Quantum 1 Lighting

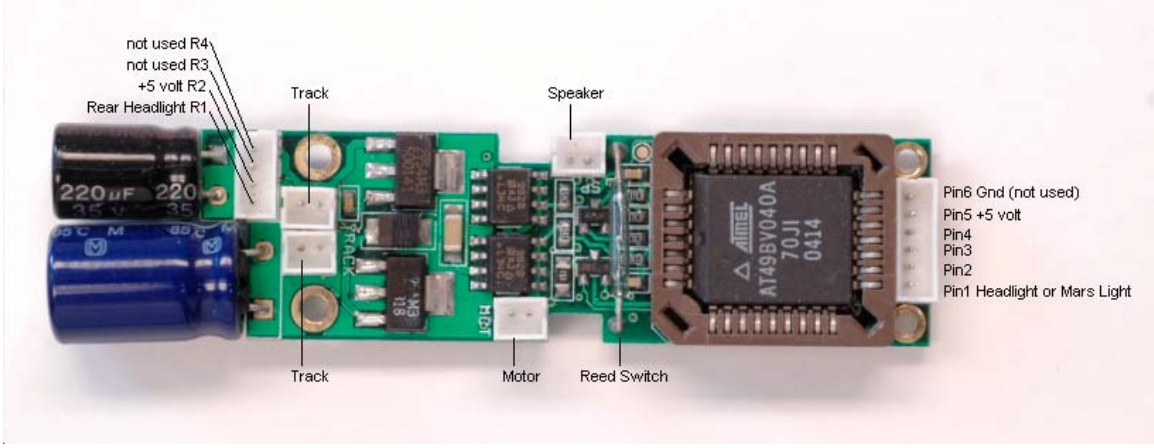
Version 1.1.1
21-Mar-11

New in document version 1.1.1

Added section on MP15 Diesel Board.

1 Small Diesel Board

The following picture is of the circuit board used in most Quantum 1 diesel locomotives.



The pins labeled Pin1, Pin2, Pin3, and Pin4 in the connector to the right of the flash memory chip are used for lights. Pin5 is +5 volts and is the return for Pin1, Pin2, Pin3, and Pin4 lights.

The pin labeled R1 to the upper left of the track inputs is always connected to the Rear Headlight. R2 is +5 volts and is the return for the Rear Headlight.

Pin1 is a 256 intensity level output and is used for the Headlight or Mars Light. If you turn the board over you can see that there is a square pad under Pin1.

Pin2, Pin3, and Pin4 are 2 intensity level outputs; i.e., on or off. These three pins are used for Ditch Lights, Number Board Lights, Marker Lights, and Cab Lights.

For models that support a Mars Light, Pin2 is used for the Headlight.

Most diesel locomotives use Pin2 or Pin3 for Marker Lights.

Most diesel locomotives use Pin3 for Number Board Lights. The exceptions are:

Pin2

Model 106 FM TrainMaster without Mars Light (Atlas)

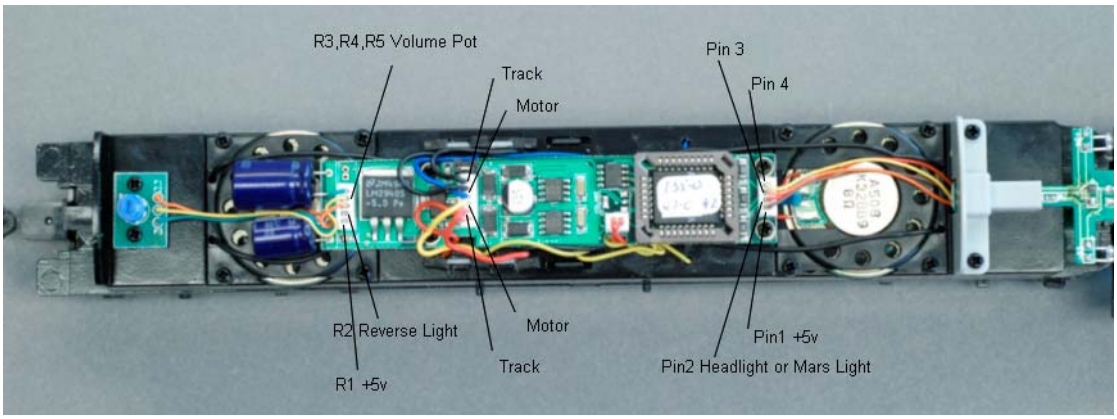
Pin4

Model 126 GE Dash 8-40BW,B (Atlas)
Model 127 B23-7 (Atlas)

Most diesel locomotives use Pin4 for Cab Lights.

2 Quantum Diesel 0031 Board

The following picture is of the circuit board used in several Quantum 1 diesel locomotives with volume pots. This board is also known as the E8/E9 board.



The picture shows the board installed in a LifeLike E8. In this model there is no reverse light connected to R2.

The pins labeled Pin2, Pin3, and Pin4 in the connector to the right of the flash memory chip are used for lights. Pin1 is +5 volts and is the return for Pin2, Pin3, and Pin4 lights.

The pin labeled R2 to the left of the track inputs is used for the Rear Headlight or Reverse Light. R1 is +5 volts and is the return for the Rear Headlight.

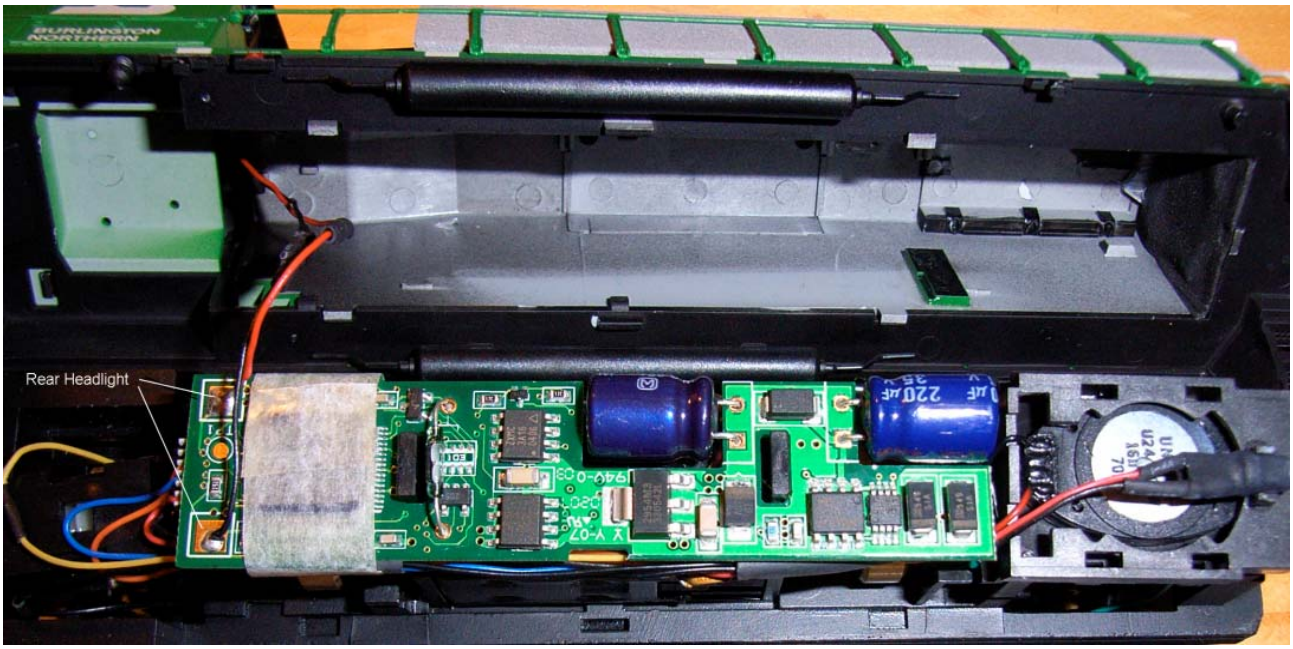
Pin2 is a 256 intensity level output and is used for the Headlight or Mars Light.

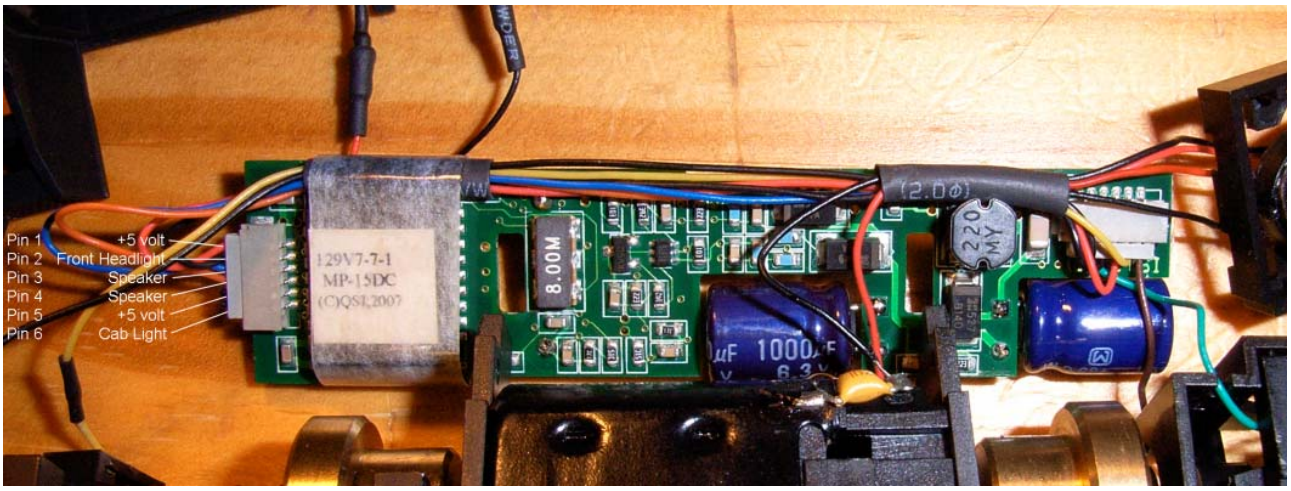
Pin3 and Pin4 are 2 intensity level outputs; i.e., on or off. These two pins are used for Ditch Lights, Number Board Lights, Marker Lights, and Cab Lights.

For models that support a Mars Light, Pin3 is used for the Headlight.

3 MP 15 Diesel Board

The following two pictures are of the circuit board used in the Atlas MP 15 locomotive. This is a special board designed to fit into the small space of the MP 15 body. The board is upside down from the normal board orientation.





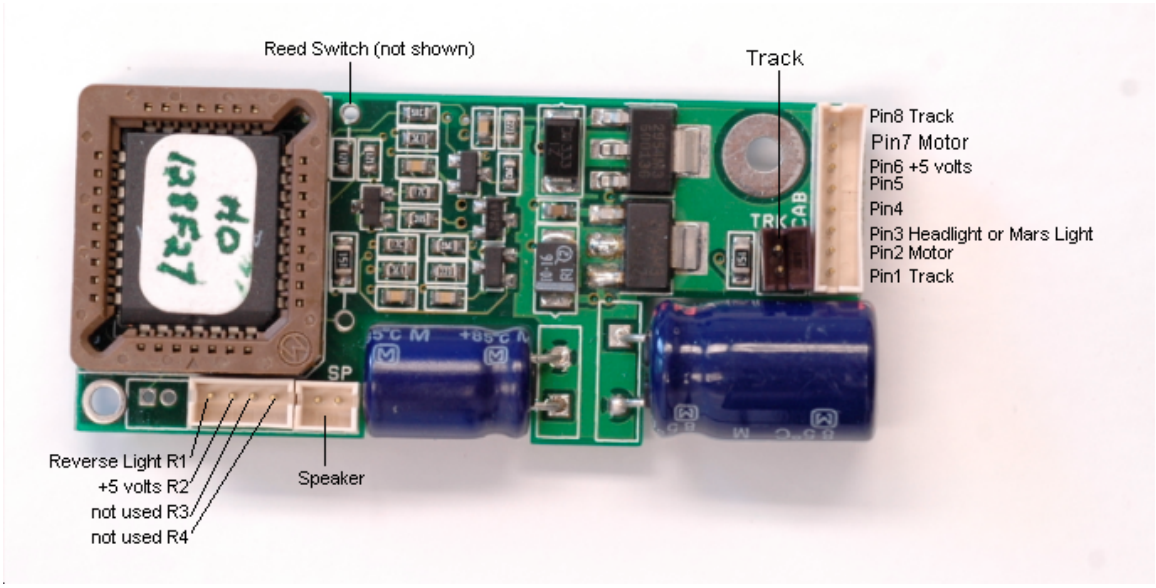
The first picture shows the top of the circuit board, what you see when you open the shell. The Rear Headlight is wired to the two pads at the left corners of the board.

The second picture shows the bottom of the board, what you see if you unscrew the board and turn it over. The Front Headlight is wired to pin 2 and to the pin 1+5 volt return. A Cab Light may be wired to pin 6 and to the pin 5 +5 volt return. The speaker is wired to pin 3 and pin 4.

Pin 2 is the 256 intensity level light output. The pin 6 and the Rear Headlight outputs are 2 intensity level (on/off) outputs.

4 Small Steam Board

The following picture is of the circuit board used in most Quantum 1 steam locomotives.



The pins labeled Pin3, Pin4, and Pin5 in connector at the right of this picture are used for lights. Pin6 is +5 volts and is the return for Pin3, Pin4, and Pin5 lights.

The pin labeled R1 just below the flash memory chip is always connected to the Reverse Light. R2 is +5 volts and is the return for the Reverse Light.

Pin3 is a 256 intensity level output and is used for the Headlight or Mars Light.

Pin4 and Pin5 are 2 intensity level outputs; i.e., on or off. These two pins are used for Number Board Lights, Marker Lights, and Cab Lights.

For models that support a Mars Light, Pin5 is used for the Headlight.

Most steam locomotives use Pin4 or Pin5 for Marker Lights.

Most steam locomotives use Pin4 for Number Board Lights.

Most steam locomotives use Pin4 or Pin5 for Cab Lights.

5 Ditch Lights Wiring

All models except 131, the BLI AC6000

The Ditch Lights use Pin2 and Pin3 on the connector adjacent to the flash memory chip. See the picture of the Small Diesel Board in section 1.

On that connector Pin1, which is used for the Headlight, is the pin at the lower left corner of the flash memory chip. If you turn the board over you can see there is a square pad under Pin1.

Connect Pin2 to the cathode of one Ditch Light LED.

Connect Pin3 to a 150 ohm resister and the resister to the cathode of the other Ditch Light LED.

Connect the anode of both LED's to Pin5, which is +5 volts.

The cathode of an LED is the side with the short connector, the large part inside, and a flat spot on the plastic.

Model 131, the BLI AC6000

The Ditch Lights use Pin2 and Pin4 on the connector adjacent to the flash memory chip.

On that connector Pin1, which is used for the Headlight, is the pin at the lower left corner of the flash memory chip. If you turn the board over you can see there is a square pad under Pin1.

Connect Pin2 to the cathode of one Ditch Light LED.

Connect Pin4 to the cathode of the other Ditch Light LED.

Connect the anode of both LED's to Pin5, which is +5 volts.

6 Parts

The part number for the plastic 6 pin JST connector on the Small Diesel Board is "ZHR-6".

The part number for the plastic 8 pin JST connector on the Small Steam Board is "ZHR-8".

No soldering of wires to the plastic connectors is necessary. Add a metal crimp to the end of the wires and push them into the plastic connector. The part number for the metal crimps is "SZH-003T-P0.5".

These parts can be obtained at JST.COM.

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