



Sentinel Signal

Installation • Operation • Maintenance
P2401



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ALSTOM Signaling Inc.

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INTRODUCTION

The ALSTOM Sentinel™ Type D and G Long-Range Color-Light Signal provide various indications by the display of one or more colored aspects. Various indications are given by the use of color only, and the position of lights does not enter into the scheme. Sentinel signals operate from either battery energy (DC) or rectified AC power. Typically, 10-volts DC is applied to the bulb for each indication. Maintenance is simple because after replacing lenses or bulbs, readjustment is not necessary.

SENTINEL TYPE D AND G SIGNALS

The ALSTOM Sentinel Type D and G Long Range Color-Light Signals are easy to install and maintain. They are much lighter than the old style cast-iron signals. All signal cases have a lifting ring at the top for easier handling. The removable six-inch sighting tube provides easy alignment when installing a Sentinel signal. Figures 1 through 4 show the physical shapes of the signals for three or four indications.

The signal cases are cast aluminum with the aspects divided into separate compartments to prevent phantom indications. Two brackets on the door are provided for attaching padlocks. Precision machining assures accurate aspect-to-aspect alignment. All servicing of the Sentinel signals is done from the rear, including removal and replacement of the lens units. The lamp bulb can be changed in the field, as can the lamp holder, without need for refocusing or realignment.

INSTALLATION

Installing the signal complete consists of mounting the case, completing the wiring and aligning the signal to the tracks. Installation requires use of an AAR wrench, 1/2" and 3/4" open end wrenches, and a flat blade screwdriver. See Figure 1 for identifying signal components and mounting hardware.

Mounting

1. Mount signal head (1) on adjusting bracket (2) with four bolts.
Note: Do **NOT** loosen vertical pivoting hardware (11).
2. Attach hoods (7) and background (8) or snowshield to signal head (1).
3. Set signal head with adjusting bracket on 5" mast by means of lifting ring (10).
4. Tighten securing screws (9) on adjusting bracket, leaving somewhat loose but tight enough to hold the signal until it has been properly aligned with the track.

Note: If signal must be lifted manually on to the mast, first mount the adjusting bracket, and then lift the signal onto the bracket. Hoods and background or snowshield may then be added and the entire unit rotated on the mast.

Wiring

Run operating wires to terminal block (4) and wire according to the wiring diagram for the indications for the signal. The optional 0 to 5 ohm adjustable resistor as shown on left side of wiring diagram should be mounted at this time. Figures 5 through 9 show different wiring configurations, with or without resistor installed.

Alignment

CAUTION

Do not loosen pivoting hardware (11). It is not required for adjusting and the signal will have to be removed to re-tighten the hardware.

The Sentinel signal is normally equipped for tangent tracks. A spreadlite roundel is recommended for installation on curved tracks.

Adjusting bracket (2) allows for independent horizontal and vertical adjustment. No realignment is required after maintenance. See Figure 1. The sight tube (6) provides easy alignment, and the precision machined housing assures aspect-to-aspect alignment. The sight tube is removable and interchangeable among Sentinel signals.

1. Locate a suitable target at desired distance from the signal to simplify and assure accuracy of alignment.
2. Mount sight tube (6) in sight block and align signal using sight tube cross-hairs as described in steps 3 and 4.
3. Horizontal adjustment is made by rotating adjusting bracket on mast. Loosen securing screws (9) and, looking through sight tube (6), rotate signal until vertical crosshair centers on vertical line of target. When centered, tighten three securing screws (9) and lock nuts (19).
4. Vertical adjustment is made by the lower set of nuts on the adjustment bolt (15) of the mounting bracket. To lower the alignment, back off the bottom nut until horizontal crosshair is aligned on horizontal line of target. Tighten nut (16) on opposite side of flange. To raise the alignment, loosen nut (16) until crosshair is aligned. Tighten bottom nut.
5. Remove sight tube after alignment is satisfactory.

PRE-OPERATIONAL CHECKS

Before placing the signal in service make sure:

1. Operating current is correct. For DC power, if the voltage is likely to exceed the rated voltage of the lamp, use optional adjustable resistor (4). For AC power, provide against fluctuation in voltage supply source.
2. Voltage drop through the relay contacts used to control the current to the lamp remains uniform and that the proper voltage is supplied to the lamp.
3. Signal is properly aligned, and be sure the housing door (3) is shut tightly by tightening captive screws (17) and padlocked (18).

TRACKSIDE MAINTENANCE

The only tools required to perform maintenance on the Sentinel signal are an AAR wrench and a flat blade screwdriver. All routine maintenance can be performed from the rear of the signal. Field replaceable lens units are removed from the back of the signal. Precision machined components, including the lamp holder, require no realignment or refocus after maintenance or replacement.

Changing Lenses

1. Disconnect power to signal head before changing out any parts.
2. To change inner lens, loosen three screws (12) on bracket and rotate clips. Loosen two screws on lampholder assembly (13) and back off assembly far enough to remove inner lens. Refer to Figure 1.
3. To change outer lens, remove entire lens unit by removing three nuts and washers and slide entire lens unit off mounting bolts (14).
4. Apply power to signal head and verify each aspect will illuminate.

Changing Bulbs

To change a bulb in a light (aspect) compartment requires no special tools. Open the door (3) at the back of the signal and twist out the bayonet-type bulb. Install a replacement bulb into the socket in the lampholder. Close door to signal. Apply power to signal head and verify each aspect will illuminate.

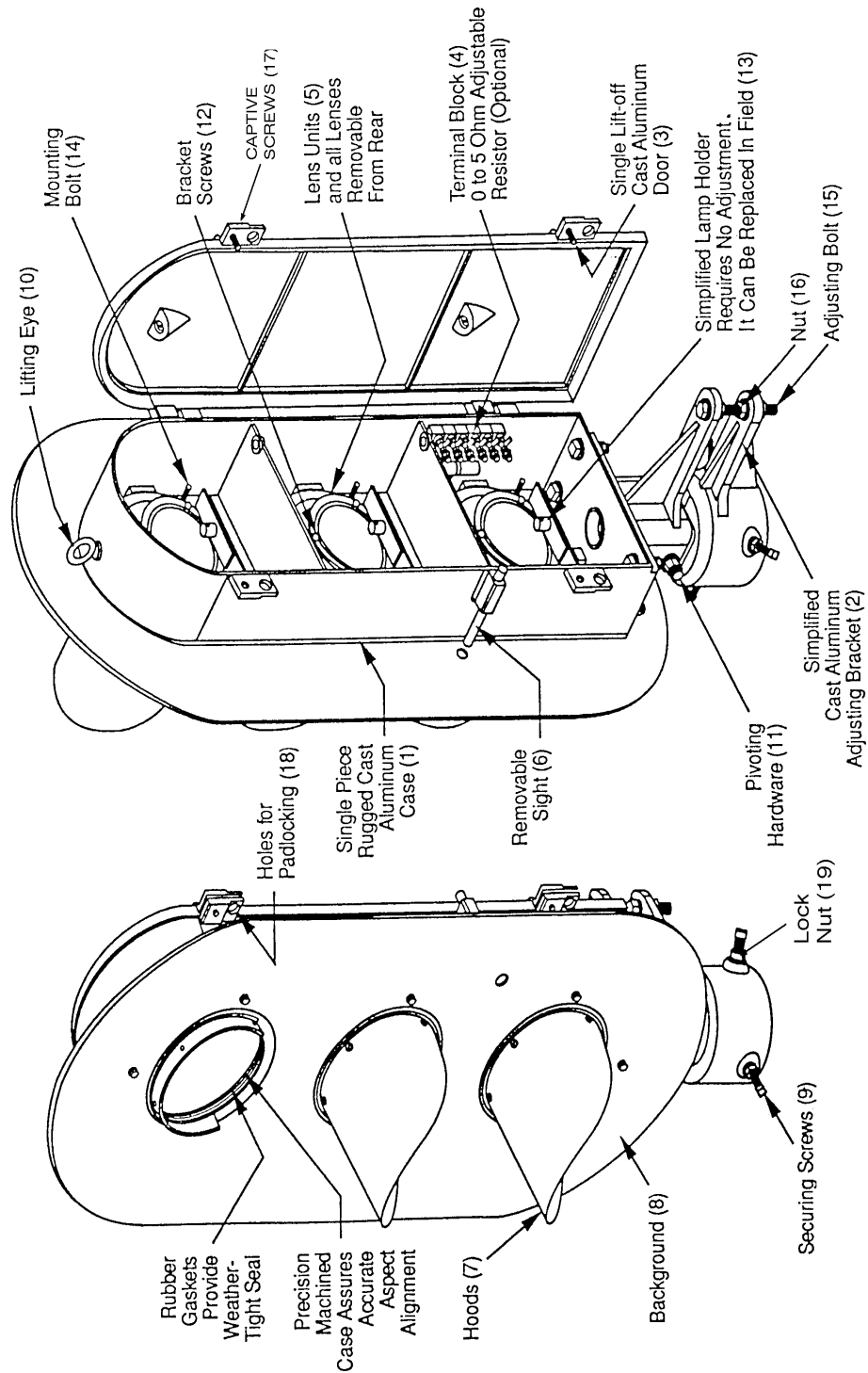


Figure 1. Three Aspect Type D Signal

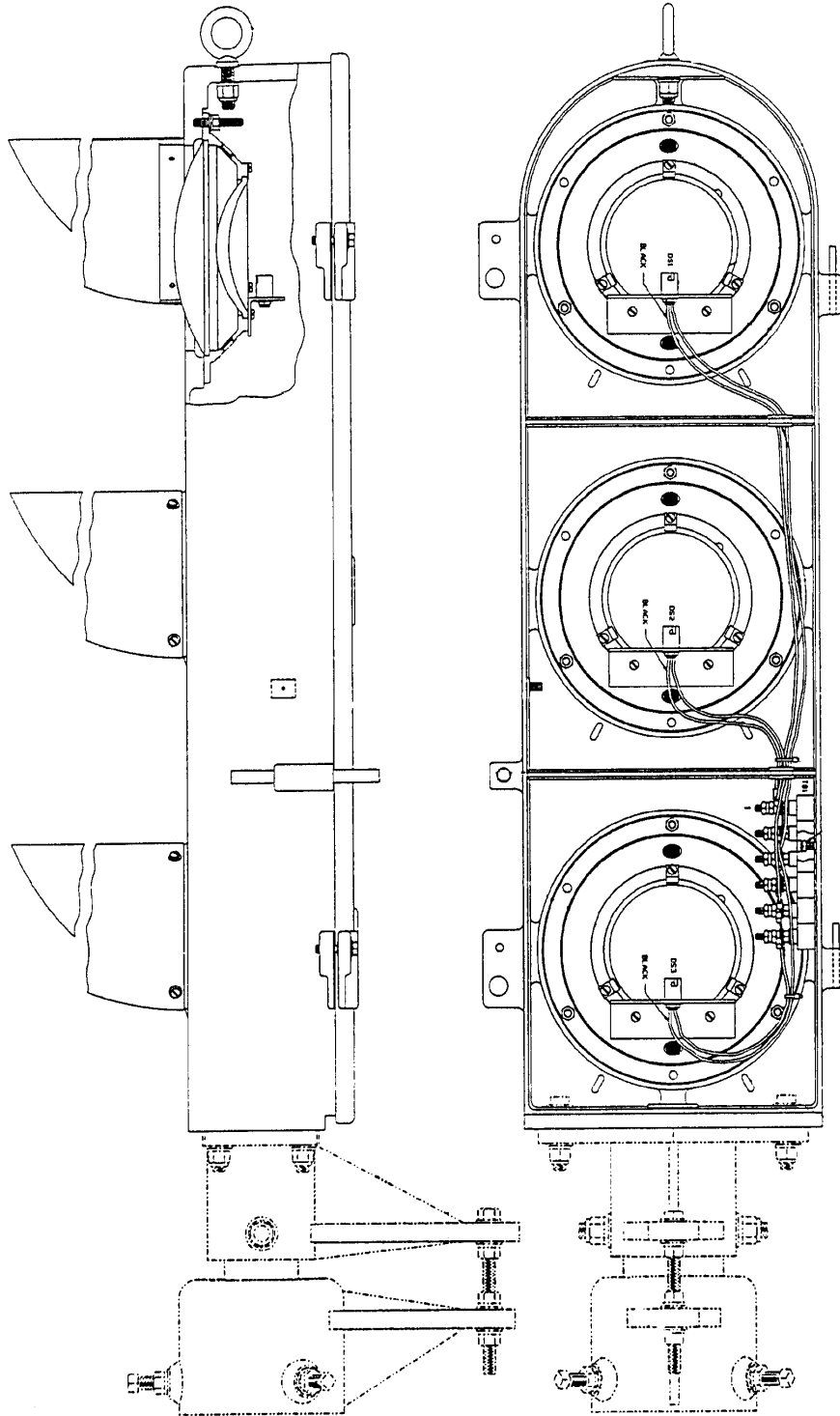


Figure 2. Sentinel Type D Case Layout, 3 Indication

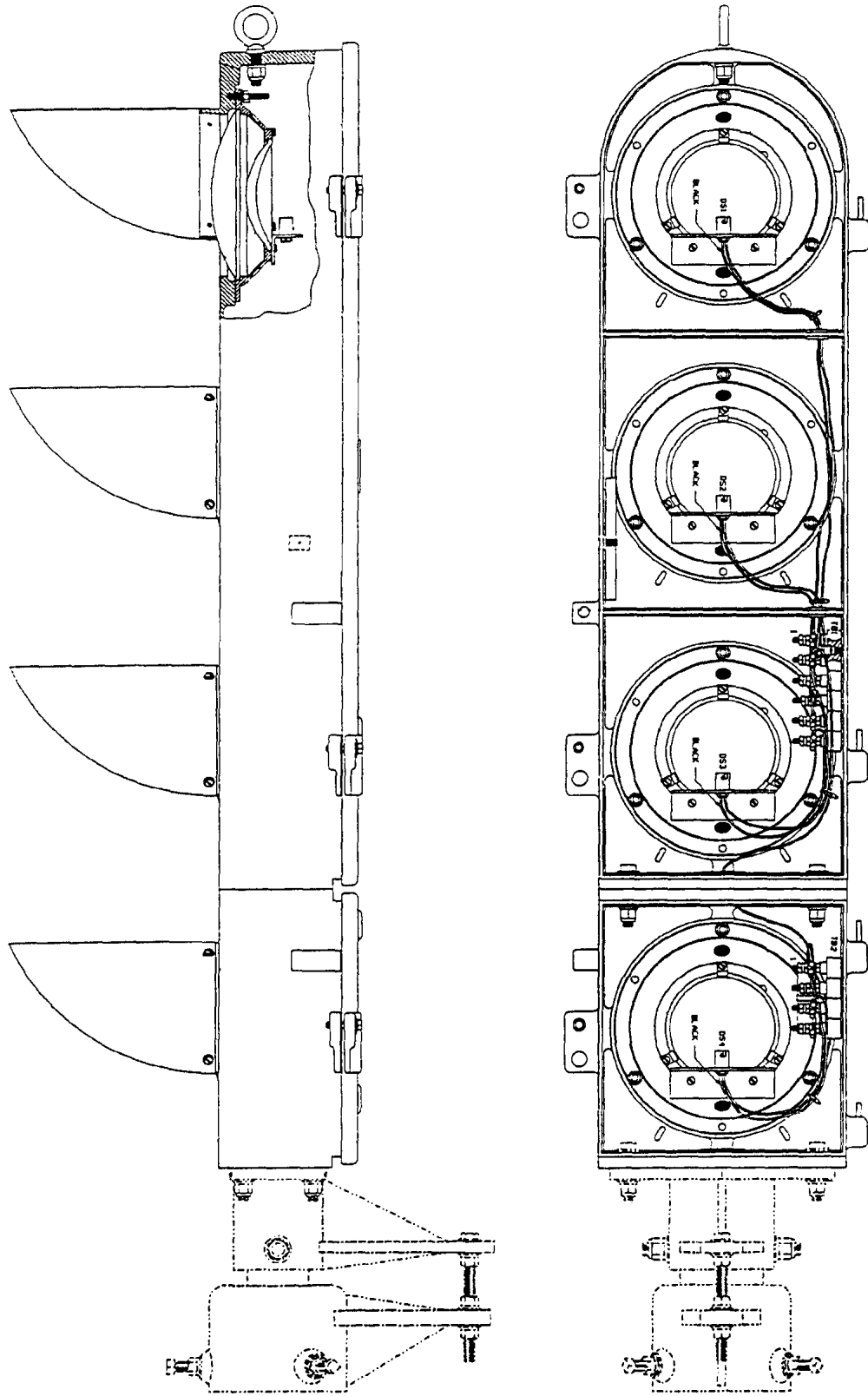


Figure 3. Sentinel Type D Case Layout, 4 Indication

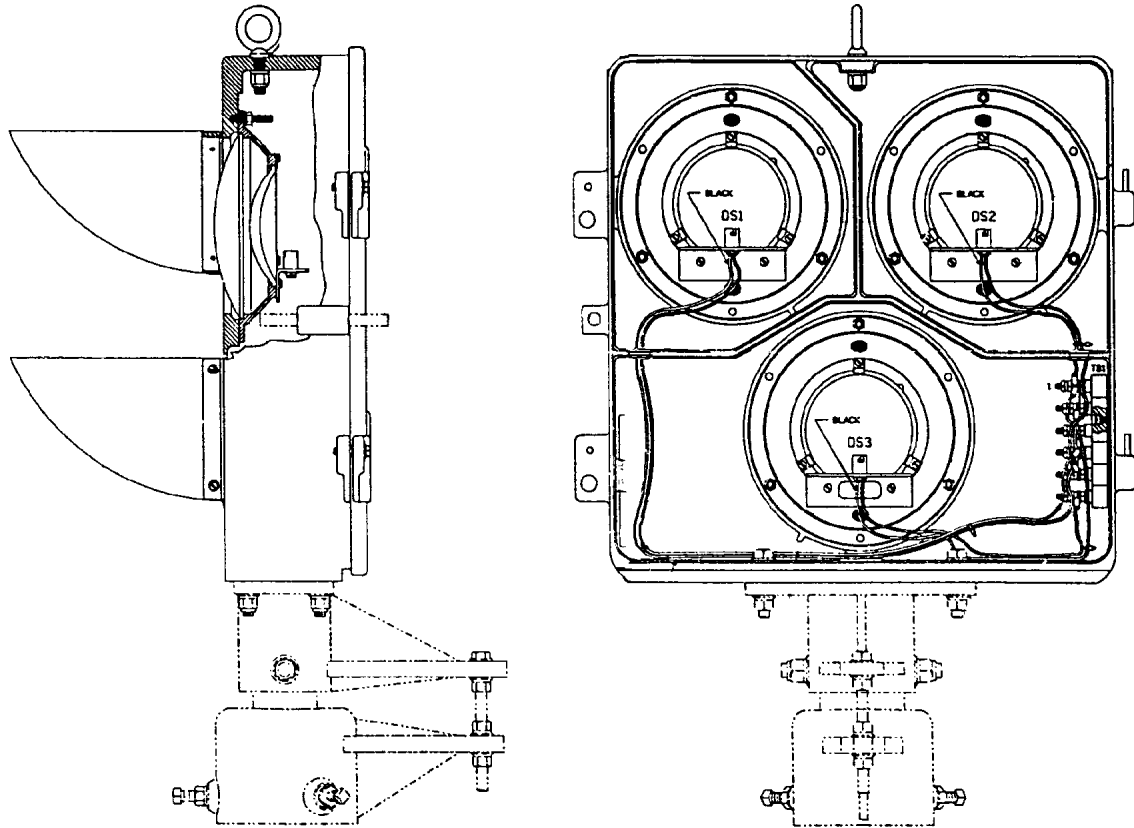


Figure 4. Sentinel Type G Case Layout, 3 Indication

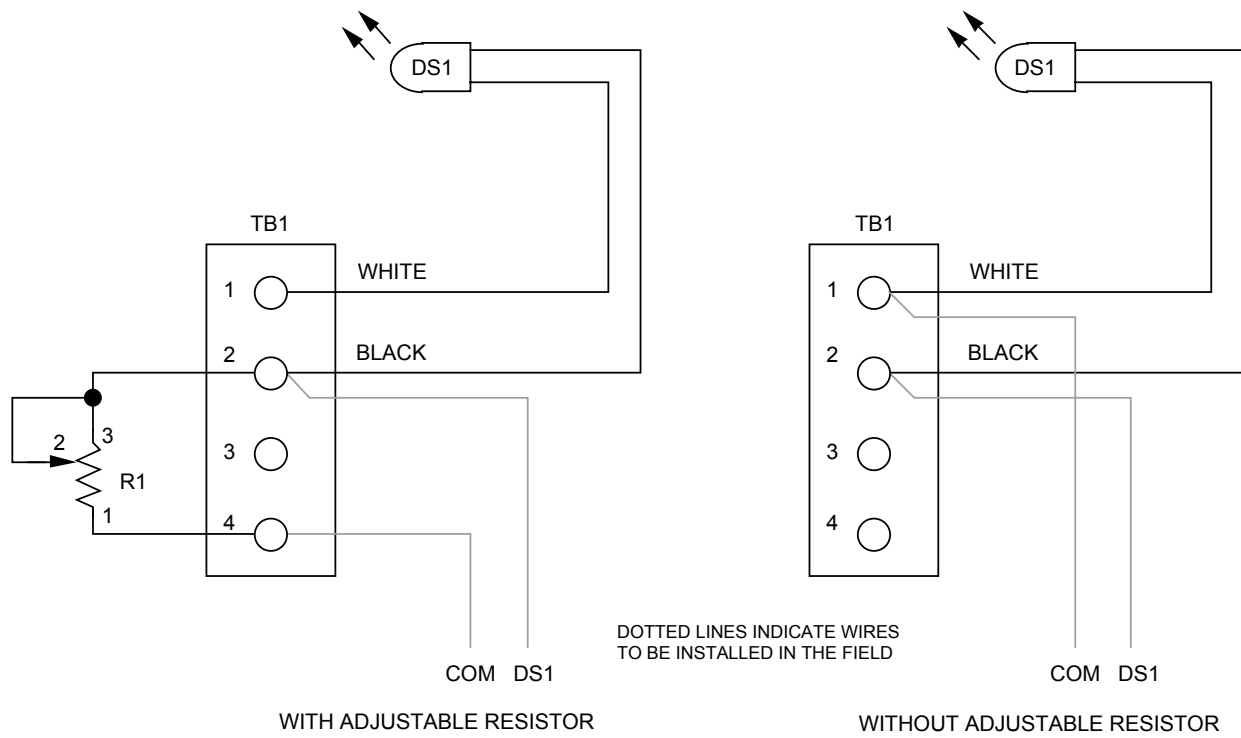
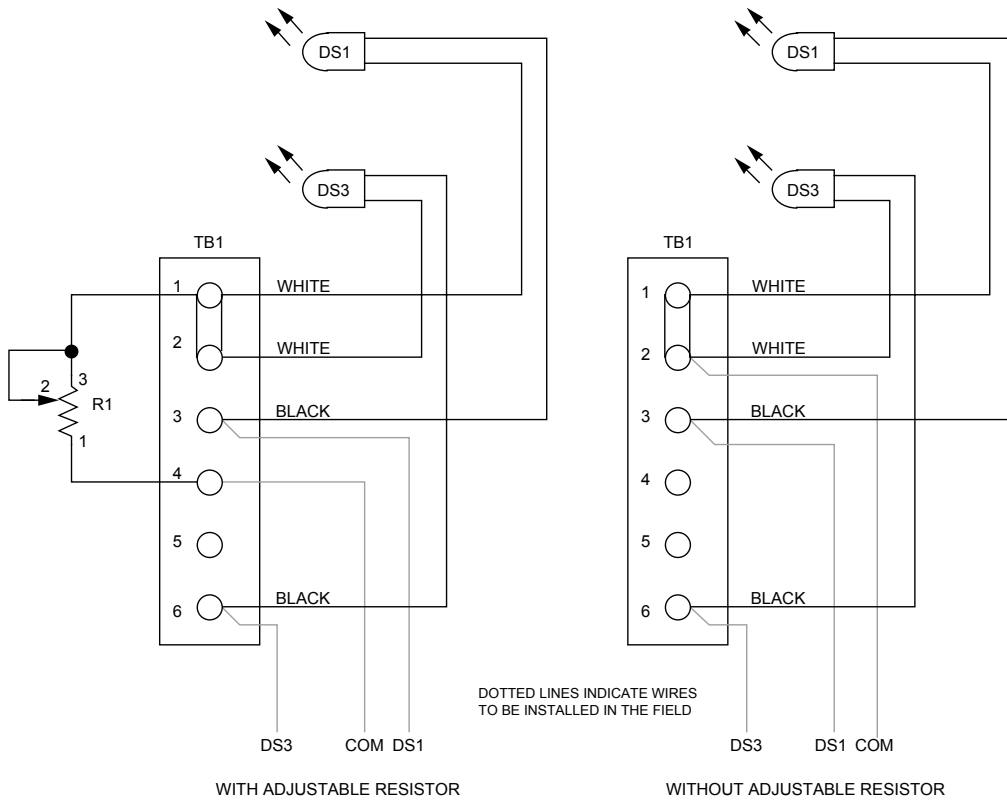
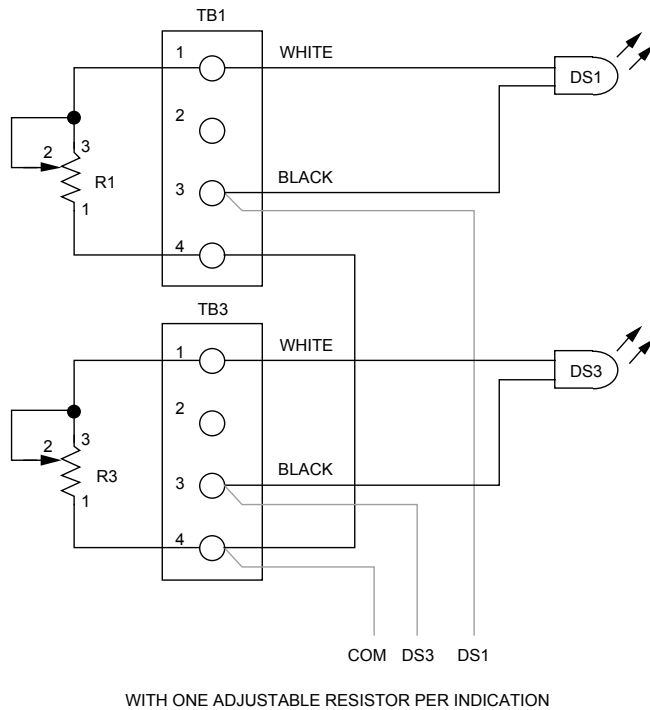


Figure 5. Wiring Diagram for Sentinel Signal, 1 Indication without Resistor; with 1 Adjustable Resistor



WITH ADJUSTABLE RESISTOR

WITHOUT ADJUSTABLE RESISTOR



WITH ONE ADJUSTABLE RESISTOR PER INDICATION

Figure 6. Wiring Diagram for Sentinel Signal, 2 Indications without Resistor; with 1 Adjustable Resistor; with 2 Adjustable Resistors

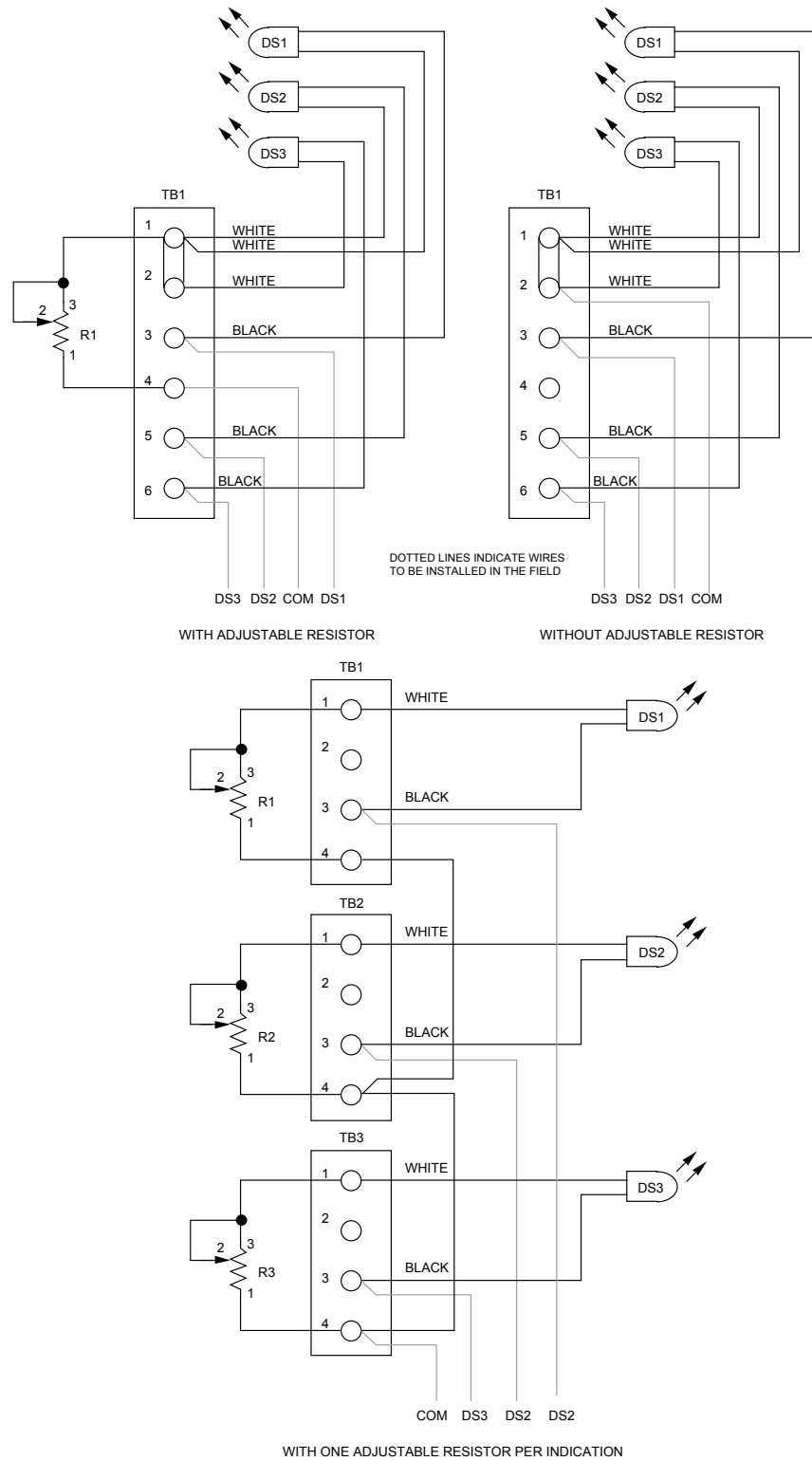


Figure 7. Wiring Diagram for Sentinel Signal, 3 Indications without Resistor; with 1 Adjustable Resistor; with 3 Adjustable Resistors

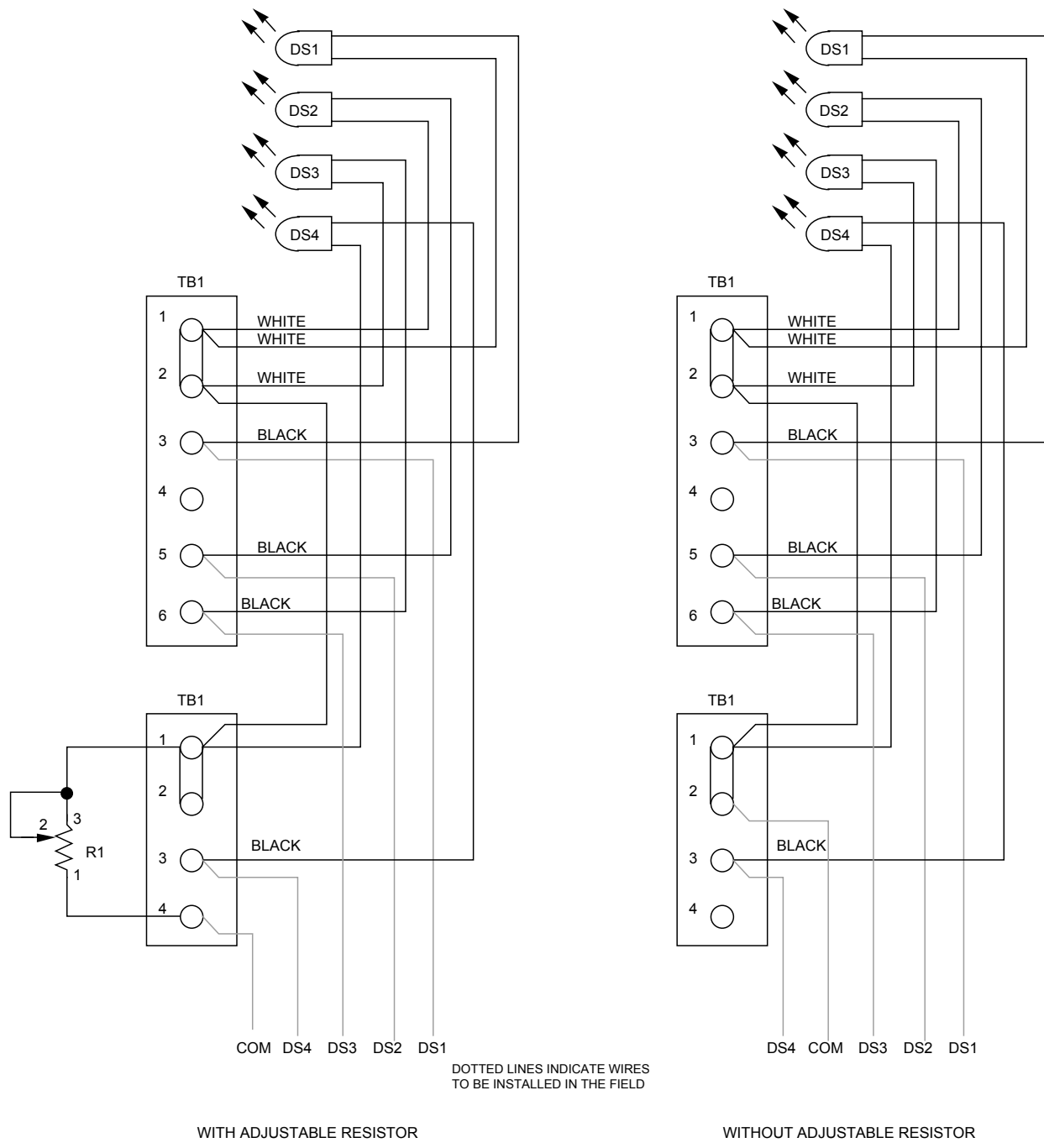


Figure 8. Wiring Diagram for Sentinel Signal, 4 Indications
without Resistor; with 1 Adjustable Resistor

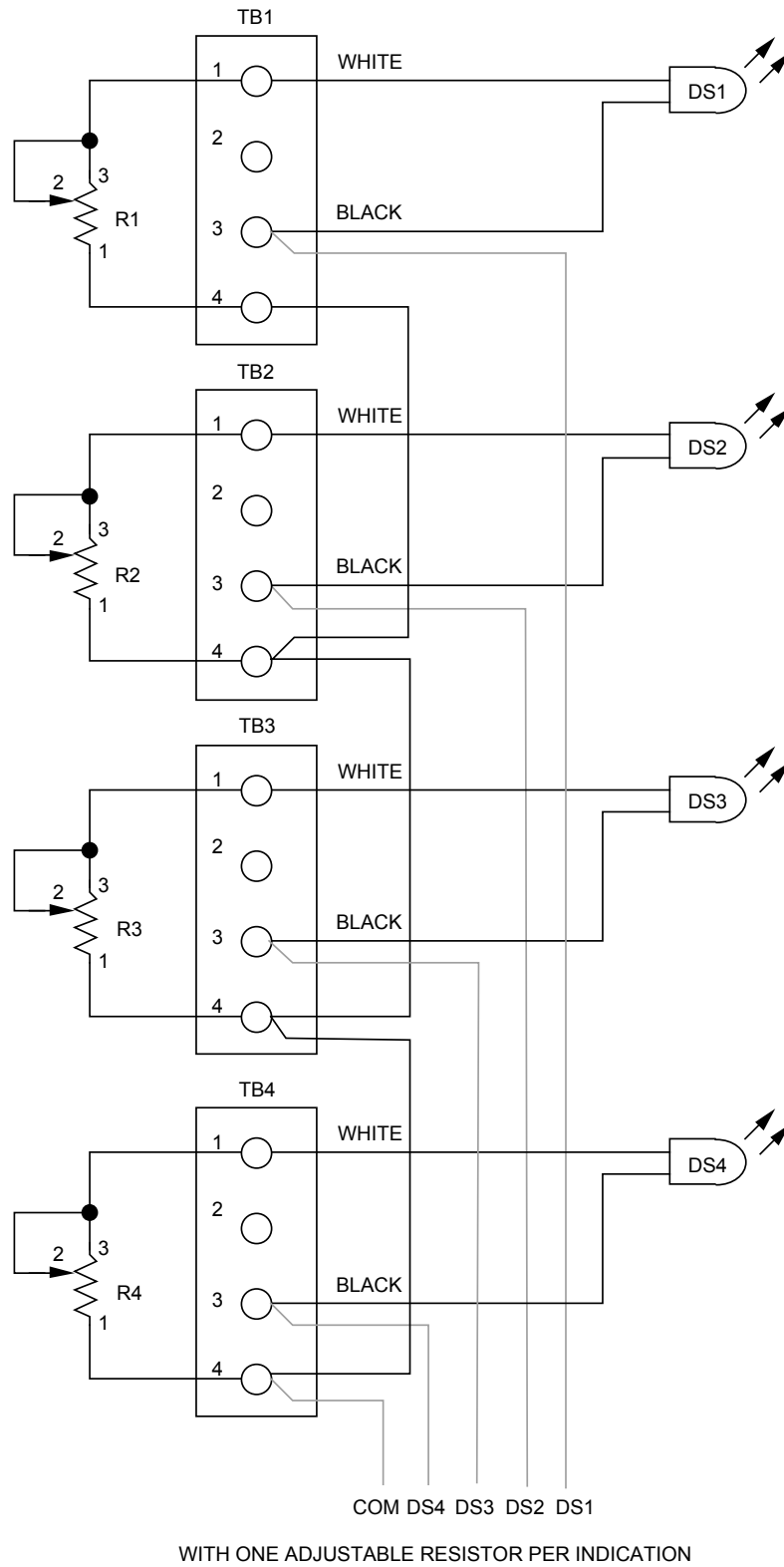


Figure 9. Wiring Diagram for Sentinel Signal, 4 Indications with 4 Adjustable Resistors

ORDERING INFORMATION

All Sentinel™ Types D and G signals are furnished with all lenses and lamp holders assembled and focused. There is no focusing necessary in the field. Sentinel signal kits include an adjustable mounting bracket, background and hoods (or snowshield background), sighting tube with clamp, and all necessary mounting hardware. As an option, these signals are available with an adjustable resistor for each aspect and also with bayonet-type lamp bulbs.

Order complete signals from Tables 1 and 2, using the 10-digit number.

Signal Configuration Legend

- G Green
- Y Yellow
- R Red
- W Lunar White
- X Filler Plate

Hardware Configuration Legend

- Resistor 0 to 5 Ohms; 3 Amps
- Bracket Adjustable Mounting Bracket and Hardware Mounting Kit
- Hoods Aluminum Hoods and Hardware Mounting Kits
- Background Aluminum Background and Hardware Mounting Kit
* Plastic Background and Hoods with Hardware Mounting Kits (See Table 1.)
- Snowshield One piece Snowshield/Background and Hardware Mounting Kit
- Bulb 10V; 25W

Table 1. Sentinel Type D Signal Kits

Cat. Number	Kit Number	Signal Configuration	Mounting Bracket	Background	Hoods	Snow Shield	Resistor 1/signal	Resistor 1/aspect	Bulbs
A73-921	59649-068-01	R	X	X	X				
A73-963	59649-068-02	R	X	X	X		X		X
A73-919	59649-062-01	GYR	X	X	X				
A73-920	59649-062-02	GYR	X			X			
A73-930	59649-062-03	GYR	X			X			X
A73-932	59649-062-04	GYR	X	X	X			X	X
A73-954	59649-062-05	GYR	X	X	X			X	
A73-955	59649-062-06	GYR	X			X		X	
A73-936	59649-062-07	GYR	X			X		X	X
A73-934	59649-062-08	XYR	X	X	X				
A73-956	59649-062-09	XYR	X	X	X			X	
A73-957	59649-062-10	GYR	X	X	X		X		
A73-964	59649-062-11	XYR	X			X			X
A73-941	59649-075-01	GYRW	X	X	X			X	
A73-935	59649-075-02	GYRW	X	X	X				

Table 2. Sentinel Type G Signal Kits

Cat. Number	Kit Number	Signal Configuration	Mounting Bracket	Background	Hoods	Snow Shield	Resistor 1/signal	Resistor 1/aspect	Bulbs
A73-950	59649-092-01	YGR	X	X	X	NA			
A73-958	59649-092-02	YGR	X	*	*	NA	X		
A73-951	59649-092-03	XYR	X	*	*	NA	X		
A73-959	59649-092-04	XGR	X	X	X	NA	X		
A73-961	59649-092-05	XGR	X	X	X	NA			
A73-962	59649-092-06	YGR	X	X	X	NA	X		

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APPENDIX A

SENTINEL SIGNAL LED INSTALLATION INSTRUCTIONS

General

The LED signals can directly replace the light bulbs in the Sentinel Signal. The LED signals can run on AC or DC however, a current limiting resistor must be used with each circuit board. Failure to use the current limiting resistor will damage the LED circuit board.

The resistor is Alstom part number 55945-013-01. It is a variable resistor (0 to 5 ohms). The resistor must be adjusted so the proper voltage is applied to the circuit board. See Table 1 for the proper values. NOTE: The resistor is factory adjusted if the LED Sentinel Signal complete is ordered directly from Alstom. The resistor must be adjusted if the LED circuit board is as an upgrade from the traditional light bulb.

Table A-1. Voltage Values

Color	Ohms	Voltage on circuit board for 10 volt systems	Voltage on circuit Board for 12 volt systems
Green	3.5	4.9	5.1
Yellow	3.0	5.6	5.8
Red	3.0	5.6	5.8

The voltage on the circuit board can be measured on the terminal block between terminal posts numbers 2 and 4. The posts are numbered from left to right, post number 1 being on the left. See Figure A-1 next page.

The input voltage is applied to terminal posts numbers 1 and 2. The allowable input voltage range is 8.5 volts to 12 volts. The variable resistor is connected to terminal posts numbers 1 and 4. There is a thumb screw on the resistor to adjust the resistance. Terminal post 3 is unused.

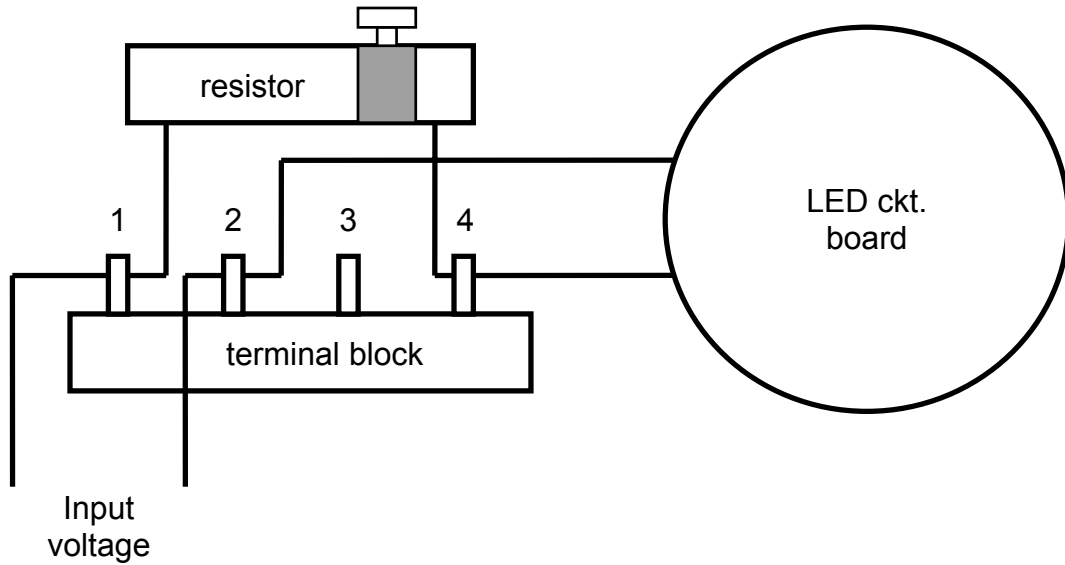


Figure A-1. Measuring Voltage on the Terminal Block