

WFD-25 Wi-Fi/DCC Trackside Interface/Booster

Operating Manual

This document is online at <http://www.wifitrax.com/manuals/WFD-25/WFD-25-Manual.pdf>. Please see our website for information on our limited warranty.

WifiTrax Model Science



www.wifitrax.com

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This product is not a toy. Keep away from children. It is not suitable for use by persons under 14 years of age. In operation some parts may become hot to the touch.

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Introduction to the WFD-25

The WFD-25 is a combined DCC command/controller and booster that is controlled entirely over a Wi-Fi network. It therefore does not need any front-panel buttons, keys or control knobs and is simply a circuit board that can be mounted anywhere on your layout and supply bipolar DCC power/signals to both your track and DCC accessory items such as switch machines or signal controllers. All you need to start a DCC layout is the WFD-25 and one or more locomotives and/or accessories fitted with NMRA compliant DCC decoders.

Two Bipolar DCC outputs are provided, one rated at 4 Amps for the main track, the other rated at 1 Amp to supply a programming track. Operational Mode programming of CVs can be done on the Main Track, but service mode programming, including programming of DCC addresses of decoders can only be done on the Program Track. CVs can only be read on the Program Track.

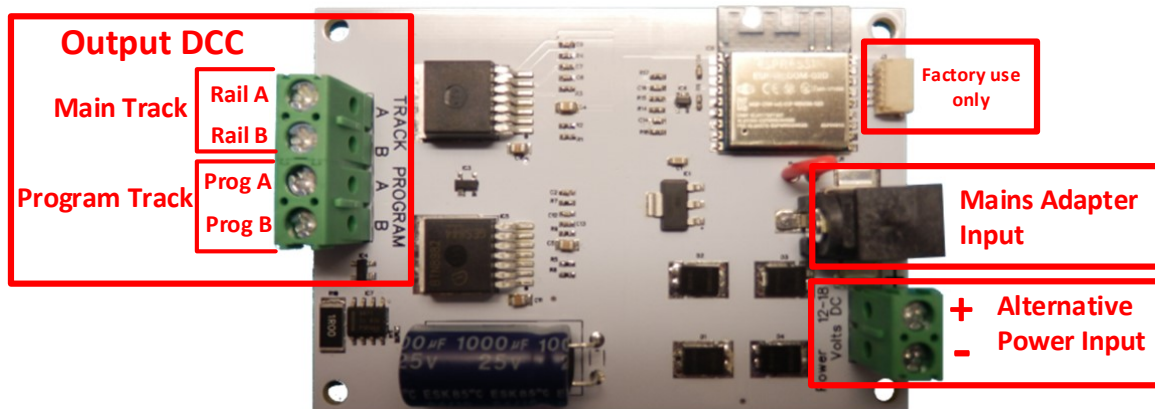


Figure 1. WFD-25 Connections

Figure 1 shows the WFD-25 module with its connectors labelled.

The unit provides the capability to address up to 16 locomotives with different DCC addresses. The locomotive information – its locomotive roster – is stored within the unit, in its Flash memory. The unit will return information about its roster to the Loco Operator driving app running on Windows 10 or Android. In order to avoid providing excessive unused information, only four locomotive records in the roster are initially active. You can change the DCC addresses of the locos in the roster and activate more – up to 16 – using the Loco Operator and Tower Operator app. This is explained later in the manual.

Any number of switches (turnouts) or other DCC accessories may be controlled by addressing them using accessory addresses from the DCC keyboard in the Loco Operator app.

Power Supplies

Power can be provided to the unit via the Mains Adapter Input using a 12-18 volt DC adapter with a barrel plug (center positive) (2.5mm I.D. x 5.5mm O.D. x 9.5mm). A recommended power adaptor is available from WifiTrax: <http://www.wifitrax.com/products/product-PA15-43-1-detail.html>. If you use this option, you can use the terminals marked Alternative Power Input as a direct output of the 12-18V provided by the mains adapter. This can be used to power other Wi-Fi Layout units such as switch machine controllers or power controllers. Do not exceed the total rating of the adapter.

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As an alternative, you can supply 12-18V DC to the Alternative Power Input terminals. You can use DCC power if this is available but the unit will ignore DCC signals on this input. The unit is not intended to operate from AC.

Power must not be connected to any other terminal, or be allowed to touch any other part of the module. Permanent damage will result if this happens.

Track and Power Connections

Figure 2 shows the WFD-25 connected to power supply and tracks. The two power options are alternatives.

The connections labelled Track A and Track B should be connected to your main track. This supplies enough power to run many trains as long as each have unique DCC addresses and the total current is within the specified limits. If you expect to use the module near its 4 Amp maximum, some parts on the circuit board will become quite hot and you should ensure that adequate ventilation is provided. Use the stand-offs provided in the mounting kit to separate the unit from your baseboard or fascia board. The polarity of the connections is not important, but it is a good idea to adopt some sort of convention such as connecting Rail A to the right hand rail (viewed from the driver's position).

The connections labelled Prog A and Prog B in Figure 1 should be connected to your programming track. You should only place one locomotive on the programming track at a time. The polarity does not matter but, if you will run locomotives from the main track to the programming track, you should ensure that the polarity is the same to avoid a short when the locomotive crosses the gap.

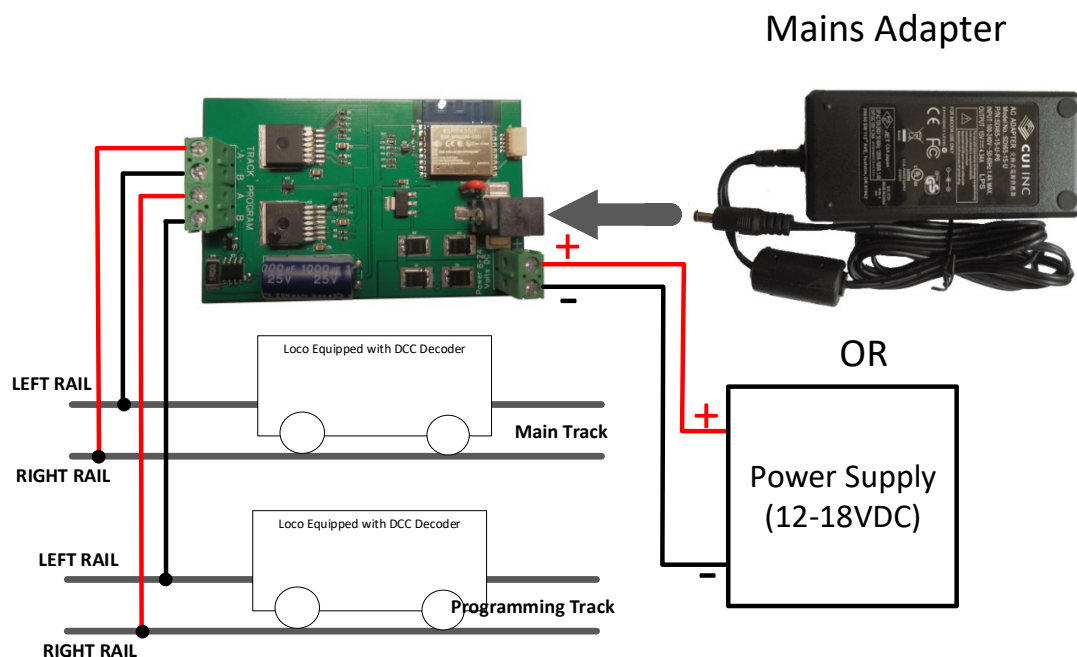


Figure 2. Connections to Power Supply and Decoder when mounted trackside

Initial Setup and Operating Instructions

The WFD-25 can be set up and operated from our free Loco Operator 3 App for Windows and Android. Detailed help pages can be found at:

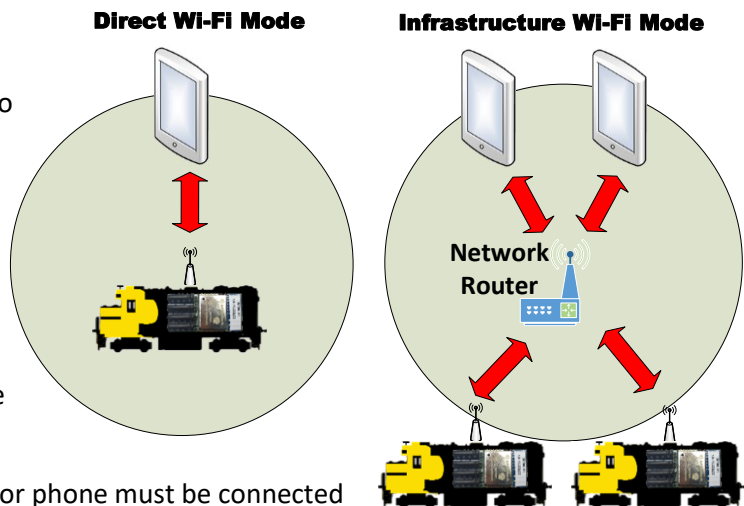
<http://www.wifitrax.com/help/locoOperator/help.html>

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Wi-Fi - Direct and Infrastructure Modes

There are two ways of driving your loco over Wi-Fi: Direct Mode and Infrastructure Mode.

When you set up your first installation of WFD-25 the Install Wizard gives you two choices in the way that you configure your Wi-Fi operation of locomotives, Direct Mode or Infrastructure Mode.



In direct mode, your computer, tablet or phone must be connected to the Wi-Fi Access Point within the loco's installed WFD-25. In this mode, you can only operate one locomotive in the roster with each installation of Loco Operator on a computer, tablet or phone. In Infrastructure Mode, the locomotive and your computer, tablet or phone all connect as *Wi-Fi Stations* to your Home Network Router – your Home Net. You can then build a full model railroad network with many locos, switch machines, computers, tablets and phones. You can drive two locos with each installation of Loco Operator, you can run multi-unit consists and you can control switch machines and power. If you start in Direct Mode, you can later use the Loco Operator Install Wizard to convert to Infrastructure Mode which generally works best.

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Installing Loco Operator - Loco Operator 3

These instructions cover both Windows 10 and Android. Follow the steps below according to your device.

- (1) Go to either the Windows Store or the Google Play Store according to whether you have a Windows or Android computer or tablet. Search for Loco Operator 3. Alternatively go to our website, use the Products menu to go to the Loco Operator page, find Loco Operator 3 and click on “DOWNLOAD FROM WINDOWS APP STORE” or “DOWNLOAD FROM GOOGLE PLAY STORE” according to your device.
- (2) Follow the instructions on the Store Page to get and install the app on your device.

Running Loco Operator for the First Time

- (1) For easy set-up, have your WFD-25, powered up on your layout before you run Loco Operator for the first time.
- (2) Android Only: When the app starts for the first time you may be asked to accept that the app will access files and the device location. You must accept these, then the screen goes black for a few seconds. Wait for the Install Wizard to appear.
This is standard Android behavior. Be advised that Loco Operator absolutely does not access your pictures, any personal files or any files other than those it generates and no data is uploaded to the internet. Also, the need to access your location is required to work with Wi-Fi. Loco operator does automatically connect your computer to the Wi-Fi access points of WifiTrax modules that you have installed and to your Home Network transparently, without prompting. When you have finished driving trains, you may have to reconnect to your home network to access the internet or other devices such as your printer.
- (3) If this is the first time you have run Loco Operator, you will automatically be taken to the Settings page and the Install Wizard will run.
- (4) The steps in the Wizard are explained on each screen. The flow chart in Figure 3 should be helpful.

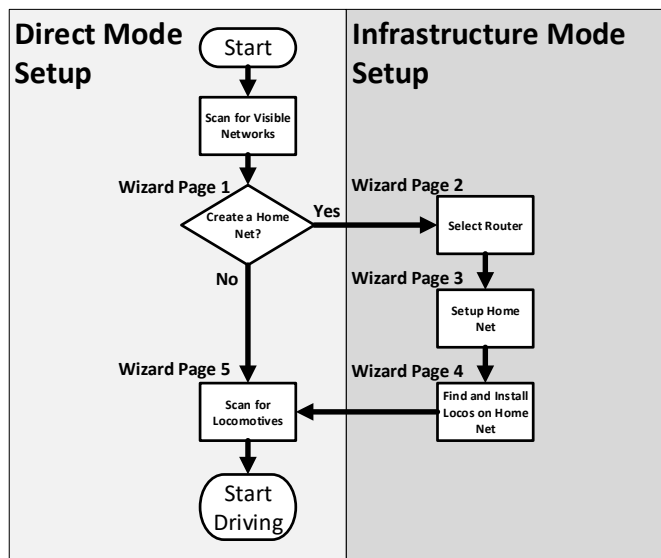



Figure 3 The steps through the Install Wizard

Install Wizard

Figure 3 shows the steps that the Install Wizard will take you through for Direct Mode Set-up and Infrastructure Mode Set-up. It's much easier to set up in Direct Mode first.

You can re-enter the install wizard at any time by clicking the wizard symbol  at the top right of the main screen. You can use the wizard to set up your Home Net for infrastructure mode or change

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it. You can install new locomotives on your Home Net and scan for the IP addresses of new locomotives that have been installed.

Quick Start – Driving in Direct Wi-Fi Mode

The easiest way to get your first locomotive running under control of your WFD-25 and give it a test drive is in direct mode.

- (1) Place a locomotive on the main track connected to your WFD-25. Power up the WFD-25. The module will immediately begin supplying DCC power to the locomotive.
- (2) Start the Loco Operator App on your computer, tablet or phone. If you are starting the app for the first time the Install Wizard will automatically run and you will see a screen called Install Wizard 1. This screen asks whether you want to define a Home Network. Click No to this option for now. You can come back to this screen later.

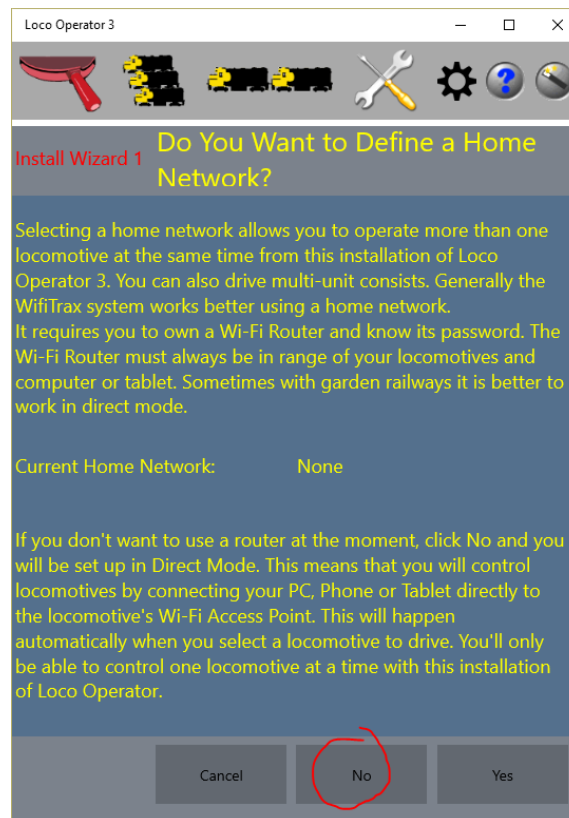


Figure 4 Install Wizard Page 1

- (3) You now see the Install Wizard 5 screen. This screen allows you to scan for locomotives or other WifiTrax controllers. Click the Scan for New Locos button and click Continue on the pop-up.

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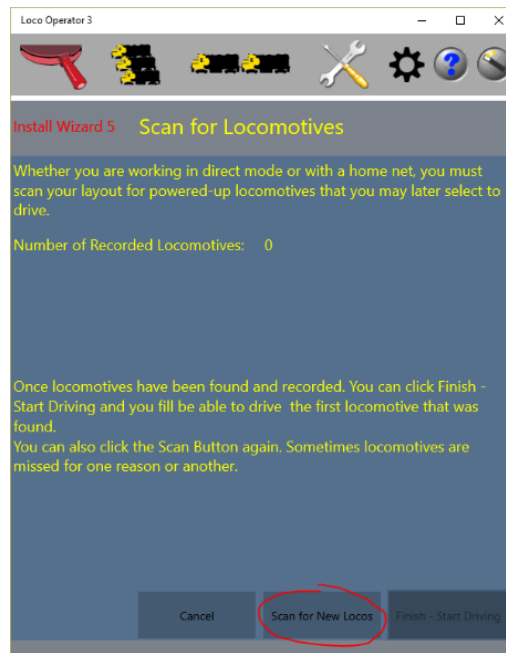


Figure 5 Install Wizard Page 5

- (4) Your default of four locomotive channels should now appear as entries in a list – channel 0 through channel 3, as in Figure 6. Since they are effectively DCC locomotives, there is a drop-down selector on each line allowing you to select the DCC Decoder that you have installed in the locomotives that will be in each of these four positions in the roster. The default is Generic-Sound, but some other options are built in which you can choose. When you have made your selection click Done.

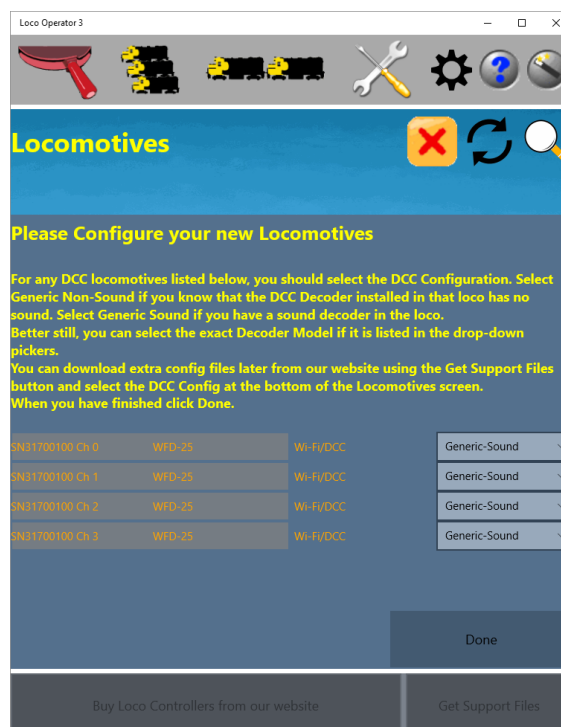


Figure 6 New Locomotive Configuration Screen

- (5) Install Wizard 5 Screen now shows four locomotives recorded as Figure 7. You can now click Finish-Start Driving and you will be taken straight to the Drive Screen with the first locomotive selected.

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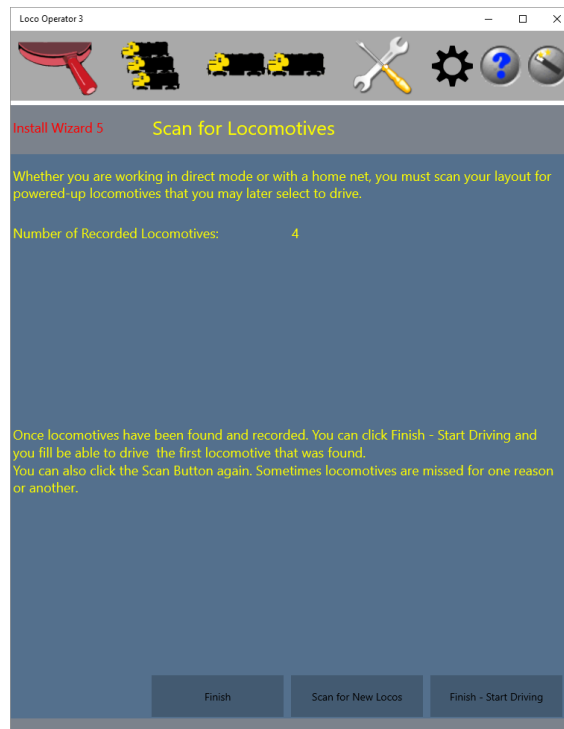


Figure 7 Install Wizard Page 5 after Scanning for Locomotives

- (6) You will see a Drive Selector drop-down control, a throttle slider, some DCC function buttons and a direction button. Other buttons are described in the help pages for Loco Operator.

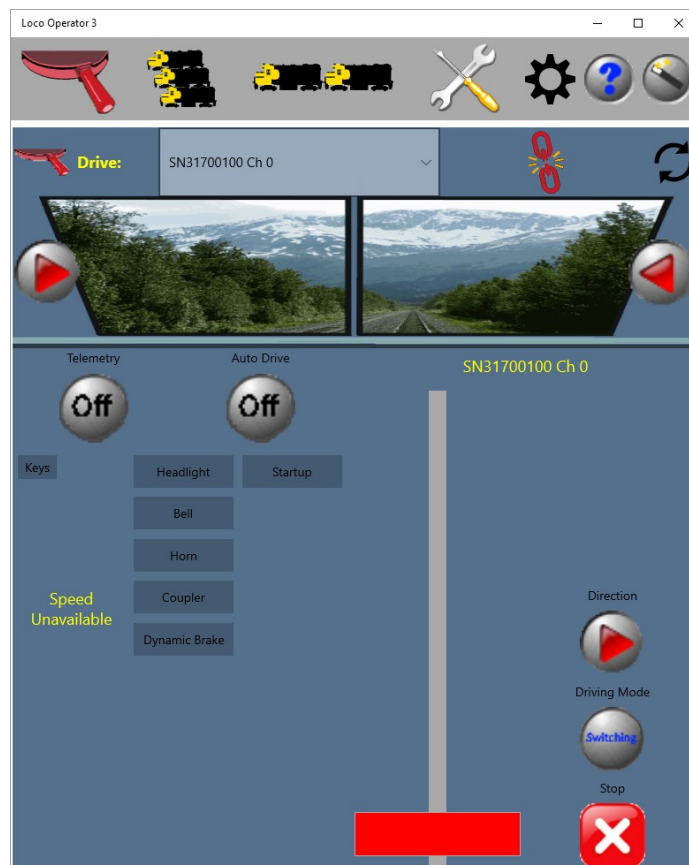


Figure 8 The Drive Screen with the first Locomotive Selected




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- (7) If you have used Loco Operator with Wi-fi Loco locomotives you will be accustomed to a different appearance. There is no speedometer available for DCC locos and the lights are controlled via DCC function keys. When you selected the DCC decoder type earlier, Loco Operator assigned a particular file to that loco. This file (which is in XML) actually translates DCC functions to names, so instead of having to remember that Function Zero controls the headlights, function Two controls the horn etc., you have them present as named buttons. If you prefer to see a traditional DCC keypad, you can tap or click the Keys button which will show the screen as in Figure 9.



Figure 9 The DCC Keypad

The following instructions assume your locomotive is new or otherwise has the default DCC address of 03. If you have a locomotive with a different DCC address you can use the instructions in the next section to change it or you can set it to 03 using another DCC command station with programming capability.

- (8) Try turning on the lights, bell, horn and engine start-up using the named buttons or the DCC keypad.
- (9) Next you can make the Loco move forward by touching the throttle slider and gently moving it upwards. Your loco should move forward.
- (10) Stop your loco and change direction by tapping the Direction button. Now you should be able to move the throttle up and the Loco should move backwards. You can get ultra-fine control by tapping the region of the throttle control above or below the slider. This will tap the speed up or down.
- (11) If you want to drive faster, tap the Driving Mode button to Main Line. The locomotive must be stopped before these buttons are enabled.
- (12) If you want to drive a different locomotive, select it from the drop-down selector to the right of the yellow "Drive:" caption, this is the Drive selector. Note that there may not be a locomotive on the track that has a DCC address corresponding to the selected channel. In this case nothing will happen if you operate the drive or function controls.
- (13) When a locomotive is selected for driving, you can visit the Tunings screen  which for DCC locos takes the form of Figure 10. There's not a lot you can change here for a DCC locomotive except to give it a name. Type a name and then click the "Send to Loco" button . You must then click the Save button  so that this is stored in the Flash memory of the WFD-25.

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Figure 10 The Tunings Screen for a DCC locomotive

Assigning DCC Addresses to the Locomotive Roster Channels

Each of the active channels in the roster (default 4 channels) are associated with a default DCC address as in Table 1.

Channel	Default DCC Address
0	03
1	04
2	05
3	06

Table 1 Default Channel DCC Address Assignment

To assign a specific DCC address to any of these channels, use the following procedure:

- (1) Power down the WFD-25,
- (2) Place the locomotive that you want assigned to that channel on the programming track,
- (3) Power up the WFD-25,
- (4) Select to drive that channel using the Drive selector,
- (5) Click or tap the Keys button,
- (6) Click or tap the DRCV button to enter Direct Programming Mode. This button should show red, CV 1 should be selected which is the CV that contains the locomotive decoder's DCC address (note: WFD-25 does not support extended DCC addresses).

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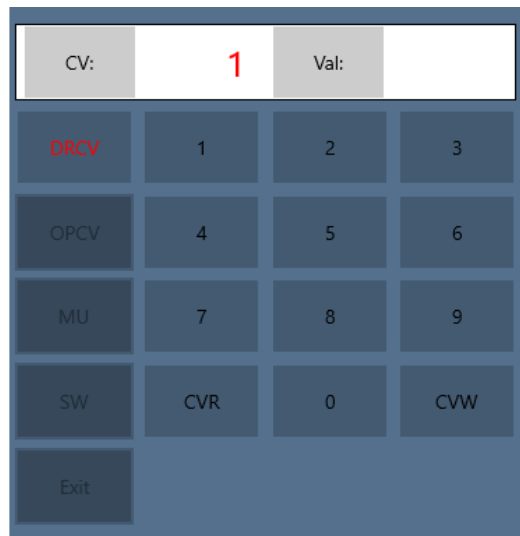


Figure 11 The DCC keyboard in Direct Programming Mode

- (7) Click the CVR button. The value of this CV should show in the Val: box, e.g.



If this is the value of the locomotive address CV when the WFD-25 is first used, you cannot drive it because it's address does not match any of the default channel DCC addresses of the WFD-25 module.

- (8) You can change the value of CV1, the decoder address, by clicking the "Val:" label and using the numeric keys to provide the desired address. Assuming this is channel zero, let's set it to 03.



- (9) Now click the CVW button and the Continue button on the warning pop-up. After a short interval in which *** is shown, the new CV values should be confirmed as 3.
- (10) The roster channel and the loco decoder DCC address are now synchronized.
- (11) You could have chosen any available DCC address instead of 3 and the roster channel and DCC decoder in the locomotive would be synchronized to whatever DCC address you had chosen.
- (12) While you are in Direct Programming Mode, you may want to change some more CVs. To do this, first click the "CV:" label, then click the numeric keys to set the CV number, then click the Val: label, use the numeric buttons to enter the desired CV value and finally click CVW to write the new CV value to your locomotive's decoder. Note that it is only the loco on the programming track that is affected – no others.
- (13) When you are done, click DRCV again and the button changes from red to black. You can then click Exit to return to the normal Drive screen, power down and return your locomotive to the main track.

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(14) To release the locomotive, click the red broken link symbol near the top of the Drive screen



If you install Loco Operator on more than one tablet, you must not select it for driving on more than one, otherwise it will try to obey both, and probably keep stopping and starting.

Infrastructure Mode

You can stay in Direct mode if you just want to operate one locomotive from each tablet with Loco Operator 3, but for more versatility you can set up infrastructure mode as long as you have a Wi-Fi router in your household and you are able to find out a little about it.

In the following, we talk a lot about IP Addresses. These are unique addresses assigned to every device on your network whether it is connected via ethernet cable or Wi-Fi. They exist so that devices can send data to each other just like sending mail to a street address. IP Addresses (Internet Protocol Addresses) always take the form of four digits separated by dots, such as 192.168.3.25, where the 192.168 is the part that means the address is private, within your household. IP addresses beginning with other numbers are usually public addresses.


Information about your Wi-Fi Router

Before you start you will need three pieces of information about your router:

- (1) The name of your home Wi-Fi network (called the SSID). This is the name that you look for when you connect your tablet, phone or computer to your home Wi-Fi. It will have been given to you on a card or in an email by your telephone company or other internet service provider. If you are fairly technical, you may have changed it yourself.
- (2) The password that you use when you connect your phone, tablet or computer to your Wi-Fi network for the first time. After you have connected once, your phone, tablet or computer will remember it, so it is easy to forget it later, but again, it will have been provided by your telephone company – or you may have changed it.
- (3) The Subnet Address of your home network. This is the first three digits of your computer's IP address with the last digit replaced by a zero. For instance, if your computer has an IP address of 192.168.1.25, the subnet address is 192.168.1.0. This is usually the default subnet address for home networks but sometimes the third digit is zero or some other number like 15. Occasionally routers have subnet addresses such as 10.1.1.0. The easiest way to find your computers IP address is:
 - a. Windows 10 – From the Start Button, choose Settings and then Network and Internet, then View your Network Properties. Then look for IPv4 address which will be something like 192.168.1.3/24. Ignore the /24 and in this case the subnet address is 192.168.1.0.
 - b. Android Tablet – Go to Settings, About Device and Status. This will show a Status screen with several pieces of information on it including IP address. Choose the one that looks similar to the examples mentioned above.

Finally, if you are stuck, just Google it! Search on something like “Find my IP address” etc. and you will find a wealth of information. This is what us IT professionals do when we are stuck!

Setting up a Home Net

- (1) To do this, if you are driving, make sure you have released any locomotive channel of the WFD-25, then click the Wizard button at the top right .
- (2) The Install Wizard 1 page is displayed. This time click Yes to define a Home Network.

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- (3) At the Install Wizard 2 page, in Figure 12, select the network in the list that corresponds to the name of your home Wi-Fi access point. This is called the SSID as we discussed earlier. This is the same network name that you choose when you connect your phone or tablet to your home Wi-Fi network.



Figure 12 Selecting a Wi-Fi Network for your Home Net

- (4) When you have selected the right network, click Continue and you will see the Install Wizard 3 page as in Figure 13.

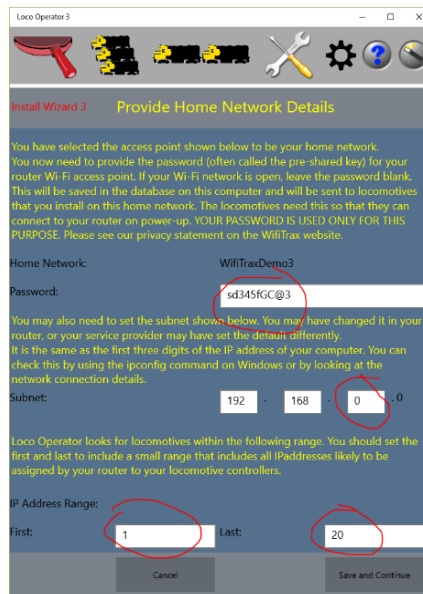


Figure 13 Providing the details of your home network

- (5) On the page in Figure 13 you need to provide some details for your Home Network.
- You must provide the Password (called the Shared Key). This password will be stored on your computer and sent to all locomotives that you want to install onto your Home Network.

A word about privacy: Knowledge of this password could allow someone near your residence to connect to your home Wi-Fi network and use your network to access the internet, possibly causing you extra charges. They might also compromise your network in some manner. The reason the Loco Operator app needs to store this password is so that it can provide it to your locomotives during the install process to enable them to connect to your home Wi-Fi router. WifiTrax software apps will never try to upload your password or do anything other than use it in this manner. The password is stored in a file on your device only and is stored in all locomotives that you install. If you sell a locomotive, you may wish to uninstall it so that the password is removed. If you are concerned, you could use a separate Wi-Fi router only for your model railroad. Please see our privacy policy online at <http://www.wifitrax.com/privacy.html>
 - Next you need to make sure that the correct subnet is shown. Most home subnets begin with 192.168 but sometimes it is different. The third digit defaults to zero but again it

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may be different for your network. The best way to find out the subnet is to check the IP address on your computer. The subnet is the first three digits of the IP address, with the fourth replaced by zero.

- c. Lastly make sure the IP Address Range is set to cover addresses likely to be assigned by your router to locomotives. Usually the default, 1 - 20 is OK.

Routers assign IP addresses to your locomotives within a certain range which can be quite large. If you have only one or two computers on your network the router will only need to assign addresses that are in the low region – maybe less than 10. If you have a lot of devices you may need to extend the range.

- d. Finally click Save and Continue which completes the setup of your Home Net.

- (6) You now see the Install Wizard 4 screen, as in Figure 14. This allows you to install locomotives or other controllers onto your home net. What does Install mean? It means sending the SSID and Password to the controller so that, each time it powers up, it will automatically connect to your Wi-Fi router.

When the screen enters, any powered-up, uninstalled controllers are discovered and listed.

Some detailed text will appear in the lower region describing what is occurring.

Uninstalled controllers are those that have not been given the SSID and Password to enable them to connect to your Home Network.

For the WFD-25, you should see just one uninstalled controller as in Figure 14. Although the WFD-25 can encompass up to 16 locomotives with unique DCC addresses, it appears as just one controller.

Select it and click the Install button. More text appears as the install process completes.

Once it is installed, no more uninstalled controllers appear and you can click Next.

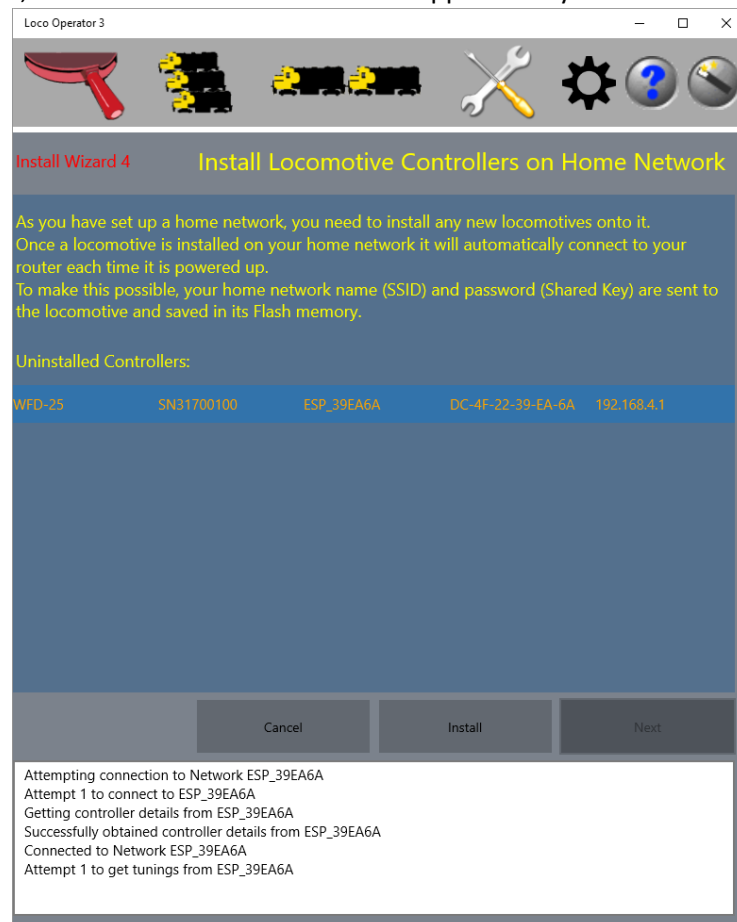


Figure 14 Install Wizard 4 Screen. Installing Locomotives onto your Home Net.

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- (7) Now you see Install Wizard 5 as in Figure 15. By this time, as a result of the install process, your Wi-Fi Router should have allocated IP addresses to your locomotives. Click the Scan for New Locos button, check the range and click Continue on the pop-up. Your computer will connect to your Home Net and test each IP Address in the range to find locomotives. You will see each IP address being tested in the progress text area on the screen.

You should see one IP address at which around 22 controllers have been found. These 22 actually include 4 locomotive channels (the default), 2 track channels and 16 configuration channels. In Loco Operator only the 4 locomotive channels concern us. We will discuss how to use the other channels later.

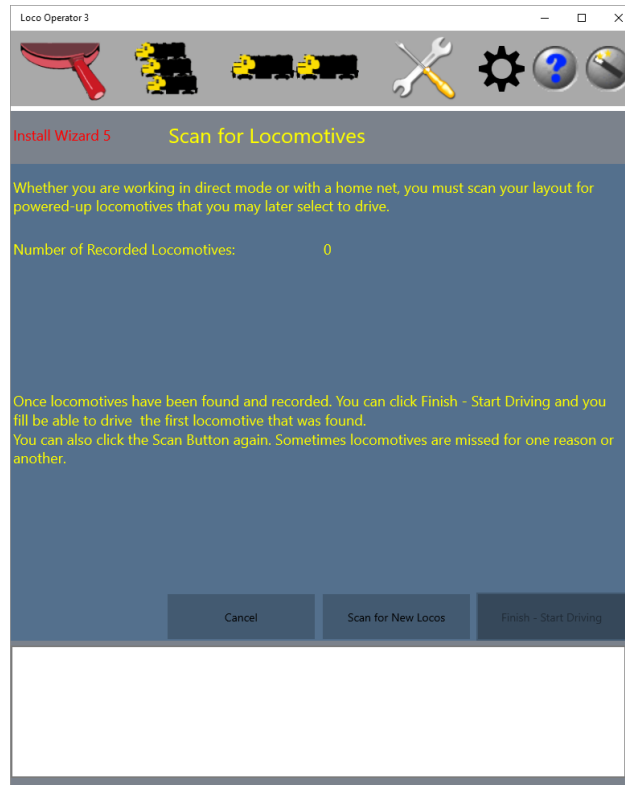


Figure 15 Install Wizard Page 5. Scan for new Locomotives.

- (8) Once some locomotive channels have been discovered – 4 in this case the New Loco Configuration Screen, Figure 16, appears. All the locomotives are based on the WFD-25 product, they have channels 0 through 3 and are all Wi-Fi/DCC. At the right of each locomotive is a drop-down that allows you to select a DCC decoder that matches what you have installed in the locomotives – this defaults to “Generic-Sound” but several specific manufacturer’s decoders are supported and you can select one that matches the decoder in the locomotive at the DCC address for that channel (see Table 1). When you are satisfied, click Done (you can change these later on the Locomotives screen).

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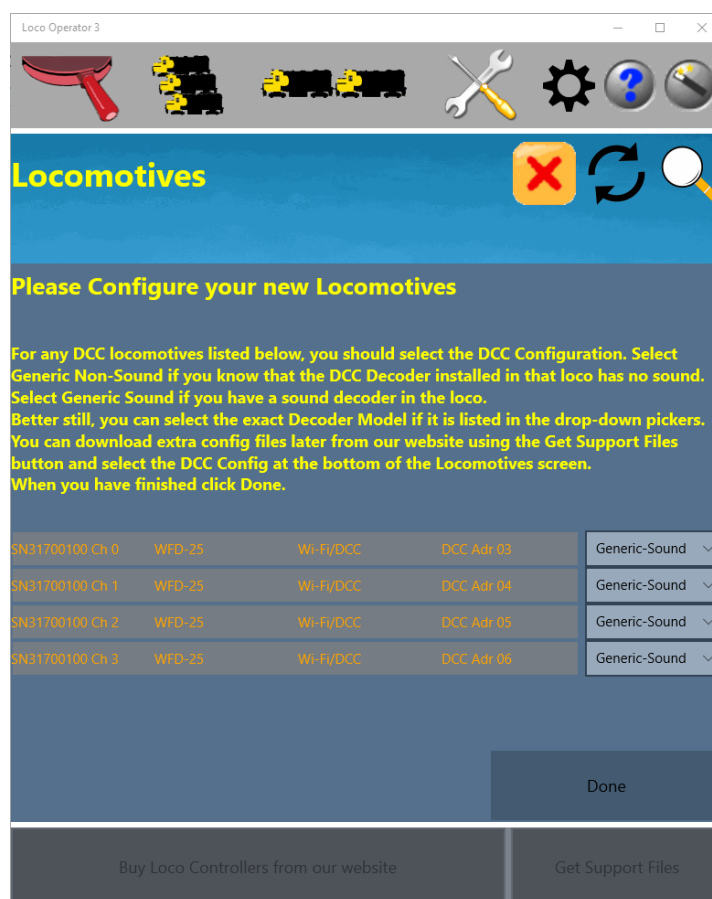


Figure 16 Configuration of new locomotives

- (9) Figure 17 shows the completed locomotive scan. Four locomotives should have been found. Remember, these are *locomotive channels* at which a DCC loco with matching DCC Address is expected to be on the track. Obviously if there is no loco with that address, you cannot drive it (consult the procedure described in the “Assigning DCC Addresses to the Locomotive Roster Channels” section to make sure your DCC locomotive addresses and the channel DCC addresses match. Click the “Finish-Start Driving” button and you can perform the same tests as you did in Direct Mode.

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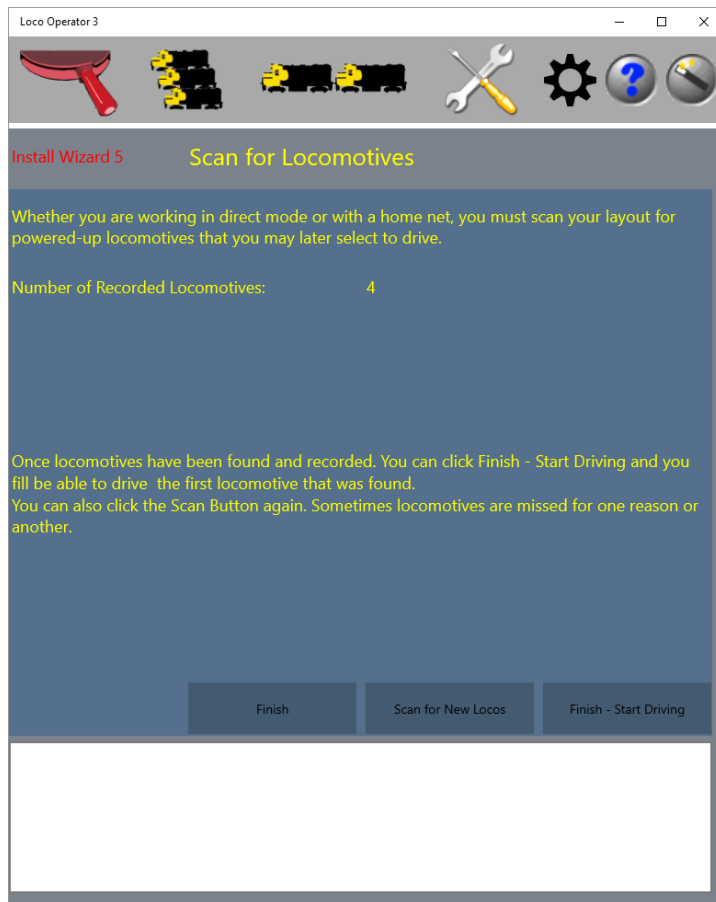


Figure 17 Completed Locomotive Scan - 4 found - the default for the WFD-25

Combining WFD-25 with WFP-40 or WUFP-40 Power Controllers

The WFD-25 does not provide auto reverse, occupancy detection and current monitoring like the WFP and WUFP series. The WUFP unit (Universal) also provides operation of DC locomotives.

<http://www.wifitrax.com/products/product-WFP-40-detail.html>

<http://www.wifitrax.com/products/product-WUFP-40-detail.html>

Both of these modules have an external input that can be connected to any Bipolar DCC signal that is NMRA compliant and this provides the ability to run DCC locomotives within the districts controlled by the four outputs of each of these modules.

You can, of course, connect the Main Track output of the WFD-25 to this external input, in which case DCC control will be available on any of the blocks under control of these power modules, together with the features provided by the power controller module itself.

You can also use the output from the alternative power connections of the WFD-25 to provide power to the WFP-40 or WUFP-40 so that you avoid an additional mains adapter. Figure 18 shows the wiring for this.

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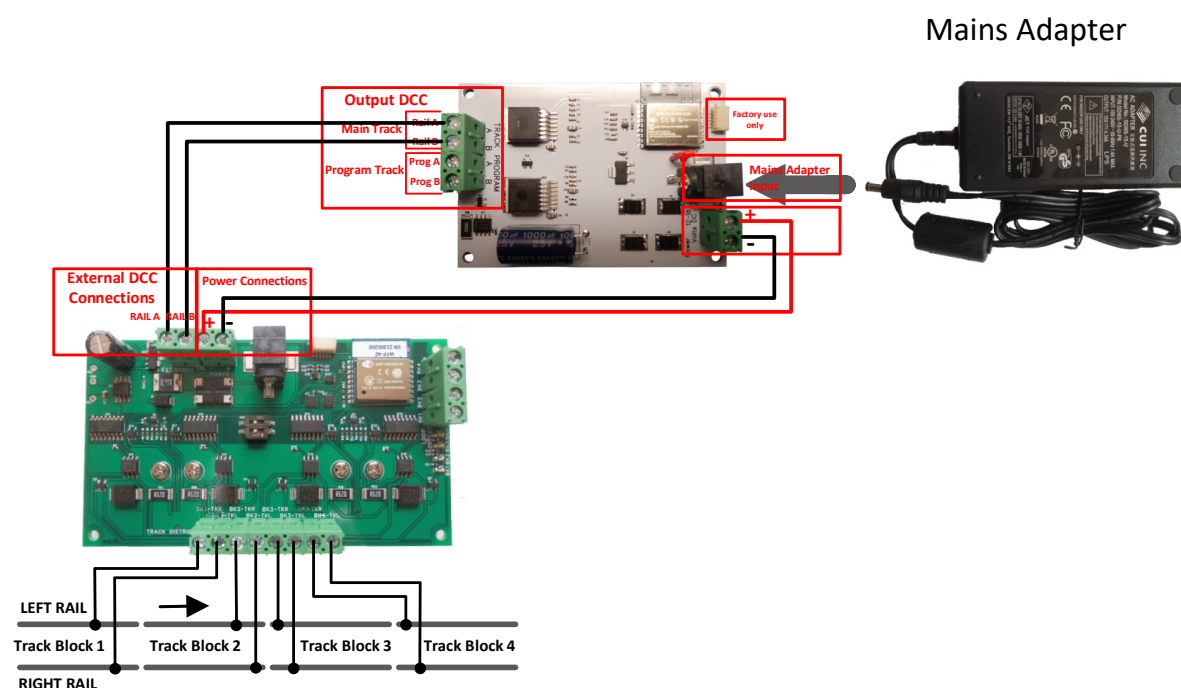


Figure 18 A WFD-25 connected to a WFP-40 module.

Working with Tower Operator

Tower Operator is the application, provided by WifiTrax free of charge for Windows 10 and Android, that is intended for Layout Command and Control. In a sense it is a dispatcher's application giving you control of switches, signals, power, etc. in the form of layout maps that you can build and edit. Full details are provided in the Tower Operator Help Pages:

<http://www.wifitrax.com/help/towerOperator/help.html>

This section describes how Tower Operator relates to the WFD-25 product. It was stated earlier that WFD-25 supports 16 locomotives in its roster, but only 4 are initially enabled. The reason for this is to avoid reporting 16 locomotive channels when a scan takes place and allowing these to be selected, when most of them will be unoccupied by DCC locomotives. You can use Tower Operator to increase or reduce the number of active locomotive channels in the roster and one or two other things.

Installing Tower Operator

These instructions cover both Windows 10 and Android. Follow the steps below according to your device.

- (1) Go to either the Windows Store or the Google Play Store according to whether you have a Windows or Android computer or tablet. Search for Tower Operator. Alternatively go to our website, use the Products menu to go to the Tower Operator page and click on "WINDOWS STORE" or "GOOGLE PLAY STORE" according to your device.
- (2) Follow the instructions on the Store Page to get and install the app on your device.

Running Tower Operator for the First Time

- (1) When you start the app for the first time, you will be presented with the Scan for Available Networks pop-up. You must accept this, so click Continue. The current released version of Tower operator does not have an install wizard so the set-up is not quite so simple. These

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instructions concentrate on what is needed for use of the WFD-25. For more details please consult the Tower Operator Getting Started (First Steps) document at:

<http://www.wifitrax.com/appNotes/quickStart/Tower-Operator-Quick-Start.pdf>

The instructions below assume you are working in Infrastructure Mode.

- (2) On the Settings page that displays next, as Figure 19, choose your home net in the displayed network drop-down selector at the top, then set the Subnet Address underneath correctly and also the first and last address in the scan range. Also enter your Wi-Fi password.

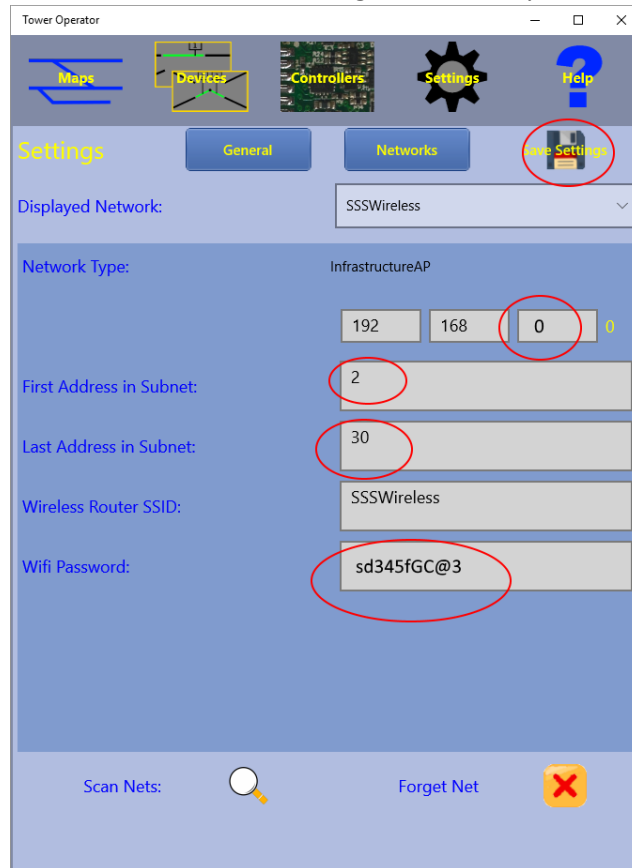


Figure 19 Settings Screen, Networks Tab for Tower Operator

- (3) Next click on the General button of the Settings page and set the Home Network and Operating Network to your home network SSID. Click the Save Settings button.

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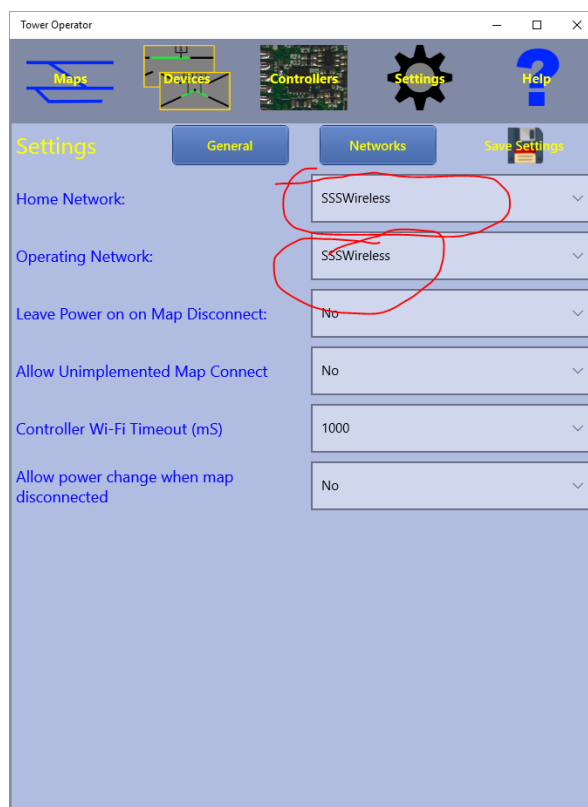




Figure 20 The General tab of the Settings Screen

- (4) Now go to the Controllers screen , make sure your computer is connected to your home network and your WFD-25 is powered up, then click the Scan button  button. Check the Operating Net and First and Last IP addresses on the pop-up and click continue. When the scan completes, you should see a list of controllers at the top containing one entry for your WFD-25, as Figure 21.

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Figure 21 Controllers Screen of Tower Operator showing just one controller - the WFD-25

- (5) The controllers screen shows a list of controller modules at the top. When you select a controller, the Controller Tunings section below shows the tunings or settings for that module.

Below that is a list of capabilities for the selected controller and below that again are the capability tunings for the capability selected in the list. So, there are tunings for the module as a whole – just the name in this case – and tunings for each individual capability.

For the WFD-25 The first two capabilities are the two power channels – the Main Track and the Program Track. The only tuning for these is the Start Mode. If you set this to 1, that DCC power output is active on power up. The default is that both the Main Track (Power Channel 0) and the Program Track (Power Channel 1) are active on power up.

The next 16 capabilities are the 16 Locomotive Channels and the first four are active by default, as in Figure 22. In the figure, channel 0 is selected and the Chan. Enabled value of 1 shows that it is active, the DCC address is set to 3 and the Speed/Dir mode is set to 2 which selects 126 Digital Decoder speed steps (1 would select 28 speed steps).

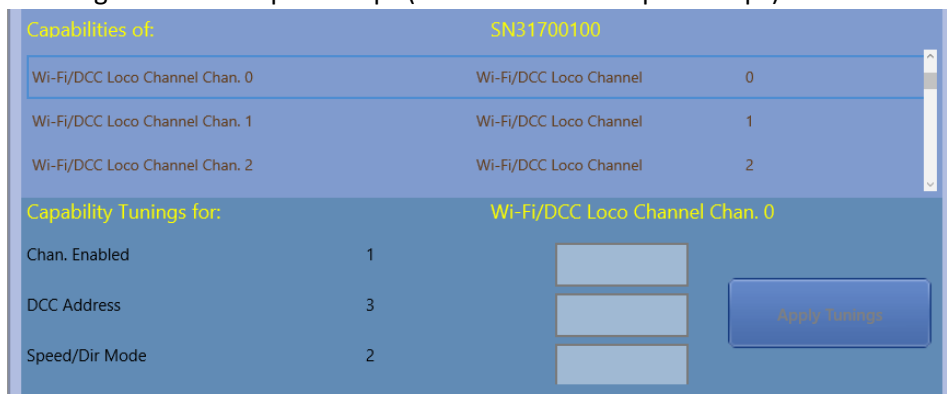


Figure 22 The Tunings for the Locomotive channels in the WFD-25

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Enabling More Locomotive Channels

Figure 23 shows how more locomotive channels, in addition to the default four, are enabled. To do this:

- (1) Select a Wi-Fi/DCC channel that has not been enabled, such as channel 4 in Figure 23.
- (2) Set the Chan. Enabled, new value, to 1 as in the textbox, outlined in red.
- (3) Set the DCC address to one that has not been already associated with a channel, such as 07 in this case, the default first four channels being associated with 03, 04, 05, and 06.
- (4) Set the Speed/Dir mode to 2. It is unlikely that you have a decoder that only accepts 28 speed steps.
- (5) Click or tap the Apply Tunings button. A pop-up should appear indicating that tunings have been sent to the controller.
- (6) Back on Loco Operator, you will need to scan again for locomotives to discover the new channel.
- (7) You may need to place the locomotive that you want assigned to the new channel on the program track and synchronize the DCC addresses (see Section “Assigning DCC Addresses to the Locomotive Roster Channels”)

Capabilities of:		SN31700100
Wi-Fi/DCC Loco Channel Chan. 3	Wi-Fi/DCC Loco Channel	3
Wi-Fi/DCC Loco Channel Chan. 4	Wi-Fi/DCC Loco Channel	4
Wi-Fi/DCC Loco Channel Chan. 5	Wi-Fi/DCC Loco Channel	5

Capability Tunings for:		Wi-Fi/DCC Loco Channel Chan. 4
Chan. Enabled	0	1
DCC Address	0	7
Speed/Dir Mode	0	2

Apply Tunings

Figure 23 Enabling a new locomotive channel in the WFD-25

Placing the WFD-25 on your Tower Operator Map

As is explained in the Tower Operator help pages, Tower Operator has three important concepts, Controllers, Logical Devices and Maps. Logical devices are layout accessories such as switches, signals, power districts etc. Each logical device needs mapping to one or more suitable controller channels to make it operate. Logical devices may be placed on maps and, when the map is connected to the Wi-Fi network, their state may be changed by clicking on their map symbol. An example is clicking a switch on the map to make it change.

The Logical Device corresponding to the WFD-25 is called a DCC Control District. Now suppose that you have created a layout using Tower Operator with many Controllers, Logical Devices and a single Map shown in Figure 24.

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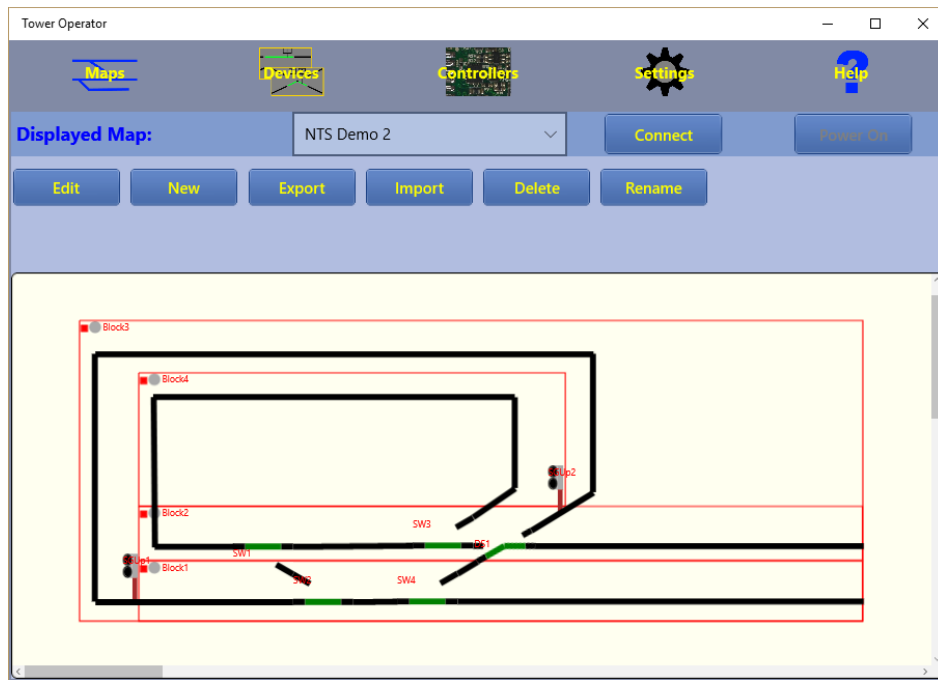


Figure 24 An example of a Layout Map using Tower Operator to which we can add a DCC Control District

We added the WFD-25 controller into Tower Operator earlier, so it remains to create a logical device for it and place it on the map.

- (1) Click on the Devices tab in Tower Operator and, in the Device Category drop-down selector, select Power. Then click the New Device button as Figure 25.

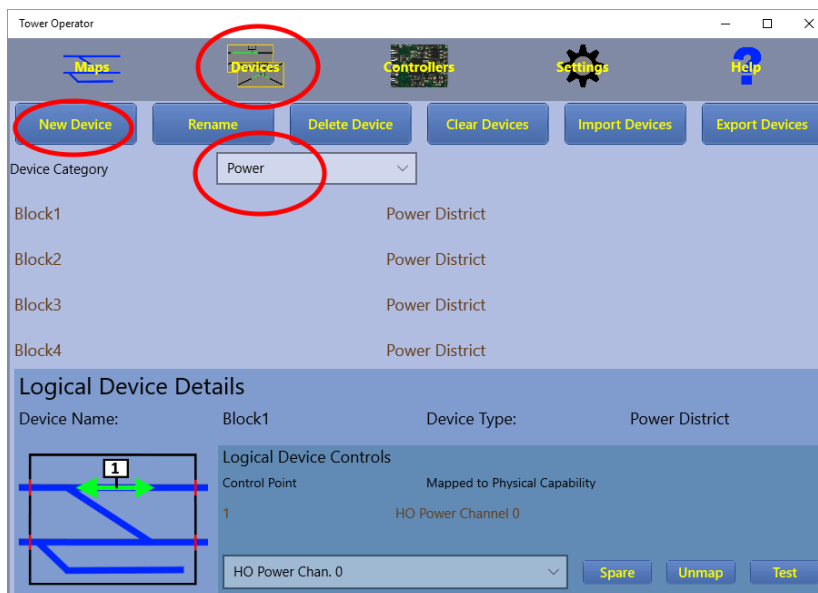


Figure 25 The Logical Devices Screen

- (2) In the pop-up (Figure 26), select DCC Control District as the type and give it a name such as "DCC Cntrl". Click Create.

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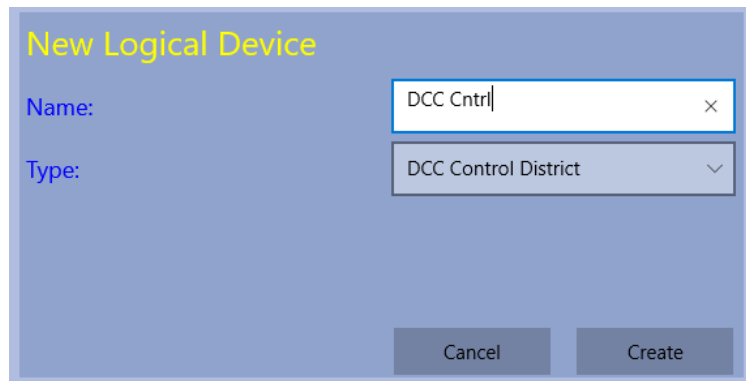


Figure 26 Creating a new DCC Control District Device

- (3) Now select the newly created DCC Control District, select its control point 1 and in the drop-down selector at the bottom, select Channel 0 of the WFD-25, in Figure 27 named “HO Wi-Fi DCC Chan. 0”. This assigns the main track of the WFD-25 to the logical device.

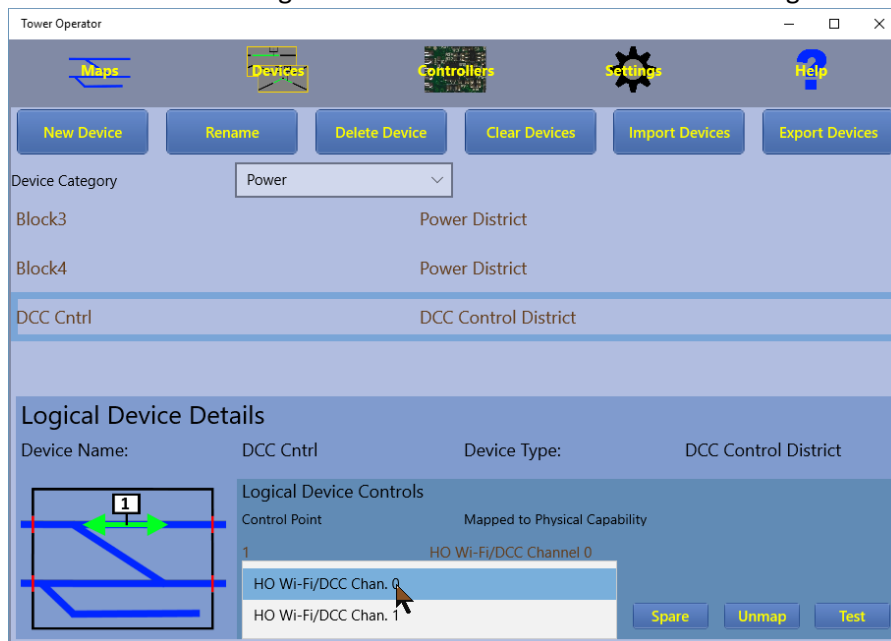


Figure 27 Assigning a controller channel to the DCC Control District Logical Device

- (4) Now go to the Maps tab and click the Edit Button. The side panel shows the logical devices available. DCC Cntrl is selected in Figure 28. Click on the map to place the logical device, then drag the sides so that it surrounds the entire layout.
- (5) When it is positioned properly, click Save and Edit Exit. You now can turn the DCC Control on and off by tapping the symbol in the top left.
- (6) You can use the same procedure to add your programming track to the map with a separate DCC Control District logical device for the Program Channel.

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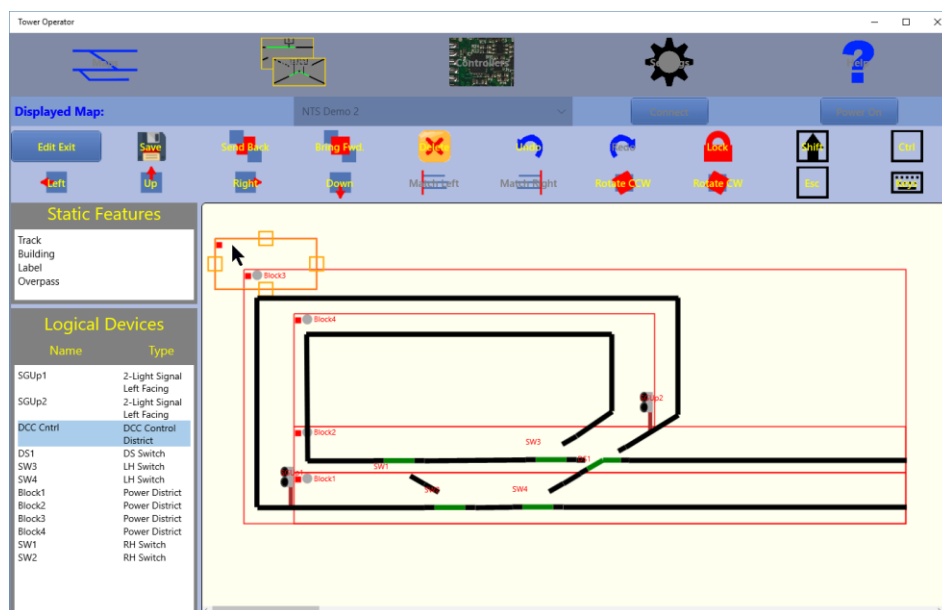


Figure 28 Adding the DCC Control District to a Map

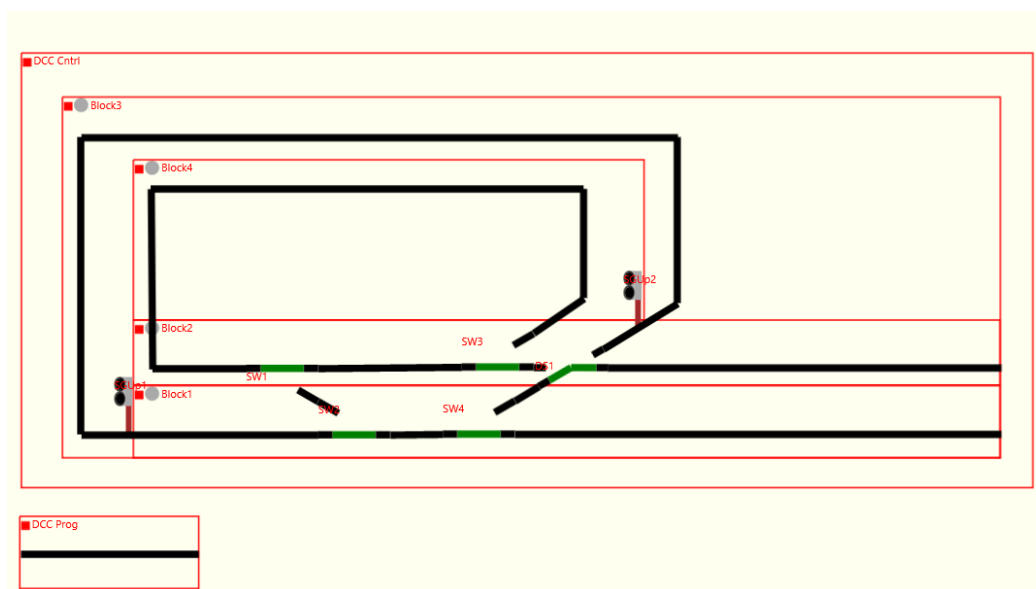


Figure 29 The Programming Track has been added as well.

More Information

Detailed Help Pages:

<http://www.wifitrax.com/help/locoOperator/help.html>

<http://www.wifitrax.com/help/towerOperator/help.html>

Article about Wi-Fi/DCC:

<http://www.wifitrax.com/appNotes/WiFi-DCC.pdf>

Access all the articles:

<http://www.wifitrax.com/appNotes/howToArticles.html>