safety and functionality of your classic car and provide you with many years of trouble free service.

INSTALLATION

Please read the following installation instructions carefully.

IMPORTANT: Your new turn signal controller is designed to function with either Positive or Negative ground cars with either 6 volt or 12 volt batteries. Your brake lights and park lights will function normally even with the power removed from the turn signal controller. Of course the turn signals will not function without power to the controller, but the brake and park lights will function if wired correctly. **BEFORE** you make any wiring changes to your car, be sure to disconnect the battery ground wire from the battery to prevent any short circuits or damage. A fully charged car battery can deliver current in excess of 400amps! This is more than enough to start fires and melt wires.

Study the wiring diagram at the center of this manual. If your car currently has an older manual type of turn signal switch already installed, the control module will directly replace this switch with the exception of the Park Light Switch wiring.

If your car has never had turn signals installed, you will need to add additional wire to both the brake lights in back and the park lights in front. We recommend that you abandon the existing brake and park light wiring and run two new wires to the park lights and two new wires to the brake lights from the control module. If you are restoring your car, most harness manufacturers will add additional wires for turn signals at your request.

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We can provide wiring kits at additional cost in cotton covered wire. You can mount the control module anywhere under the dash that is not near any heat source such as in front of a heater outlet vent. Use the supplied velcro type fastener to mount the control module.

Note: For automatic cancel to work, the control unit must be mounted within 12 degrees of level and any one of the

control box axis aligned with the front/rear axis of the car.

The LED indicator on the control is connected to provide brake, left, right turn, hazard, and auto cancel sensing indication.

WARNING: Always disconnect the ground (chassis) side of the battery when working on the electrical system of your car.

We recommend the following wiring steps:

1. Using the black wire, connect the ground terminal from the control module to the chassis or metal body of the car using either an existing bolt or add a new one. Be sure the metal is bright where you make the connection.
2. Using the red wire, connect the power feed terminal from the control module to full time power at the ignition switch, headlight switch, ammeter or fuse block.
3. Mount and connect the turn switch unit you wish to use. It can be our column switch, under dash toggle switch or customer supplied switches. The switches you use must be momentary in design. You can use two push button switches, one for each direction. The switches just momentarily ground (black) the left(red) or right(green) turn wires from the control. The switch inputs on the control unit are optically isolated from the control logic to prevent damage to the control unit. If miss-wired, they may not work, but no damage to the control will occur.

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The indicator LED on the front of the control will blink orange for left turn, blink green for right turn and blink red when in hazard mode. The LED will show you the status of the brake light circuit when a turn signal is not active. The LED light should light solid green when you step on the brake. This

indicates that the control is receiving a good signal from the brake switch. It will NOT tell you if one or both of the brake lights are functioning. In Auto cancel mode, the LED will turn yellow when the car enters a turn, turn red as you move through the turn and turn green when you exit the turn. After 1.4 to 2 seconds of green, the control will cancel the turn and the LED will turn off.

Trouble Shooting

The control unit contains 3 modern ATM fuses. A 15 amp for the turn signal control and turn functions, and two 10 amp fuses, one for brake lights and one for park lights. To access the fuses, remove the four cover screws and replace any blown fuses with the same size and rating.

The control is designed to function with a supply voltage down to 5.9 volts. If the control acts erratic or flashes once and quits, the voltage at the control is falling below 5.9 volts when the car lights come on and draw high current. This can be caused by a weak battery or poor or loose power feed connection to the control unit. A ¼ ohm or resistance in a connection to the control box will cause a 1.5 volt drop when both a front and rear turn indicator lights try to turn on. This voltage drop can cause the control to reset.

That's it and Happy Motoring!

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OPERATING INSTRUCTIONS

The turn signal control has 4 mode settings as follows:

1. 4-way Hazard: Hold switch in left turn for 4 flash cycles.
2. Beep ON/OFF: Hold switch in right turn for 4 flash cycles.
3. Cancel Mode: hold brake on and left turn for 4 flash cycles.
 - A. 15 second delay for cancel. (1 beep/flash)
 - B. 30 second delay for cancel. (2 beeps/flashes)
 - C. 45 second delay for cancel. (3 beeps/flashes)
 - D. Automatic turn sense cancel. (4 beeps/flashes)
4. Automatic cancel calibration: Hold brake on and left turn for 4 flash cycles.

Note: You must perform the calibration before mode option D above becomes available. To perform a calibration, go to a safe place with level ground such as a parking lot. While depressing the brakes, hold the left turn switch for 4 flash cycles. A continuous double beep will be heard. If a fast beep is heard, the unit is reporting that it is not mounted square to the vehicle, or the ground the vehicle is on is not level. Release the brakes and drive straight forward at a normal rate for at least one second and then stop. The unit will report a successful calibration with one long beep. If a fast beep is heard, the unit did not calibrate and you must perform the above again. This can be caused by turning during the calibration or hitting pot holes. The faster acceleration rate during calibration, the less sensitive the auto turn cancel. The unit will select the "fully automatic" mode as describe above on completion of a calibration cycle. You can manually cancel the turn at anytime by moving the switch in the opposite turn direction.

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At this point, you can check the operation of the control module. Reconnect the battery ground. With the turn switch

you should be able to start and stop a left turn (green LED), right turn (orange LED) as indicated by the LED on the front of the control module (See operation instructions). If not, check your connections.

4. Disconnect the battery ground at the battery. On page 8 you will find a general wiring diagram of a car without turn signals to help with this process. Please contact us if you have any questions. You will now either need to identify or run new wire (recommended) to the following 6 locations:

- a. Left front park light
- b. Right front park light
- c. Left rear brake light
- d. Right rear brake light
- e. Switched side of the brake light switch
- d. Park light terminal on the headlight switch (Optional).

Splice any new wire to the brake light wires in the rear or the park lights in front near each socket. Use a good quality butt end connector or solder and cover with heat shrink tubing.

The brake switch in most old cars is mounted on or near the master cylinder and is operated by hydraulic pressure or mechanical means. One side is connected to the battery (it may or may not run through a fuse or circuit breaker built into the headlight switch). The other side will run to both brake lights in the back of the car. This wire will need to be replaced or rerouted to the control module.

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The wire from the headlight switch for the park lights will be run

to the "Park Light Switch" terminal on the control module. This will cause the front park lights to come on when the light switch is pulled or placed in the park position. If you drive with the lights in this position, the park lights will flash to indicate a turn and return to the "ON" state when the turn signal is cancelled.

5. Once you have identified or replaced the wires to the required locations, connect these to the proper terminals on the control module per the wiring diagram. Twist the ends of stranded wire tightly to keep loose strands from straying outside the connectors on the control module. The control module uses a European type screw connector that can handle the current requirements of 6-volt cars. Be careful when inserting stranded wire that a stray strand does not contact an adjacent terminal.

That's it! Now you need a helper to confirm that you wired the proper wires to the proper terminals. Reconnect the battery ground cable. Have someone watch the back and front of the car while you try the brake and park lights. All should function normally. Now test the turn signals and select desired options.

Important: Start the car and try all the functions again with the car running. Have your helper observe the brake lights. If the turn signal cancels as you vary engine RPM, or erratic operation of the system, you have ignition and/or generator noise getting into the controller. This is caused by a lack of radio frequency noise suppression on the generator and ignition. You will need to install noise suppression condensers on the coil and generator or voltage regulator of your car. We recommend Standard Brand RC-1 .5mfd condensers.

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The condensers are available from any automotive parts suppliers. The condenser is a 5/8" x 2" round cylinder with a wire coming off the end. It has a slotted ear on the barrel for mounting and grounding. Install one on the battery side of the ignition coil by connecting the wire lead to the coil battery terminal and mounting the body ear to a good ground. Connect the wire lead of a second condenser on the armature terminal (output) at the generator or to the (A) or (GEN) terminal of the voltage regulator. Mount the ear of the condenser to the generator ground screw or regulator mounting bolt. If you have a radio in your car these condensers should already be on the car. If not, adding them will improve your radio operation as well. In some cases, you may need to install a carbon core (suppression type) plug wire from the coil to the distributor.

Additional Safety: As with any electrical device, it could fail. Although the brake lights run through the controller, they do not depend on the controller power for proper brake light operation. There is a 10 amp brake light fuse inside the control. We do, however, recommend you consider adding a third brake light per the wiring diagram.

6. If you would like to add additional turn indicators inside the car, we have shown two options on the wiring diagram. One option is for a single light that will flash for either a left or right turn. The other option provides two indicators, one for each direction.

For more information or help:

Contact us at (763) 780 – 2861, M-F 9:00AM to 6:00PM CST. We will be happy to answer any questions you may have.