

Nuisance Issues That Have Easy Fixes

We receive many requests for help that fall into a category of nuisance issues. The only problem was that the user needed some help to understand the cause and the solution. This page has some of the more common questions arranged by observable symptoms.

Locomotive Runs and Stops, Runs and Stops - Most Common Cause

The most common cause of this problem is having the same locomotive number assigned to more than one throttle. Throttles A and B can't have the same locomotive number as an wireless or plugin throttle. *Remember the rule - only one throttle at a time can be used to control a locomotive.*

Locomotive Runs and Stops, Runs and Stops - 2nd Most Common Cause

This is a common issue when the track and wheels are dirty. This can be verified by watching the headlight on the locomotive. If the locomotive hesitates and the headlight blinks off then back on, clean both the wheels and the track.

Locomotive Runs and Stops, Runs and Stops - 3rd Most Common Cause

Some newer decoders may have a very short time set for the DCC packet time-out value, which is CV11. Dirty track and wheels exacerbates the problem. Reset CV11 to a value of 0. This value disables the packet time-out allowing slightly longer power outages to be tolerated. Once again, clean the wheels and track for better performance.

Locomotive Stalls On Turnout And ZoneMaster Booster Sounds

This is caused by a short circuit. One cause is an out of gauge turnout allowing one of the rails to touch the back of a wheel. Check the gauge on the track and the wheels since either one can cause this to occur. Naturally, if the turnout is thrown the wrong way, a short will also occur when the locomotive hits the turnout.

Loco Runs Full Speed For A Few Seconds When Power First Applied

Decoders that offer "analog" operation (decoder can run with an ordinary power pack), may accidentally switch over to analog mode while the Command Station is initializing. If this occurs, program the decoder's CV29 to disable the analog mode. If this mode is desired, consider keeping the locomotive on an unpowered section of track until the Command Station completes the initialization sequence.

Another possible problem is an incorrect cable used between the Command Station and the Booster or between multiple boosters. If you suspect this might be a problem, consider replacing the cable with a new one.

Headlights Flash As Train Speed Changes and Other Odd Behavior

For each address used, the Command Station can be set to one of 3 speed step settings. Each decoder can be set to either 14 or 28 speed steps (the 128 speed step setting is automatic and does not require decoder programming). Obviously, the speed step settings must match. For example, if the Command Station is set for 28 speed steps and the decoder is set for 14 steps, the locomotive's headlight flashes as you change speed. Use the table below to help troubleshoot speed step mismatch.

<u>CS</u>	<u>Decoder</u>	<u>Result</u>
14	28	Pushing F0 (headlights) changes locomotive speed
28	14	Headlamp flashes with speed change
128	14	F0 (headlights) will not work
128	28	OK but the decoder must support the 128 speed step mode

Locomotive Stops When Tethered Throttle Is Unplugged

Check for another throttle set to the same address. Don't forget to check the Command Station's throttles too.

Some newer decoders may have a very short time set for the DCC packet time-out value, CV11. Reset this value to provide a longer time.

A momentary interruption of the track signal (derailment, dirty track etc) can also halt a

Nuisance Issues That Have Easy Fixes - *continued*

locomotive running on memory. Memory is resident inside the decoder, not in the Command Station. Consider cleaning the track and/or improving the locomotive's pickup if this becomes a problem.

Train Doesn't Run In One Section

If you were just working in the affected area, or an adjacent area, that is where to focus. Think about what you were doing in that area and then check for broken unplugged power supplies, feeder wires, broken bus wires or missing feeders.

Plug-In throttle doesn't have a stop position but rotates continuously

Oops, that is a sign that the potentiometer attached to the knob has been broken. It will need to be replaced. Give us a call to setup its repair.

You need to take some time to inform your operators that turning the speed knob faster or harder against the stop does not make the train stop quicker. It only breaks the potentiometer.

The MTH Decoder or the BLI Decoder Can't Be Programmed With The Loco Address

These decoders do not handle the NMRA-DCC standard back-to-back programming packets correctly. Therefore, to program this locomotive, each of the 3 CVs that makeup the locomotive address must be programmed one at a time using the "Program CV" service programming command on the programming track.

For a loco address between 1 and 99, CV1 is programmed with the loco address and CV29 must be program to a value of 2.

For a loco address between 100 and 999, there are 2 CVs, CV17 and CV18, that hold the locomotive address. Unfortunately, the values are not what you expect.

To determine the proper values for the 2 CVs, use the online calculator found at this site (cut and paste this long URL into your browser:

<http://www.digitrax.com/support/cv/calculators>

Use this CV calculator to calculate the two CV values for the desired address. Program these values into CV17 and CV18 using **Program Any CV** command. Then, program the value of 34 into CV29. Your locomotive will now respond on the desired address.

Note: You may need to repeat this process a couple of times in order for the decoder to be completely programmed for the long address. Maybe, some day, the decoder manufacturer will release better decoder software that stays within the NMRA-DCC specifications thus eliminating this problem.

The Plug-In Throttle Indicators Flash When The Cord Is Moved or Plug Is Rotated

This usually means the throttle is not getting a good signal. Rotating the plug or moving the cable usually means one or both are bad and need to be replaced.

Try another fascia socket. If the problem goes away, replace the socket on the fascia where you saw the problem - it is worn out. Contact us to purchase new sockets. They are easy to replace.

If the problem is present on multiple fascia sockets, then the throttle's cord and/or plug are bad and need to be replaced. Call us to setup the repair.

Troubleshooting Intermittent Horn/Whistle With Wireless

Throttle function 2 activates the horn or whistle of a sound decoder. It is given special priority in the hierarchy of software within the Command Station because it literally tests the absolute response time of the entire DCC system.

With thousands of installations of EasyDCC wireless equipment, it is impossible to create an exhaustive list of all causes of this symptom. So, we'll start with the most common cause and work downwards towards the least common. In all cases, all of these causes result in exactly the same symptom – the horn/whistle shuts off before commanded to do so.

Cause #1: Specific to QSI decoders

As delivered from the factory, there is an incorrect value programmed into CV11, which is the DCC packet timeout value. For proper operation of the horn function, CV11 must be programmed to a value of 0. Use either the programming track or OPS programming to change the value.

Cause #2: Duplicate Wireless or Tethered Throttle IDs

All throttles must have a unique ID number programmed into them. ID programming is not obvious but we have been surprised how many operators have accidentally changed the ID. It is also possible that a plug-in throttle might have accidentally been assigned an ID within the wireless throttle range. Use the Command Station diagnostic tools (SHOW ID, etc) to verify proper and unique IDs for ALL throttles.

Cause #3: Duplicate Wireless Frequencies Used

For each XF-Series wireless receiver, it can accept up to 8 throttles each on their own unique frequency. Each throttle must be set for SCAN mode and each throttle must set to its own frequency.

For RF1300 throttles, the throttle can only be received by an XF-series Group-1 receiver. Inspect each DIP switch setting and confirm no two throttles are on the same frequency and make sure the.

For T9000 throttles, verify that each unit is on the desired frequency without duplicates.

Cause #4: Loss of Signal – Reception Black Holes

When a wireless throttle loses contact with the wireless receiver, the command station has special software routines that protect against horns and whistles being stuck on. This occurs when the operator pushes the F2 key, and then steps into a poor reception area. When this happens, the Command Station no longer receives the throttles signals but knows that the F2 key was previously command ON. After a period of NON-RECEPTION, the command station turns off the horn automatically. The solution to this cause is simple, improve the reception. This can be done by repositioning the receiver or by adding additional receivers in areas known to have reception problems.

Cause #5: External Jamming of Frequencies

Somewhat related to #3 and #4, this cause is a bit more difficult to assess. The most common symptom will be one throttle that always seems to have trouble. This is usually a sign that an external jammer has rendered the frequency unusable. Your only solution is to remove the jamming source after confirming your own equipment is not the cause (see #3). If your equipment is OK and you can not locate or disable the jammer, you must declare that frequency unusable and move to a different frequency. There are some guidelines related to jamming in the orange Operation manual.

Cause #6: Transmitter Congestion at the Receiver

This cause is not very common so it is listed last. For this case, the cause is the physical proximity of several transmitters to the radio receiver. Initial installations where the receiver is simply placed near the command station and connected with the modular cable are where this cause usually pops up. This is why this manual includes suggestions for how to find the best location.

Simplified Troubleshooting When The Trains No Longer Run

Troubleshooting is not a scary. In fact, if you read and follow the suggestions in this section, you'll be troubleshooting like a pro. A professional troubleshooter tackles problems by using simple tests to decide where to focus his efforts. For an EasyDCC system, the tests are very simple and easy to perform without any expensive equipment. The assumption for this section is that one or more trains were running just fine but now they have stopped.

If none of the previous page's tips have helped, the following procedures will help find the cause of the trouble. It is important that you follow these procedures exactly as described and in sequence. Do not skip around. The big assumption for this section is that everything was working normally when the trains were last used.

Step 1: Check for power on the rails. The easiest way to do this is to use a clip lead and short across the rails in the area in which the train doesn't run. The short circuit buzzer should sound off and the red fault light will light up on the ZoneMaster booster feeding this area. This proves there is DCC power on the rails and that the booster is working correctly. If the short circuit test works and the alarm sounds, proceed on to step 2. If the alarm doesn't sound, go to next page and find "step 1 failed."

Step 2: Checks for correct Command Station and booster operation. Next, turn off all wireless throttles and unplug all plug-in throttles. This is very important. Setup the Command Station's built in "A" throttle to the loco number that is not running. Check the display on the Command Station. Use the following key sequence to setup the Command Station's A throttle to the loco number. Note that the loco number is shown by "nnnn." You substitute your loco number for nnnn. You also need to deassign the B throttle.

SETUP, THROT-A, nnnn[the loco number used for the test], ENT, ESC.

SETUP, THROT-B, ENT, ESC

Verify that the display shows A=nnnn [your loco number] and the B throttle shows dashes.

Now turn up the A speed control and check if the loco moves. Change the A direction and check if the loco moves in the other direction. **If the loco does not move, go to step 3. If the loco does move, go to next page - Loco moves at step 2.**

Step 3: Reprogram the loco number. Move the test loco from the step 2 to the programming track with all wheels on the rails. Use the following keys to reprogram the loco decoder to the desired number. Again, as before, the loco number is shown as "nnnn" and you use whatever number you want. Most people use the locomotive's cab number since it is easily seen.

Push the **SVC PRGM** key. There are two possible messages that will appear after pushing this key. Find the column that matches your display for what to do next.

```
Program Track
Program What?
```

Push the SHOW/LOCO key.

```
Program Track
Loco Addr ____?
```

Enter the desired loco number and then press ENT.

```
Prog Address OK
PamPT:What else?
```

Push ESC.

Go to step 4.

```
Decoder Type=02
ENT=OK or 1,2,3
```

Push the 3 key.

```
Program Track
Program What?
```

Push the SHOW/LOCO key.

```
Program Track
Loco Addr ____?
```

Enter the desired loco number and then press ENT.

```
Prog Address OK
PamPT:What else?
```

Push ESC.

Go to step 4.

Step 4: Move the reprogrammed loco to the mainline. Recheck that the A throttle has the same number you programmed into the loco. If not, setup A throttle to the number that you programmed into the loco in step 3.

Turn up the A speed control and check if the loco moves. Change the A direction and check if the loco moves in the other direction. If the loco does not move, go to step 5.

Step 5: Summary and conclusions. At this point, you have verified there is power on the rails, no external throttles are in use, the locomotive has been reprogrammed to a known number and that throttle A, which has been set to the same number as was programmed into the locomotive, does not operate the train. This indicates that there is some kind of trouble with the locomotive and/or its internal decoder. As a final check, repeat the same sequence with a different locomotive.

Note: There is a slim chance that the Command Station's programming circuit has been damaged which means it cannot reprogram the decoder. However, such a problem would not prevent normal Command Station operation using its built in throttles. This can be proved by simply operating a known good locomotive with the Command Station's throttle A.

Testing Failures - What to do next?

Test Failed At Step 1: The failure of step 1 test, shows there is no track voltage. Look at the track booster that powers the section of track where the test took place.

POWER indicator is dark. There is no power getting to the booster. Make sure the plug from the power supply is firmly pushed into the power socket. Check that the power supply AC line cord is firmly plugged in. Check that the indicator on the power supply is on.

GP LED is dark and FT lights are on or flashing. There is no signal coming from the Command Station. Check all of the modular cables. Try swapping cables. Sometimes, nearby lightning strikes can cause excess voltages to damage a chip on either the Command Station or the booster or both. If you think this has happened, see the Troubleshooting booster section.

FT LED is ON and/or the short circuit alarm buzzer continuously sounds. There is a short on the track or the track wiring somewhere in the area fed by the booster. Pull out the TRACK OUT plug and confirm that the buzzer and FT LED turn off.

Loco Moves At Step 2. Since the locomotive does respond to the Command Station's built-in throttle, this shows the Command Station, track booster and decoder are all OK. However, there is some kind of problem with the plug-in throttle or the wireless throttle and further testing is required to find the cause.

Time To Give Us A Call! At this stage of testing, you have collected sufficient information such that a phone call to us will yield useful results.

When you call you must be in front of your Command Station. Have this paper with you along with your notes you took during the tests. We will ask you some simple questions to determine what happened as you went through the preliminary tests.

```
V6xx T=00 M=255
A=0003 E=----
```

We will also ask you about your Command Station and what the home page screen shows. We will want to know what V, T and M show.

Finally, we may have you do a few more followup tests. That is why it is important for you to be in front of the system before you call. So, when you are ready, give us a call. You will be surprised at how quickly we can pinpoint the cause of your problem.

Nearly all of the symptoms for wireless issues can be traced back to just a couple of sources and these items are described below along with their solution. This page assumes that the throttles were previously working OK. In other words, the wireless receiver has been setup correctly. See the RX904 installation guide for how to setup the wireless receiver.

Symptom: Intermittent Loss Of Control In Certain Areas

This is easy - the receiver is no longer receiving the throttle's transmitted signal. One possibility is that the power level of the T5000E throttle has been changed. Set it to a higher power level and try again.

If the problem is specific to a certain area, then you may have what we call a black hole.

The solution is to improve reception for that area. There are many techniques and options described in great detail on page 27.

Symptom: A Specific Wireless Throttle No Longer Works

There are several potential sources of this problem. Check your records and make sure that its assigned ID number and its unique frequency have not been changed. Curious fingers have been known to work through the menus and change either or both of these critical settings. Also confirm that there is a small letter s following the RF number. The throttles must always be in the SCAN mode which is what the s means.

Symptom: The Locomotive Doesn't Run Smoothly With The Wireless Throttle

There are three possible causes of this.

First cause is another throttle set to the same address. This can be a plug-in, Command Station or another wireless throttle.

The second cause can be a duplicate frequency or ID number on the wireless throttle.

The third cause is the wireless receiver and how it handles the same locomotive address now being controlled by a new throttle. In this case, the receiver starts sending update information from the new throttle. However, the old throttle information is still in the receiver which has not yet timed out. This takes about 2 minutes after the throttle has been turned off. This scenario is identical to two throttles controlling the locomotive although in this case, it is a throttle and the wireless receiver. To insure this doesn't occur, always assign the throttle to a unused address before turning it off. Use an easy to remember address such as 1 or 99 or 9999. Just make sure it isn't a legitimate address.

Symptom: A throttle, when turned on, causes interference with another throttle

Again, this is usually caused by two throttles are on the same frequency. Make sure every throttle is on a unique frequency.

Another cause may be the throttle is set to incorrect transmission mode. If frequency 7 is affected, one of the wireless throttles is set to burst mode (small letter b after the RF number). Burst mode will jam frequency 7. Do not use it.

Symptom: A specific throttle frequency always seems to have reception problems

Your wireless equipment operates in an unlicensed band shared by many other transmitters. Some of these external transmitters can and will create interference, intermittent throttle operation or complete failure of one or more of the wireless receiver's 8 frequencies. The sources of these external interfering signals can be from your own home or from adjacent homes and businesses.

Here's a list of devices known to have cause problems when operated near our wireless EasyDCC System: wireless devices attached to computers, TV remote controls, cordless telephones, alarm systems, baby monitors, unlicensed personal communication devices, lawn sprinklers, remote starter switches, cordless light switches, outdoor lighting controllers, toys and games.

If you encounter a strong interfering signal on a specific frequency, don't assign a throttle to

Record Keeping - Before You Contact Us For Help

If after trying all of our troubleshooting and placement suggestions, and still have wireless reception difficulties, please contact us. Email is better but you can also give us a call. Before contacting us, please collect the basic information below so we can help you better.

Why We Need This Information - And So Do You

The majority of operational issues with wireless equipment is incorrect settings, modes or hookup. Many times, a customer has told us he figured out his problem while collecting this information. This continues to validate our number 1 assumption about the cause of a problem - it's always something simple!

Command Station Information - Very Important

On the home page of your Command Station, the top line contains 3 important numbers we need to know. First, note the V-number which is the software version number. The T-number stands for the number of active throttles. This is not as important for us but you should record that number too. At the far right is the M-number which is the memory counter indicating the remaining free locomotive slots. Write your numbers in the space provided and be sure and include them when contacting us.

```
V6xx T=00 M=255
A=0003 E=-----
```

V _____

T _____

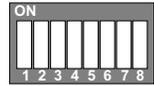
M _____

Wireless Receiver Hookup and Switch Settings - Very Important

For each receiver, we need to know the model number, its group, how it is connected to your Command Station, and the settings of the 8 switches. As for model number, if it has a metal rod antenna or a black wire antenna in the center of the lid, it will be a standard RX904. However, if it has an antenna down in the lower left front of the lid, and has the stylized XF on the faceplate, that is the RX904-XF(1 or 2) model. For all receivers in use, fill out the blanks with the information. The hookup method is either coax or modular. Note: XF-1 is a group 1 receiver; XF-2 is a group 2 receiver.

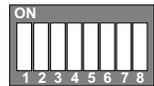
Receiver Model _____
 Receiver Group _____
 Hookup Method _____

Switch Settings →
 Show the actuator position
 as either up or down.



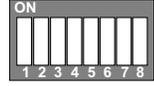
Receiver Model _____
 Receiver Group _____
 Hookup Method _____

Switch Settings →
 Show the actuator position
 as either up or down.



Receiver Model _____
 Receiver Group _____
 Hookup Method _____

Switch Settings →
 Show the actuator position
 as either up or down.



Wireless Throttle Information - Very Important

For each of your wireless throttles in use, we need to know the model (T5000E, T9000E or RF1300). We also want to know each of their ID numbers, their scan/burst mode setting and their frequency. Use the table below to record the information. See your throttle user guides for how this

Model	ID#	Freq	Mode	Model	ID#	Freq	Mode	Model	ID#	Freq	Mode
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____