

M.R.C. TECH 6 INSTRUCTION ADDENDUM
PART NO. 0001200 2-AMP RATING

Thank you for purchasing this new Tech 6 Train Control System.

This advanced train control system can control two types of locomotives; standard, analog D.C. locomotives and new sound-equipped locomotives that contain N.M.R.A. compatible sound or non-sound decoders. The new Tech 6 line of power packs will take you beyond the **21st Century** of train control.

Quick Start

Simply plug the power supply into your new Tech 6. Connect two wires from the track hook-up terminals to your layout and place the locomotive of your choice on the track. Plug the power supply into the wall outlet. Then use the “MODE/Select” button to set the Tech 6 to the type of loco on the track:

“DUAL” is used for sound equipped locos.

Note- it is better to use this mode for your sound equipped locos. Also, to insure that your sound equipped loco will run, make sure your mode selection button is set for “Dual”, the press the “Shift” button, and then the “9” button two times

“STD” is used for standard, analog D.C. locos.

Use the throttle to control speed and the direction button, (< >), to control direction.

If you are using a sound equipped locomotive, pressing button # 1 will activate the bell, and button # 2 will activate the horn.

That’s it!!!

This unit will let you control speed and direction of any locomotive, and let you access all the sounds that are built-in to any sound equipped locomotive without the need for additional control accessories.

To get more performance from either type of locomotive, please read the “**Advanced Operations**” section of this manual.

Blue Line, (reg. T.M.), locomotives without a power DCC decoder installed will be considered a “standard, analog D.C. locomotive”.

Note: Blue Line Locos, without a power DCC decoder installed, when run on a standard power pack or in the “STD”, [standard] mode of this train controller will only give you the synchronized motor sounds, [diesel prime mover and/or steam chuff]. To gain access to all the accessory/sound functions built into this loco, a DCC power decoder must be installed. Once this is done, the loco can now be run in the “DUAL” mode of this train controller.

Features

Throttle- controls the speed of your locomotive in either operational mode. The numbers that circle the throttle knob on the cabinet of this unit do not correspond with the speed of the loco in “scale miles per hour”, they are just for reference.

Mode/select Button- chooses the type of control you need for the locomotive you are running. “Dual” is for any DCC equipped loco. “STD” is for standard, analog D.C. locos. Each press of this button toggles your new Tech 6 between each of the two modes.

Mode L.E.D.s- indicates what operational mode you are in.

Direction Button (< >) - controls the direction of your loco in either operational mode.

Direction L.E.D.s (^ v) – indicates your locos direction.

“ENT” Button- “Enter” button. [Its use will be explained in the “**Advanced Operations**” section.

“P” Button- “Program” button. [Its use will be explained in the “**Advanced Operations**” section.

SHIFT Button- this button is only used in the “dual” operational mode and lets you access functions in your DCC equipped loco higher than F9 if the loco has more than 9 accessory/sound functions. E.g.: the Shift button plus the #1 button plus the #2 button equals function 12, [SHIFT +1+2= F12]. If your locos decoder has “function F12”, pressing this combination of buttons will activate F12.

0 through 9 numbered buttons- these buttons are used in the “dual” operational mode, and control the accessory/sound functions in your DCC equipped loco. Function 1, [F1] is normally associated with the locomotive bell, press once to turn bell on, press a second time turns bell off. Function 2, [F2], is normally associated with a locomotive horn or whistle. This button does not lock the horn or whistle on, the duration of pressing the button lets you activate the horn/whistle for as long as you want. Functions 3 and above, [F3 to F28] are locking function buttons, one press turns them on, another turns them off. Function 0, [F0], is normally associated with the locomotives headlights, press F0 once and the lights turn on; press again turns the lights off. Button numbers 2, 3, 4, and 5 are also used in the “STD” mode to set start voltage, acceleration momentum, deceleration momentum, and top voltage in your standard, analog D.C. locos. This will be covered in the “**Advanced Operations**” section.

Note: it is advisable to thoroughly read the instruction book that came with your locomotive to see exactly what functions it actually has. If your loco does not have function 23 for example, activating F23 on this control unit will not have any affect on the loco.

Hook-up

Your new Tech 6 Train Controller comes with a universal D.C. switching power supply that can be used world-wide, [110/220 VAC-50/60 cycles]. If the power cord that comes with the power supply does not match your homes wall outlet, simply unplug the power cord from the power supply, and replace it with one that does.

There is a fixed power cord attached to the power supply with a barrel connector at the end. Simply plug this into the receptacle on the right hand side of your Tech 6 Train Controller.

There is a RJ45 receptacle on the front of your Tech 6 train Controller. This is only used for the optional walk around throttle, [available separately- part no. 0001203], or for an optional remote plug-in port, [part no. 0001501, also available separately], for the #0001203 throttle. ***Do not inset anything else into this receptacle!!!***

You can only use 1 walk around throttle with this unit, allowing two operators to run trains.

There is a green plug with two screw terminals on the side of the Tech 6 Train Controller, these go to your track hook ups. In the “STD”, [standard], mode, with the green direction L.E.D. lit, (^), a standard, analog D.C. loco should move in a forward direction, if not reverse the wires to the track. *If you are only using DCC equipped locos, voltage polarity from the track hook-up terminals to the track does not matter.*

Trouble shooting initial hook up- The best way to test and trouble shoot any model railroad is by using a “Digital Volt Meter”. The D.C. power supply when plugged into the wall outlet should have an output of approx. 14 to 16 volts D.C., when read at the barrel connector. When the power supply is plugged into your wall outlet, and the power supply is connected properly to the Tech 6 Train Controller you should get the following readings at the two track terminal screws:

“STD”, [standard] mode- Supplies variable voltage from the throttle knob. 0 to 14.6 VDC is the acceptable range.

“DUAL” mode- supplies constant track voltage at a range of approx. 13.5 to 15 VAC. This is an acceptable range.

Advanced Operation

Standard, analog D.C. locomotives:

Press the “MODE/Select” button until the L.E.D. indicator lights up, showing you are in the “STD” operational mode. In the “STD”, [standard], mode, place the standard, analog D.C. loco on your layout. Use the throttle to control speed, and the direction button, (< >), to control the direction of your loco. One of the two direction- L.E.D.s will light, indicating the direction the loco is traveling in. When finished running, shut down the unit by unplugging the power supply from your wall outlet. The advanced Tech 6 circuitry will remember the operational mode you were last running in and the last direction your loco was traveling in.

Setting start voltage, momentum and, top voltage in standard, analog D.C. locos-

Four numbered buttons are used to set these features:

Button **2** is used to set **Start Voltage**

Button **3** is used to set **Acceleration momentum**

Button **4** is used to set **Deceleration momentum**

Button **5** is used to set **Top voltage**

These four settings use a range of values from “0 to 32”. “0” being the lowest value, to “32” as the maximum value.

Place the locomotive on the track, making sure that you are in the “STD” mode.

1-Press the “P” button- All four L.E.D.s will light up.

2-Press the # 2 button to set start voltage- Three L.E.D.s will go out.

3-Press the “ENT” button- all L.E.D.s go out.

4-Press any of numbered buttons to give a value in the range of “0” to “32”. For example if you want the start voltage set to a value of “12”, press the # 1 button followed by the # 2 button, [1 + 2 = 12].

5-Press the “ENT” button. You are now finished setting your start voltage. Two L.E.D.s light up showing you are now back in the “STD” mode, with the last direction of travel for your locomotive.

Run the locomotive, if you are not satisfied with your Start Voltage setting, repeat the above steps and try a different value between “0” and “32”.

Follow the above steps to set Acceleration using button # 3, Deceleration using button # 4, and Top Voltage using button #5.

Note: do not try to run a standard, analog D.C. loco in the “DUAL” mode, as this puts constant A.C. voltage to the track rails, and can damage the motor in your locomotive.

Locomotives equipped with N.M.R.A. DCC decoders:

Press the “Mode/select” button until the L.E.D. indicator lights up, showing that you are in the “DUAL” operational mode.

“DUAL” mode operation- This mode of operation is for **DCC Decoder Equipped Locomotives only**. There is a lot of information to be digested in this section, please read it thoroughly.

Note- all DCC equipped locos and decoders come from the factory set to N.M.R.A. default address # 3. This Tech 6 Train Controller will only run these locomotives and decoders on address # 3. If you were running your DCC decoder equipped locomotive on a DCC layout, and changed the loco/decoder address from address # 3 to another address, it must be re-addressed to address # 3, with C.V. 29 set to “6”, [*analog enable*], or it will not run on your Tech 6. The easiest way to do this is to re assign the loco/decoder to address # 3 with the DCC system before returning the loco to your home layout and attempting to run it again on your Tech 6 Train Controller. If you forget to do this, your locomotive can be re-assigned to address # 3 again with your Tech 6, [see steps below].

Also of note is older Atlas H.O. Scale locos that came equipped with a standard Lenz DCC decoder, usually came from the factory set at an address that matched the first two digits of the road number printed on the sides of the locomotive. These locos must have their address re assigned to address # 3, before running them with the Tech 6.

Re-assigning DCC equipped locos to default address # 3 with your Tech 6 is very easy and takes only a couple of steps:

- 1- Place your locomotive on the track.
- 2- Turn on your Tech 6
- 3- Press the “Mode/Select” button until L.E.D. indicator shows you are in the “DUAL” mode.
- 4- Press the “Shift” button once, then press the “9” button two times, [SHIFT+9+9]. Both directional L.E.D.s will then light up.
- 5- Wait a 5 seconds, and one L.E.D. will turn off. When this happens, your loco is now set to default address # 3.

Use the throttle knob to control speed, and the direction button to control direction. Use the “0 to 9” buttons along with the “SHIFT” button to access all the sound/accessory functions in your locomotive. The Tech 6 Train Controller opens up a new dimension in your DCC sound equipped locomotives. This was the easy part...

For the “Not so faint of heart”- All N.M.R.A. compatible DCC decoders of the sound and non-sound variety have parameters built inside of them that can be changed, [DCC People call this “programming”]. These parameters are kept in configuration variables, [C.V.s in DCC parlance], that are stored inside the decoder. Each C.V. has a number assigned to it, and each numbered C.V. controls a function/parameter of the decoder that can be changed or altered. Each C.V. also contains a value that is pre-set by the manufacturer that can be changed by programming, or you can re-program that value whenever you desire.

Your new Tech 6 allows you to perform simple programming of a decoder equipped loco to get even more out of it, by altering or changing every C.V., just by inputting a new value into the C.V.

Don’t let the word “programming” scare you...If you performed the steps above to re-assign your loco back to address # 3, you have already programmed your loco. It was so easy; you did not even realize that you did it.

Programming Locos:

Certain C.V.s are mandated by the N.M.R.A. to perform the same function in every decoder made by every manufacturer so they are standardized. Other C.V.s are up to the manufacturers’ discretion as what they do in that particular locomotive.

This is where you have to keep the instruction book for each of your locomotives!!!

The instruction book will give you a list of every numbered C.V. contained in that particular locomotive, what that C.V. controls, and what range of values you can put in that C.V. to change what that C.V. controls.

For example:

C.V. # 1 is the decoder short address. This C.V. has a value range from “1” to “127”. You can assign, [program], your locomotive to a short address from “1” to “127”

C.V. # 1 is mandated by the N.M.R.A. as an industry standard to be the same for every decoder made by every manufacturer. So one make of loco has C.V. #1 and, another make of loco also has C.V. # 1. C.V. # 1 has to do the same thing in each locomotive, [short address], but one loco can have an address of “4” and the other can have an address of “123”, because you can change the value of C.V. # 1 through programming.

You can go to www.nmra.org to view the list of “Standards and R.P.s” for all DCC decoders.

Since the Tech 6 can only run locomotives on [default] address # 3, if you program C.V. # 1 to a value other than # 3, it will not run. Pressing “SHIFT-9-9” [shift+9+9] will automatically re-programs C.V. # 1 to address # 3.

Another C.V. in your locomotive may contain various horns that you can choose from. By changing the value in that C.V., you can pick the horn that is correct for the locomotive type or road name. There are too many C.V.s to list here. This is why it is important to save the instruction book for each loco.

Programming C.V.s with your Tech 6:

Programming can only be done in the “DUAL” operational mode with locomotives that contain an N.M.R.A. compatible DCC decoder.

- 1- Press the “P” button to enter the program mode.
- 2- All four L.E.D.s will light.
- 3- Select the number of the C.V. you wish to change or program. (Refer to your locomotive instruction book). Press any of the number buttons to pick that C.V. number. If you want to change C.V. # 49, press button # 4 then button # 9, [4+9= 49]. One L.E.D. will remain lit.
- 4- Press the “ENT” button. All L.E.D.s will go out.
- 5- Choose the new value that you want to enter into this C.V. by pressing the number buttons. For example; C.V. # 49 contains 30 different horns. The factory pre-set is for horn # 2, but you like horn # 25. Press the # 2 button followed by pressing the # 5 button, [2+5= 25].
- 6- Press the “ENT” button. Two L.E.D.s will light, showing you are back in the “DUAL” operational mode, [ready to resume running], with the direction L.E.D. showing the last direction your loco was traveling.

That’s it!!! Congratulations, you just programmed a C.V. in your locomotive!!!

Follow the above steps to program any C.V. that is listed in your locomotives instruction book.

Note- there are certain C.V.s that contain the manufacturer I.D. number and the version number of the decoder. These C.V.s can not be changed or re-programmed. Also you can not change a C.V. that is not in your decoder, nor can you add a C.V. that is not there.