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# Using JMRI to Monitor & Control NTRAK and T-TRAK Layouts

by  
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# JMRI

**JMRI = JAVA Model Railroad Initiative**

**<http://jmri.sourceforge.net/>**

**Free**

**Windows / Mac / Linux — Requires JAVA 11**

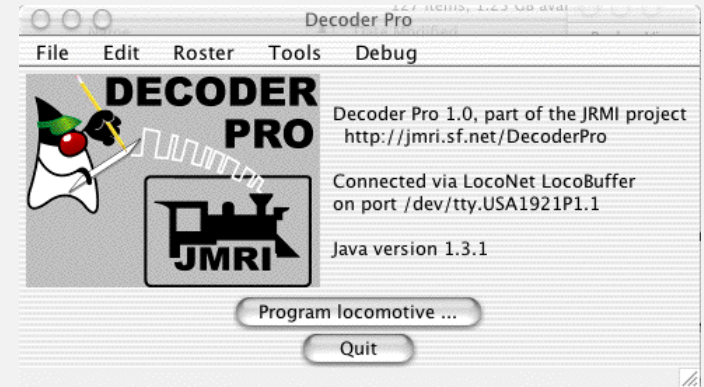


# JMRI

One program, two main “shells” — DecoderPro and PanelPro

## DecoderPro

- Prime aim is to ease programming decoders

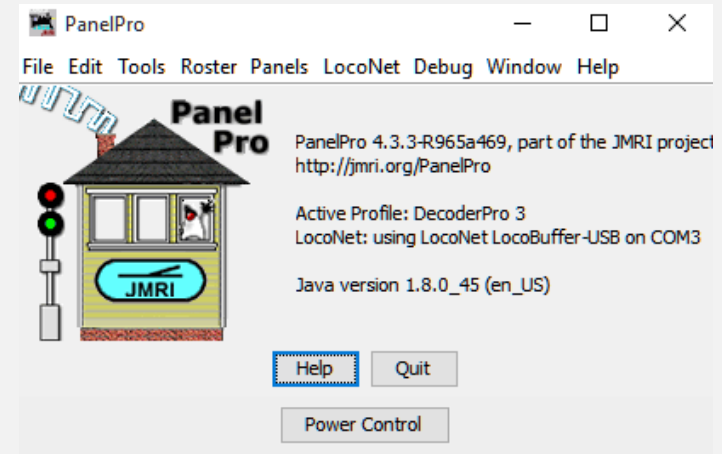


## PanelPro

- Prime aim is to ease creation of CTC-type control panels and set up signaling

## Other apps within JMRI

- DispatcherPro
- OperationsPro
- SoundPro



But JMRI can do much more to control and automate model railroads



# Connecting JMRI

Computer	—	Interface	—	LocoNet
Windows	USB Cable	PR3/PR4	LocoNet Cable	Command Station
Mac		LocoBuffer-USB		UP3/5/7
Linux		LocoBuffer (older)		Other LocoNet
Raspberry Pi		Built-in PR3/PR4	n/a	

Can also use SPROG, LokSound programmer, etc. in place of Command Station



# JMRI

## General tools available within JMRI

- Turnout Control
- Lights
- Sensors
- **Throttles**
- Consisting Tool
- Reporters
- Blocks
- Memory Variables
- Routes
- Sections
- Logix
- Fast Clocks
- Speedometer
- Audio
- **Power Control**
- **WiThrottle**

## LocoNet Tools

- **Monitor LocoNet & Stats**
- **Monitor Slots**
- Monitor Clock
- **Configure BDL / PM / SE / DS**
- Select PR3/PR4 Mode
- **Configure Command Station**
- **Configure LocoNet ID**
- **Configure Duplex Group**
- Send Throttle Messages
- Send LocoNet Packet
- Download Firmware
- Download Sounds
- Edit SPJ Files
- **Start LocoNet Server**



# Additional JMRI Capabilities

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## Import your layout plan into PanelPro

- AnyRail
- XTrkCad

## Crandic Automated Traffic System (CATS)

- CATS is an integrated suite of open source programs that provide signal logic and operations support on a model railroad. CATS uses JMRI for accessing the layout hardware and provides the logic for tying the hardware pieces together. It presents the layout as a computer screen panel inspired by Digicon. In addition, CATS supports crew management and connects to JMRI Operations for car routing.
- <http://cats4ctc.wikidot.com/>

## Locomotive Speed Matching with NRMRC Script



## Specific setup for Screen Shots

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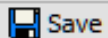
- **JMW Home Desktop Computer + AT&T Fiber Router**
- **Digitrax 240 Advanced Command Station/Booster + CVP Products DCPS120U 120-Watt Power Supply**
- **USB cable from Computer to PR3 port on DCS240 Command Station**
- **Digitrax PM42 Power Manager + PS14 Power Supply**
- **Digitrax UR93 Duplex Radio Transceiver + PS14 Power Supply**
- **No connection to track**
- **Multiple DT throttles and smart phones used to populate slots**



# Set JMRI Preferences

## Connections

- Defaults
- File Locations
- Start Up
- Display
- Messages
- Roster
- Throttle
- WThrottle
- Config Profiles
- Web Server
- LocoNet over TCP Server
- JSON Server
- Railroad Name
- SRCP Server
- Simple Server
- Warrants



Save

LocoNet



System manufacturer

Digitrax

System connection

LocoNet PR.3

Settings

Serial port:

COM4

Command station type:

DCS240 (Advanced Command Station)

Connection Prefix:

L

Connection Name:

LocoNet



[Additional Connection Settings](#)

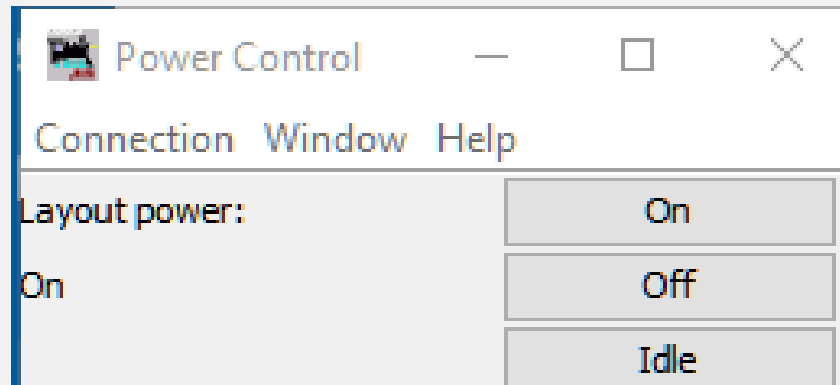


Disable this Connection





# Track Power Control





# Configure Command Station



Window Help

DCS240 Programmer

Show reserved option switches  
Items describe effect on system operation when set "dosed".

T  C 2: Run DCS240 as Booster only, not a Command Station

T  C 3: Booster is autoreversing

T  C 6: Do not check for decoder before programming

T  C 13: Raise loco address purge time to 600 seconds

T  C 14: Disable loco address purging

T  C 15: Purge will force a loco to zero speed

T  C 17: Automatic advanced consists are disabled

T  C 18: Extend booster short shutdown to 1/2 second

T  C 20: Disable address 0 analog operation

T  C 21: Global default for new loco: FX

T  C 22: Global default for new loco: 28 step

T  C 23: Global default for new loco: 14 step

T  C 25: Disable route echo over LocoNet

T  C 26: Enable routes

T  C 27: Disable normal switch commands (Bushby bit)

T  C 28: Disable DS54 interrogate at power on

T  C 31: Disable metering of route/switch output when not in trinary

T  C 33: Restore track power to prior state at power on

T  C 34: Allow track to power up to run state

T  C 35: Disable Loco Reset Button

T  C 36: Clear all mobile decoder info and consists in DCS240

T  C 37: Clear all routes in DCS240

T  C 39: Clear all internal memory states

T  C 41: Diagnostic click when LocoNet command received

T  C 42: Disable 2 beeps when loco address purged

T  C 43: Disable LocoNet update of track status

T  C 44: Limit slots to 120 (from 400)

T  C 45: Disable reply for switch state request

T  C 47: Program track is brake generator





# WiThrottle Monitor Screen

WiThrottle Window Help

WiThrottle Server v2.0 listening on:  
John-PC.attlocal.net  
10.174.180.159:12090

Clients: 1

  On Roster Group:

Device Name	Address
John M Wallis's iPod	3040(L)



# Configure PM4/PM42

Configure PM4/PM42

Window Help

Unit address:

Current limit:  ▾

Section 1 Breaker Speed:  ▾  Autoreversing

Section 2 Breaker Speed:  ▾  Autoreversing

Section 3 Breaker Speed:  ▾  Autoreversing

Section 4 Breaker Speed:  ▾  Autoreversing

Device Accesses completed.



# Configure Duplex/ID

## Configure Duplex Group

Group Identity Channel Scan

Duplex Group Name:

Duplex Group Channel:

Duplex Group Password:

Duplex Group ID:

Found 1 UR92 device

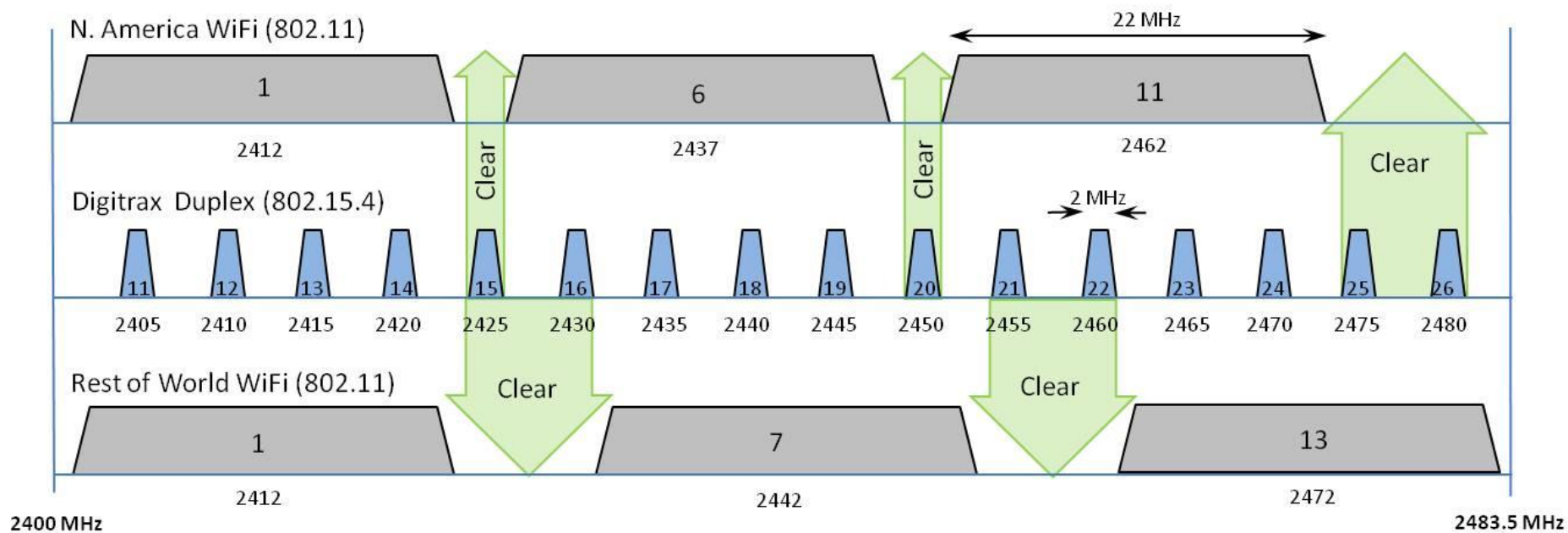
## Configure LocoNet ID

LocoNet ID:

**UR92: Channels 11 to 26**  
**UR93: Channels 11 to 25**



# 2.4 GHz Spectrum



2.4 GHz Channel Assignments











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# LNWI LocoNet Wi-Fi Interface

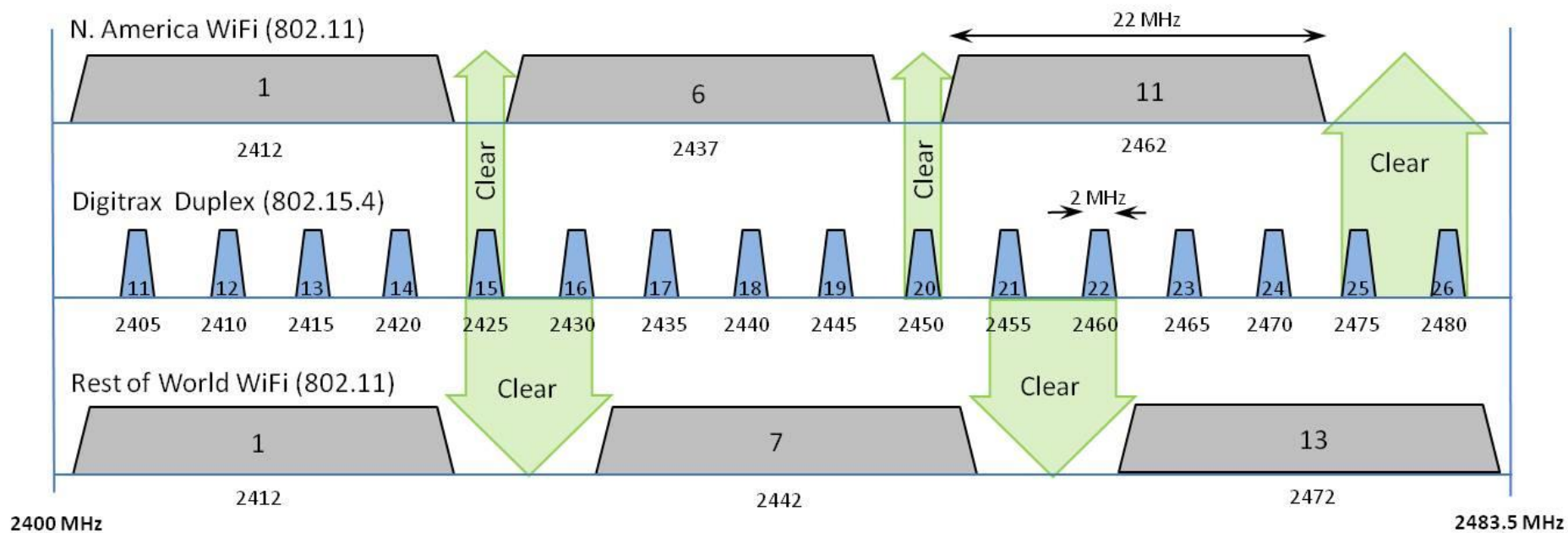
## Key Points

If the LNWI coexists with Duplex (UR92/93), then:

- The LNWI channel number must match the duplex channel number minus 10
  - Duplex channel numbers 11 – 25 (26)
  - LNWI channel numbers 1 – 11 (11-21 duplex)
- The Duplex Group Name must match between the UR92/93 and the LNWI itself cannot program the group name then:
  - With throttle plugged into UR92/93 front panel, LNWI plugged into LocoNet and both turned on, in OPT/EDIT mode on the throttle press ENTER on the throttle. This will update the LNWI to the group name of the UR92/93.
- The “network number” has nothing to do with the UR92/93. Set via the LNWI OpSw per the instructions. This changes the LNWI’s IP network number to avoid conflict with another railroad. 0 – 7. This is the third octet in the IP address 192.168.7.1, the 7 shown.
- To check the value, look at the connections page on your device  
`Dtx1-YYYYYYYYY_xxxx-7`
  - Dtx is the Digitrax identifier (cannot change)
  - 1 is the duplex channel number, 7 is the network number
  - YY is group name, XX is LNWI ID set by Digitrax (cannot change)



# 2.4 GHz Spectrum



## 2.4 GHz Channel Assignments