

FUNCTION OF REVERSE LOOP TERMINALS

The reverse loop terminal on your Controlmaster X will enable you to turn your train around without a turntable. This is accomplished by the use of an electrically insulated loop (see Figure 1.). (First, make certain your Reverse Loop Direction and Main Direction Switch are in the same direction). As your train heads east on the main line, pass switch #1 but turn into the loop by switching switch #2.

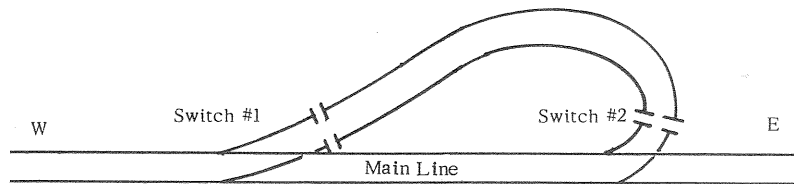


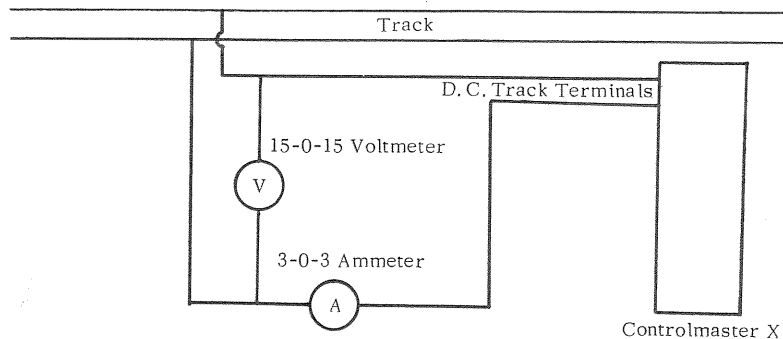
Figure #1

Now, as soon as the train is in the loop, change your Main Direction Switch and switch Switch #1 toward the loop. Your train will now enter onto the main line heading west. Simply set Switches #1 and #2 back in alignment with the main line, and you're back where you started from, only heading in the opposite direction.

HOW TO ATTACH METERS

The following diagram (Fig. #2) indicates the correct way to attach meters to your track.

Figure #2



MODEL RECTIFIER CORP., 2500 Woodbridge Ave., Edison, N. J. 08817

CONTROLMASTER X

TRANSISTORIZED

Congratulations!

You have just purchased the finest Model Railroading Power Supply available.

CONTROLMASTER X is a sophisticated electronic control that delivers more locomotive performance!

CAUTION - ELECTRICALLY OPERATED PRODUCT.

This electrically operated control unit is RECOMMENDED FOR USE BY ADULTS OVER 15 YEARS OF AGE who have an understanding of basic electricity and model railroading. As with all electric products, precautions should be observed during handling and use to prevent electrical shock.

The additional control allowing realistic coasting, starting and acceleration provide the enjoyment of realism in HO and N gauge operation. If this is your first purchase of Model Rectifier Corporation equipment, you can look forward to enhancing the pleasure of your railroad with the finest in train controls.

WE LOOK FORWARD TO SERVING YOU AGAIN IN THE FUTURE!

ELECTRICAL SPECIFICATIONS

INPUT: 110 - 120 VOLTS A.C. 60 HERTZ
OUTPUT: VARIABLE D.C. VOLTAGE (Maximum output variable from 12 to 26 VDC) *
VARIABLE D.C. VOLTAGE FOR REVERSE LOOP (Same as above) *
FIXED D.C. at 16 VDC for expansion
FIXED AC at 19 VAC for use with accessories
TOTAL RATED CURRENT - 1.3 AMPERES
*(See 'Maximum Output Voltage Control' for details.)

MOUNTING

The unique 3 part construction of your Controlmaster X housing enables you

to mount your new power supply in the way most convenient and comfortable for you.

1. TABLE TOP MOUNTING, (Fig. 1)

As your Controlmaster X is presently assembled, it can be mounted on a table top with the front panel (the panel on which the controls are mounted) sloping upward toward the operator.

2. SIDE TABLE MOUNTING, (Fig. 2)

If your train table is not open in front, but is covered, this mount may be the one you need. Remove the four hex screws from the cabinet and extract the control section carefully. Turn the control section upside down, reinsert, and replace the screws. If you place your Controlmaster X on a table top, the printing will appear upside down and the panel will slope upward. Simply mount this on the vertical covering of your table, and the controls will slope up to you and the printing will be right side up.

3. UNDER TABLE MOUNTING, (Fig. 3)

In order to mount your Controlmaster X under your table so that only the front panel shows, start by removing the four hex screws. Carefully remove the control section, turn it upside down, and insert the control section backwards. If you place your Controlmaster X on a table top, the printing will be upside down and sloping downward. To use your unit in this state, you simply turn the unit upside down and mount under your table with the front panel extending past the table edge. The printing will now be right side up and sloping upward.

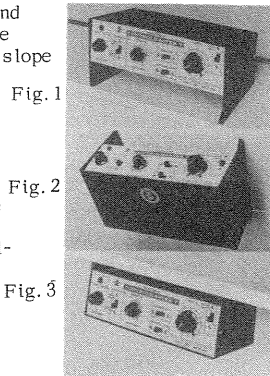


Fig. 1

Fig. 2

Fig. 3

CONTROL INSTRUCTIONS

1. MASTER ON-OFF SWITCH

This control shuts off all power to your layout.

2. SPEED CONTROL

Controls the speed of your locomotive from the stop position up to the voltage set by the Track Voltage Control. This principle gives you the best control of your trains. It also makes fine adjustment of slow speeds a breeze.

3. MAIN LINE DIRECTION SWITCH

This control reverses the voltage to your train, enabling it to run forward or backward by moving the slide switch from side to side. If the position

of the switch doesn't correspond with train direction, simply reverse the two wires going to the Track DC terminals. Note: It is recommended that trains are stopped before being reversed.

4. REVERSE LOOP DIRECTION SWITCH

This control functions the same as the Main Line Direction Switch, but is for use on a separate Reverse Loop Track Section. Note: The Reverse Loop Track Section must be electrically insulated from the Main Line on both rails. (See "Function of Reverse Loop Terminals" for details).

5. MOMENTUM ADJUSTMENT CONTROL

This control allows you to adjust the acceleration and deceleration of your train. The higher the number, the slower the acceleration and deceleration. This concept permits you to simulate the different accelerations and decelerations that would occur with more or less cars. When slowing down, the slow decrease in speed simulates the braking of a real locomotive.

6. TRANSMISSION SELECTOR SWITCH

This control chooses one of two modes of operation.

- a. Direct Drive, which causes your Throttle Control to operate similar to a conventional power pack, with your locomotive responding to any throttle changes instantly.
- b. Flywheel Action, which causes your Throttle Control to run your locomotive like a real train, accelerating and decelerating slowly. The rates of acceleration and deceleration are controlled by the Momentum Adjustment Control mentioned above. Your locomotive will now respond like a real prototype.

7. OVERLOAD INDICATOR

This indication device informs the operator of the presence of a short circuit or current overload by glowing. If you see this glow, it indicates that the internal thermal circuit protector of the Controlmaster X has tripped, disconnecting all power from the terminal board. To correct this situation, simply turn your master switch off, correct the short or overload, wait 5 minutes, and turn the unit back on. Note: While the Controlmaster X has several built in safety devices, it is unwise to subject it to repeated or continual overload or short circuits. To do so could cause certain electronic components to fail.

8. TRACK VOLTAGE ADJUSTMENT CONTROL

This control sets the maximum output voltage of your Track and Reverse Loop Terminals. It will enable you to vary the voltage to your locomotive, thereby supplying your locomotive with the correct voltage for best performance.

It is suggested that this control be adjusted by setting the Speed Control at full, and then varying the Track Voltage Adjustment Control unit until maximum speed desired is attained. Note: Do not operate your train with this control in the full position. To do so may damage your locomotives and will definitely shorten their life, due to the high voltages present. We recommend the use of a track voltage and track current meter to insure that your system is not operating at excessive voltages, and to be certain that your system is not drawing more than the rated current of the Controlmaster X. This will help assure you of years of happy Model Railroading with your new Controlmaster X.

9. EMERGENCY BRAKE

Your Controlmaster X is equipped with an emergency brake to help prevent accidents and resulting damage to your locomotives and layout. This control has been strategically located so that it can be operated instantly with a simple downward sweep of the hand. Your train will stop instantly and the Flywheel Transmission, if in use, will reset itself to zero. Note: Brake does not effect AC or fixed DC Terminals.

CONNECTION INSTRUCTIONS

1. TRACK D.C.

These two terminals should be connected to track mainline. Direction is controlled by the Main Line Direction Switch on the front panel. If switch position does not correspond to train direction, reverse the two wires to these terminals.

2. FIXED D.C.

This control is supplied for expanding your layout. By connecting the "input" side of a cab control to these terminals, an entirely separate section of track may be powered. Note: a. The separate section of track must be completely insulated electrically. b. Certain Cab Control inputs are polarity controlled; in other words, attaching input wires to this type of Cab Control backwards will cause the Cab Control not to function and may damage it. For this reason, observe marked polarity on terminal board when attaching solid state Cab Controls. MRC also makes two fine Cab Controls, Cab Control 44 and Cab Control 55. These are readily compatible to the Controlmaster X and are highly recommended.

3. A.C. ACCESSORIES

These two terminals are for use with A.C. accessories such as switch machines, lights etc. Hook up polarity does not matter.

4. REVERSE LOOP

These two terminals, controlled by the Reverse Loop direction switch on the front panel, are for attachment to a reversing loop, which will allow you to turn your train around. Operation is the same as the Track D.C. terminals. Note: Reverse Loop must be completely insulated electrically (See "Functions of Reverse Loop Terminals").

NOTE: While connecting to any terminal, care must be taken that wires do not touch more than one terminal at one time. Loose wires are a danger to your unit and layout; be certain wires are properly wrapped around terminal before tightening screws.

TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE
Train does not function at all	<ol style="list-style-type: none"> 1. Unit not plugged in. 2. Master switch off. 3. Wiring to track not connected properly. 4. Overload; light should glow. 5. Track wired to A.C. terminals. 6. Train defective. 7. Track dirty. 8. Brake is on.
Overload light comes on	<ol style="list-style-type: none"> 1. Track is shorted by metal debris. 2. Wires on terminal strip shorting. 3. Wires attached between wrong terminals. 4. Load current is more than pack is designed for. 5. Reverse loop or cab control track sections are electrically connected to main line. 6. Too many trains on track. 7. Train motor shorted.

PROBLEM	POSSIBLE CAUSE
Train runs slowly, but will not run fast when throttle control is turned to "Full".	<ol style="list-style-type: none"> 1. Track voltage adjustment set low. 2. Poor wiring connection.
Train runs quickly, but will not run slowly and does not respond to throttle control.	<ol style="list-style-type: none"> 1. Track attached to fixed D.C.
Main Line Direction switch ineffective.	<ol style="list-style-type: none"> 1. Track connected to reverse loop terminals. 2. Track connected to fixed D.C. terminals.
Reverse loop direction switch ineffective.	<ol style="list-style-type: none"> 1. Reverse loop connected to Track D.C. terminals. 2. Reverse loop connected to fixed D.C. terminals.
Cab control does not function when attached to fixed D.C.	<ol style="list-style-type: none"> 1. Cab control connected to wrong terminals. 2. Cab control input wires backwards - reverse. 3. Cab control block not completely insulated electrically.
Momentum does not function	<ol style="list-style-type: none"> 1. Transmission switch on direct drive. 2. Momentum adjustment control on zero.

FOR YOUR PROTECTION

1. Never reverse locomotives without stopping them first. To do so may damage locomotive engine.
2. Never connect locomotive to A.C. Terminals of your Controlmaster X. This may also damage your locomotive engine.
3. Turn power switch off at end of days operation.
4. When a short circuit or current overload occurs and thermal circuit protector trips, turn the Controlmaster X off and correct the short or overload. Allow 5 minutes for the thermal circuit protector to reset before turning your unit back on.
5. Avoid prolonged overloads and short circuits. While your Controlmaster X is equipped with several safety devices to prevent accidental damage due to short circuits and overloads, it is unwise to subject it to these frequently or often. To do so may cause certain electronic components to fail.
6. Do not store in damp area.
7. For best performance, keep wheel and track surfaces clean. Intermittents and "jerky" operation are often caused by an oxide coating which has formed on the track or wheels.
8. Before returning your unit for repair or servicing, make certain it is defective. Do not shut down your layout unnecessarily.
9. If it is necessary to return your unit, repack it in its original carton and then in an outer carton, placing at least four inches of packing material on each side. Mail the unit to
 Model Rectifier Corporation
 2500 Woodbridge Avenue
 Edison, New Jersey 08817
 Be certain to send the unit Parcel Post insured, and include a letter describing the problem you are experiencing.

All of us at MRC would like to join in wishing you many happy years of model railroading with your new Controlmaster X!

PARENTS, PLEASE NOTE; as with any electrically operated unit, it is always best to periodically examine it and repair or replace any potentially hazardous part.