CREST CRE 57000 ON BOARD RADIO CONTROL SYSTEM

PRELIMINARY

INTRODUCTION

Congratulations on your purchase of the CREST 2.4 On Board Train Engineer Wireless Control System

Contents

PAGE GENERAL INFORMATION

1. FEATURES

Adjustable Momentum Control
Adjustable Forward & Reverse Delay
Adjustable Top Speed
Adjustable Start Speed
All Stop
Adjustable Back Light
Copy Locomotive Settings
Can Supply 5amps of Power
Direction Control Headlight

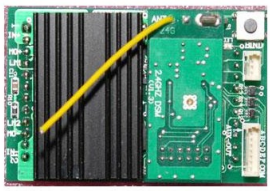
Direction Control Motor
Function Mode
Individualized Locomotive Setting
Large LCD Screen
LCD Backlit Graphic Screen
Multiple Group Codes
Memory For Up To 50 Trains
Over Load Protection
Outdoors Range Exceeds 400 Feet
Polarity Protection
Peak Loads That Can Go to 8 amps
Range of 300 'Indoors
Single Unit 'SU'
Six Auxiliary Outputs on the Receiver
Multi Units 'MUed' 6 locomotive
Smoke Control
Sixteen Function Accessories

1. SYSTEM COMPONENTS

The CREST 2.4 On Board Wireless Control System consists of 6 components,

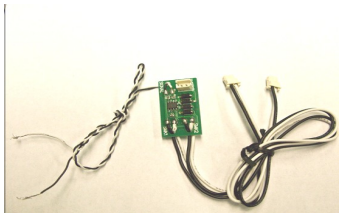
a. 2.4 Transmitter
b. Receiver
c. Auxiliary wire harness
d. Code set switch
e. Smoke control board
f. Wire harness.

2.4 Transmitter 

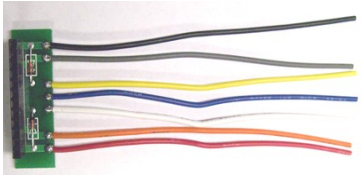
Receiver 

Code Set Switch

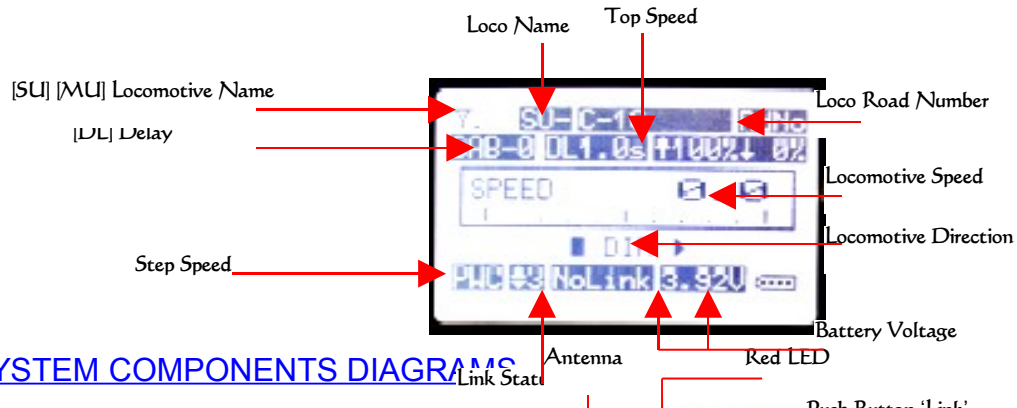
Auxiliary Wire Harness

Smoke Control 

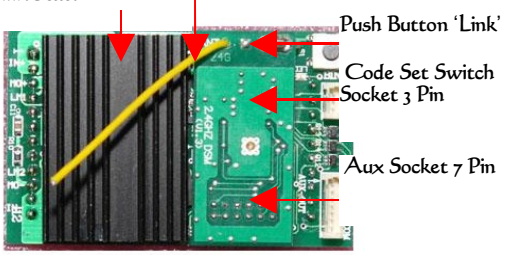
Wire Harness



2. 1] TRANSMITTER DIAGRAM AND COMPONENTS



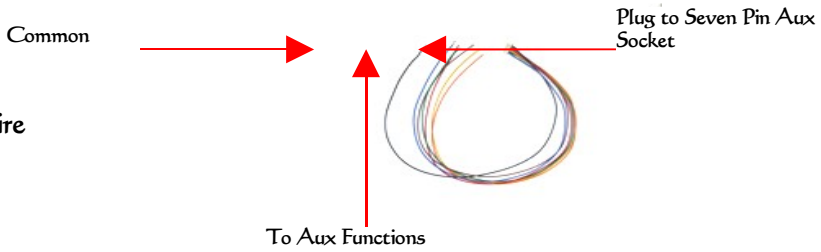
3. SYSTEM COMPONENTS DIAGRAMS



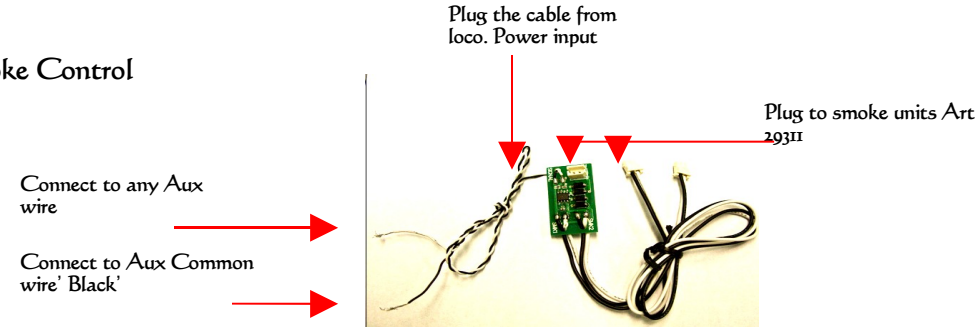
2] Receiver

3] Code Set Switch

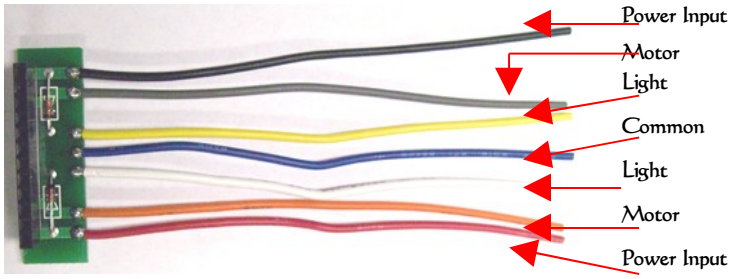
4] Auxiliary Wire Harness



5] Smoke Control Board



6] wire Harness



Operation Overview

Before you start working with the Train Engineer Revolution there are a few concepts that you need to understand.

The transmitter and receivers in your locomotives are designed to communicate and exchange information about the way you want your trains to operate. In order to establish a link between them you need to set up options in the transmitter. These include settings like the locomotive's name and road number, the top speed that you want it to achieve, the rate at which you want it to accelerate and how long you want it to delay when the direction is changed. Once these parameters are set the link between the units is finalized by a process called "linking". Once the transmitter and a locomotive's receiver are bound together they are set to communicate and run your train.

The second concept has to do with the Cab number that is associated with each locomotive. The Cab numbers range from CAB-0 through CAB-49. Once you link a locomotive you must select the Cab number that it will run under. This allows you to easily move between as many as 50 locomotives while operating. The Cab number is also used to identify groups of locomotives that you might want to run in a consist 'MU'. Locomotives can be operated independently or grouped for multiple unit operation. CAB-0, CAB-1 and CAB-2 might be used to operate three different locomotives while CAB-3 can be used to operate those same three locomotives in a consist 'MU'. Changing between single unit (SU) operation and multiple unit (MU) operation is as simple as selecting a Cab number.

Once you have an opportunity to experience the process used to operate trains with the TE Revolution I think you will find that Aristo Craft has found an elegant solution to what can be a complex problem

Functions for System Components

4. CODE SET SWITCH
   a. Mount the code set switch so you can get access to program your locomotive.
   b. Press the code set switch and hold down to link the transmitter and receiver.

5. AUXILIARY WIRE HARNESS LABEL

Auxiliary Wire Color	Auxiliary Wire Harness Functions
Blue Wire	Horn
Green Wire	Bell
Yellow Wire	Whistle
Orange Wire	Brake
Red Wire	Lights
Brown Wire	Smoke
Black Wire	Common

6. SMOKE CONTROL BOARD

a. The smoke control board controls one or two smoke units.
b. To install the smoke control board remove the cables from the smoke units on the locomotive.
c. Plug the cable that you remove into the small socket on the smoke control board.
d. Plug the two cables from the smoke control board into the smoke units.
e. Connect black wire on the smoke to the black 'common' wire on the auxiliary wire harness.
f. Connect the white wire to any of the six aux functions.
g. Make sure the smoke switch on the locomotive is in the ON position.
h. The smoke unit must be in the LATCH position on the aux function.

7. WIRE HARNESS

a. Use the wire harness to hook up locomotive with out the new plug and play board.

RECEIVER ADAPTER	WIRE COLOR	WIRE USE
TRK +	BLACK	RIGHT SIDE CAB POWER PICK-UP
MOT +	GRAY	RIGHT SIDE MOTOR TERMINAL
HD 1	YELLOW	REAR HEADLIGHT
HD COM	BLUE	HEADLIGHT COMMON
HD 2	WHITE	FRONT HEADLIGHT
MOT -	ORANGE	LEFT SIDE MOTOR TERMINAL
TRK -	RED	LEFT SIDE CAB POWER PICK-UP

8. RECEIVER INSTALLATION

STEP A. BEFORE ANY INSTALLATION; MAKE SURE THERE IS NO POWER ON THE TRACK OR TO THE LOCOMOTIVE. The On Board receiver is designed to work on track power or battery power of at least 12volts DC to a maximum of 24 volts DC. The unit is self protected for polarity and input current. MAKE SURE THE YOU PLUG IN THE RECEIVER CORRECTLY INTO THE MAIN PC BOARD ON THE ENGINE.

a. Remove the locomotive shell and jumper pin on the main PC.
b. Make sure the 12-10 pin connector on the receiver is facing the 12-10 pin socket on the engine main PC board.
c. Plug in the On Board Receiver on the engine PC board.
d. Attach the Code set switch to the three-pin header on the receiver.

9. TRANSMITTER INSTALLATION

STEP B:

a. Remove the battery cover from the rear of the Transmitter
b. Insert three "AA" Alkaline, NiMH or Ni-cad batteries.
c. Replace the back cover on the transmitter.

10. CHARGING TRANSMITTER BATTERIES

a. Use three 'AA' rechargeable batteries for the transmitter, N-CD or Nmh.
b. At the bottom of the Transmitter there is an adapter jack to charge the batteries.
c. Batteries can be charge when the transmitter is turn, ON or OFF.
d. Plug the charger jack in the transmitter to charge the batteries.
e. When charging the battery the battery icon will move indicating it's charging.
f. When the batteries are fully charge, the battery icon will stop moving.
g. Charge the batteries overnight

A. **Power ON/OFF** pressed the 'ON/OFF' key to turn on the Transmitter. Press and hold the ON/OFF key for 2 seconds to turn off the Transmitter

B. <<**T** / **T**>> -Used to select the active locomotive. Press the <<T key to scroll left and the T>> to scroll to the right. The locomotive names and road numbers will be displayed on the main operation screen. When the locomotive is set up under SU or MU it will also show up.

C. **STOP/ENTER** –when operating a locomotive the STOP/ENTER button stops the active locomotive and sets its speed to zero. When accessing the menu STOP/ENTER is use to conform a selection.

D. **ARROW** – When operating a locomotive the up and down arrows (▲▼) increase or decrease speed and the left and right arrows (◄►) select direction. When accessing menu items the up and down arrows scroll between items and the left and right arrows change that item's value.

E. **MENU** –Select the unit's setup menus. When accessing menus pressing MENU will move you back one level like and escape or back key.

F. **ALL STOP** – press and hold the "0 all stop" key for 2 seconds and this will immediately stops all engines on the same group ID number and sets their speed to zero. To restart the active locomotives press the <<T –T>> to select the cab and press the UP arrow.

G. **NUMBER / LETTER KEYS** –Use when entering numeric or textual information the use of these keys is identical to those on a cell phone.

H. **NUMBER KEYS 1-6** - When operating a locomotive, keys 1 through 6 are used to access six auxiliary functions that may have been programmed into your engine's controller. For example, pressing key "1" might activate the sound card's whistle and "2" its bell sound while "3" might turn the smoke unit on or off. An extended mode will support 16 function keys.

I. **NUMBER KEY #** - When the Operating screen is being displayed pressing the # key accesses the Quick Menu List.

J. **NUMBER KEY 0 / ALL STOP** - When the Operating screen is being displayed pressing the 0 key for 2 seconds will stop all locomotives and set their speed to zero. To restart locomotives press the <<T or T>> keys to select a locomotive and press the up arrow

K. **View MU Locomotive** – When locomotives MU press the left bottom key [*⇑] on the transmitter to view the locomotives that MU. To activate a locomotive functions e.g. bell, horn, and smoke press the [*⇑] key to select the locomotive. When locomotive is selected, press the number key to activate bell, horn, smoke etc.

11. CHARGER

STEP C:

a. To charge the batteries in the transmitter you need the correct charger.
b. Aristo Craft will have a charger available for the 2.4 Transmitter, CRE 57090.
c. Charger sold separately

12. TRACK POWER

STEP D:

a. By using power direct from your power supply to the layout at the highest setting it will make the On Board receiver work better and the locomotive will run more efficiently. The minimum voltage to use on the track is 12 Volt DC and the maximum voltage is 24 Volt DC.

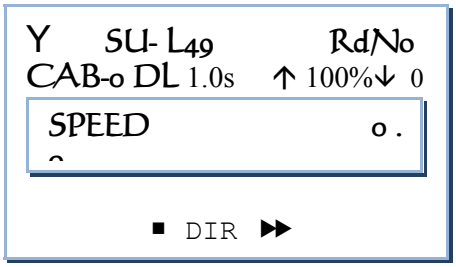
13. BATTERY POWER

STEP E:

The on board receiver will not handle more than 24 volts. ARISTO CRAFT have batteries that will work with this receiver. On the Nmh and N_CD batteries, you need two to get the correct voltage. Connect two Nmh batteries or two N_CD in series to get the right voltage. To connect the batteries in series you need to have Y PLUG.

The numbers for the batteries and connectors as follows:

a. CRE 55610 LI-ON, CRE 2amp 21.5 Volts
b. CRE 55611 Y Plug In Parallel



14. SETUP AND LINK TRANSMITER AND RECEIVER TO RUN A SINGLE UNIT (SU)

STEP F:The transmitter's Operating screen displays a great deal of information about the locomotive that is being controlled

a. Place the locomotive on the track.
b. Make sure the pin on the On Board is plugged in correctly on the engine PC board.
c. Select track or Battery power on the switch panel on the locomotive.
d. Apply power to the track.
e. Press the ON/OFF on Transmitter and the LCD screen will show up.

Press the **MENU** button to go to the **Main Set Up**

Under main set up you can select any of the functions two ways (1 –8)

1. Press the Stop/Enter button or

2. Press the number for any of the functions below. (1 –8)

Press the MENU button once to select ASSIGN FUNCTIONS. Press the STOP/ENTER button or [1] to select ASSIGN FUNCTIONS.

To enter a single locomotive (SU), under ASSIGN FUNCTIONS first you have to enter a LINK Address. Each locomotive must have its own LINK address.
The LINK ADDRESS comes with a default setting [49]. When [a] LINK address is selected, press the left or right arrow to choose your LINK address.
IT IS IMPORTANT TO REMEMBER THE LINK ADDRESS FOR THE LOCOMOTIVES THAT YOU ENTER IN THE TRANSMITTER.
If you forget the link address go to quick menu list on page 35 (A->Z name search)

```
1. ASSIGN FUNCTIONS
i. HD LIGHT          [ON]
j. TOP SPEED         [100%]
k. START SPEED       [  0%]
l. AUX FUNC.      SETUP
m. LINKING   ▶▶▶▶
↑
```

Scroll down enter the road #, momentum For more about functions page 24.

```
1. ASSIGN FUNCTIONS
i. HD LIGHT          [ON]
j. TOP SPEED         [100%]
k. START SPEED       [  0%]
l. AUX FUNC.      SETUP
m. LINKING   PASSED
↑
```

to name, etc. info assign go to

STEP G. Press the code set switch on the locomotive for four seconds and the head light will start to flash on the locomotive.
Scroll down to [M] LINKING and press the Stop/Enter button. After a few seconds the locomotive headlight will stop flash and the transmitter will read LINKING PASSED.

If the LINKING failed check to make sure that the locomotive is receiving power from the track or battery power. Follow the above steps [F-G] to re-link the transmitter and receiver.

Press the MENU button one time to go back one step and scroll down to USAGE OF CAB.

```
MAIN SET UP
1. ASSIGN FUNCTIONS
↓
2. USAGE OF CAB
3. ADD MU/SU CAB
4. COPY LOCO
5 SYSTEM CONFIGURE
```

STEP H.
Scroll down and press the

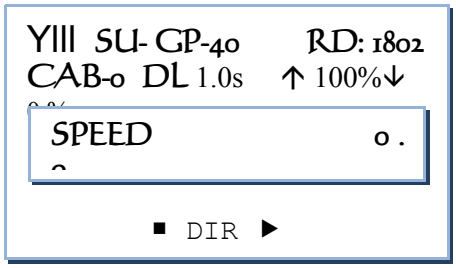
```
1. ASSIGN FUNCTIONS
a. LINK ADDR         [49]
↓
b. RX TYPE [OnBoard]
c. NAME  [GP -40]
d. ROAD NO.          [      ]
e. MOMENTUM          [ 5%  ]
```

STOP/ENTER BUTTON or [2] to select USAGE OF CAB: The transmitter comes with a default setting of [5] CAB. To control more CAB press the right arrow.

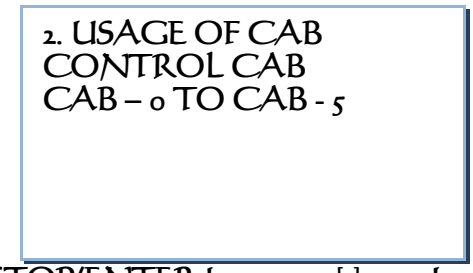
Default Setting

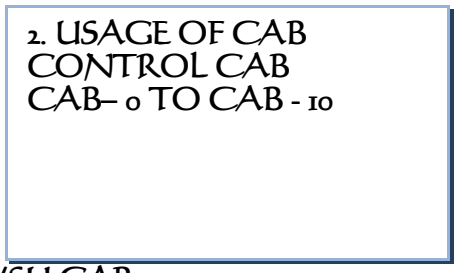
Add More Cabs

Press the MENU button one time to go back one step and scroll down to ADD MU/SU CAB.



STEP 1. Press the



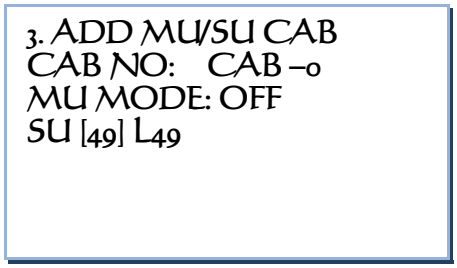


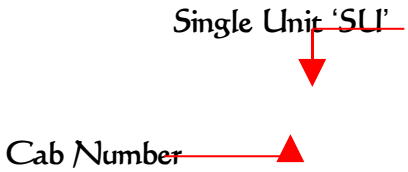
STOP/ENTER button or [3] to select ADD MU/SU CAB:
When adding locomotive to your layout each locomotive MUST have its own CAB number and LINK address.
Select the CAB Number that you want to run a Single Unit by pressing the right or left arrow.
Scroll down to (SU [49] L49.)
SU comes with a default LINK Address which is number [49].
To enter LINK address [00] quickly press the STOP/ENTER button.
Press the left or right arrow to select a Single Unit that you enter in the transmitter to add to your Cab.
Press the MENU button twice to go to the main operating screen.
On the main screen it will show the single locomotive that you enter and cab number.
The link address number will not show up on the main operating screen.

REMEMBER EACH LOCOMOTIVE THAT YOU ENTER IN THE TRANSMITTER MUST ADD TO YOU CAB.

You are now linked and ready to run your train [Link Ok].

To add more single locomotives to the layout follow the above steps.





15. HOW TO RUN A SINGLE UNIT [SU] WITH THE TRANSMITTER

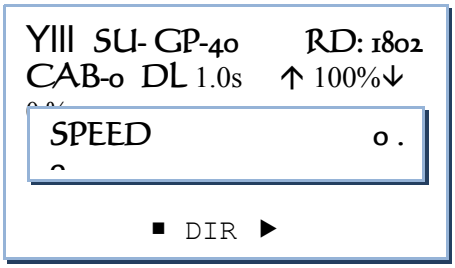
OPERATION:

STEP]:

The transmitter's Operating screen displays a great deal of information about the locomotive that is being controlled. Any of the functions below can change before or after you program your Transmitter and Receiver.

a. Press the Left or Right Arrow for forward and reverse Direction.

b. To know which direction the locomotive is going, look on the LCD screen and the DIR arrow will show the direction of the locomotive (■ DIR ▶▶).



c. Test each locomotive to make sure that the functions are working correctly. E.g. motor direction and headlight direction. If you need to change directions go to page 24 for more info under Assign Functions.

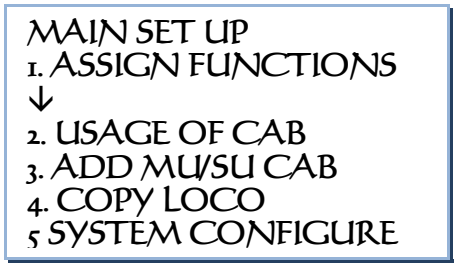
d. Use the up or down arrows (▲▼) to increase or decrease speed and the left and right arrows (◀ ▶) to select direction

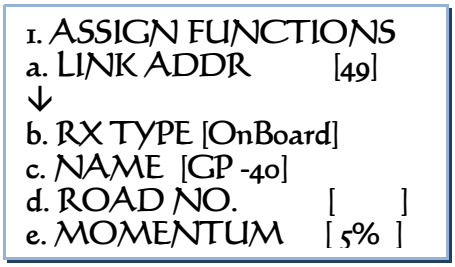
e. <<**T** / **T**>> -Used to select the active locomotive. Press the <<T key to scroll left and the T>> to scroll to the right. The locomotive names and road numbers, SU OR MU will be displayed on the main operation screen.

f. Press the left bottom key on the transmitter to view 'MUed' locomotive [*⇑]

g. Press the menu button to enter the assign functions and change it settings MU or SU.

h. Press the # key to view and operate the aux functions and change the steps speed settings.





16. SETUP AND LINK TRANSMITER AND RECEIVER TO RUN MULTIPLE UNIT (MU)

Main Set Up

STEP K. Press the MENU button once to select ASSIGN FUNCTIONS. Press the STOP/ ENTER button or [1] to select ASSIGN FUNCTIONS.

To enter multiple locomotives (MU), under ASSIGN FUNCTIONS first you have to enter a LINK address for each locomotive. Each locomotive must have its own LINK address.

The LINK ADDRESS comes with a default setting [49]. When [a] link address is selected, press the left or right arrow to choose your link address.

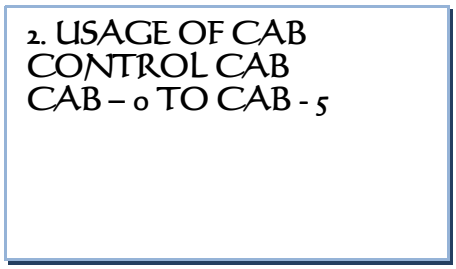
IT IS IMPORTANT TO REMEMBER THE LINK ADDRESS FOR THE LOCOMOTIVES THAT YOU ENTER IN THE TRANSMITTER.

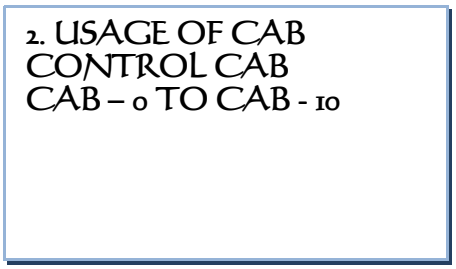
Scroll down to enter the name, road #, momentum etc. Test each locomotive and make sure they are going in the same direction. For more info about assign functions go to page 24

STEP L. Press the code set switch for four seconds and the head light will start to flash on the locomotive.

Scroll down to [M] Linking and press the Stop/Enter button. After a few seconds the locomotive headlight will stop flashing and the transmitter will read LINKING PASSED.

If the linking 'failed' check to make sure that the locomotive is receiving power from Track or battery power. Follow 'step f' to re-link the transmitter and receiver.



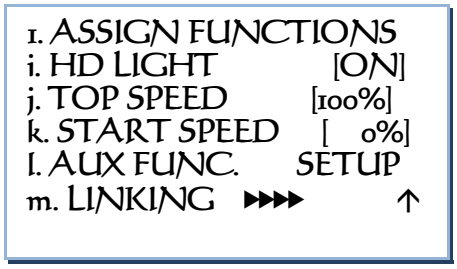


Press the MENU button one time to go back one step and scroll down to USAGE OF CAB.

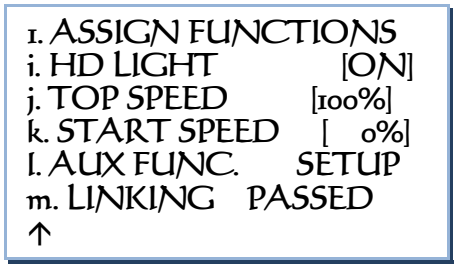
STEP M. Scroll down and press the STOP/ENTER BUTTON or [2] to select USAGE OF CAB:
The transmitter comes with a default setting of [5] cab. To control more cab press the right arrow.

Default Setting

Add More CABS



Press the MENU one time to back one and scroll to ADD MU/SU



button go step down

CAB.

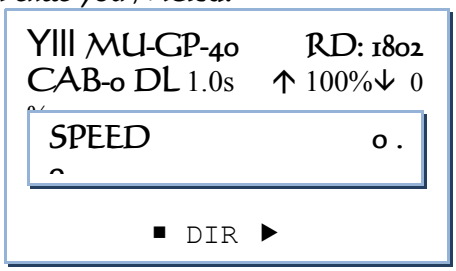
STEP N. ADD MU/SU CAB: you can only [MU] six (6) locomotives to a single CAB.
To run multiple locomotives you must choose a cab number. The cab number should be deferent than the cab number in use.
E.g. if cab number (-0 -1-2) is in use, choose cab number (-3) to run the MU locomotives.

Any locomotive that you link in the transmitter have to be added to your track.
Press the right or left arrow, to choose the cab number you want to run the MU locomotives.
Scroll down to [MU MODE: OFF] and press the right arrow to turn ON the MU mode settings.
MU1 comes with a default link address which is number [49].
To enter the link address [00] quickly press the STOP/ENTER button
Press the right or left arrow to select the loco you want to run [MU].
Scroll down to (MU2-MU3-MU4-MU5 MU6) and select locomotives you want to run [MU].
If you enter a locomotive that you do not want to run MU, press the Stop/Enter button and it will show 'NOT SELECTED'.

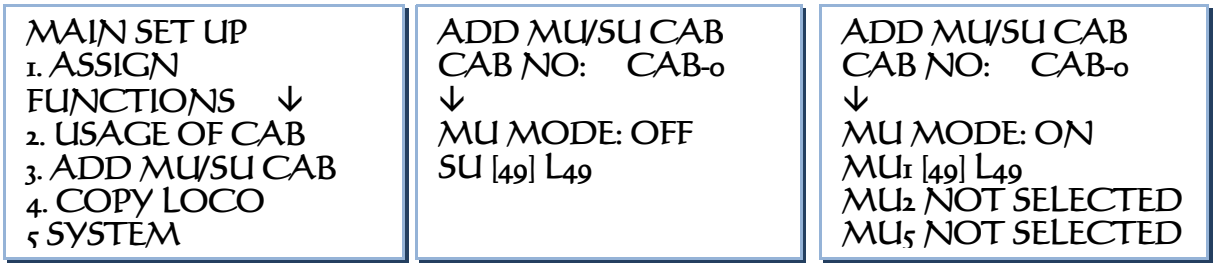
STEP O:

Press the MENU button twice to back to the main screen.
On the main screen you will see the locomotives that you [MU]. Only one locomotive will show up on the main screen that you MUed.

17. VIEW INDIVIDUAL MU LOCOMOTIVE



To view MU locomotives press the bottom left key on the transmitter [*⇑]. You can view the MU locomotive and control the aux functions.
When you selected a locomotive that you want to control and adjust its functions press the MENU button once.
Select 1. ASSIGN FUNCTIONS and press number [1] key on the transmitter to adjust the functions as necessary, aux functions and step speed.
For more info about auxiliary functions go to page 26



View MU locomotives

18. LOCOMOTIVE RUNNING IN THE OPPOSITE DIRECTION

Stop all engines before changing any functions on MU locomotives.

1] Select the locomotive that is going in the opposite direction by pressing the [*⇑] key on the transmitter. When the loco is selected press the MENU button and select ASSIGN FUNCTIONS by pressing number [1] key on the transmitter.
Scroll down to the functions that need to be changed.
E.g. motor, head DIR, headlight ON/OFF Aux Func etc

19. OPERATE SMOKE AND SOUND ON INDIVIDUAL MU LOCOMOTIVE

Stop all engines before changing any functions on MU locomotives.

SMOKE UNIT CONTROL

1] Select the MU locomotive that you need to operate the smoke unit on by pressing the [*⇑] on the transmitter keypad. When the locomotive is selected, press the MENU button once. Select ASSIGN FUNCTIONS by pressing number [1] on the transmitter keypad.

Scroll down AUX FUNC. SETUP and press the Stop/Enter button. If you have the smoke unit hooked up to auxiliary function [F3:] scroll down to [F3] and press the left arrow for **LATCH**.

Do not use the momentary for smoke because it will turn the smoke on and off very quickly. Press the MENU button 3 times to back to the main screen.

To turn ON the smoke unit, press number [3] key on the transmitter.

To turn OFF the smoke unit, press number [3] again on the transmitter.

SOUND UNIT CONTROL

2] Select the MU locomotive that you need to operate the sound unit by pressing the [*⇑]on the transmitter keypad. When the locomotive is selected, press the MENU button once. Select ASSIGN FUNCTIONS by pressing number [1] on the transmitter keypad.

Scroll down to Aux Func Setup and press the Stop/Enter button. Press the right or left arrow for momentary or latch.

MOMENTARY will turn the bell or horn on and off.

Latch will make the bell and horn work continuously.

Under momentary, when number [1] key on the transmitter is pressed for bell and the bell is working continuously press [1] again to turn it off.

For more info go to page 26

When the number [1-6] on the transmitter key pad is pressed for aux function it will show up on the main LCD screen as [F1-F6].

Aux Function →

20. CHANGING THE SETTING BETWEEN 'SINGLE UNIT [SU]' TO 'MULTI UNITS [MU]' TO 'SINGLE UNIT [SU]'

SINGLE UNIT 'SU'

1] First you have to link each locomotive individually. It is important to remember the link address for each locomotive.

For example you have three locomotives 'SD45 GP40 Dash 9 '. The first locomotive SD45 you link it under link address (00) the second GP40 under link address (01) and the third Dash 9 under link address (02).

Now you have to separately select a cab number for each locomotive under Add MU/SU CAB.

Choose a cab number to run the above locomotive.

E.g. the (CAB NO:-0 "SD45") (CAB NO: -1 "GP40") AND (CAB NO: -2 "DASH 9". When finished go to (SU [00] L49) and select the locomotive the above locomotives. Each loco must have its own cab number and link address.

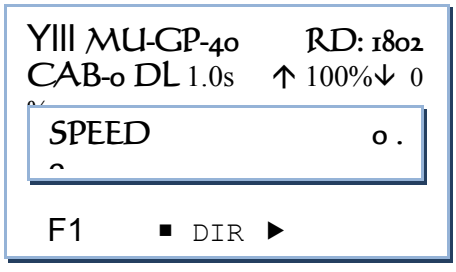
Do not confuse yourself with **LINK ADDRESSES AND CAB NUMBERS**.

MULTI UNITS 'MU'

You do not need to relink the above locomotives to run MU. If you decided to add more locomotives to run MU, only then you need to link the locomotives with a new link address number. Remember each locomotive must have its own link address number and cab #.

1] To MU the above locomotives go to USAGE OF CAB and select the number of CAB you are running e.g. (10).

2] Go to ADD MU/SU CAB and select a cab number to run the MU locomotives on e.g. [5].



Scroll down to MU MODE and press the right arrow to turn ON the MU setting.

Scroll down to MU1 and select (MU1 [00] SD45)

Scroll down to MU2 and select (MU2 [01] GP40)

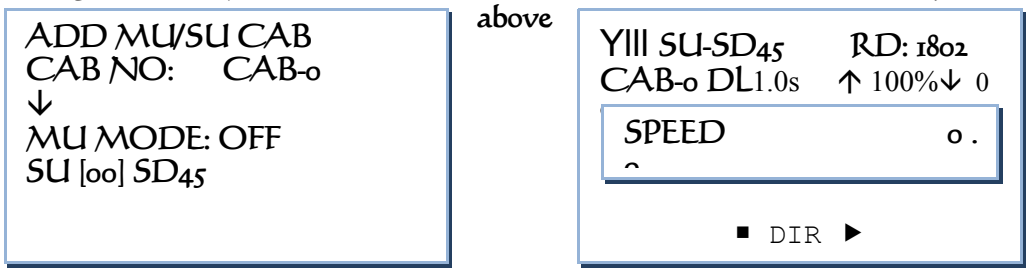
Scroll down to MU3 and select (MU3 [02] Dash 9)

When returning to the main screen and the fast button is pressed, all three locomotives will run on Cab [5] at the same time.

Link Address No ⟶

SINGLE UNIT 'SU'

If you decided to run the above locomotives individually you do not need to relink or change cab numbers. Again it is important to remember the link address and cab number you have for the above



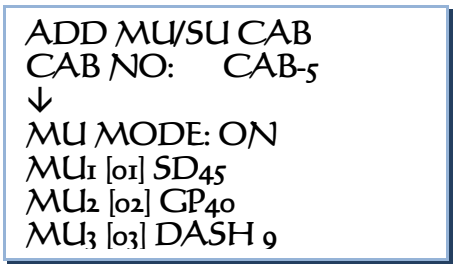
locomotives.

To go back to the single unit operation press the left [<<T] or right [>>T] key.

a] Press the left [<<T] key until [CAB-0] show up on the main operating screen. The top line on the main operating screen will show [SU-SD45].

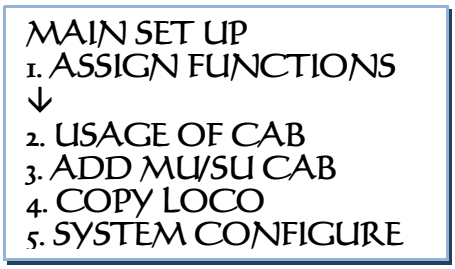
b] Press the right [>>T] key for [CAB-1] and the GP40 will show up.

c] Press the right [>>T] key for [CAB-2] and the Dash9 will show up.



If a locomotive does not show up under the correct cab number, go to ADD MU/SU CAB and select the correct cab number and link address number.

Link locomotive if you forgot the Link address and cab number



To enter the MAIN SET UP press the MENU button

21. MAIN SET UP

1. ASSIGN FUNCTIONS
2. USAGE OF CAB
3. ADD MU/SU CAB
4. COPY LOCO
5. SYSTEM CONFIGURE
6. RADIO CONFIGURE
7. MY MEMO
8. RESET MEMORY

Any functions under main set up can be entered in two ways.
a] press the Stop/Enter button on the transmitter
b] Press the number [1-8] on the transmitter to enter its function.

22. 1. ASSIGN FUNCTIONS:

To enter this function press the MENU button once
All functions listed below will enter in upper and lower case by using the left or right arrow.

a] ***LINK ADDRESS***: [00-49] The link address comes with a default setting which is [49]. First the link address for the locomotive must be chosen. To start from [00] quickly press the Stop/Enter button. (Note: when linking a single unit [SU] multi unit [MU] each locomotive must have its own linking address). Press the left or right arrow to select link address number.

b] ***RX TYPE***: [On Board / Base Rx] this option is use for which RX you are using. This option should be set to ONBOARD. The Base Receiver is use for your Cab side or accessory controller.

c] ***NAME***: use the keypad to type numbers or letters to name the engine. Names may be up to 9 characters long, e.g. [GP40] EGGLINER OR MIKADO. **To DELETE any numeric or textual information press the # key**.

d] ***ROAD NO***: [5533] enter a road number of up to four characters

e] ***MOMENTUM***: [0 - 100%] this sets the locomotive's momentum, the rate at which it accelerates or decelerates. The higher the momentum value the slower the locomotive will speed up when you press the up arrow for acceleration.

f] ***DELAY:*** [0 – 5 sec] When the direction of the locomotive is reversed this setting determines how long, in seconds, that the locomotive will be completely stopped before it starts up again in the other direction. The range is 0 to 5 seconds in 1/10th second increments.

g] ***MOTOR***: [Rev – Nor] sets the default direction of travel when the transmitter says the locomotive is going forward. This can be set to NOR (normal) or REV (reverse). If set to normal NOR the locomotive will go forward. When direction [■ DIR ▶] on the transmitter shows that it is going forward. If set to reverse [REV] it will go backwards. Not all the locomotive will run forward when the transmitter is set to normal [NOR].

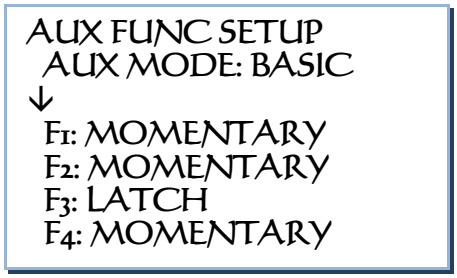
h] ***HD DIR***: [Rev – Nor] sets the direction that the locomotive will be traveling for the headlight to be lit. This can be set to NOR (normal) or REV (reverse). If set to normal [NOR] the headlight on the locomotive will come on when the locomotive is going forward. If set to reverse [REV] the headlight will come on when the locomotive is going backwards Not all the locomotive will run forward when the transmitter is set to normal [NOR].

i] ***HD LIGHT***: [OFF/ON] turn the locomotive headlight ON or OFF. When this function is set to on or off the headlight will not turn on or off until you return to the main operating screen.

j] ***TOP SPEED***: [50 – 100%] sets the locomotives top speed as a percentage of its possible top speed. Increase or decrease the speed on the locomotive. This comes in handy if you have visitors who are operating your trains and have been known to run them at too high a speed. If you set this to 70% that is all the faster the locomotive will go, 70% of its possible top speed.

k] ***START SPEED***: [0 – 25%] sets the speed at which acceleration of the locomotive begins. Start speed on 0% will start the loco slowly, 25% will start the loco quickly. If you have a large locomotive or one that is pulling a long, heavy train you can set the start speed so that the power level will jump to the set percentage as soon as you begin accelerating. For example, if you have a locomotive that doesn't start moving till the throttle setting is at 25% you can set

the start speed to that number and not have to wait for the speed to get to that level before the train moves. As soon as you press the UP ARROW the speed will jump to 25%.



l] ***AUX FUNCTION SETUP:*** Press the STOP/ENTER button and AUX FUN SETUP will show.

To change the functions below from momentary to latch

i. ***AUX MODE: EXTEND/BASIC***.

ii. To choose basic or extended press the left or right arrow.

iii. To change from momentary to latch press the right or left arrow.

iv. ***BASIC***: this will only control 6 auxiliary functions, [F1 to F6].

v. ***EXTENDED***: this will control all 16 auxiliary functions, [F1 to F16].

vi. ***LATCH***: this will make any aux function work continuously. If you have the bell sound hook up to F1 on the AUX output, and [1] key is pressed on the transmitter, this will turn the Latch Function ON. To turn OFF Latch Function, press the [1] key on the transmitter keypad.

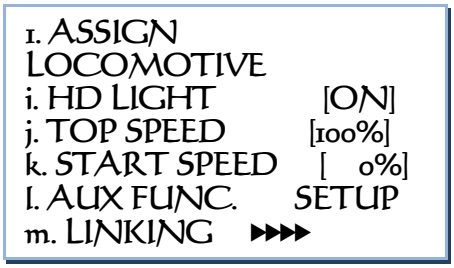
vii. ***MOMENTARY***: Press the number [2] key on the transmitter and the horn sound will turn on and turn off by itself. Press and hold number [2] key on the transmitter and the how will sound until the key is released.

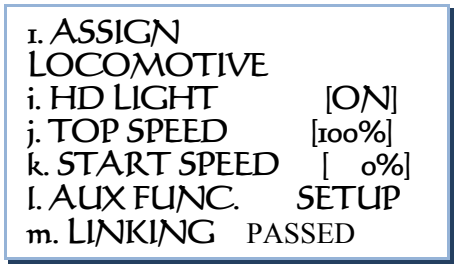
viii. The six auxiliary buttons (#1 through #6 on the keypad) can be configured to operate your other sound boards.

ix. See your sound board's documentation of consult on-line resources for installation of sound boards.

m] ***Linking:*** Associates a particular locomotive's description and settings with a particular receiver. Each locomotive must be bound before it can be operated.
To link a locomotive:

1. If running on batteries make sure the locomotive's battery is fully charged. If using Cab power turn on power to the Cab that the locomotive is on.
2. Press and hold the LINK button for four second on the locomotive. Release the Link button when the red LED on the receiver board and the locomotive's lights begin flashing.
3. While the lights are flashing select menu item **m. LINKING** and press the STOP/ENTER button.
4. In a moment the screen will show that the programming of the unit has been successful and the flashing will stop.



5. 

On the transmitter it will read linking passed. The main screen will show **LINK OK**.

23. Under Quick Menu List

You can check to see if the smoke on the latch or momentary function is in the ON/OFF position. Press the # key select AUX FUNCTIONS and press the STOP/ENTER button. You can turn these functions ON or OFF by pressing the STOP/ENTER BUTTON.

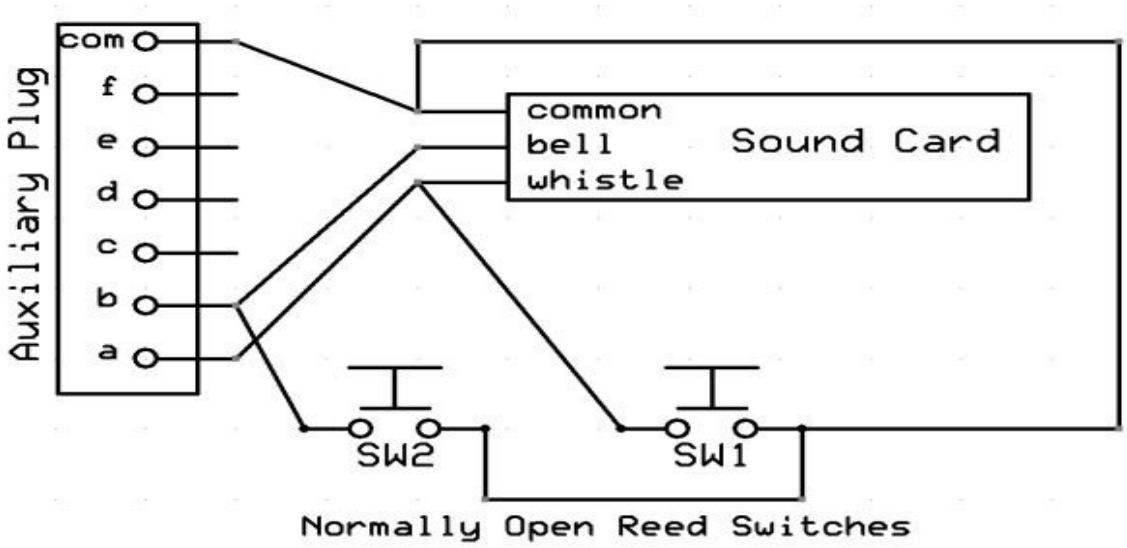
Auxiliary Function Table

AUX OUT ON RX	PRESS KEY ON TX TO ACTIVATE SOUND ETC	FUNCTIONS	BASIC FUNCTION	EXTENDED FUNCTION
F1	1	LATCH/MOMENTARY	F1	F1
F2	2	LATCH/MOMENTARY	F2	F2
F3	3	LATCH/MOMENTARY	F3	F3
F4	4	LATCH/MOMENTARY	F4	F4
F5	5	LATCH/MOMENTARY	F5	F5
F6	6	LATCH/MOMENTARY	F6	F6
F7	7	LATCH/MOMENTARY		F7
F8	8	LATCH/MOMENTARY		F8
F9	9	LATCH/MOMENTARY		F9
F10	10	LATCH/MOMENTARY		F10
F11	11	LATCH/MOMENTARY		F11
F12	12	LATCH/MOMENTARY		F12
F13	13	LATCH/MOMENTARY		F13
F14	14	LATCH/MOMENTARY		F14
F15	15	LATCH/MOMENTARY		F15
F16	16	LATCH/MOMENTARY		F16

24. Sound installation on auxiliary wires Harness Table

Dallee Sound Card / Wire	Plugs From Main PC Loco	7 Pin Auxiliary Wire Harness
J3 –Black →	Connect to Red Power wire 2 Pin	
J3 –White →	Connect to Green Power wire 2 Pin	
J1 –Red –Not connected		
J1 –Gray →	Connect to Red Power wire 2 Pin	
J2 –Red –Not connected		
J2 –Gray →		Black –Common
J4 –Red →		Blue –Horn
J4 –Gray →		Green –Bell

The outputs from the Auxiliary Plug can be wired in parallel with reed switches so that your sound card can ring its bell or sound its whistle from buttons on the transmitter and from magnets on the Cab that the trigger reed switches. This diagram shows how they need to be wired.



a] ***LINK OK, NO LINK***: Normally the transmitter's main control display shows LINKOK on the bottom line of the screen. This indicates that there is a good radio link between the transmitter and the receiver in the locomotive. If that link is lost due to an exhausted battery, excessive

distance, a short on the Cab, a derailment or no power on the Cab the message will change to NOLINK. When the amperage drawn by a locomotive exceeds the capacity of the onboard receiver, which can supply 5amps continuous, the receiver will shut down and the transmitter will display OVERLOAD on the LCD. After you correct that condition pressing the zero key [0] on the transmitter keypad will reset the error message.

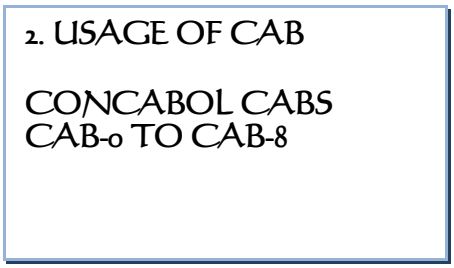
b] ***OVERLOAD***: When the amperage draw exceeds the capacity of the onboard receiver, which is 5amp continuous the receiver shut down and the transmitter will indicate an OVERLOAD on the LCD. After you correct that condition pressing the [0] on the transmitter keypad that will bring us to the former status.

Note if the STOP/ENTER button is pressed; you have to restart your locomotive.

c] **OVERHEAT**: The receiver will send an OVERHEAT signal to the Transmitter if the temperature reaches 180 degrees Fahrenheit. If the receiver overheat wait for 5 to minutes for the receiver to reach it's temperature and press the [0] key on the transmitter and that will bring us to the former status.

25. 2. USAGE OF CAB:

Usage of Cab comes with a default setting of [5] Cab [CAB -0 TO CAB-5].
You can add or remove Cab number by pressing the right of left arrow.
If you have ten locomotives and you are only running eight, just add eight Cabs to the transmitter.
Press the menu button twice to go back to the main operating screen.



26. 3. ADD MU/SU CAB

Add MU/SU Cab is used to select a single unit or multiple units to add or remove from the layout.

SU 'SINGLE UNIT': Each locomotive must have its own link address and Cab number.

Go to ASSIGN FUNCTIONS and select a link address.

Scroll down to [m] linking and press the Stop/Enter button to link the locomotive.

Select a Cab number that you want the locomotive to run on, under ADD MU/SU CAB.

Scroll down to [SU [00] L49] and select the locomotive you want to run. The locomotive will run under the Cab number you selected.

Press the MENU twice button to return to the main screen.

To add more single locomotives, follow the above steps

MU 'MULTI PLE UNITS': before any locomotives are MUed, you must link each locomotive with a different link address. Only six MU locomotives can run on a single Cab number.

Select a Cab number that you will run the MU locomotives on. Scroll down to (MU MODE) and press the right arrow to turn the MU setting ON.

3. ADD MU/SU CAB
CAB NO: CAB-0
MMODE: OFF
SU [00] L49

Scroll down to [MU1 through MU6] to add locomotives

Press the right or left arrow to enter a locomotive.

E.g. if you have three locomotives, (1st loco on Cab [-0] Link Address [00] SD45) (2nd loco on Cab [-1]) [Link Address [01] GP40) (3rd loco on Cab [-2] Link Address [02] Dash-9)

Choose a different Cab number to run the **MUed** locomotives, e.g. Cab [-3]

If you enter a locomotive incorrectly press the Stop/Enter button to remove the locomotive 'NOT SELECTED'.

27. 4. COPY LOCO:

Once you set up a locomotive with a set of options you can copy that locomotive's characteristics to another locomotive based on its link address. For example, if you have set up link address 00 and want to copy it to link address 01 just select 00 as the FROM: and 01 as the TO: and move to COPY and press STOP/ENTER.

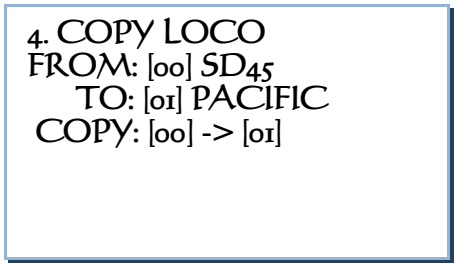
This function will only copy the data from one locomotive to the other.

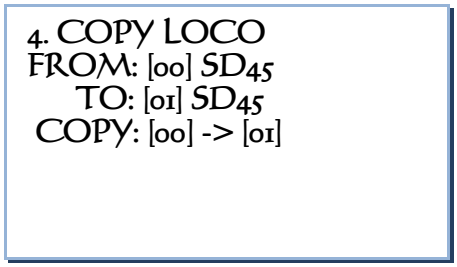
AFTER COPY

3. ADD MU/SU CAB
CAB NO: CAB -1
MU MODE: ON
MU1 [00] SD45
MU2 [01] GP40
MU3 [02] DASH 9

BEFORE COPY

When





finished selecting the loco, press the STOP/ENTER button to copy.

To exit press the MENU button twice.

28. 5. SYSTEM CONFIGURE:

To enter this function press, the STOP/ENTER button.

a. ***POWER ON/OFF***: [1 –60 MIN] use this function to set the minutes to turn off the transmitter power by pressing the right or left arrow. When you are not using the transmitter it will turn off by it self.

b. ***BRIGHTNESS***: [0 –100%]: use this function to adjust the brightness on the LCD screen by pressing the left or right arrow. It will affect battery life obviously.

c. ***CONTRAST***: [0 –100 %] use this function to adjust the text color or number color on the LCD screen by pressing the left or right arrow.

d. ***KEY TONE***: [ON –OFF] uses this function to turn the sound tone on the transmitter ON or OFF.

e. To exit press the MENU button twice.

29. 6. RADIO CONFIGURE

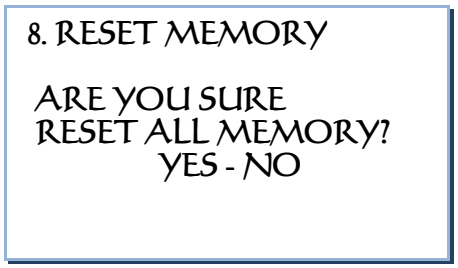
To enter this function press, the STOP/ENTER button.

a) RF –CHANNEL:

[CH: 11 –26] you can change the channel numbers if you are experiencing interference. To change the channel numbers, press the right or left arrow.

b) GROUP ID:

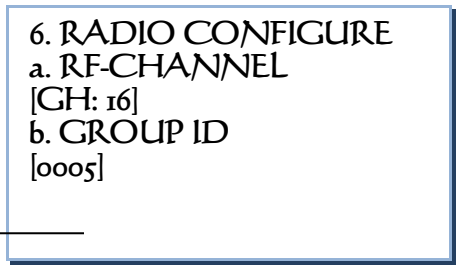
This feature will allow several people to have control over their locos even if they use the same Cab #'s for controlling their loco. The group I.D. is transmitted to the loco from each transmitter with a different setting and the receiver will not acknowledge messages from transmitters with a different group code. The group code is set randomly for each transmitter and will self generate the same number for each cab assigned.



30. 7. MY MEMO:

Name:

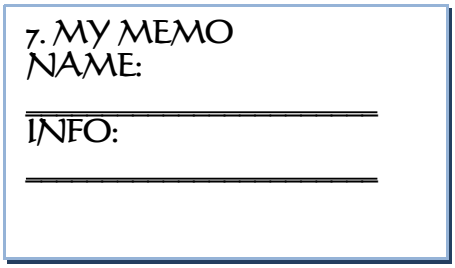
Info:



To exit press the MENU button twice.

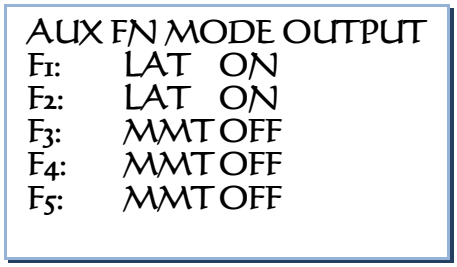
31. 8. RESET MEMORY

1. To reset the transmitter to the factory settings press the left arrow to select the YES and and hold the Stop/Enter button for four seconds and



When Yes is chosen

2. To exit press



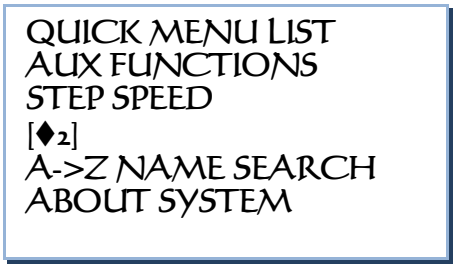
the MENU button twice.

32. **QUICK MENU LIST**

a] AUX FUNCTION: This menu item is under the Quick Menu List – It shows each function and whether it is set to Latch or Momentary. It also shows the current setting for each function. This is an easy way to see, for example, if your smoke unit is on or off. You can also change the setting of each function by highlighting it and pressing STOP/ENTER.

b] AUX FN MODE OUT PUT:

Under the aux function change the Latch to ON or ENTER.



mode output you can only OFF by pressing the STOP/

When you set the aux function setup to basic it will only show up six aux function, Extended will show all sixteen functions.

c] <u>STEP SPEED</u>: [1 –5]

This menu item is under the Quick Menu List - The step speed can range from 1-5.

When set to 1 the rate at which the speed increases when you hold the UP ARROW will be at its slowest. A higher number will cause this rate to increase. When set to its highest value the speed can change from 0 to 100% very rapidly. For precise control of a locomotive's speed set it to 1 or 2. To have your locomotives accelerate very rapidly set it to 4 or 5.

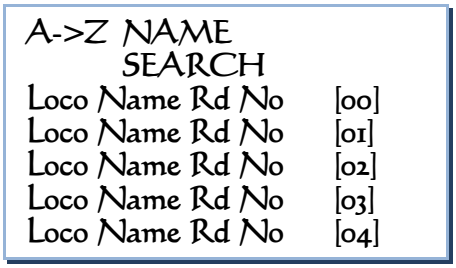
When Step Speed is set to 1 it changes in increments 0.1 %.

When step speed is set to 2 it changes in increments of 0.5 %.

When step speed is set to 3 it changes in increments of 1.0%.

When step speed is set to 4 it changes in increments of 2.5%.

When step speed is set to 5 it changes in increments of 5.0%.

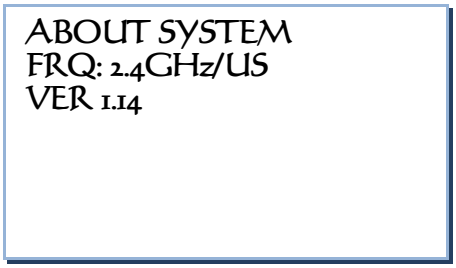


Step Speed Setting	Number Of Speed Steps	Increment on Each Key Press	Use
1	1000	1/10	Very delicate operation
2	200	½	
3	100	1	Normal Operation
4	40	2 ½	
5	20	5	Rapid speed up & slow down

d] <u>A – >Z NAME SEARCH</u>: To enter this function, press the STOP/ENTER key, A ->Z NAME SEARCH. Name search will only show you the names, road numbers and address numbers of the locomotive that is enter in the transmitter.

e] **ABOUT SYSTEM**: press and hold the STOP/ENTER button it will show the system info:

To exit pressed the MENU button once.



33. WIRE HARNESS ADAPTER INSTALLATION

a. **POWERING THE ON BOARD RECEIVER:**

The wire harness adapter is use for locomotives with out the plug and play board. The On Board receiver is designed to work on track power or batter power of at least 12volts DC to a maximum of 24 volts DC. The unit is self protected for polarity and input current.

b. **CONNECT THE POWER WIRES**:

Solder the black (TR+) wire and red (TR-) wire from the Wire Harness Adapter to the power pickup in the locomotive. All power wires must be isolated from all other wiring before installation.

WIRE HARNESS	WIRE COLOR	WIRE USE
TRK +	BLACK	RIGHT SIDE CAB POWER PICK-UP
TRK -	RED	LEFT SIDE CAB POWER PICK-UP

c. **ISOLATE THE MOTOR (S)**:

The motor (s) must be isolated from ALL other wiring before the on board receiver can be installed in a locomotive. After you have disconnected the motor wires form the locomotive you can now solder the wires from the wire harness adapter to the motor as shown below.

WIRE HARNESS	WIRE COLOR	WIRE USE
MOT +	GRAY	RIGHT SIDE MOTOR TERMINAL
MOT -	ORANGE	LEFT SIDE MOTOR TERMINAL

d. **CONNECTING THE HEADLIGHTS**:

All of the wiring to the headlights MUST be isolated from all other wiring.

WIRE HARNESS	WIRE COLOR	WIRE USE
HD 1	YELLOW	REAR HEADLIGHT
HD COM	BLUE	HEADLIGHT COMMON
HD 2	WHITE	FRONT HEADLIGHT

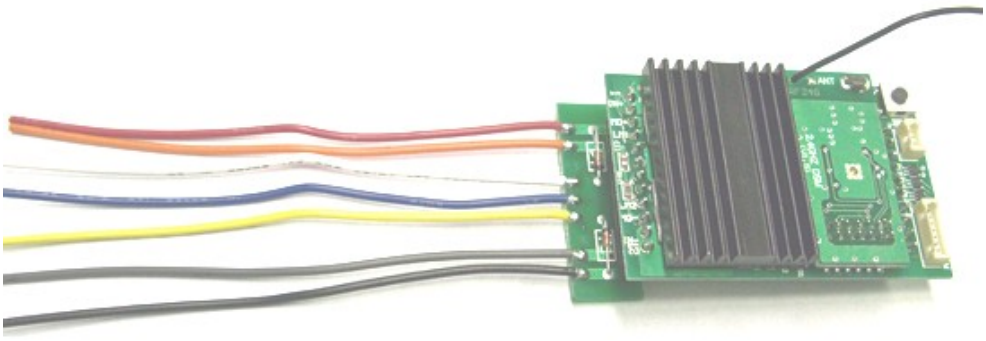
e. **SECURING THE ON BOARD**: The On Board should be insulated and secure from any metal inside the engine. The On Board can be attached to the shell or interior floor of the engine with double stick foam tape.

f. **PLUG IN THE ON BOARD RECEIVER TO THE WIRE HARNESS SOCKET**.

Make sure that there is no power on the track or locomotive when you are going to install the On Board Receiver to the wire harness socket.

Check to make sure the 12 pin on the On Board Receiver is plugged in correctly to the wire harness socket.

The wire harness adapter has a 12 position socket. Plug in the wire harness socket to the On Board 12 pin connector correctly.



Regulatory Statements to be included in the Users Guide for Sputnik

USA-Federal Communications Commission (FCC)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna
-Increase the distance between the equipment and the receiver.
-Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Caution: Exposure to Radio Frequency Radiation.

To comply with FCC RF exposure compliance requirements, for mobile configurations, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

This device must not be co-located or operating in conjunction with any other antenna or transmitter.