## Remote Searchlight Signal Termination Card (RSST)

The JLC provided RSST card is useful for users desiring to retain the easy installation of 3-lead searchlight signal LEDs, for the case when using C/MRI outputs configured for current sourcing. For example, on the SV Oregon System we have dedicated 23 of the Classic 24-line DOUT cards configured for current-sourcing to drive 276 of the 3-lead bicolor LEDs. Doing so saves purchasing and installation of 552 separate transistors and the corresponding 1104 resistors and it allows us make use of the less expensive RSST card rather than the more capable RSSD. The net cost savings was $200. Fig. 1 shows the schematic for the basic circuit and its application connections, while Fig. 2 shows the parts layout for the complete RSST card, which contains four of the circuits shown in Fig. 1.
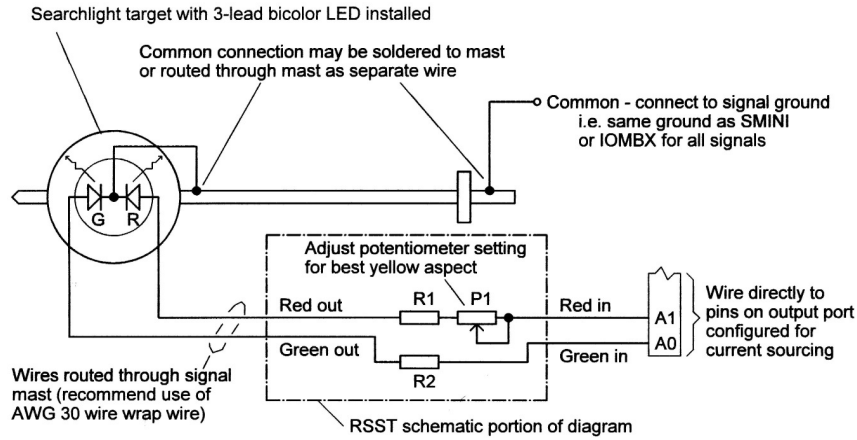


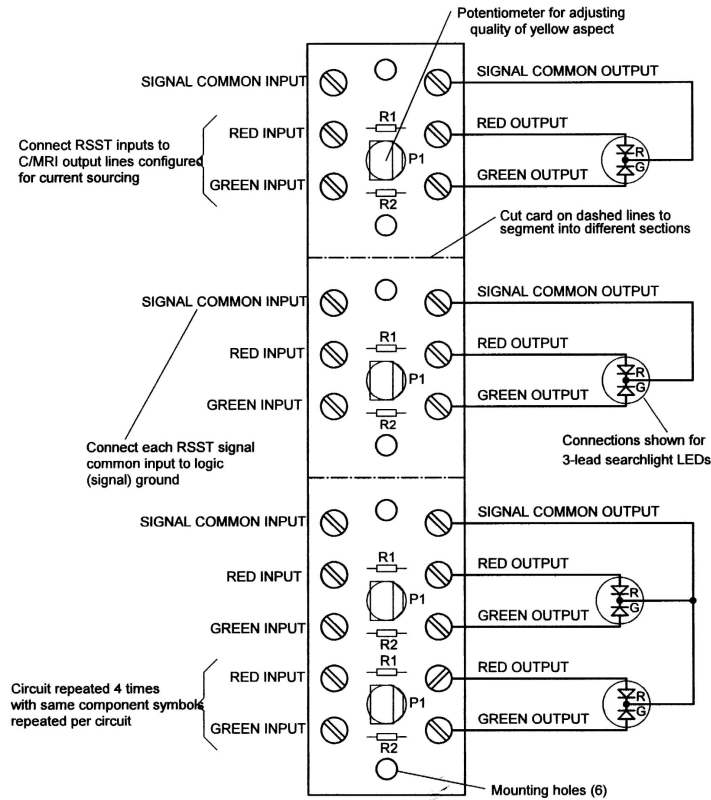**Fig. 1.** RSST schematic and connection diagram



**Fig. 2.** RSST parts layout and LED connections

In fundamental terms, the RSST card is an RSSD card without the transistors and their corresponding drive resistors. Additionally, the RSST may be divided into three sections rather than two sections as with the RSSD. Because each of the four circuits is identical, I have repeated the parts nomenclature from circuit to circuit including the separate potentiometers used to optimize the yellow aspect of each LED individually. The parts list quantities, see Table 1, are for one circuit. Thus to build up a complete card you need to multiply all the quantities shown by 4 and then add 6 screws and nuts for the card's signal common connections.

**Table 1.** RSST circuit parts list (in recommended order of assembly)

| Qnty. | Symbol | Description |
|---|---|---|
| 4 | - | 4-40 x ¼" pan-head machine screws (Digi-Key H142) |
| 4 | - | 4-40 hex nuts (Digi-Key H216) |
| 1 | R1 | 75Ω resistor [violet-green-black] |
| 1 | R2 | 150Ω resistor [brown-green-brown] |
| 1 | P1 | 500Ω potentiometer (Digi-Key 3306F-501) |

Author's recommendations for suppliers given in parentheses above with part numbers where applicable. Equivalent parts may be substituted. Resistors are ¼W, 5 percent and color codes are given in brackets.

Ready-to-assemble RSST printed circuit boards are available from JLC Enterprises at $6 each, or $1.50 per signal LED, and complete kits as well as fully assembled-and-tested cards are available from EASEE Interfaces. Although the RSST card does require C/MRI outputs to be set up in their alternate, current sinking, configuration, the card still makes available the following positive features:

1. Provides a neat mounting place for all terminal screws and resistors so that they are located right next to each signal for handy wiring terminations.

2. Provides a separate yellow adjustment potentiometer for each searchlight signal LED making it very convenient to always achieve that optimized yellow aspect.

For those interested, the RSST assembly steps are as follows:

Board orientation. To help avoid errors during assembly, make certain that you orient the board as shown in Fig. 2. All parts are installed from the top, i.e. the component side of the board and all soldering is completed on the bottom or the trace side of the board.

Terminal screws. Insert 4-40 screws in each of the terminal holes from the top side and add 4-40 hex nuts on the bottom side, tighten firmly and solder the nuts to the circuit pads.

R1, R2. Match the color code of each resistor to the parts list. Make 90-degree bends in the leads of each resistor so it is centered between its two holes and the leads fit snugly. Insert and solder while holding the part flat against the card, then trim its leads flush with the tops of the solder "tents" on the solder side of the card.

P1. Install the trim potentiometer as in Fig. 2, pushing the three prongs all the way into the holes as you solder.

That completes the RSST card assembly.