

HO TRAIN ENGINEER WIRELESS RADIO CONTROL SYSTEM

Congratulations on your purchase of the CREST HO Train Engineer Wireless Radio Control System. This product has been manufactured to the highest standards using only quality components and, with proper care, should provide you with reliable service. Although some of the more advanced features may be new to you, with a little guidance they are easy to use and can add to your overall railroad operating pleasure while protecting your equipment.

INTRODUCTION TO THE HO TRAIN ENGINEER

The CREST HO Train Engineer Wireless Radio Control System is designed to operate with any HO model locomotive that is equipped with a Digital Command Control (DCC) NMRA standard eight pin interface board without any significant modifications. As an added benefit, the receiver utilizes the locomotive's 12-volt lighting system to aid in linking it to the transmitter. Furthermore, the receiver is activated using a magnet. These latter two features allow you to easily link the transmitter and receiver without the need to drill additional holes to mount additional switches on your locomotives.

The unit is designed for easy operation with simple "plug and play" installation. Since this is a true radio control system, no "line of sight" is necessary between the transmitter and locomotive(s) under control.

The HO Train Engineer has ten different frequencies and each frequency has ten different channels available for use. Thus, it is possible for one transmitter to control 100 different receivers independently. There are no unique frequency crystals in the transmitter or receiver. Using a patented CREST innovation, each frequency is digitally generated with a computer code that is user selectable.

FEATURES

In addition to its wireless walk-around control of multiple trains and accessories, the HO Train Engineer offers several other features to both enhance your enjoyment and protect your valuable equipment. These include momentum and directional change time delay.

In real life, trains don't "jack rabbit" to speed or "stop on a dime" so why should yours? The adjustable momentum control incorporated in the HO Train Engineer allows you to increase and decrease the speed of your trains in a smooth and realistic manner. These gradual changes are also easier on your trains' motors and gears.

One of the hardest things on any train is a quick change in direction. This not only causes excessive wear on all moving parts, but also can strip gears in the locomotive. Furthermore, even if no damage is done, it can cause a derailment. To alleviate these problems, the HO Train Engineer incorporates an adjustable time delay feature when changing directions. When the directional buttons are pushed, the train gradually slows to a stop, changes direction, and returns to its prior speed. As with momentum, the delay period is user adjustable.

COMPONENTS

The HO Train Engineer Wireless Radio Control System is a two-piece set that includes both a transmitter and receiver: Additionally, a magnet used to link the receiver to the transmitter is provided.

In addition you will need the following:

- Batteries: four 1.5V "AA" Alkaline to power the transmitter
- 12-14V DC filtered power source

While any good DC well-filtered power source (pure DC without "noise") of proper voltage for HO locomotives will serve to power the receiver, we recommend the use of our switchable power supply. (Note, that no separate controller or "throttle" is necessary as the control comes from the on-board receiver.)

INSTALLATION

Receiver

(Note: The receiver must be placed within the locomotive or tender in a location where it will be influenced by the magnetic field of the provided magnet)

- 1) Following the manufacturer's instructions, remove the locomotive's shell. The HO Train Engineer receiver is designed to plug directly in to the eight-pin DCC port included in many DCC-ready locomotives. Depending upon the selected locomotive, it may be necessary to remove an on-board jumper prior to plugging in the receiver. The instructions included with your locomotive should provide more details on this installation procedure. If the locomotive is provided with the eight-pin DCC port, follow the locomotive manufacturer's instructions regarding DCC conversion. Provided with the receiver is a female eight-pin DCC NMRA standard plug. This is for use in converting locomotives that do not have a manufacturer provided eight-pin plug. If this is your situation, follow instructions in the "Locomotive Conversion" supplement, then continue with step 2.
- 2) Stretch out the antenna wire along the inside of the locomotive shell. Ensure that the wire is routed away from any moving parts within the locomotive.
- 3) Replace the shell.

Transmitter (FIGURE-2)

- 1) Unscrew the two recessed Phillips head screws in the back of the case and remove the back cover.

- 2) Unscrew the Phillips head screw next to the word "ANTENA" etched into the top of the circuit board. Place this screw through the loop at the bottom of the provided antenna and place this assembly on the circuit board so that the antenna fits within its cutout in the case. Retighten the screw until secure. (Caution, do not over tighten.)
- 3) Insert four 1.5 V "AA" batteries making sure that they face in the directions indicated on the battery holder.
- 4) Replace the back cover and retighten the two removed screws until secure.

NOTE

- If LEDs on the transmitter flash quickly and then go out when a button is depressed, the batteries are low and need replacing.
- When the batteries are removed, replace them within 30 minutes. The memory of the transmitter will be wiped out after 30 minutes. It will be necessary to reestablish links with the receivers.

Many power supplies, controllers and or throttles do not provide clean or pure DC voltage that is required for the proper operation of the HO Train Engineer system. For these situations a noise filter is provided. For noise filter installation, see figure 1.

KEY PAD FUNCTIONS (SEE FIGURE-2 & TABLE 2)

- C-L
Channel selection, move left.
- C-R
Channel selection, move right.
- FAST
Throttle up (Increase Speed).
- SLOW
Throttle down (Decrease speed).

- LEFT ARROW
Change direction.
- RIGHT ARROW
Change direction.
- EMERGENCY STOP
Push to emergency stop train or locomotive on current frequency and track channel.
- KEYPAD "A" – "F"
Control buttons for accessory devices.
KEYPAD "F" can be used to turn headlights on and off.
- KEYPAD "SPD"
Push to check train speed.
- KEYPAD "ALL STOP"
Push to emergency stop all trains and locomotives controlled by the transmitter.
- KEYPAD "FRQ"
Selects the radio frequency.
(Note: As a safety feature there is a built in response delay to the pressing of buttons to prevent inadvertent changes)

HOW TO SELECT THE RADIO FREQUENCY

Press the "FRQ" button and hold it down for 2 seconds. At that time the LED will begin to flash at the present frequency location number (1-10). Press "FRQ" again to select the desired frequency. The light will move to the right. Release the button at the desired frequency number. Press any *other* button or simply wait for the light to extinguish to select the desired frequency.

HOW TO SELECT THE CHANNEL NUMBER

Press either of the Channel Select buttons, "C-L" or "C-R" (under the LED display on the transmitter). The light will begin to flash at the present channel number (1-10). Press again to move left or right to select the desired channel. This setting allows the use of multiple engines with multiple receivers.

However, in this mode the receivers are susceptible to radio interference if two users issue commands simultaneously. Furthermore, one user can inadvertently issue commands to another user's receiver (and train). For interference free operation, when you are sharing a layout with others you should change the frequency rather than the track as shown above.

HOW TO LINK THE TRANSMITTER AND RECEIVER

- 1) Turn on the power source, which supplies 12 volt DC current to the track.
- 2) Place the locomotive(s) on the track if not already on the track.
NOTE: The direction that the locomotive faces has no relation to its orientation relative to the direction buttons on the transmitter.
- 3) Place the magnet over the locomotive shell above the receiver location to activate the decoder. The locomotive lights will blink rapidly. Remove the magnet.
NOTE: if the lights do not blink, depending on the receiver's proximity to the locomotive shell, it may be necessary to reorient the magnet relative to the shell. If the lights still fail to blink, it may be that the power supply does not supply a "clean" source of DC current. CREST has found that some power supplies will not work with the HO Train Engineer system.
- 4) Press and hold one of the Alpha buttons (A-F) on the transmitter until the blink rate of the lights slows. Release the Alpha button. This step links the loco to the transmitter and sets the desired momentum. The "A" button sets no momentum while buttons "B" though "F" increases the relative momentum from minimum to maximum, respectively. The exact momentum will vary between different locomotives. (See Table #1 for momentum settings.)
- 5) Press and hold one of the Alpha buttons (A-F) on the transmitter until the lights stop blinking. Release the Alpha

button. This step sets the reverse time delay between the transmitter and the locomotive. The reverse time delay determines how quickly the locomotive responds to direction change commands. (See Table #1 for reverse time delay settings.)

- 6) To complete the linking operation, press either the A or F buttons to set the memory. Memory On (A Button) allows the locomotives to automatically return to its present speed and direction in the event that power to the track is lost and subsequently restored. If Memory Off (F Button) is selected, when power to the track is lost, the locomotives will stop and remain motionless until the "FAST" button is pushed. The transmitter and receiver are now linked. NOTE: For the best operation, ensure that all wheels and electrical pick-up contacts of the locomotive are clean and that the track is clean.
- 7) For additional locomotives, select a different frequency and/or channel on the transmitter and repeat linking Steps 2 through 6.
- 8) If multiple locomotives are to be linked on the same frequency and channel (such as for a multiple unit lash-up) follow step 7. Then, ensure that the additional locomotives are running in the same direction (change the direction of the locomotive by pressing a direction button on the transmitter). Repeat steps 3 through 6 for the additional locomotives using the same frequency and track channel and Alpha Key combinations used for the first locomotive.

HOW TO CHECK THE SPEED OF THE TRAIN

To check the relative speed of a locomotive while underway, press the "SPD" button. The number of lights that come on gives a relative indication of the speed of the train. The lights will not stay lit and the higher the speed, the faster they will extinguish.

NOTE: It is necessary to hold the fast or slow key for 2 seconds to change the number of lights displayed.

Thank you for choosing the CREST HO Train Engineer and we hope this innovative product enhances your enjoyment of the hobby. Enjoy!

CREST ELECTRONICS.
POLK'S MODEL CRAFT HOBBIES INC.
698 S. 21st Street, Irvington, NJ 07111
Phone: 973-351-9800
Fax: 973-351-9800
www.aristocraft.com
aristo@mindspring.com

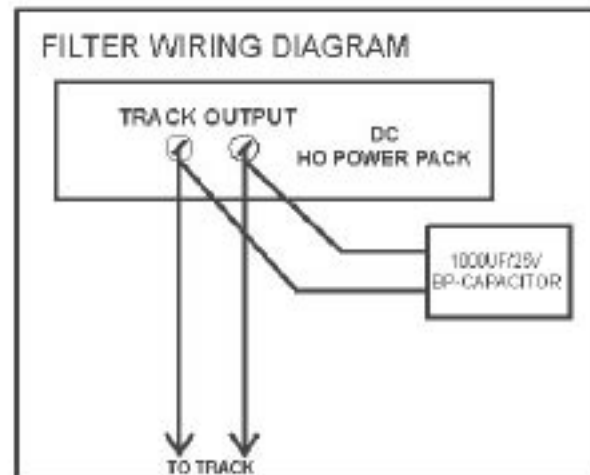


FIGURE-1

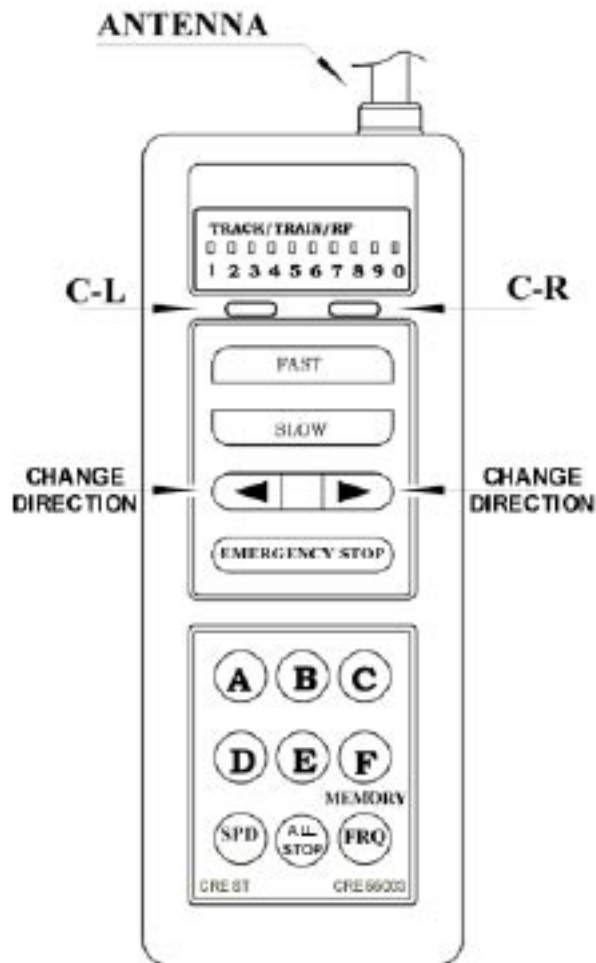


FIGURE-2

Table 1
Alpha Keypad Use in Locomotive/Transmitter Linking Procedure

KEYPAD BUTTON	STEP #4 MOMENTUM SETTING	STEP #5 REVERSE TIME DELAY	STEP #8 MEMORY SETTING
A	No Momentum	0.1 Second	Memory On
B	#1	0.2 Second	
C	#2	0.5 Second	
D	#3	1.0 Second	
E	#4	1.5 Seconds	
F*	Maximum Momentum	2.0 Seconds	Memory Off

*After linking process is complete Keypad Button "F" can be used to turn headlights on and off.

Table 2
Transmitter Keypad Buttons & Functions

BUTTON	FUNCTION
C-L	CHANNEL SELECT CHANGE TO LEFT
C-R	CHANNEL SELECT CHANGE TO RIGHT
FAST	INCREASE SPEED
SLOW	DECREASE SPEED
ARROW BUTTONS	CHANGE DIRECTION
EMERGENCY STOP	STOPS LOCOMOTIVE(S) ON CURRENT FREQUENCY & CHANNEL
ALFA KEYS (A-F)	SEE TABLE 1
SPD	SPEED RELATIVE TO VOLTAGE
ALL STOP	STOPS ALL LOCOMOTIVES CONTROLLED BY TRANSMITTER
FRQ	FREQUENCY SET/CHECK