K-Line Milk Car Mini Commander Installation Guide

Revised: October, 2008

OVERVIEW:
The Milk car is normally operated by the UCS track, or from the K-Line wireless remote control. When over the UCS track, about a 1 second application of power closes a reed switch in the car. This reed switch applies a trigger signal to cycle the car operation. The Mini Commander can apply this trigger via an adapter cable 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.

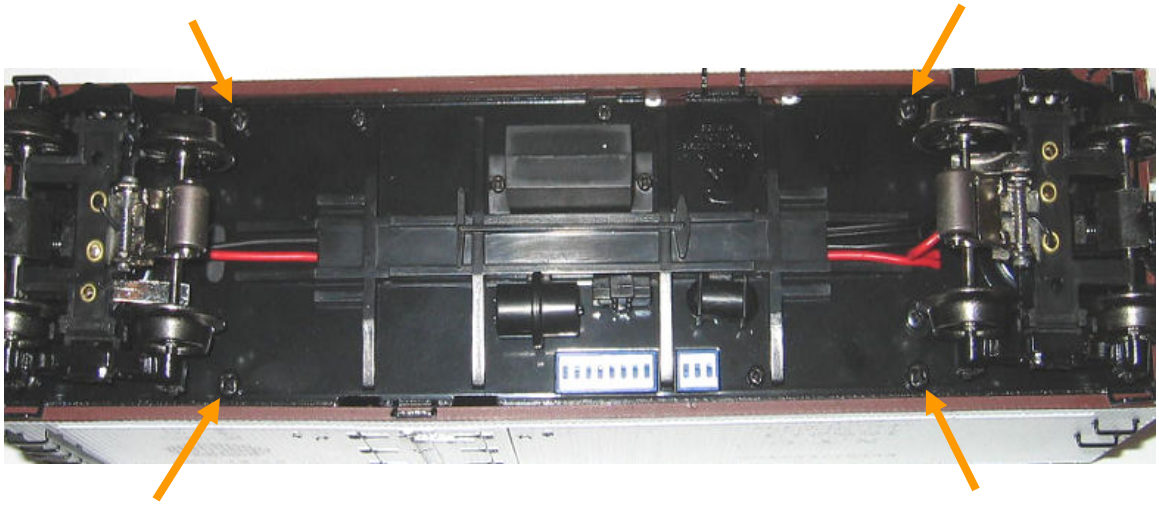
INSTALLATION PROCESS SUMMARY:
The Mini Commander will need power from the track, which is available on the original Milk car circuit board. Additionally, two (2) trigger wires will need to be attached close to the power connections. The most complex portion of this install is mechanical in nature. Since the Mini Commander is mounted strategically on top of the original circuit board, care must be exercised to prevent shorts, which could damage either or both circuit boards.

Prior to mounting the Mini Commander, the power wires must be attached firmly. Once the Mini Commander is installed, the screws on the power connector are difficult to access. After this step, there are 4 wires to solder onto the original circuit board. The locations of the connections are close together, and easy to access for soldering.

A wire tie additionally helps to secure the Mini Commander. The installation is easy, fast, and does not require configuration of the Mini Commander beyond the default settings. When properly installed, the Milk car may be activated from the CAB-1, K-Line remote control transmitter, or the UCS track.

INSTALLATION SEQUENCE:

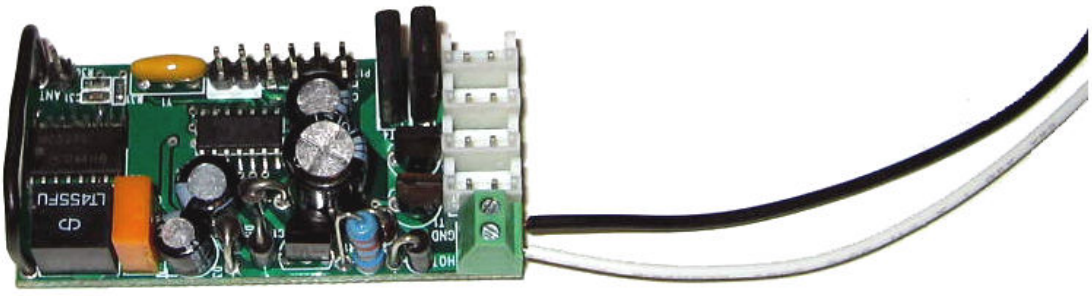
To remove the shell requires 4 screws under the chassis to be removed. These screws are located as shown. Use care not to damage the hatches on the top of the car when removing the shell. ***Important: note the shell orientation, as the loading and unloading doors are important in relation to the car chassis.***



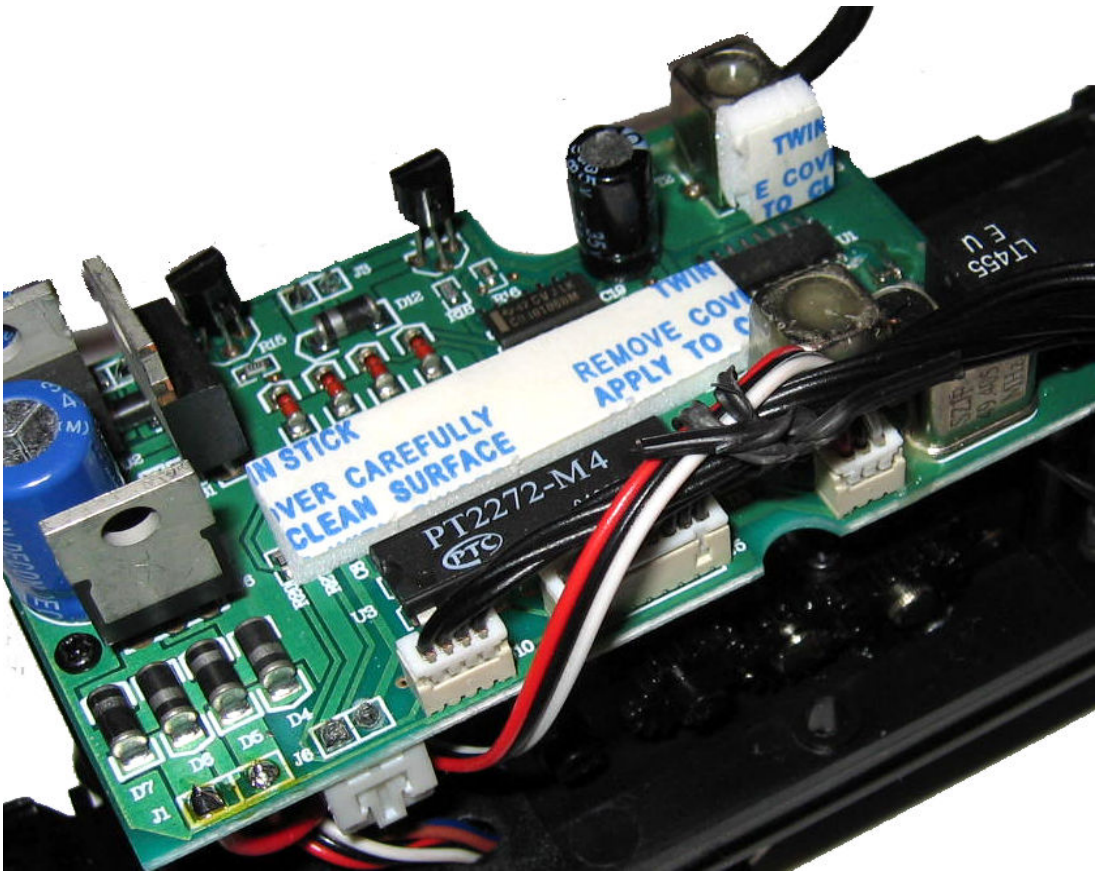
Remove these 4 screws to release the shell

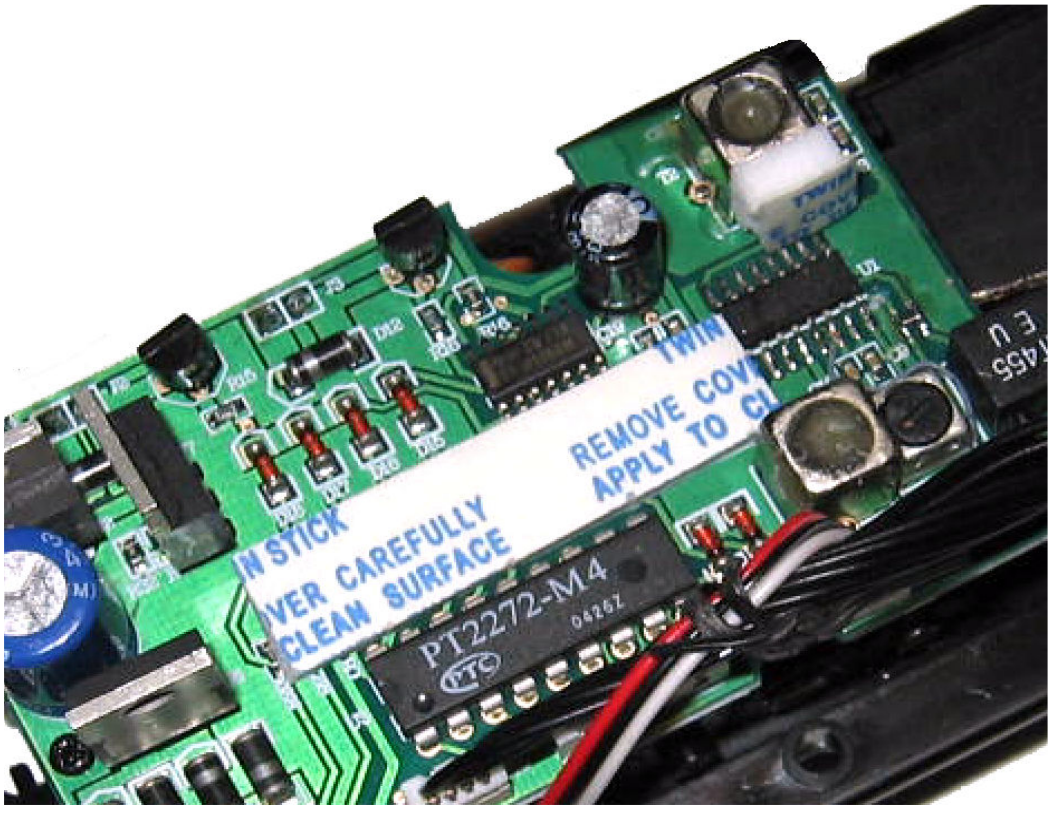
PREPARING THE MINI COMMANDER:

First locate the white and black wires provided. Strip the end about 1/4“ and attach them to the Mini Commander Power terminals. The white should be connected to the “HOT” terminal. Verify they are solidly connected, as the screw terminals will be hard to access once the Mini Commander is mounted.

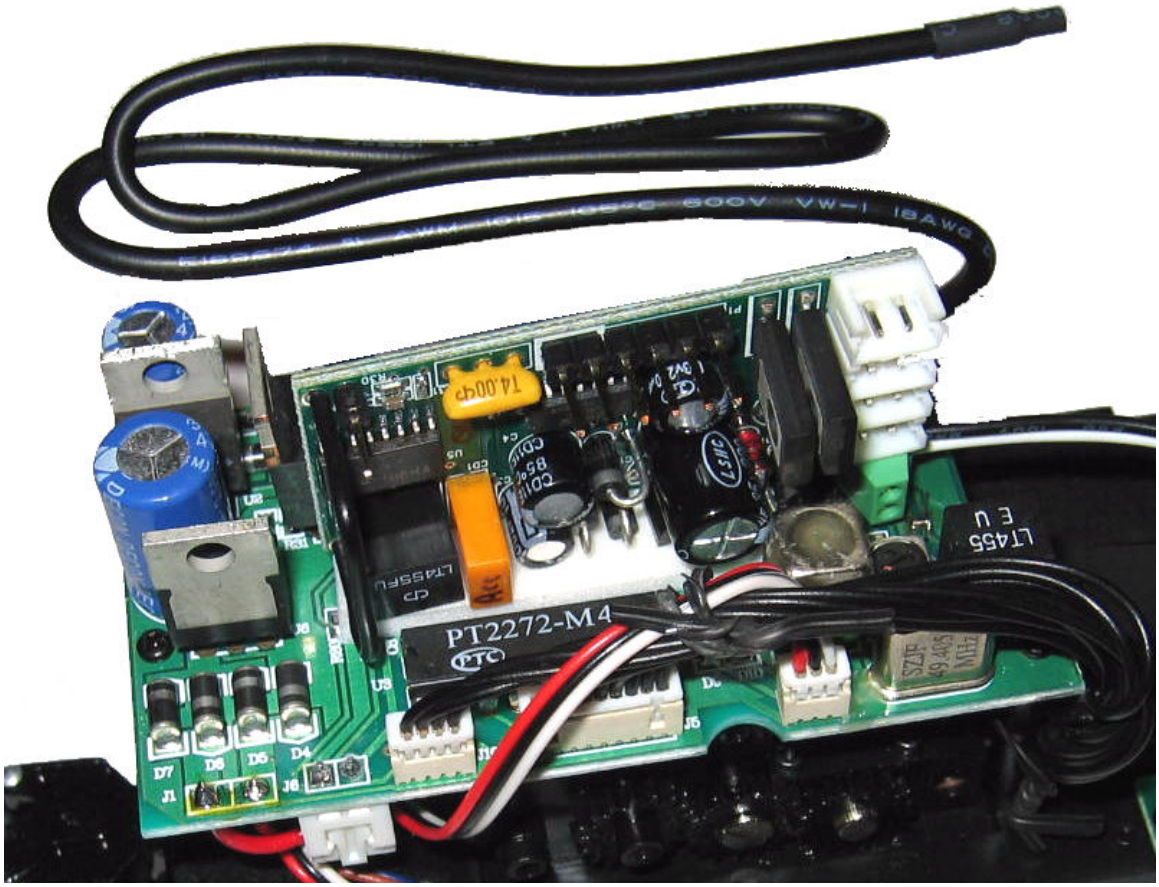


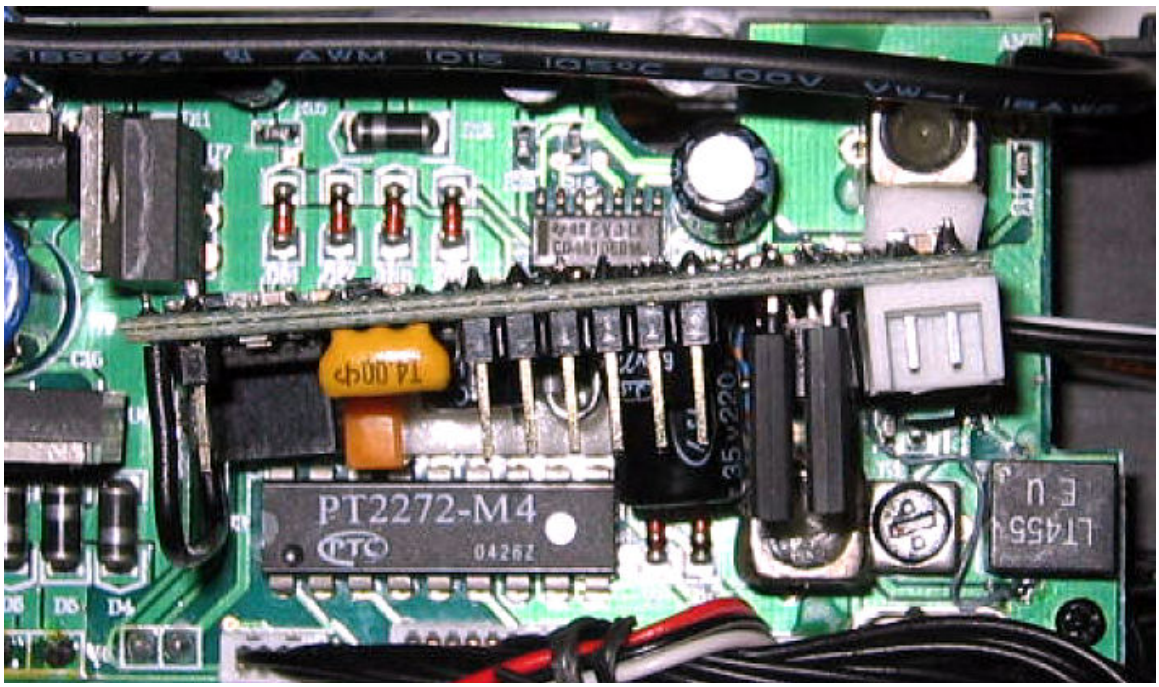
PREPARE THE DOUBLE STICK TAPE AS SHOWN:
(Cut the tape strip to dimensions of 1 ½" long x 3/8" wide)





MOUNT THE MINI COMMANDER AS SHOWN:

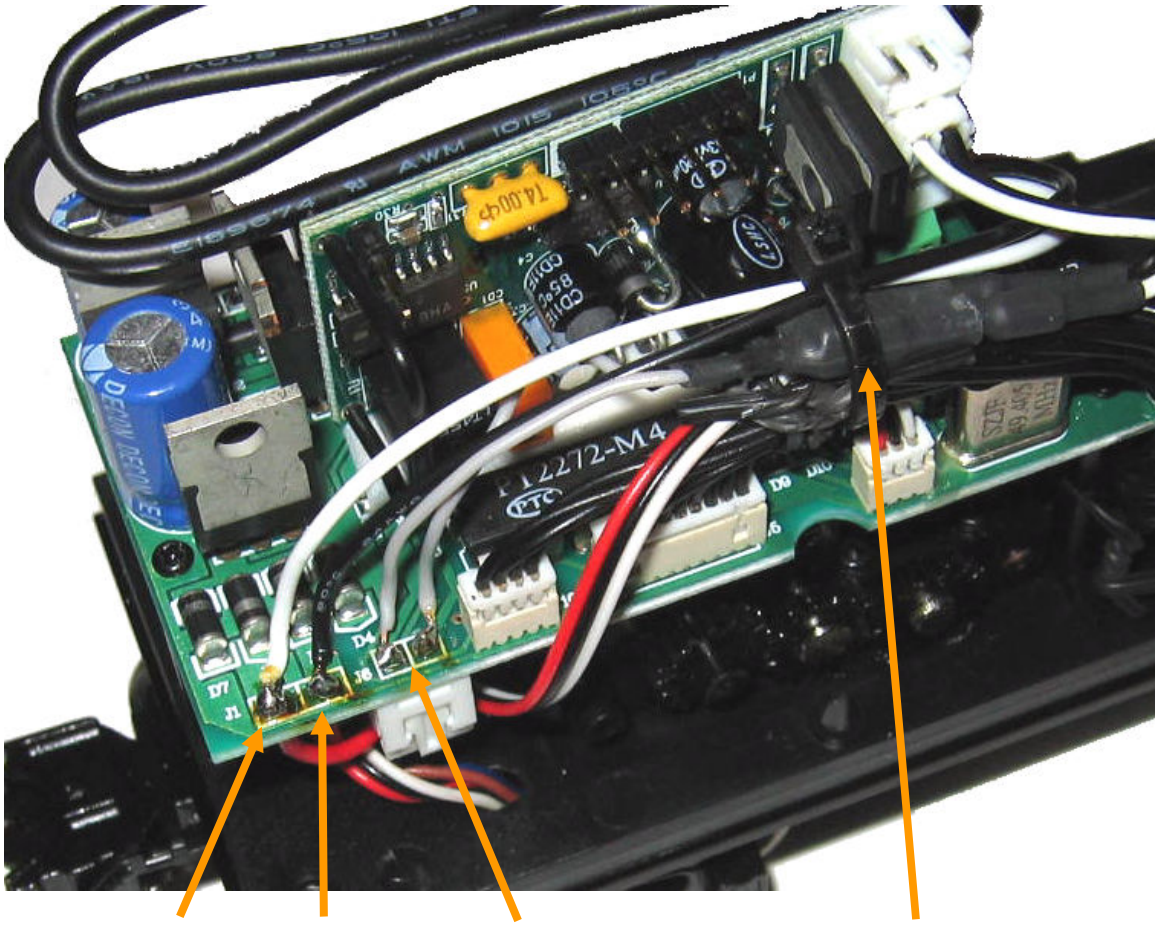




ATTACH THE POWER AND TRIGGER WIRES:

The lower left shows the connections that need to be made. From left to right, the white wire is the HOT, the black is the Common, the next two are trigger wires – the polarity is not important on the trigger wires.

Important: The point where the white wire is attached should be confirmed as the location where the center pick-up roller is attached. Although the Mini Commander will work if the HOT and COM wires are reversed, the signal reception is the best when the polarity is correct.



Take your time to attach the wires. The trigger wires are located above the connector on the milk car circuit board and will attach easily. It is possible for the car power feed wires to pop loose when the soldering iron touches the connection point, so use caution here.

Use reflow soldering techniques: Tin the wires to be attached, add some fresh solder to the point of attachment. Guiding the wire into position, heat the junction to fuse the wire to the connection point.

Plug the adapter cable into the second connector from the top on the Mini Commander HC-1, and secure with a wire tie as shown. Do not over tighten the wire tie.

CHECKOUT:

Assuming you have the wiring reviewed, you can do the checkout while the car is apart. 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, then press AUX1. If this checks out, proceed to the simplified configuration. If not, you will need to verify the connections again, and use a meter to be sure the Mini Commander is getting power. Due to the location of the power connector, it is suggested to use an ohmmeter to probe the roller and wheel-set connections to the Mini Commander. The screws that secure the wires are a good place to touch the probe. If any problems arise, contact us for tech support.

PROPER OPERATIONAL SEQUENCE:

The Milk car milk conveyor belt will run for about 10 seconds, and then the milk deliveryman will eject the can. If the CAB-1 key is pressed in a relatively short period of time again, the deliveryman will operate immediately. If a period of time elapses, then the belt will run again before the deliveryman operates. (This sequence is the same as when operated from the K-Line remote or the UCS track.)

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.

CONFIGURATION:

Since there is not a Configure / Run switch, it is best to use 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)
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)
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 if HC-2 is used) for about 1 second.

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.

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 Op-reefer cycle. It is recommended to hold the AUX1 (or AUX2) key down about 1 second to activate the car.

DCS

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

If you opted for AUX2 operation, the HDLT key will trigger the operation.