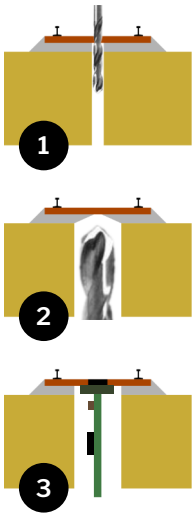
SQUEALER

Motion Activated Flange Squeal System

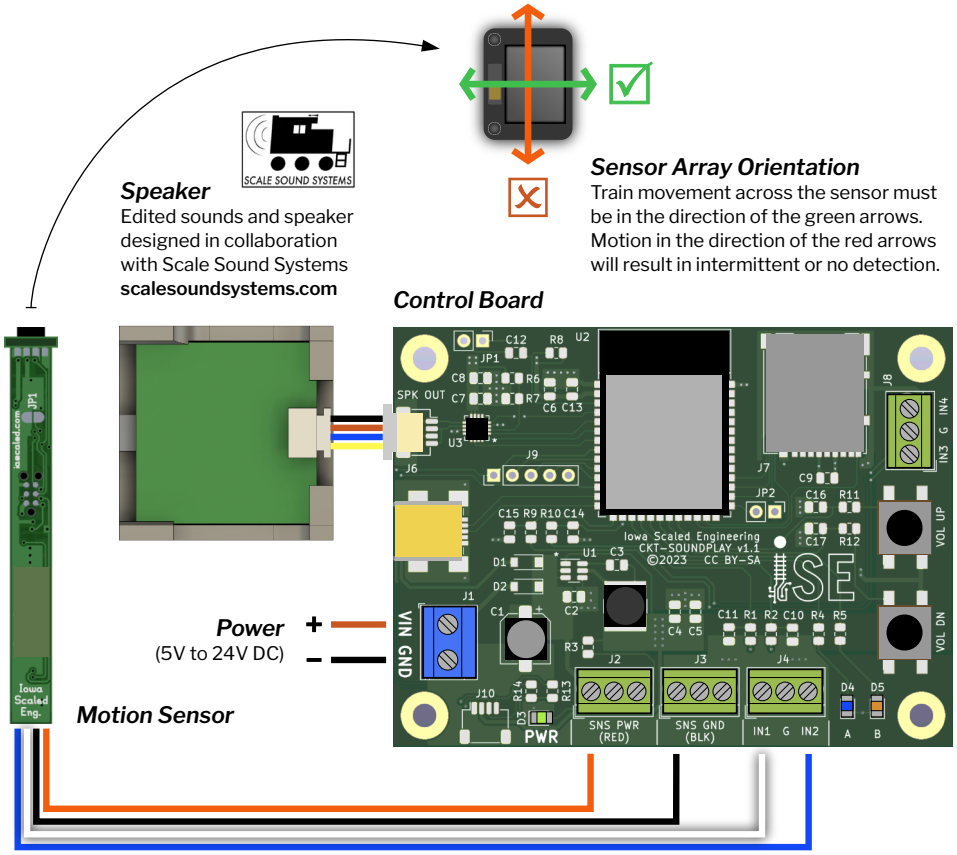


Installation

1. Drill a 1/16" pilot hole down through the benchwork

2. Drill a 3/8" hole up to just under the ties

3. Align the motion sensor with the top of the ties. Use a piece of paper towel or tapered shim and gently wedge into the hole to hold the sensor in place



Power

The Squealer can be powered from 5V to 24V DC, applied through connector J1 (positive to VIN, negative to GND). Alternatively, the mini USB jack can be used to power the Squealer, either from a USB charging block or a laptop/PC.

Sensor

The motion sensor is powered from the Squealer board. The red wire from the motion sensor connects to J2 in any of the RED terminals. Similarly, the black wire from the sensor connects to J3 using any of the BLK terminals. The sensor output wires (white and blue) connect to IN1 and IN2 terminals on J4 respectively. Note that the center terminal on J4 is ground and shouldn't be used.

Position the sensor below the rail even with the tie height. Make sure the full face of the emitter opening and imaging array is clear of any ballast or obstruction.

Although the sensor and the control electronics are relatively robust, standard precautions should be taken — avoid static electricity, don't let it get wet, and keep conductive materials away, etc.

Speaker

The speaker attaches to connector J6 (SPK OUT) on the board. The plastic speaker enclosure can be mounted above or below the layout. For better sound fidelity, bore a 3/8" hole in the scenery or benchwork, and position the speaker enclosure with the opening on the side facing up. Camouflage the hole with scenery. However, this is user preference and may involve some experimentation.

Operation

After powering up, the blue LED will blink to indicate the Squealer is ready. If using the built-in sounds (ie: no microSD card), the blue LED will blink twice. If a microSD card is inserted with valid WAV files on it, then the blue LED will blink four times.

Sound is muted until the sensor detects motion. Once detected, the volume will fade up to the set level. Note that there are random silence spaces built into the program, so sound may not play immediately. However, the blue LED on the Squealer board will always indicate the current detection status.

Volume

The volume has 30 levels and comes preset at level 20. Level 0 is mute. There are ten levels above 20 to amplify custom audio tracks with low gain, but these levels should be used with caution as they may cause distortion.

To change volume, press the VOL UP or VOL DN button. The amber LED will blink briefly in response to pressing the button. When setting volume level 20, the amber LED will blink somewhat longer than normal to indicate it is the default level.

Custom Sounds

Custom sounds can be loaded into the Squealer using a microSD card. The microSD card must be formatted as FAT. The sounds must also meet the following requirements:

- WAV file named with .wav extension (e.g. mp3 or other formats will not work)
- Place .wav file(s) in the main directory of the microSD card (note: all other sub-directories are ignored)
- 16-bit, mono format
- 8, 16, 32, or 44.1kHz sample rate

The Squealer will load all valid files found on the microSD card and begin playing them in random order.

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