

S-CAB Motherboard – GP JST version

For use with HO and S-scale diesel locos

S-CAB Motherboards

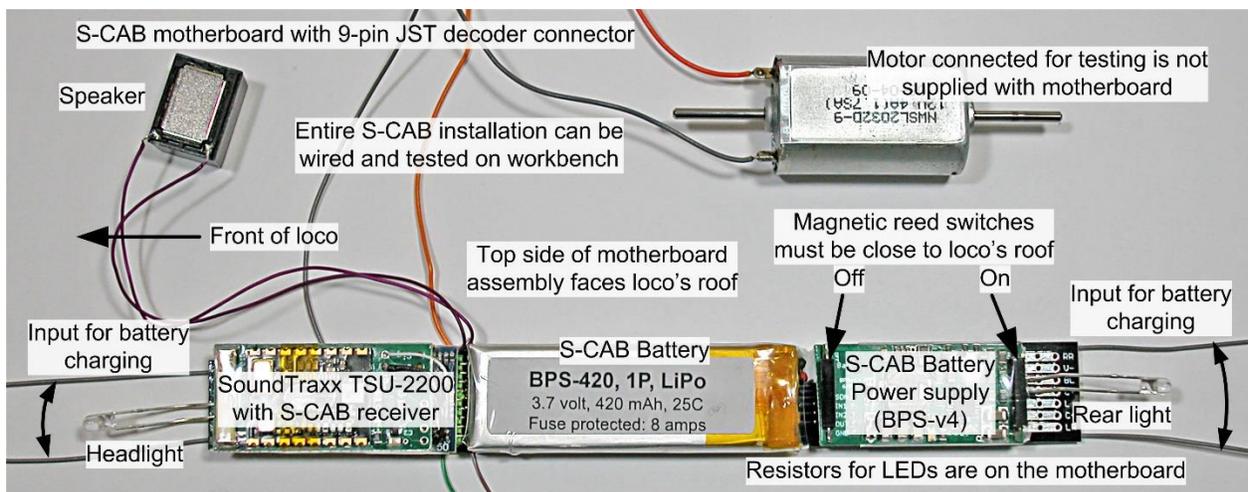
S-CAB is a set of components for installing battery power and radio control in HO and similar smaller scale locomotives. All S-CAB components are designed and tested to operate as a system, which eliminates risks of selecting components from different sources. However, determining what components are needed, how they can fit in a small space, and how they are wired is a challenge many model railroaders would rather avoid. For example, a larger capacity battery is always desirable, but what size will fit, together with other components, in the shell of a typical HO scale diesel locomotive?

S-CAB motherboards (“MB”s) are intended to facilitate a decision to use battery power and to simplify installation. A potential user is not required to select individual components. The motherboard discussed in this document fits a broad selection of HO scale diesel locomotives. “GP” (meaning general purpose), is an appropriate choice for EMD GP class locos as well as E and F class and popular ALCO models. “NEM version” indicates it is designed for use with decoders using an NEM socket.

Once a user selects a loco model and chooses a decoder, an S-CAB motherboard (if available) defines the project. At present, two members of a planned MB family are available. Both are for GP applications; this JST version for decoders with a 9-pin JST socket (or soldered wire harness) and another for decoders using a 21-pin NEM socket.

MB Assembly

This photo shows a complete system wired for testing. The motor is the only item not shipped with the system.



All wiring is completed except for connections to speaker, motor and power for battery charging. The assembly has been fully tested, including speaker, motor and power input.

LEDs are mounted temporarily for testing and will need to be repositioned to match loco light locations. Considerable effort has been devoted to minimizing head-room required by the motherboard but trimming metal castings (used to increase loco weight) is frequently required.

The decoder is not visible since it is mounted beneath the radio receiver on top side of motherboard. In some situations, and by special request, the decoder can be moved to underside of the motherboard.

Notes

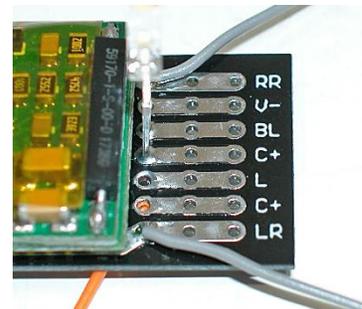
The assembly can be shortened by trimming ends of the motherboard.



Be sure to keep a list of terminal labels.



RR	Right rail
F3	Extra light
L+	connect to LED positive
HL	Headlight (LED negative)
BL	Rear light (LED negative)
LR	Left rail
V-	BPS negative
C+	Same as L+



- Motor connections (orange and gray) should be reversed if loco runs backwards in response to forward command.
- Input power connections (gray wires) are not polarity sensitive; nor are speaker wires (unless using more than one speaker).
- LEDs must be wired with correct polarity and require a series resistor (4,700 ohms already on the motherboard). Reversed polarity will not damage an LED; it simply does not work.
- Terminal F3 is operated by function output FX3 which is controlled by throttle button '4'.
- L is a spare output of positive common (decoder blue) and is protected by a 4,700 ohm resistor. An LED can be wired between L and a spare decoder function output. In this case, LED positive connects to 'L' and LED negative connects to decoder function output.
- V- is BPS negative and is intended only for test purposes. It is *not* the same as decoder ground.