

# Special Lighting for Consist Operation

We recently received a question from one of our customers on how to achieve an unusual combination of lighting effects.

**Question:** I am running two diesel locomotives in a back to back consist and would like my lights to do the following:

- 1 - Lead loco headlight bright in forward (with F4 dimming) and the trailing loco headlight dim. I would like the lighting reversed when the consist reverses direction.
- 2 - I would like the rear lights of the locos to be dim or off.

Is it possible to get this setup?

**Answer:** Yes, if you have an NCE decoder with 4 or more function outputs. The major problem to overcome is the NCE decoders only allow one lighting effect per function output, such as F4 dimming or dim when in reverse. Luckily our decoders are made so that you can tie two (or more) function outputs together. This lets us program each output with the lighting effect we want, then tie the outputs together to get the combined effect on one LED (or bulb).

## Setting up the front headlight for point number 1 (above)

### What we are going to do:

- Program output 1 to be dimmable by F4 and on only in forward (off in reverse)
- Program output 3 to be dim in reverse and on only in reverse (off in forward)
- Connect both outputs 1 and 3 to be controlled by F0 (headlight function)

In the forward direction the headlight can be turned on/off by F0. In forward it can be dimmed by F4 and in reverse it will be dim. This will accomplish point number 1.

**How to do it:** (assume LED lights, subtract 128 from CV120 and 122 if using incandescent bulbs)

- ✓ Set CV33 = 5 - Map outputs 1 and 3 to F0.
- ✓ Set CV35 = 0 - Disables operation of output 3 by F1 (which is a factory default)
- ✓ Set CV120 = 161 - Configure output 1 for F4 dimming and on only in forward (128+32+1)
- ✓ Set CV122 = 174 - Configure output 3 for dim in reverse and on only in reverse (128+44+2)
- ✓ Tie the output 1 and output 3 wires together and hook to the headlight

## Setting up the rear headlight for point number 2 (above)

### What we are going to do:

- Program output 2 to be dim in forward and on only in forward (off in reverse)
- Program output 4 to be dim in reverse and on only in reverse (off in forward)
- Connect both outputs 2 and 4 to be controlled by F0 (headlight function)

In both directions the rear light can be turned on/off by F0. It will be dim in both directions

**How to do it:** (assume LED lights, subtract 128 from CV121 and 123 if using incandescent bulbs)

- ✓ Set CV34 = 10 - Map outputs 2 and 4 to F0.
- ✓ Set CV35 = 0 - Disables operation of output 4 by F2 (which is a factory default)
- ✓ Set CV121 = 169 - Configure output 2 for dim in forward and on only in forward (128+40+1)
- ✓ Set CV123 = 174 - Configure output 4 for dim in reverse and on only in reverse (128+44+2)
- ✓ Tie the output 2 and output 4 wires together and hook to the rear light

Hookup and program both locos in the same manner, connect back to back and setup the consist.