



MTH Signalman Car Mini Commander Installation Guide

Revised: October, 2008

OVERVIEW:

The Signalman car is normally operated by the UCS track. When over the UCS track, about a 2 second application of power trips a relay in the car. This relay applies power long enough for the motor to move the mechanism inside to close a micro switch, which then keeps the power on the motor and lantern until the mechanism cycles and opens the micro switch again. The Mini Commander can apply this trigger when AUX1 or AUX2 is pressed on the remote. If DCS operation is desired, the Mini Commander HC-1 output, controlled by AUX1, should be used.

INSTALLATION PROCESS SUMMARY:

The Mini Commander will need power from the track, which is available on the Signalman Car. Removal of the existing electronics is needed to get power for the Mini Commander by soldering wires to the bottom of the existing circuit board. **Take time to label and sketch the connections before disassembly.** There are several black wires, one is the 3rd rail power wire, and the others are the UCS track shoes. The Red wire is the common (wheels). On re-assembly, be sure to connect the 3rd rail collector (a black wire) and common (red wire) back on the original pins!

After power is tapped for the Mini Commander, the original electronics is reinstalled and the wiring is completed. After installation, it is suggested to place a small piece of double stick on top of the relay to anchor the original wires from the UCS shoes. The Mini Commander output will now go to these two (2) posts on the original electronics to activate the mechanism.

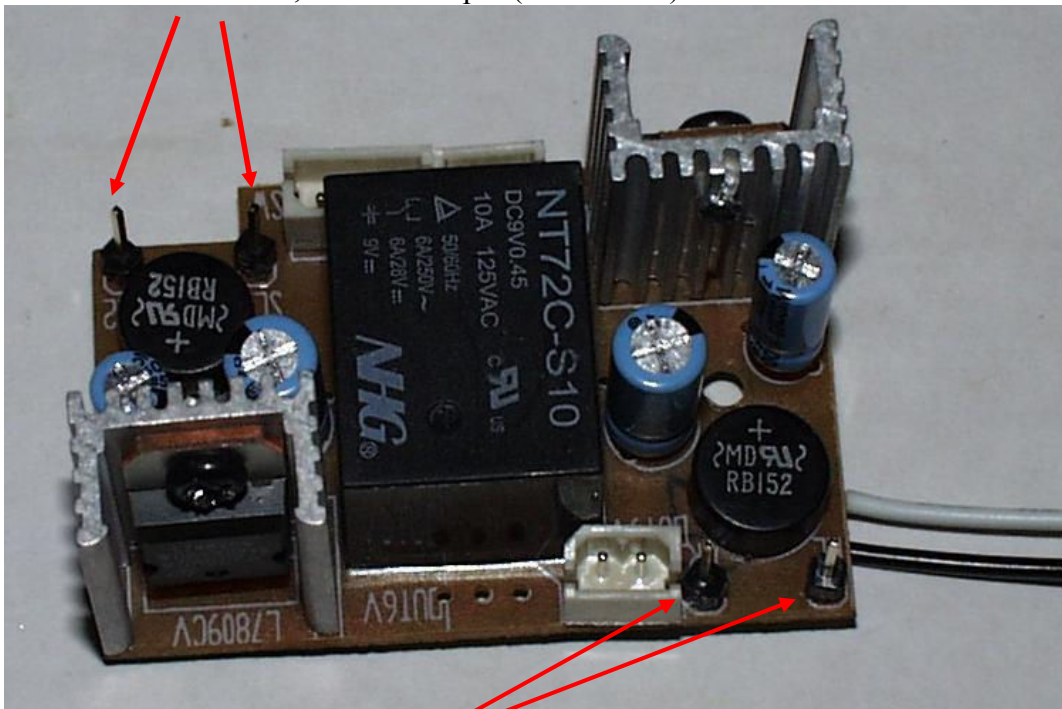
INSTALLATION SEQUENCE:

Start by removing the Signaller Boxcar shell. There are 4 large screws in each corner that release the shell. Use caution as the operating door has a small tab that engages on the operating mechanism. This tab can be easily broken off if forced.

After the shell is off, note the wiring and draw a diagram on how the circuit board is connected to the wires. Label each connection for reassembly.

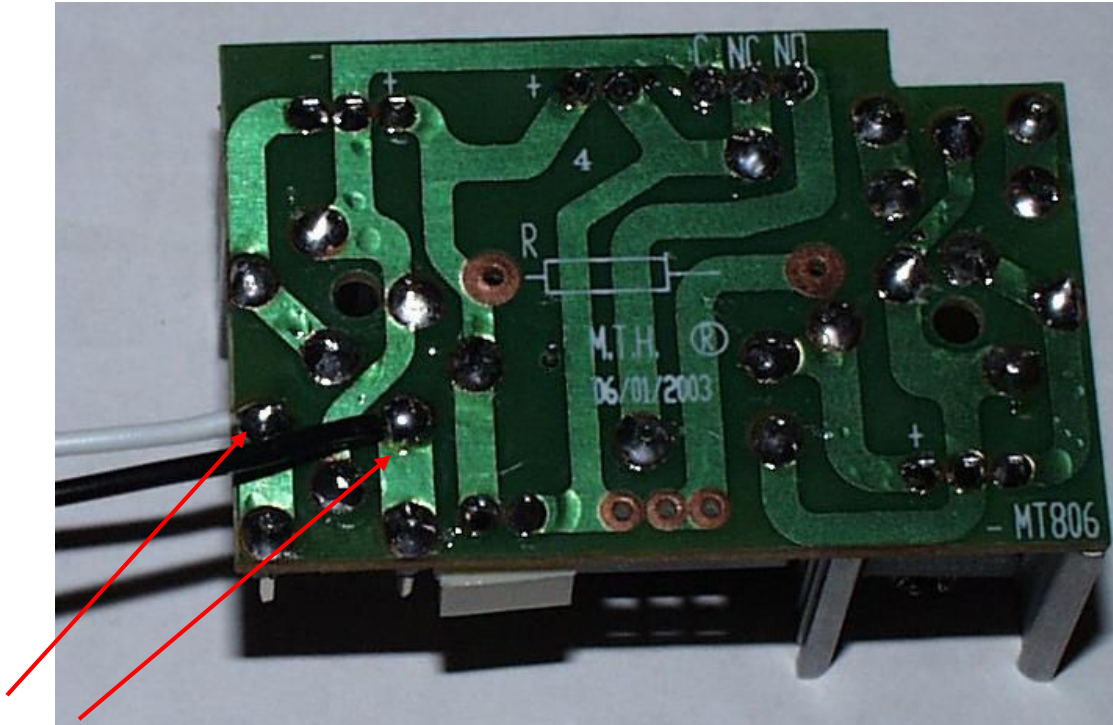
After removing the connections, remove the circuit board by removing the 2 screws that hold in the electronics, one by each heat sink.

UCS shoe connections, one to each pin (black wires)



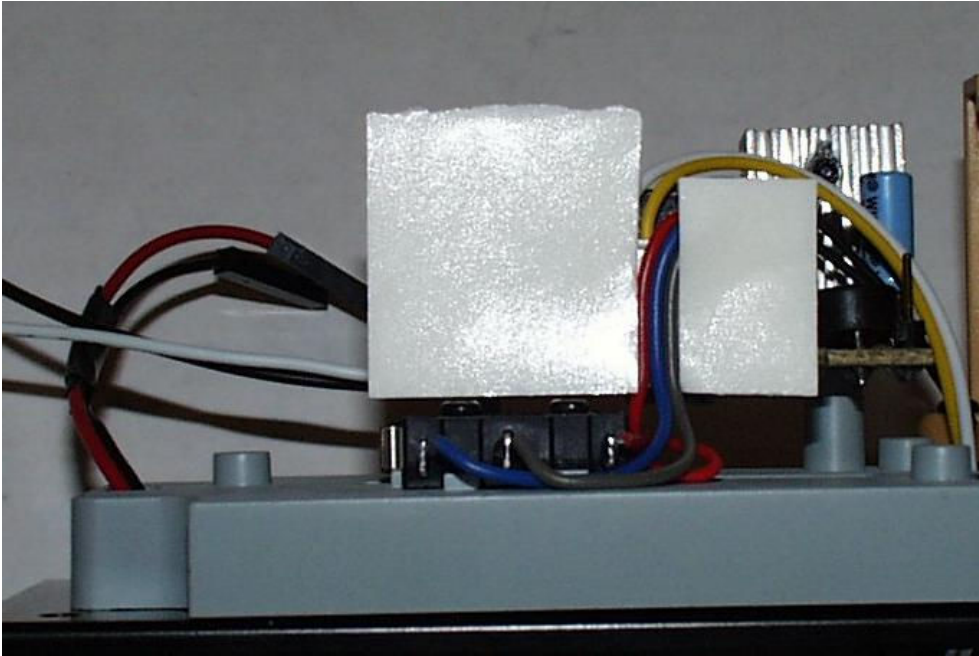
Power connections, the Red wire is the common (outer rails)

Where to get power for the Mini Commander:

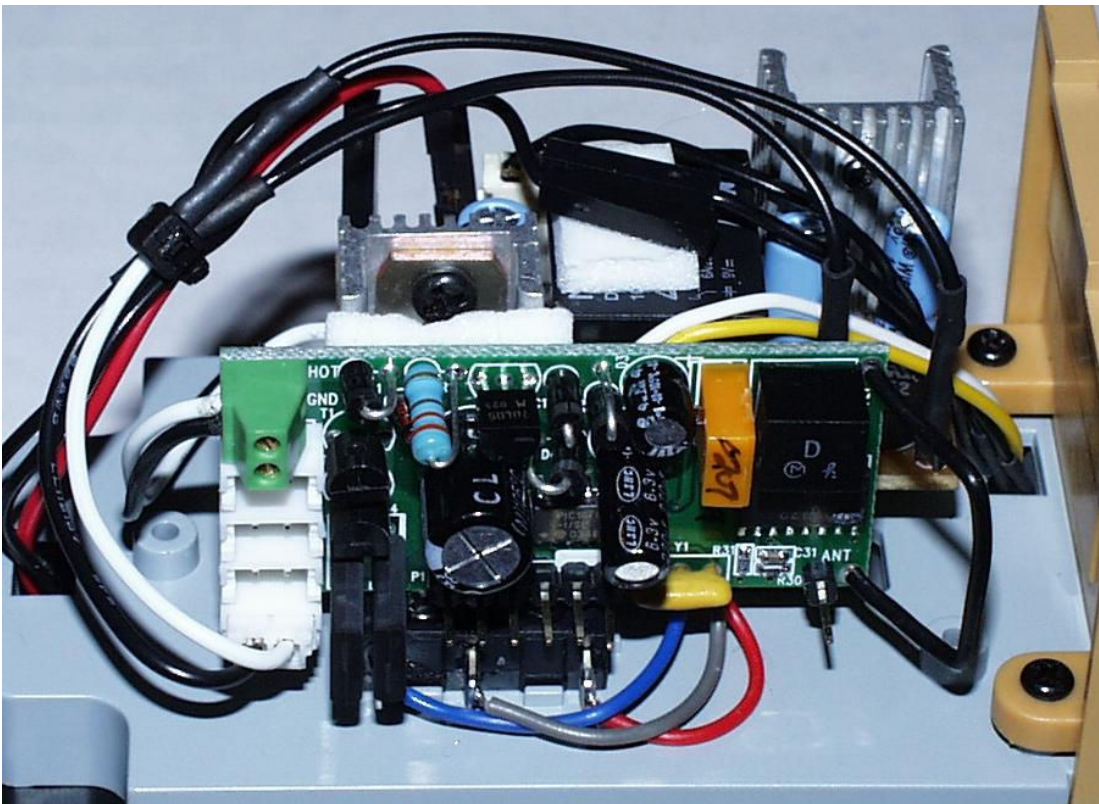


Attach 2 wires about 2.5 “ in length as shown above. These will be the power wires to the Mini Commander. Make sure you get the connections to the PCB on the corner **without** the notch. Note the white wire location, this is the 3rd rail collector power. After attaching the wires, mount the original electronics back on the car and re-attach all but the UCS wires.

Apply double stick tape as shown to mount the Mini Commander. Place tape on the existing electronics at the heat sink on the left, and the connectors to the right as shown. Route the wires that go to the micro switch close to the center of the connectors so you can mount the double stick as illustrated.



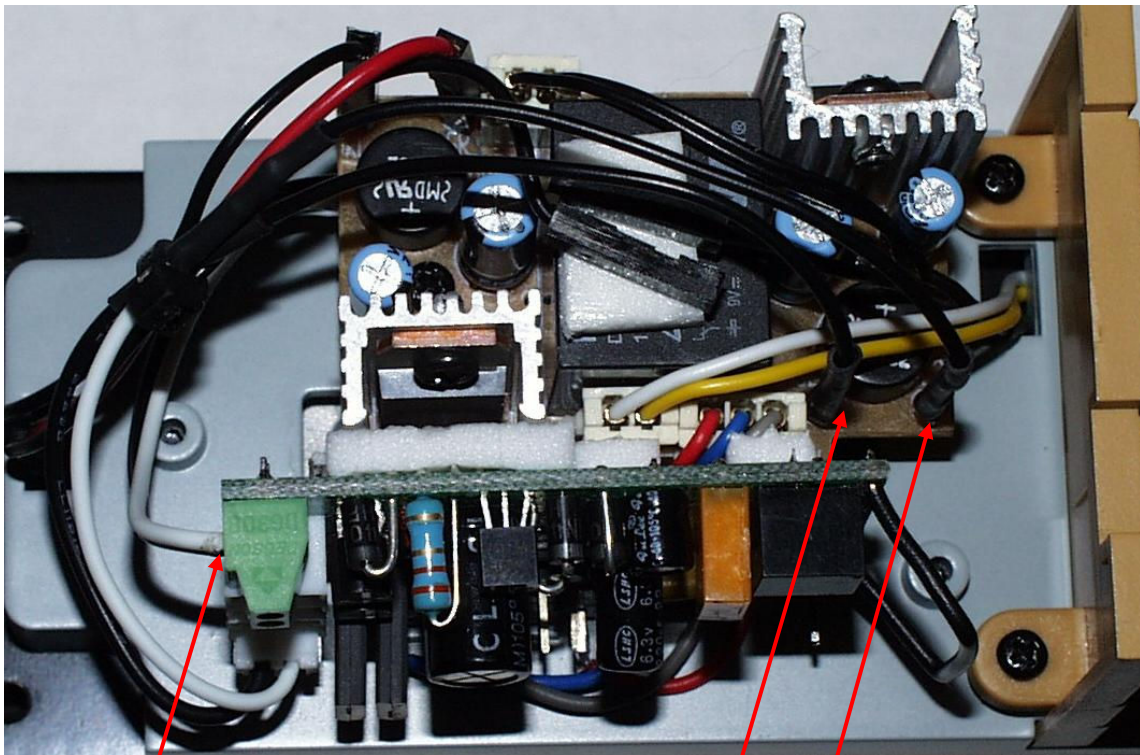
Now mount the Mini Commander to the double stick tape, positioning as shown. When the Mini Commander is attached, the bottom of the Mini Commander will rest on the micro switch mounting screws. Use CAUTION so that none of the Mini Commander components on the bottom of the board protrude through the double stick and touch the metal heat sink.



Next, locate the wire assembly as shown below. This assembly will connect the original electronics and the Mini Commander for triggering from the remote. The length of the assembly is about 5”.



Attach the wire assembly to the HC-1 (or HC-2) output on the Mini Commander, and to the 2 pins in the lower right on the original electronics PCB. Attach the power wires to the Mini Commander power connector. The polarity matters!! If you followed the pictures when soldering the connections, the white wire becomes the HOT. If not sure, simply use an ohmmeter to identify what wire is connected to the 3rd rail pickup roller. The wire that is connected to the roller is the HOT wire.



Power connections

Mini Commander HC-1 (or HC-2) output connects here
polarity is not important on this connection.

Another view of the installed Mini Commander, note the wire tie location.



NOTE: In almost all cases, the built in antenna will work fine. If you find the car is not as responsive as you would like, you can enhance the signal reception by using the supplied antenna extension. The extension is a single wire with a connector that plugs over the “ANT” pin. Place the antenna wire in a place that will not be in the way of the operation of the car. It is fine to shorten the wire. However, if you shorten it too much, it will not help the reception.

CHECKOUT and CONFIGURATION:

Review the wiring. Be sure you have identified the pickup shoes relative to the track HOT. These are both black wires, and have the same connector on the electronics end of the car. Oddly the wheels (or track common) are a red wire on this car. A check for shorts between the 3rd rail pickup and the wheels would be a good idea.

Assuming you have the wiring reviewed, power up the car (leave the shell off until checkout is complete). The Mini Commander is set to ACC 1 when shipped. And although the configuration is not done yet, you can get the car to operate by selecting ACC + 1 + AUX1 (or AUX2), then press AUX1 (or AUX2) repeatedly until the car starts to run on its own. If this checks out, proceed to configuration. If not, you will need to verify the connections again, and use a meter to be sure the Mini Commander is getting power.

CONFIGURATION:

Since there is not a Configure / Run switch, you must enter Soft Set to finalize the installation. With the car on the track and power applied, configure the Mini Commander as follows- waiting 1 second between each SET press. Actually a few extra SETs are a good idea. I usually press it 6 to 7 times!

As ACC:

ACC + 1 + SET + SET + SET + SET + SET (Soft Set entry sequence)

ACC + ## + SET (where ## is the ACC number you want)

AUX1 + 8 + BRAKE + 8

AUX2 + 8 + BRAKE + 8

WAIT 10 seconds; do not press any CAB-1 key while waiting.

As ENG:

ACC + 1 + SET + SET + SET + SET + SET (Soft Set entry sequence)

ENG + ## + SET (where ## is the ENG number you want)

AUX1 + 8 + BRAKE + 8

AUX2 + 8 + BRAKE + 8

WAIT 10 seconds; do not press any CAB-1 key while waiting.

Now select the car by ACC (or ENG) + ## (the number you entered above) and then press AUX1 (or AUX2) for about 1 second. After successful configuration, you do not need to repeatedly press AUX1 (or AUX2), since the configuration should take care of the timing needed to operate the car.

If the car is not operating, you will need to redo the configuration sequence. If you are un-sure you are able to get into Soft Set to configure the car, you may use the jumper on the connector P1 pins 1 & 2. Then enter the configuration sequence without the Soft Set entry sequence line above.

The configuration sequence above shows AUX1 and AUX2 getting configuration settings. This is not an absolute requirement, but until you get more familiar with Soft Set, please follow the sequence above.

NOTE: All configuration sequences require the CAB-1.

OPERATION:

CAB-1

Operation with the CAB-1 is as simple as selecting the ACC or ENG and the ID that you assigned. Pressing AUX1 (or AUX2) will start the signalman cycle. It is recommended to hold the AUX1 (or AUX2) key down about 1 second to activate the car.

One benefit of using AUX1 under the CAB-1 is simpler operation if you set the Signalman as the same ENG ID as the loco pulling the Signalman car. When setup in this fashion, while you operate your loco, triggering the Signalman is as easy as pressing AUX1.

DCS

Operation under DCS can be initiated by adding the Signalman as a TMCC engine. When selected, using any of the soft keys under the LCD will operate the Signalman.

If you opted for AUX2 operation, the HDLT key will trigger the operation. Multiple presses may be required depending on the Signalman micro switch tolerances.

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