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Lane Control Sign Specification

This specification will provide information concerning the lane control signs manufactured by Southern Manufacturing.

1. Body

1.1. Material

1.1.1. Enclosure NEMA 3R

Each enclosure is constructed from 5052 H32 sheet aluminum in a variety of sizes. Smaller signs are constructed from .090" thick materials while the larger bodies and the LCS bodies are of .125". The top and bottom of the sign body has a .125" thick reinforcement plate welded in place for additional strength when hanging the sign. This reinforcement has been tested to withstand a load greater than 6,600 lbs or 2 metric tons. Seams are continuously welded to ensure a watertight seal. Weep holes are incorporated in the bottom of the enclosure to prevent possible buildup of condensation.

Enclosures can be custom manufactured to virtually any height and width up to 36"x36" viewable area.

Enclosures use a neoprene gasket strip to provide a watertight seal between the door and the display lens.

Glare shields are available for each enclosure size and are retained with stainless steel hardware.

1.1.2. Lens

Lenses are cut from .120" matt finish polycarbonate lexan.

1.1.3. Hardware

All hardware is stainless steel to prevent corrosion. Door latches and keepers are a turn-lock style requiring no tools to open the enclosure. The hinges are also stainless steel and of a full length continuous piano hinge style construction on signals with a viewable area of 18"x18" or less. 6" stainless Hinges are typically riveted to the door and bolted to the enclosure body.

1.2. Finish

The standard finish is satin black powder coat applied on the external aluminum surfaces. The message board mask is finished in a flat black powder coat. Other colors can be available and must be specified in advance.

1.3. Mounting

Standard mounting patterns include Hub and Tri-stud patterns. Other patterns can be provided if specified in advance. The type of mounting must be supplied with the order. Mounting brackets are available at extra cost.

2. Electrical

2.1. General

Each sign consists of electronics package that is custom designed for its particular application. In general, it consists of an AC to DC power supply, LED Light Engine, and optional dimming and or flashing circuitry. Electronics are mounted onto a panel located on the rear of the enclosure body and the message board on the door. The modules are rated for use throughout an ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

2.2. Light Engine

All light engines comply with the applicable ITE, Vehicle Traffic Control Signal Heads specifications. Including but not limited to the LED Circular Signal Supplement and LED Vehicle Arrow Traffic Signal Supplement.

The light engine consists of discrete LED's mounted onto printed circuit boards (PCB) which are custom designed for each type of application. The PCBs are mounted onto a message board mask and protected from the elements by the body lens. The PCBs have a full sized copper ground plane to provide noise shielding, and a heat sink for the LEDs.

The LEDs are connected in parallel with one another, with each LED having a dedicated current limiting resistor. This configuration insures that the remaining LEDs will continue operating should a failure occur in another path.

5 VDC electrical power is delivered to the light engine through a series header and connector. This connector is rated at to withstand the voltage and current to operate the LED's for their particular application.

All LED's will comply with ITE VTCSH: LED Vehicle Arrow Traffic Signal Supplement Section 4 (Photometric Requirements) and ITE VTCSH: LED Circular Signal Supplement Section 4 (Photometric Requirements) for luminous intensity and distribution (Section 4.1)* color regions (Section 4.2)* and color uniformity (Section 4.2)*.

* Both the ITE VTCSH: LED Vehicle Arrow Traffic Signal Supplement and ITE VTCSH: LED Circular Signal Supplement Section 4 and sub-sections have the same section numbers and titles. VTCSH: LED Vehicle Arrow Traffic Signal refers to VTCSH: LED Circular Signal Supplement for LED specifications.

The ITE specifications were compiled in the following table.

Color Intensity Chart

Package	Color	Color WL(nM) + / - 10	Intensity (mcd)		Chromaticity Coordinate		θ	Conditions
			min	max	x	y		
T1-3/4	White	N/A	36900	73800	.310	.320	30°	If = 20mA
T1-3/4	Green	500	3600	10200	.085	.490	30°	If = 10mA
T1-3/4	Amber	590	4200	11800	.560	.435	30°	If = 10mA
T1-3/4	Red	630	2400	9600	.700	.299	30°	If = 20mA

2.3. Symbol details for Lane Control Signs

Lane Control symbols are arrows  that can point downward, to the left or right and a X. These symbols can be displayed in any combination of colors shown on the color intensity chart above.

2.4. Power Supply

The sign model and series determines which specific power supply is used. Power Supply models and the manufacturer specifications are listed below.

*Mean Well or Equivalent Mfg Power Supply

	*RS25-5	*RS-150-5
Electrical specifications:	5v	5v
Input voltage:	88 ~ 264Vac, 125 ~ 373Vdc (Autosensing)	90 VAC to 264 Vac (Switch Selectable)
Input current:	0.7A/115Vac 0.4A/230Vac	< 3a @ 115v
Input frequency:	47 ~ 63Hz	47 Hz - 63 Hz
Output current:	0 - 5A	0 – 26A
Output power (rated):	25 watts max	130 watts max
Output ripple (peak to peak):	80mVp-p	80mV p-p
Adjustability:	4.75 ~ 5.5V	4.75 ~ 5.5V
Output indicator:	Green led, output present	Green led, output present
Output regulation (line/load):	±2.0%	±1.0%
Turn-on delay:	30ms/115VAC at full load	30ms/115VAC at full load
Hold-up time:	80ms/230Vac 14ms/115Vac at full load	20 mSec min at nominal input 115 Vac and full load
Inrush current:	cold start 30A/230Vac	Cold start 40A@230VAC
Efficiency:	77%	78%
Over-voltage protection:	110 ~ 180% rated output power	110 ~ 150% rated output
Over-current / short circuit:	Hiccup mode, recovers automatically after fault condition is removed	Hiccup with auto recovery
MTBF	309.7 Khrs min. at (25 °C)	244 Khrs at 25° c ambient

Operating temperature:	-20~+70° c (Refer to output load derating curve)	-25~+70° c
Storage temperature:	-40 ~ +85° c , 10 ~ 95% RH	-40~+85° c
Humidity:	20 ~ 90% RH non-condensing	20 ~ 90% RH non-condensing

2.5. Testing

2.5.1. Signs have passed vibration testing IAW both NEMA TS 2-2003v2.06 and MIL-STD-883. Additionally, signs have passed thermal durability testing to -40 Degrees Fahrenheit.

2.5.2. Signs will comply with all internal testing procedures, including but not limited to EP-SGN-WI-001 – Work Instruction for Checking and Recording PCB Burn In, and EP-SGN-WI-002 – Work Instruction for Checking LED Array Signs.

2.6. Dimming & Flashing

Flashing is an optional feature that is easily incorporated into the Blank Out Signs. Dimming is a standard feature on Blank Out Signs and Lane Control Signs. The Bar-Sign, by design, has neither dimming nor flashing features.

The dimmer is a two level design (Bright/Dim) allowing the light engine to normally operate at full intensity. When the dimmer is active, the power to the light engine is reduced by approximately 50% which reduces the intensity. The dimmer incorporates a failsafe feature where the light engine will continue operating at its full intensity in the event of a dimmer relay or resistor failure.

The dimmer can be controlled locally by an optional electric photocell mounted on the enclosure, or by an external 120v AC signal. Other voltages can be used on request.

The blank out signs use an adjustable resistor to set the dim mode intensity. This value is typically adjusted to 50% of the Led's bright output. Within limits, this can be adjusted to meet particular needs or demands.

Flashing is accomplished through the use of a flasher relay with variable on and off times. This provides an infinitely adjustable combination of flash rates and durations ranging from .6 seconds to 24 Hrs.