



NEWSLETTER

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Current Central Station 3 Version – 2.5.2 (6)
Current Central Station 2 Version – 4.3.2 (4)
Current Mobile Station Version – 5.9
Current Wireless MS Version – 5.4.0.21

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We have finished our show season for the year with the annual trip to Milwaukee for Trainfest. It was a great show and seems to be getting more popular every year.

There was an update to the CS3 for the wired Mobile Station. This update also added current icons to the CS3 but did not change the software version. The wired Mobile Station software is now v5.9 with this update. There is no version change for the wireless Mobile Station.

Our first article is about creating a Multi-Unit set (MU) in the CS3 and running it. The second article is about operating a locomotive in the “Cab View” feature of the CS3.

Converting the Locomotives

This article came about because I had a conversion of two older Marklin D109 locomotives (3170). The customer wanted to use both locomotives and run a longer passenger train. It made me think about how he would do it and how to handle the lighting in an MU set. Since these are older locomotives and do not have the capability of individual lighting, I had to do a little thinking about the light configuration.

The first step was converting both locomotives. This was straightforward except I needed to do a little machining to the frame to get the decoder mounting board to fit properly. I wanted to use a 21-pin decoder (Marklin 60972) since I thought it would be easier to re-program the decoder or replace it in case of a problem (Fig. 1). Since I have covered this topic many times before, I will skip it.



Fig. 1 – Two Marklin 3170 converted.

Lighting Configuration

The lighting configuration was a slight challenge due to the locomotive itself. There are single light bars at each end for the triple headlights and a single bulb at each end.

After consulting with the customer, we decided on headlights for the front unit and headlights on the rear unit as taillights in the forward direction. This was an easy set-up where I added a function button (F2) and mapped it where the reverse light would turn on in the forward direction.

I mapped both locomotives the same way so the customer could have either locomotive in the front. Since either locomotive might be used as a single unit, both locomotives also have their regular directional lighting and shunting lights (both lights on) for single locomotive operation (Fig. 2).

Setting up the MU

I knew that the MU setup should be simple, however the problem that I needed to figure out was the locomotive speeds and verify the lighting configurations of each locomotive since I programmed them both the same.

I put the locomotives on my layout and let them register. Once they were in the system, I touched the “Edit” wrench in the Locomotive inventory tab, then selected “Create MU Set” and a pop-up box appeared (Fig. 3). I re-named it and then drag and dropped the chosen locomotives into the panel on the right. It really is simple as that.

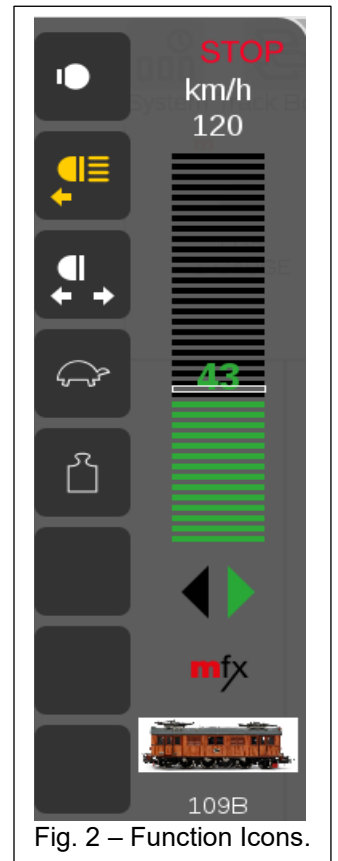


Fig. 2 – Function Icons.



Fig. 3 – Name the MU set then drag and drop selected locomotives.

One thing to note is that the first locomotive that is dropped into the panel will be the one that has the functions that are shown in the MU, and they are operational in both locomotives, this means if the headlights are turned on in the MU functions, the headlights will turn on in both locomotives. This is where I thought I would have a problem with my lighting configuration since I didn't want the lights on in the front for the second locomotive, I wanted the light on at the rear, (or at least have the option to have them on).

As it turns out, the solution was also very simple. I was able to assign each locomotive to a controller, one left and one right, and by using the “Pop-up Control Panel” feature in the CS, I just touch a locomotive icon in the inventory tab, and I have instant control of another locomotive. So, I touched the MU set for the pop-up control (Fig. 4). One note is that you need to have the “Pop-up Control Panel” box checked in the “Settings CS3” while in the System menu of the CS3 (Fig. 5).

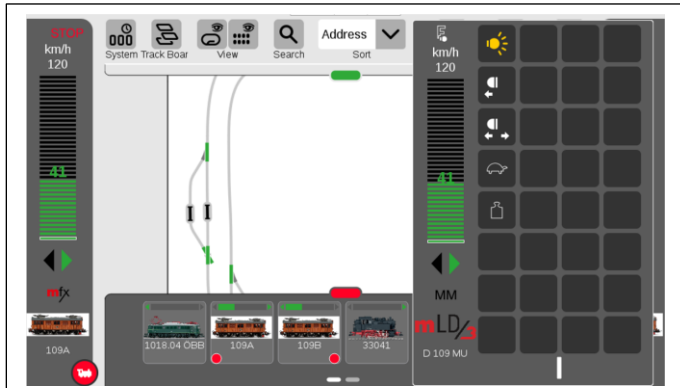


Fig. 4 Pop-up Control Panel for MU set.

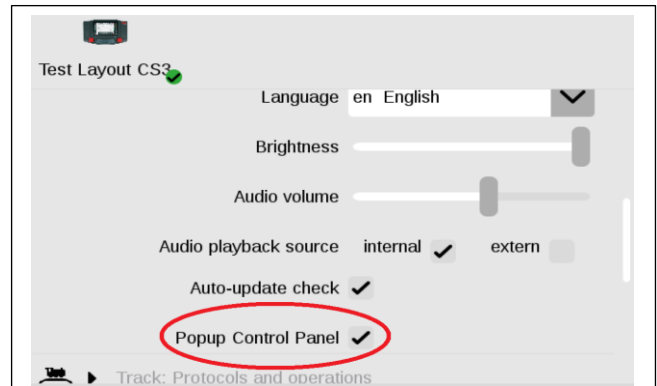


Fig. 5 – Pop-up Control Panel check box.

Another option would be to drag the inventory tab to the top of the screen showing a page of locomotives. This worked a little better since the MU control box didn’t cover a locomotive in the side panel (fig. 6).

Motor Synchronization

Now for the topic of motor synchronization. While it is true that motors running in tandem should be synchronized, they do not have to be matched perfectly. In fact, there is no way for multiple motors to be matched perfectly on a model railroad layout as far as I know. There is a lot of computer programming and sensors that need to be installed into a model, which is just not possible in this application. For this reason, “close enough” is good enough.

What I did to match these locomotives was to run them in the MU a couple of inches apart to see how closely they ran with the same throttle. The “109B” was slightly slower. While this was probably good enough, I wanted to see how close I could match the locomotives.

I closed the pop-up control window for the MU set once I input an acceptable running speed. With a locomotive on each controller, I could adjust them independently while they are running in the MU, just like the function control. I found that the 109B would match very closely when the throttle was 2 numbers higher – 109A throttle = 40, 109B throttle = 42. It would catch up to 109A but extremely slowly while both were running. This is close enough. Since they were running so closely, I tested them running coupled for more than an hour and neither locomotive was warmer than the other. I believe this will work well for the customer.

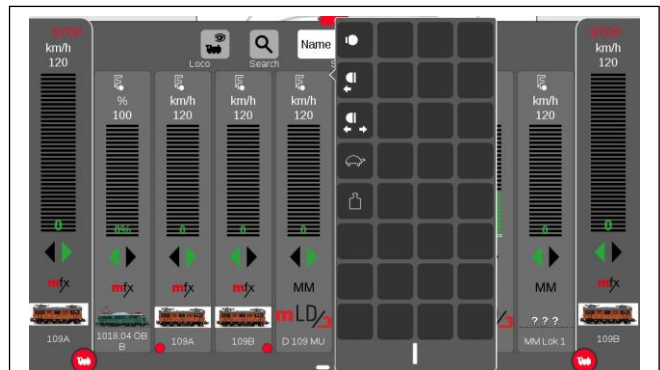


Fig. 6 – Inventory tab to the top and MU selected

Locomotive Arrangement

The next question was how the locomotives would be arranged. Since the D 109s look the same on each end, this is not a concern. For other locomotives, it might be. As a test, I turned the rear locomotive around. This made them run “back-to-back” rather than “elephant style”.

I would need to reverse the second locomotive for this test. Again, it was just a simple matter of reversing the direction of the back locomotive in the CS3. I just clicked the knob to reverse the locomotive, and it was running in the correct (reverse) direction for the MU. The only problem was the lighting configuration was not correct since it was running backwards, the customer probably would not be in this situation, but I needed to test it even though there was nothing I could do about the function of the lights being wrong with a locomotive running in reverse. I could program the decoder for this lighting, but I did not want to make it too complicated for the customer.

With this test, it showed me that a modern model could be driven in an MU in either arrangement. Also with the newer locomotives, there is more control of the lighting features so the arrangement can be whatever a person wants, depending on the lighting.

Additional Information

There are a couple of things that should be pointed out. First, it is best to have matching motors and gearing in locomotives. In my example for this article, both locomotives have the same gearing, and both have the same 5-pole motors (60943).

Also, it is important to remember that if an MU enters a braking section, the first locomotive will start to slow down, and the second will keep pushing the first one until it enters the braking section, possibly pushing the first locomotive past the emergency stop section. Modifications might have to be made to the event scripts and/or braking sections to minimize this.

Also be aware of locomotives with buffer capacitors, I believe they can also keep running in braking sections. So, some testing of modern locomotives will need to be done if this is attempted.

I had also thought that the sliders should be as close together to minimize the brake section problem, but most sliders are on the front truck so running the first locomotive backwards would not look prototypical.

While I have not tested a modern locomotive, I can see that they would have the same challenges as an older set of locomotives so one should try it with only locomotives and no wagons to see how it will work out.

This was a fun task into a topic I had never done before, and it was nice to work through the lighting process to make it work.

World Of Operations (*Steam Lok*)

The World of Operations feature offers a cabin control viewpoint of the engine controls. However, it is more than just a pretty interface. World of Operations mode has three levels of operational control. The most basic setting is simply the cab view controls where operation of the model remains the same. It is the 'no consumption' or Standard mode.

The next two levels are consumption modes. They work with a calculated rate of consumption of operational supplies such as fuel, water, etc. The first of these two is the simple 'consumption' mode, when operational supplies are low, you can refuel using on screen commands to reload.

The second of these is an advanced mode that uses feedback sensors to be integrated into the layout. It is called the 'refueling' or 'MF' mode. The primary addition to this mode is that the sensors indicate specified maintenance facilities and this is where the refueling can take place. You can also refuel at random as you can in 'consumption' mode.

To clarify, refueling operations take two events. A refueling request (of the appropriate consumable) and the actual refueling. In consumption mode, this would take multiple clicks on screen. In the 'MF' mode, one track contact would 'trigger' a request and a second contact will end the refuel operation. You may still use on screen refuel 'consumption' commands in the 'MF' mode.

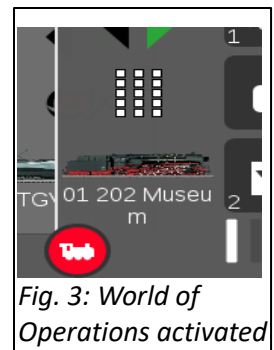
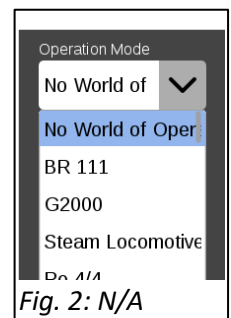
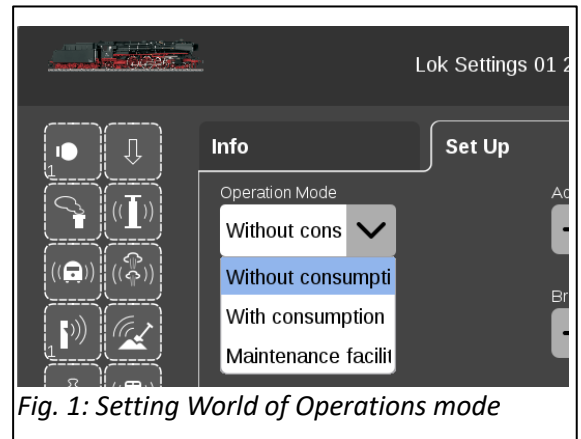
In both consumption modes, when any operational supply is depleted, the Locomotive will only move at a crawl until you replenish the supply.

Setting the World of Operations Mode

To access this change, you will need to access the 'Edit Lok' mode and select the lok to alter. Select the 'Setup' Tab then set the 'Operation Mode' of the Lok (See Fig. 1).

If the lok does not have this feature, then you may see the mode stated as 'No World of Operation'. Clicking on the pull-down menu will display the list of loaded loks, but these will not be restricted to loks with the World of Operations Feature. An example is shown in Fig. 2).

The lok will now have a status display to show that the lok is set for World of Operations. Fig. 3 shows the status display for the lok in the knob control display. There will be a similar display in the multi train control panel. The example display shows all fuel supplies at full capacity.



Working within the Cab View

The most notable difference with the World of Operations is the Cabin View. The cabin view expands the requirements needed to make the locomotive move. Especially with steam loks.

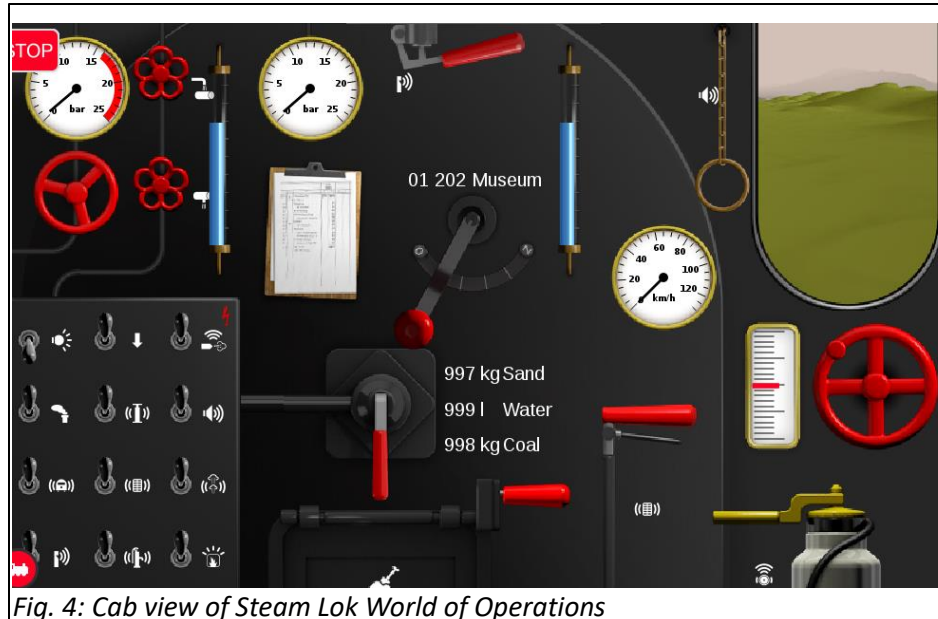


Fig. 4: Cab view of Steam Lok World of Operations

Normally outside of cab view, you may only need to set the direction and speed of your engine. Within the cab, you are required to operate the many valves and monitor the gauges required to safely operate the engine.

To access the cab view of World of Operations, drag the control knob icon to the opposite corner of the screen. You will now see the various control surfaces needed to operate the specified lok. Fig. 4 displays the Cabin view for steam loks. For me, the steam engine seemed the most complex to operate. Therefore, it was the first for me to discuss.

Getting the Lok to Move

Your manual will have an index guide on the function for each component in the view. The top center of the display will show the Lok in operation. In this case, "01 202 Museum" lok is under control. The lower left of the screen contains a switchbox display of the decoder functions (I will not discuss these). I will run through the operation step-by-step along with some thoughts noted as I went along with the process. Trying to do this in the manual can be daunting, as you will need to constantly flip back and forth between steps and the indexed cab view.

Open Steam Valve

To begin, you'll need to open the steam valve in the upper left corner (Fig. 5). You will not need to rotate the valve as a simple click will do this for you. The boiler gauge above it may not move as no pressure has been created.



Fig. 5: Open Steam Valve

Fill the Boiler

The Boiler/water gauge (Sight Glass x2) will need to be filled to about the 2/3 mark (Fig. 6). The upper valve will fill the gauge, while the lower valve will empty the gauge. Not shown is the second gauge, which works identically to the one shown. In my short time of operation, I believe that the gauge will naturally deplete. I didn't fill the gauge above the recommended level, so I didn't see any need to manually empty the gauge.

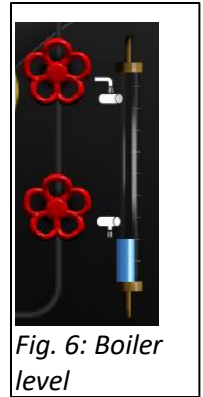


Fig. 6: Boiler level

Warming the Boiler

Now Coal needs to be loaded to warm the boiler. Do this by opening the firebox (Fig. 7). The amount of coal to load can be somewhat measured by the Steam Valve gauge in Fig. 5 (upper left corner). In my first experience, I was not sure how much coal to load, so I only loaded until I reached the 5-bar mark. Later, I loaded more, which seemed to take quite a bit more time. The firebox will grow brighter.



Fig. 7: Warming boiler / Coal Loading

Release the Brake

You will need to release the brake control which is needed to have some more clarity in the manual. In my first attempt, I switched it the wrong way which made me think that I did not have enough coal loaded when the lok did not move with any consistency. Fig. 8 indicates which side the brake lever needs to be positioned as set or released.

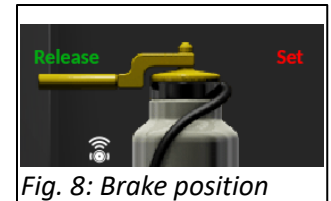


Fig. 8: Brake position

Setting the Direction

The manual indicates setting the direction lever. However, in a steam cab, it is really a hand wheel. Moving it in one direction, where the gauge indicator goes up, will set the lok for forward motion. When the gauge indicator goes below the midway point, the lok is set for reverse (Fig. 9). The range is supposed to indicate the amount of pressure sent to the cylinders.

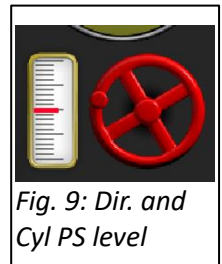


Fig. 9: Dir. and Cyl PS level

Ready to Move

At this point, there will be no feedback from the Cylinder pressure gauge (which will still indicate 0). It is located at the Top Left Center of the Cab (Fig. 10). By moving the Regulator Valve* from right to left (Fig. 11), the Engine should begin to move. (*This is noted as a 'valve' in the manual's text, but simply the 'Regulator' in the photo index). You should immediately see the Cylinder Pressure Gauge go up.

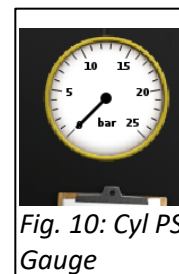


Fig. 10: Cyl PS Gauge



Fig. 11: Regulator Valve

Reversing the Engine

To reverse direction, you must first stop the lok, set the direction indicator to 'neutral' (midway) and then set the brake. After that, you can first re-release the brake and set the direction after.



What is Needed While in Motion

The steam engine in World of Operations is a balancing act of keeping the boiler pressure and sight glass at proper levels. This involves keeping your water levels up and plenty of coal loading while also keeping track of your fuel supplies shown in Fig. 12. If these get low, your lok's speed will drop to a crawl until the required supply is reloaded.

Refueling

To refuel, click on the desired supply and you will see in the cab window a refueling station along with a refuel icon. Click on the icon and you'll see the fuel supply number increase as the supply is refueled and the icon changed. Once full, you can click the icon and the fueling station will 'shut down' and then you are good to go.



Other Control Elements

I have demonstrated the procedure for operating a Steam Engine in the World of Operations. It is a bit intimidating at first, but I am sure that it could be a fun aspect to master once one becomes more familiar with the control surfaces. There are a couple of controls that I am not fully aware of how they are applied, but they did not have any bearing towards operation (at least by the standards written in the manual). They may be aesthetically required but not a functional requirement. These are the controls for the Oscillating Grate and the Steam Release Control.

I guess if you need to shake out your spent coal, have at it. On the other hand, that is just a guess of what the oscillating grate's function is.

Enjoy!
Curtis Jeung

Upcoming appearances:

- **ONLINE Webinar**
December 10th
- **Amherst Railway Society**
January 24-25, 2026
Springfield, MA

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