

## JMRI Advanced Consisting

Sometimes we want to run more than one locomotive to get that real life action. One method of accomplishing this is to set the locomotive ID of several decoders to the same number. While effective, this has the result of each locomotive behaving exactly the same. This includes lights, horns, and misc. effects. With Advanced consisting, we can do better! And, with DCC decoders and JRMI, we can accomplish this with relative ease, and take our programmed locomotives to *any* layout and maintain our programming.

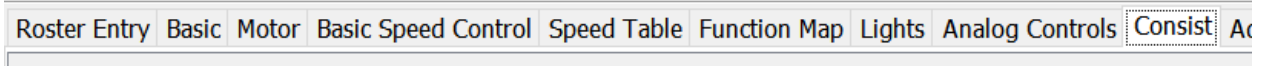
Before any programming takes place, be sure to have a master backup of your decoder on file in case the results you get during programming aren't what you desire and you can't remember how things were before starting.

Also, this brief covers advanced consisting. If your decoder does not support this function, you will have to implement either basic consisting as noted above, or command station consisting, which is not covered here.

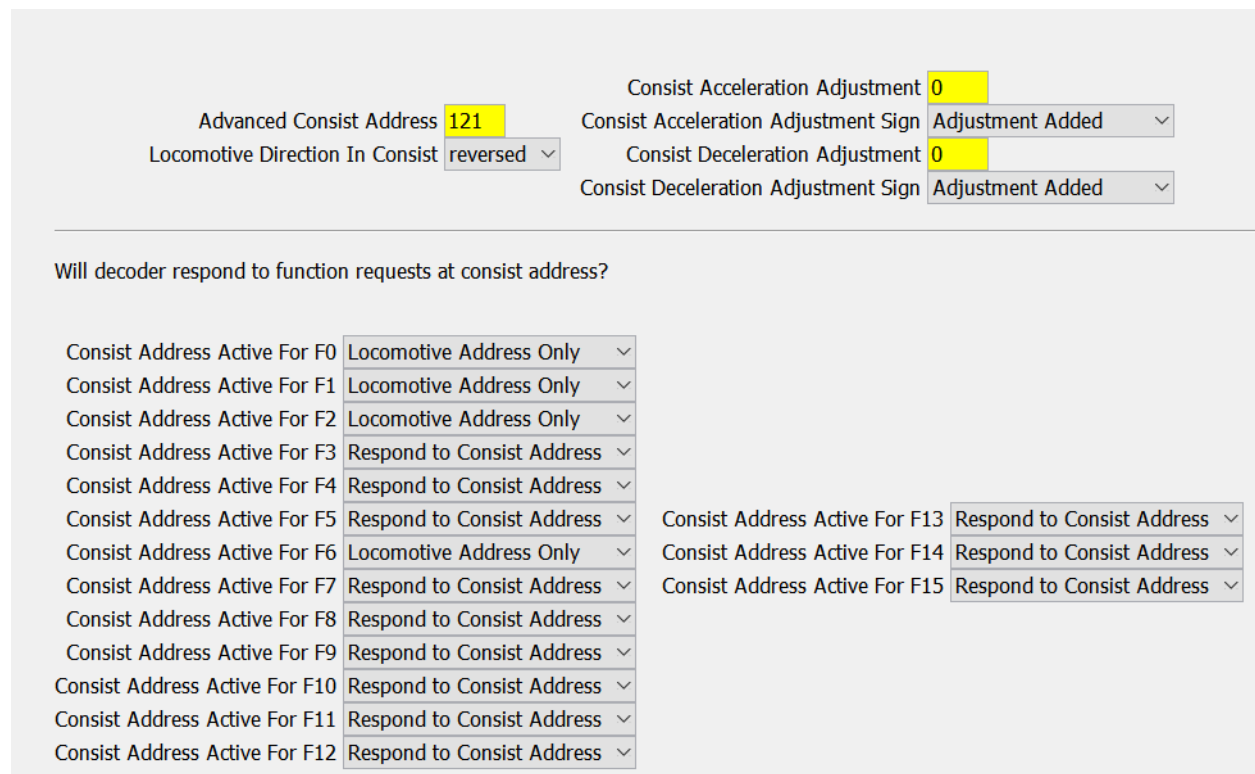
Open Decoder Pro and select your locomotive by right clicking the entry and selecting Program. Wait. The programming screen will take a moment to load.

Click on the "Consist" tab

File Reset Window Help



From this screen, you will see a programming menu like below:



The screenshot displays the "Advanced Consisting" programming interface. At the top, there are several settings:

- Advanced Consist Address: 121
- Locomotive Direction In Consist: reversed
- Consist Acceleration Adjustment: 0
- Consist Acceleration Adjustment Sign: Adjustment Added
- Consist Deceleration Adjustment: 0
- Consist Deceleration Adjustment Sign: Adjustment Added

Below these settings, a question is posed: "Will decoder respond to function requests at consist address?". This is followed by a list of function addresses (F0 through F15) and their corresponding response options:

Function	Response Option
Consist Address Active For F0	Locomotive Address Only
Consist Address Active For F1	Locomotive Address Only
Consist Address Active For F2	Locomotive Address Only
Consist Address Active For F3	Respond to Consist Address
Consist Address Active For F4	Respond to Consist Address
Consist Address Active For F5	Respond to Consist Address
Consist Address Active For F6	Locomotive Address Only
Consist Address Active For F7	Respond to Consist Address
Consist Address Active For F8	Respond to Consist Address
Consist Address Active For F9	Respond to Consist Address
Consist Address Active For F10	Respond to Consist Address
Consist Address Active For F11	Respond to Consist Address
Consist Address Active For F12	Respond to Consist Address
Consist Address Active For F13	Respond to Consist Address
Consist Address Active For F14	Respond to Consist Address
Consist Address Active For F15	Respond to Consist Address

Note that if you are consistng for the first time, the Advanced Consist Address will be set to 0. This is the default value and sets the decoder to act in stand-alone function. Any other value present will set that decoder's consist address to that number.

### **Consist Address**

In the screen capture above, the consist address is set to 121. This means that any locomotive that has the consist address of 121 will be part of that consist and will respond accordingly.

Additionally, any number of decoders can be assigned to that same address to increase the locomotive count in the lash up – you could assign the number to 10, 20, 30 or more if your layout supports it! However, unless you are running a funeral train, this likely won't be utilized!

To set your consist address, simply enter the desired number and then write the changes on the sheet.

As more engineers begin to use advanced consistng, the club will need to determine consist blocks to assign to members. With the number of available numbers compared to the active member roster, there should be the opportunity for multiple consist addresses for each member if desired.

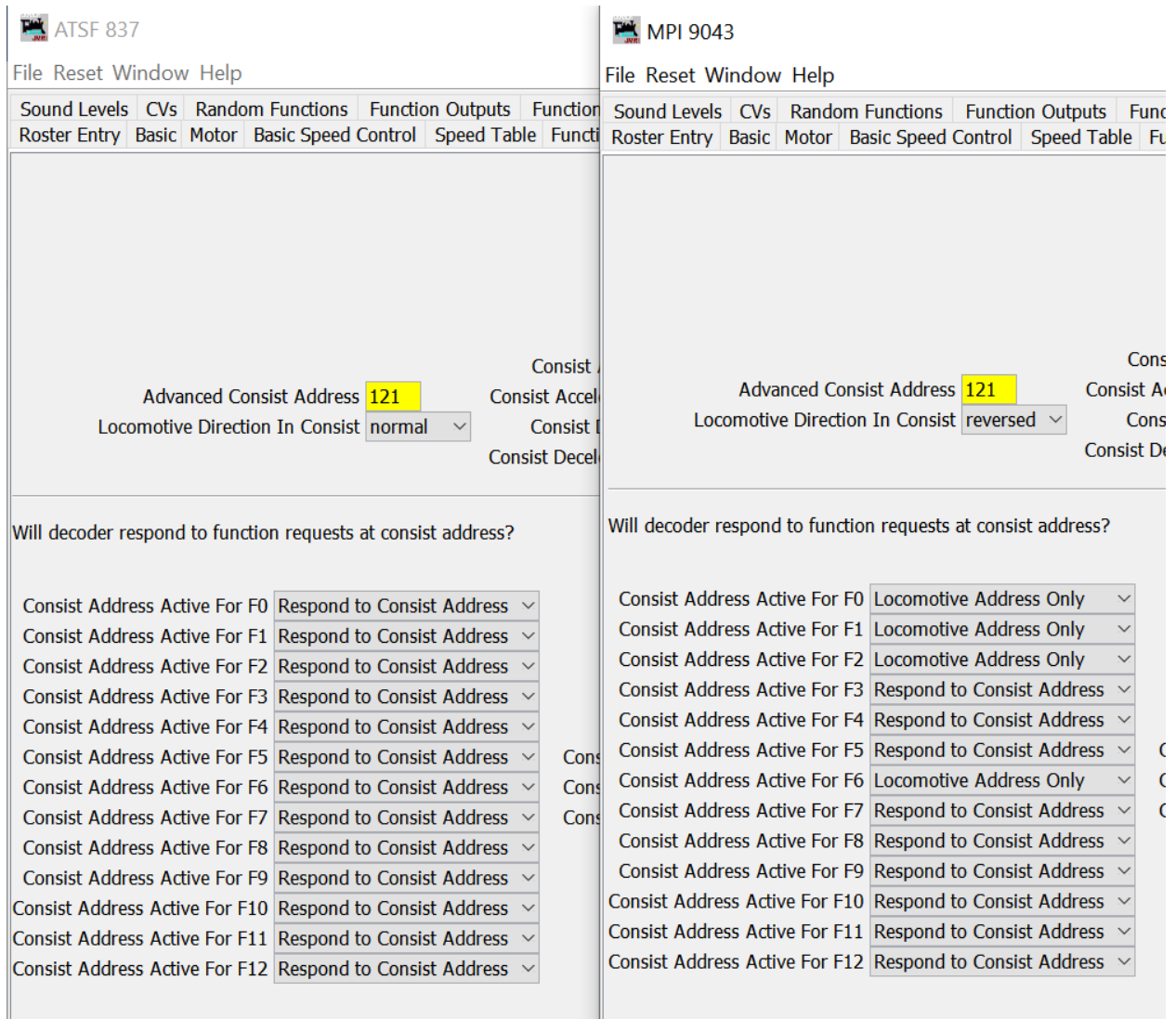
### **Locomotive Direction in Consist**

This parameter sets the direction of the locomotive in the consist. It is important to note that regardless of the direction you set here, the locomotives **MUST** be placed on the layout in this manner during operation. If a locomotive is placed opposite of it's programmed direction, it will run against the rest of the consist.

### **Function Controls**

An important aspect of Advanced Consistng is setting function controls. These settings will determine how each locomotive will behave when function controls are activated on the throttle. Crucial to programming these values are an understanding of the functions of each of your locomotives. Maintaining a consistent schema for your fleet of locomotives will aid in keeping programming these values from getting too complicated.

In the screen capture below, there are two locomotives loaded in Decoder Pro. Note the differences in parameters for the function keys:



Note that both decoders are set to Advanced Consist Address of 121. This means both locomotives will respond to commands on address 121.

Also note that the unit ATSF 837 is set to respond only to the consist address. This places ALL decoder functions strictly under the control of the consist address. In effect, the locomotive will respond as it would when running by itself with its normal address.

Now look at MPI 9043, which has a mixed set of parameters. 9043 is set to respond for F0(Light), F1(bell), F2(horn), and F6(ditch lights) on Locomotive Address Only while the remainder of functions respond to the consist address. This dictates that the functions for lights, horns, and bell are controlled by the locomotive address and NOT the consist address.

When setting up your consist, a similar set up is recommended. Program your locomotives one at a time on your programming track. Pick your lead locomotive, set the functions to all respond to the consist address. Once your programming is complete, click the Write Changes to Sheet. To keep your decoder programming in sync with JMRI, click File, and then click Save. This will save changes written to the decoder to the local JRMI file. For your trailing locomotives, set the direction of normal operation and then set the function keys to match locomotive ID controlled or consist controlled as desired. Write and save your changes.

Now let's put these locomotives on the track and see what we end up with. In our example, we have set 837 as the lead locomotive by virtue of the consist response for lights, bell, and horn, therefore it is placed at the front of the lash up. 9043 is set to run normal reversed, therefore it is placed backwards on the track relative to 837. We can couple them together and fire them up! Set your throttle to match the consist address, in this case 121. If you have a sound decoder, press the appropriate function button to start the prime movers. They'll all start at once in this configuration! Now you can turn on lights by pressing F0, and if you have ditch lights, F6 (or the appropriate key for your set up). Additional lights can be activated if programmed by pressing the appropriate function button. Note that only the lead locomotive will light. Press F2 and note that only the lead locomotive activates its horn. Now place the locomotive in forward and apply throttle. Assuming speed matching is set (a topic for a different day), the locomotives will both run in the same direction. Reduce throttle to 0, come to a stop and reverse the throttle. Both locomotives should now run in the opposite direction. If you have programmed your lights to switch to the rear light of a locomotive, you would want those lights disabled on the lead locomotive and enabled on the trailing locomotive.

### **Removing a Locomotive From a Consist**

If you wish to return a locomotive to stand alone functionality, simply open the programming sheet for the locomotive in JMRI and set the Advanced Consist Address to 0 and write the changes to the sheet. This will set the decoder to respond to the primary programmed address. Remember to save the update to JMRI before leaving the programming sheet for the decoder. If you wish to place the locomotive back into the consist, simply re-program the consist address, your previous settings will be preserved.

### **It All Went Wrong, Now What?**

If you've completely screwed up, can't remember the way things were, things aren't working as expected, or you are just plain lost, don't panic! You can revert to your original programming by closing the current entry for your locomotive in JMRI and opening your master copy. You can restore just the sheet you were working on by clicking on Write Full Sheet. Or, if you've completely lost track of everything, you can write all sheets back to the decoder. If you go this route, make sure your locomotive is secured to the programming track by either a coupler or stopping block as continual read/write operations may cause engine creep. Once you've secured your loco, go find something else to do. Advanced decoders can take over an hour to perform this function.

### **Further Reading**

For further reading on consisting, this great article by Don Fiehmman at TonysTrains.com has a more in depth look at the topic

<https://tonystrains.com/news/complete-guide-to-consisting/>