Microflex Labs 106 Lights Controller Instruction Manual

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Microflex Labs

RideLightSolution.com

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Lights Controller

Model 106
Installation, Operation, Specifications Manual

Description

The model 106 lights controller provide a complete control solution for your ride’s signal lights. The controller will autocancel turn signals using 3D gyroscopes and accelerometers that determine vehicle turn velocity. No mechanical connection to the steering shaft or steering column linkage is needed. This allows the lights controller to be used on a wide range of vehicles. It can also control your hazards lights and brake lights. No external relays, flashers, load equalizers, or bulb combiners needed. Just add your lights and switches.

The electronics are hermetically sealed with epoxy potting for maximum ruggedness and

weatherproofing. Wire leads allow for adding connectors or hard wire into your harness.

Features

- **Auto-Cancels Turn Signals**
  Uses motion sensors to measure vehicle angular velocity.
  Does not use steering wheel position or a timer to cancel turn signals
- **Combines Turn and Brake Lights**
  Eliminates bulb combiners for common light systems
- **Hazards Lights Control**
  Eliminates a separate hazards flasher and simplifies wiring
- **High Power Solid-State Light Drivers**
  No Relays with moving parts and switch contacts
- **Precision Blink Rate**
  Not Load Dependent, same blink rate with any light
- **Universal Fitment**
  Small size, wide operating range, flexible installation
- **Momentary turn buttons or switches preferred**
  but can be used with OEM style steering column turn signal switches
- **Wide operating voltage range**
  can be used on 6V, 12V, and 24V systems
- **Epoxy Sealed Electronics**
  Maximum ruggedness and weatherproof seal

⚠ **Safety**

- Read and understand this manual before starting the installation.
- Installation and wiring should be performed by someone with knowledge of automotive electrical systems and techniques.
- Disconnect the battery before starting any work on the vehicles electrical system.
- The controller does not have an internal fuse.
  Power must be from a fused circuit to prevent possible fire or system damage. Refer

to the wiring diagram in this manual for details.
- The lights controller is not rated for under-hood or engine compartment conditions. Do not install where the controller could be exposed to excessive heat.

Operation

Turn Signal

Momentarily press the left or right turn button or switch to start a turn signal sequence.

Auto Cancel

With the left or right signal lights blinking, the vehicle turn velocity is monitored to determine when the vehicle is making a turn in the indicated direction. When the turn velocity returns to zero, at the end of the turn, the signal is canceled.

Manual Cancel

To manually cancel a turn signal, simply press either turn signal direction button.

Lane Change

A slight turn may not produce the required angular velocity for the auto-cancel sensors to cancel. A lane change turn can be signaled by holding either turn signal button for a long press, about 3 blinks or more. When the button is released the turn signal will cancel.

Combined Turn and Brake Lights

Connecting the brakes switch to the controller will combine the brake lights and turn signals functions. If your vehicle tail light combines turn signals and brakes into a single light, this will eliminate the need for a 2-bulb to 1-bulb combiner.

Precision Blink Rate

Turn signal and hazards blink rates are microprocessor controlled and not load dependent. Lights can be LED or incandescent without any effect to the blink rate. Do not add external flashers.

Lights Drivers

The four signal lights are controlled by solid-state switches and can drive (power) up to 2-amps per light. No mechanical relays are used.

Hazards Lights

The controller can blink all four lights when the hazards switch is on. If the switch is wired to an always on power source, you will be able to turn on the hazards lights even if the key is off. If the switch is wired to a key-on power source, the key must be on to use the hazards lights. The flasher for the hazards lights is included in the controller. Do not add external flashers.

NOTE: A latching hazards switch will carry the full load of all four lights plus the controller's power. It must be rated higher than the maximum full load current (controller plus all four lights).

Motorcycle Parade Mode

If your vehicle uses two separate buttons for the turn signals, you can turn on the hazards lights by holding down both direction buttons for about 5 seconds – until the lights begin blinking. Holding down both buttons again, or cycling power, will turn off the hazards lights. This feature can eliminate the need for a separate hazards switch.

Turn Signal Buttons and Switches

The Lights Controller requires, but does not include, left and right turn buttons. The buttons or switches are not carrying the full load of the lights so low current buttons or switches can be used. Maximum button or switch current is less than 0.005 amps (5mA).

Momentary Buttons (preferred)

Momentary buttons allow the controller to auto-cancel using motion sensors after the turn is complete. This instruction manual refers to left and right turn signal buttons but any single-pole-double-throw (SPDT center off) momentary toggle switch or other momentary type switches could be used. Microflex Labs offers the model 104 steering column mounted switches.

Latching Switches

If latching switches are used, the controller will not be able to auto-cancel the switch. In this case, the mechanical mechanism in the steering column will return the switch to the center off position after making a turn. The controller will use its Lane Change mode to cancel the turn signal sequence when the turn switch centers (opens). The turn switch must be closed for more than 3 blinks for the controller to enter Lane Change mode.

Specifications

Supply Power

Minimum …….. 5 Volts
Max ……. 30 Volts
Key Off …… 0 Amps
Key On, All Lights Off …. 0.006 Amps Typical at 12V

Lights Drivers

Maximum Current …….. 2 Amps per Light
Light On Min …….. Supply – 0.5 Volts
Light Off Max ……. +0.5 Volts

Blink Rate ……. 90 per Minute (1.5 Second)

Enclosure

Cover …….. ASA/ABS Molded Plastic
Mounting Plate …… 6061-T6 Aluminum
Screws …… Stainless Steel
Weight ……. 3oz [84g] IP Rating
…….. 67

Wires ……. 18-Gauge Stranded x 10” [250 mm]

Environmental

Not Rated for Engine Compartment Temperatures
Operating Temp ……. -22°F to 122°F [-30°C to 50°C] Storage Temp ……. -40°F to 158°F [-40°C to 70°C] Seal ……. Epoxy Potting

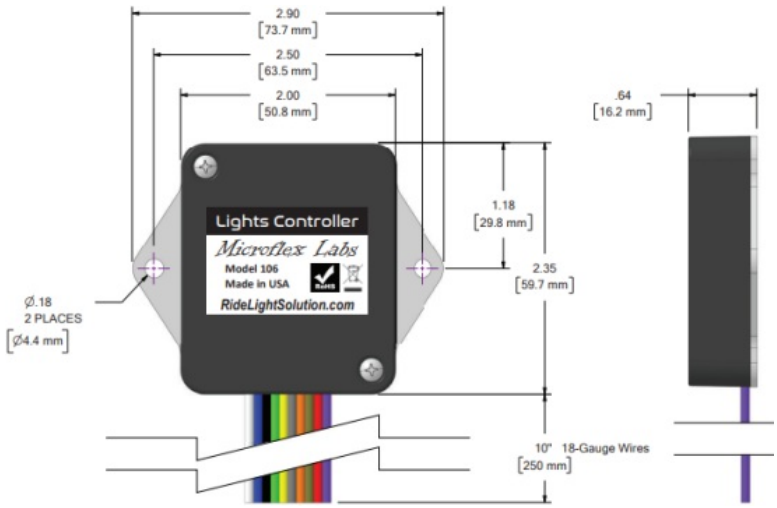
Turn Buttons Current – The left and right turn buttons provide battery voltage to the controller input to start a turn sequence. Maximum current is less than 0.005 amps (5mA).

Hazards Switch Current – The hazards switch must be capable of switched power for all four lights plus the controller’s power.

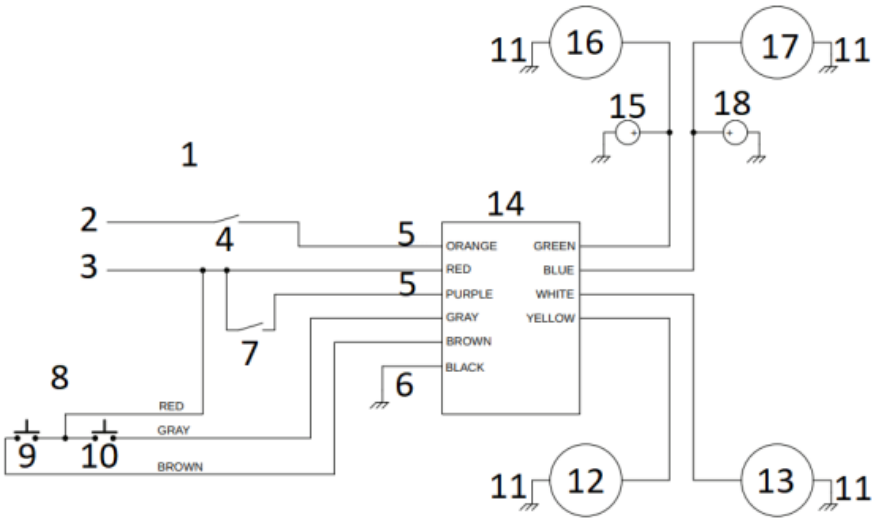
Brakes Switch Current – When the brakes are pressed, battery voltage is applied to the controller. Maximum current is less than .005 amps (5mA).

Fuses

Controller power and Hazards power must be fused. The fuse should be cable of supplying power to all lights and the controller, typically 3 to 10 amps, depending on the lights used.



Model 105, 106 Lights Controller
WIRING DIAGRAM



1. Model 105, 106 Lights Controller
   WIRING DIAGRAM
2. FUSED
   Key-On or Always On Battery+
3. FUSED
   Key-On Battery +
4. Hazards Switch
5. Leave Open if Not Used
6. Chassis Ground
7. Brake Switch
8. Left / Right Buttons
9. Left Turn
10. Right Turn

11. Ground
12. Rear Left Light
13. Rear Right Light
14. LIGHTS CONTROLLER
15. Left Turn Dash Indicator
16. Front Left Light
17. Front Right Light
18. Right Turn Dash Indicator

Installation

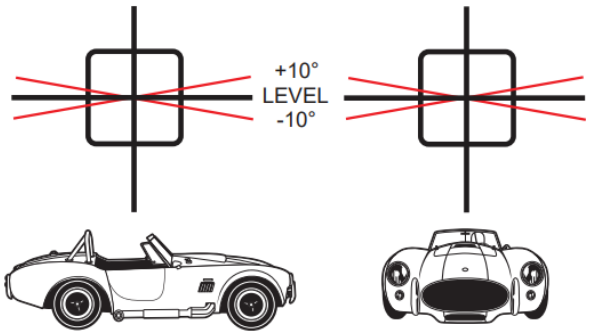
Controller Mounting

The controller must be mounted level to the ground to keep the motion sensors axis aligned with the vehicle. Leveling just by sight should be sufficient, ±10°. It does not need to be exact. Any side can be up as the controller's sensors can detect this. The controller will also automatically align to be straight to the vehicle. Mounting the controller at an angle will add error to the turning measurement and reduce the auto-cancel accuracy.

Most vehicles will have a convenient location under the dash. For motorcycles, the controller is typically mounted under the seat. Consider the existing harness and how wires will be routed when choosing a location.

The controller can be mounted using the two holes on the backplate. The 0.18″ diameter holes accept #8 [4 mm] screws.

IMPORTANT: Mount the controller level, front to back, and left to right, any side up, plus or minus 10 degrees.



Wire Functions

Wire Color			Name	Function
	Black	10	Ground	Battery (-) or chassis ground. Must be able to handle the full fused capacity.
	Red	7	Key-On Power	Power to the lights controller when the key or ignition switch is on. Connect to fused key-on power.

	Orange (optional)	8	Hazards	When power is applied, through a hazards switch, the front and rear lights will blink. Connect the switch to either a fused always-on, or fused key-on power source. The switch should be rated to handle the full load of all lights. Refer to the wiring diagram for how to connect the hazards switch. If power is from an always-on source, the hazards lights will work even if the key or ignition switch is off. If connected to a key-on power source the hazards lights will only function if the key is on. If not used leave this wire open with the wire conductor protected.
	Gray	3	Right-Turn Button	When power is applied, through the right-turn button, the right turn sequence is started. The right side front and rear lights will blink until canceled.
	Brown	2	Left-Turn Button	When power is applied, through the left-turn button, the left turn sequence is started. The left side front and rear lights will blink until canceled.

	Purple (Optional)	1	Brake Switch	Connect to the brake pedal switch or brake light wire. Activates both rear lights when brakes are pressed. If a turn sequence is also requested, the left or right front and rear lights will also blink until canceled. If not used leave this wire open with the wire conductor protected.
	Green	4	Front Left Light	Connect to the front-left turn signal light and the left-turn dash indicator.
	Blue	5	Front Right Light	Connect to the front-right turn signal light and the right-turn dash indicator.

	White	6	Rear Left Light	Connect to the rear-left turn signal light.
	Yellow	9	Rear Right Light	Connect to the rear-right turn signal light.

Limited Warranty

Microflex Labs warrants this unit against defects in materials and workmanship for a period of one year from the date of shipment. Microflex Labs will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

A Return Materials Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before equipment will be accepted for warranty work.

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MADE IN USA

Documents / Resources

	Microflex Labs 106 Lights Controller [pdf] Instruction Manual 106, 106 Lights Controller, 106, Lights Controller, Controller

References

- User Manual

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106, 106 Lights Controller, controller, Lights Controller, Microflex Labs

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