TRAIN CONTROL SYSTEMS

UWT-50

QUICK START GUIDE

UWT-50 Quick Start Guide

Table of Contents

Getting Started **3**
- Installing Batteries 3
- First-Time Setup 3
- Adding a WiFi Network 4

Connection Issues **5**
- Troubleshooting the WiFi 5
- Troubleshooting the Server 5
- Troubleshooting LNWI 6

Using the UWT-50 **7**
- Power On/Off 7
- Menu Navigation 7
- The “Help” Button 7
- Programmable Buttons 8
- Text Entry 9

Operations **10**
- Select a Locomotive 10
- Using Loco Functions 10
- Reverse Direction 11
- Change Speed 11
- Emergency Stop 11
- Consisting 12
- Yard Mode 13

Throttle Reset **14**

Warranty Information **14**

Support and Contact **14**

Safety and Regulatory Information **15**

Getting Started

Installing Batteries

The UWT-50 is powered using two “AA” batteries. Many battery chemistries can be used, including Alkaline, NiCd, NiMH, and Lithium. The two AA batteries must be installed into the battery holder in the correct orientation in order to power up the throttle. The required polarity of the batteries is indicated within the battery holder. To ensure the battery door is properly secured, press down firmly until you hear a “click.”

Once two “AA” batteries have been installed, press and hold any button for 3 seconds to turn on the UWT-50. Once the unit is on, press button 2 to complete the startup process.

Pro Tip: Pressing button 7 at this time will startup the throttle in bootloader mode. Pressing any other button besides 2 or 7 will cancel the startup and power the unit down.

First-Time Setup

When you turn on the throttle for the first time, you will be guided through a quick first-time setup process. This setup process will enable you to establish an initial WiFi connection. If you would prefer not to use the guide, you may press “Skip.” Otherwise, press “Next” until a scan for WiFi networks is initiated. Once the scan is complete, the throttle will display a list of available WiFi networks. Select your desired network from the list and enter the password if necessary. For help with entering text for your password, please refer to the “Text Entry” section of this guide.

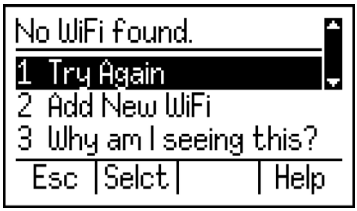
Pro Tip: Digitrax LNWI devices start with a standard prefix. Find “Dtx1-LnServer_(...)” in your network list to connect to your LNWI.

Once a successful WiFi connection is made, the main Drive Window will appear and you may begin to operate with your UWT-50. Please refer to the “Connection Issues” section of this guide if you experience issues establishing a WiFi or Server connection.

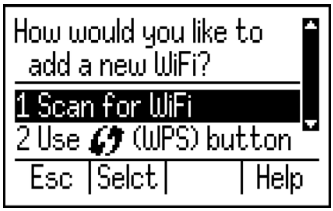
Adding a WiFi Network

Once you have successfully connected to a WiFi network, the UWT-50 will attempt to connect to it's last known WiFi network on startup. If you are in a new location or no known WiFi networks are present in your location, the throttle will display a "No WiFi Found" screen **(A).** In order to connect to a new WiFi network, select option 2 "Add New WiFi" which will call up a list of methods for adding a new WiFi connection **(B).**

A.



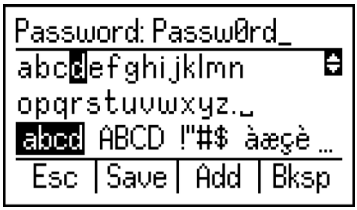
B.



It is recommended that you use Option 1 "Scan for WiFi" to find your WiFi network - this may be a WiFi router connected to your JMRI, an LNWI, or other device **(C).** Once the scan is complete, the throttle will display a list of available WiFi networks. Select your desired network from the list and enter the password if necessary **(D).**

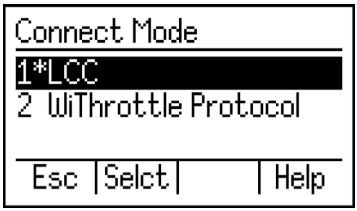
C.

D.

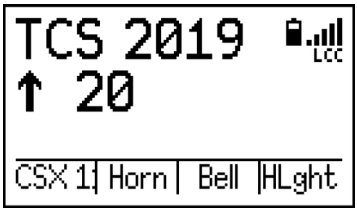


If multiple connection modes are available on your network, you will be prompted choose your desired connection mode from a list **(E).** You may change your connection mode at any time from the "Network Options" menu.

E.



F.



Once a successful WiFi connection is made, the main Drive Window will appear and you may continue to operate with your UWT-50 **(F).**

Connection Issues

There are two network connections the throttle must make in order to communicate to your command station: WiFi and Server.

WiFi - The WiFi connection is your access point, router, or WiFi device.

Server - A server functions as the translator between your throttle and command station. This is often a computer running JMRI.

> *Pro Tip: Some devices like Digitrax LNWI and MRC WiFi module function as both the WiFi and the Server simultaneously.*

Please refer to the steps below to troubleshoot your connection.

Troubleshooting the WiFi connection

This section will help you troubleshoot your network connection after a “No WiFi found” error. If no WiFi is found, there are a few likely causes:

Problem: Your router or WiFi network is not turned on or is otherwise inoperational.
Solution: Restart your WiFi device or router, and check for error messages or warning lights.

Problem: You have not yet connected to a WiFi network.
Solution: Follow the steps in the Connecting to a WiFi section to establish a connection.

Problem: Your WiFi password was entered incorrectly.
Solution: You will see the “Wrong WiFi Password” prompt. Double-check and re-enter your password.

Troubleshooting the Server connection

This section will help you troubleshoot your server connection in the event the “Server not found” prompt is displayed.

Problem: Throttle cannot connect to JMRI WiThrottle server.
Solution: Reboot your computer and command station, open JMRI, and start the WiThrottle server. Once complete, select “Try Again” on the throttle. If you are running JMRI on a Windows PC, make sure JMRI is allowed through the Windows Firewall or the throttle will not connect.

Problem: Command station does not respond to throttle input.
Solution: If your throttle is on and appears to be operational, but there is no response from your command station, restart the command station and check your power and data connections.

Problem: The wrong connection mode is selected.
Solution: Use the menu option labeled “Auto-detect LCC/WT” or “Change LCC/WT Mode” and select the correct connection mode. An asterisk (*) will appear next to the active mode.

At this time JMRI, LNWI, and all other potential connections communicate via the “WiThrottle protocol.” If your connection mode is set to “LCC” for the connection to your layout, change this to “WT” for WiThrottle protocol. LCC mode will be available in the future and is also used for throttle firmware updates.

Problem: mDNS failed to find the WiThrottle Server.
Solution: mDNS is a WiFi protocol which is used to automatically load the IP address and Port number of a server connection. mDNS does not work with all WiFi networks and can fail. If you use phone apps, you may be familiar with manually entering the IP and Port number of your JMRI WiThrottle Server. The UWT-50 is also capable of doing this. Select “Set IP Address” from the Server not found menu and set the IP address and Port number as indicated on your WiThrottle server window in JMRI. After entering the IP and Port number once, the throttle will retain this information when reconnecting in the future.

Troubleshooting an LNWI connection

If you are unable to establish a connection with your LNWI device, follow the steps below:

1. As simple as it sounds, turning the LNWI device off and on again will often solve connection issues.
2. Ensure that the number of connections to a specific LNWI device is not greater than four. LNWI devices have a limit of four connected devices at one time - including phones running apps like WiThrottle and EngineDriver. Turn off or disconnect one of the devices connected to the LNWI and see if the problem disappears.
3. Check that your saved LNWI device is turned on. In situations where there are multiple LNWI devices in use, the throttle may be configured to connect to one that is not available.

Using the UWT-50

Power On/Off

To turn on the UWT-50, press and hold any button on the keypad for 3 seconds, followed by button 2 to power up the throttle. If you would like to access the bootloader mode for firmware updating, press button 7 instead of 2. When powered up, the throttle will display the main Drive Window - your dashboard for locomotive operations.

You may choose to shut down the throttle at any time via the Main Menu. To do so, enter the Menu and select option 9 “Power Off.” Left idle, the throttle will shutdown on its own after a user-configurable amount of time. Visit the “Power Settings” menu to configure the auto-shutoff time in minutes.

Menu Navigation

The Menu button will open the UWT-50 Main Menu. There are functions and options in the menu that can customize your user experience and are helpful for throttle operations.

Navigating the Main Menu can be performed a variety of ways. Rotating the knob will navigate up or down through menu items one at a time. The current menu item will be highlighted. Use of the left or right thumb switch will also shift the cursor one item at a time.

Each menu option corresponds to a numeric keypad button. Pressing the corresponding button will immediately select that numbered menu option, even if that menu option is not visible onscreen. If you choose to scroll for a menu option, press the Enter or Select button. If you would like to know what a menu option does, first consult the Help Text.

The “Help” Button

The Universal WiFi Throttle contains information that explains most menu options and operations. To access these tips, you may press the button at any time to access the help text for the currently highlighted menu option. Help text is also available in menus by using the button and which is labeled “Help” on-screen.

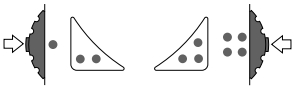
A scroll bar will appear on the right side of the screen if more text is available. Scroll up or down to see additional text by using the knob or either thumb switch.

Pressing the Help [?] button on the Drive Window will bring up the "Function Help" screen. This screen displays all available function buttons, what they do, and their status (on/off). This feature will only display named functions for each function number if the throttle is connected to a JMRI WiThrottle server *and* has a roster entry whose functions have been defined in [Your locomotive] > Labels and Media > Function Labels.

Programmable Buttons

There are eight buttons on the UWT-50 that can be assigned operations by the user. These buttons can be customized to perform an operation different than their default assignment. The top four buttons, directly below the screen, will always identify their action with an on-screen description. If the description is blank, no action is assigned to that button.

You can access button configuration options via the "Throttle Settings" menu. The programmable buttons will adjust based on the configuration in your throttle, command station, and selected locomotive's roster entry. If you are connected to a server which does not communicate function data such as a LNWI, the buttons will return to their defaults or not display names.



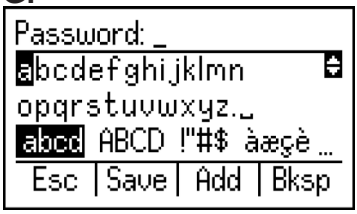
When connected to JMRI, the throttle will display the name/number of your locomotive and functions based on your JMRI roster entry. The programmable buttons will display and operate based on the function names as established in your roster entry under [Your locomotive] > Labels and Media > Function Labels.

Text Entry

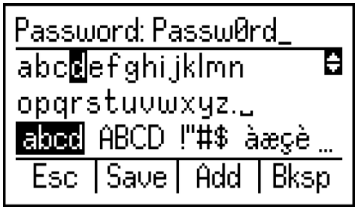
The UWT-50 has a text entry interface that is used to fill out text-based fields such as WiFi passwords. Whenever the throttle requires text input, it will display the text entry interface. A sample is shown **(G).**

Within the text entry interface, the knob adjusts the position of the highlighted character. Rotate the knob to move the cursor to the first character you want to enter, then use the button to 'Add' that character. If you make a mistake, you can delete a character using the Backspace button. You may navigate through your entered text using the right thumb switch.

G.



H.

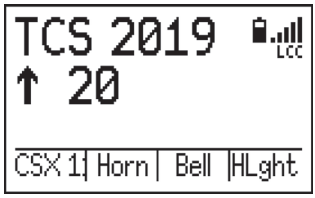


The left thumb switch moves the cursor up or down one whole line at a time. The left thumb switch also advances the cursor to other pages of characters. To quickly switch between uppercase and lowercase letters, use the Shift key.

A fully-entered password is shown above **(H).** Letters and special characters can all be entered with the text entry interface. Numbers do not display within the text entry screen and can be entered directly with the throttle keypad

When you have finished entering text, press Save or Enter .

Operations



The Drive Window provides an overview of your currently selected locomotive and other important status indicators.

When no locomotive is selected, an “E” will be displayed in the top left corner which stands for “Empty”. If you had previously acquired a locomotive address prior to powering down, the throttle will attempt to re-acquire it. In order to operate a locomotive, use the Select Locomotive button. The single dot button defaults to the quick recall function which will swap between the two most recently used addresses/names.

Select A Locomotive

Press the button on the keypad to access the locomotive selection screen. Users are given two options for selecting a locomotive.
1. Enter the cab number manually using the numerical keypad.
2. If the throttle is connected to JMRI, all locomotive IDs (names or numbers) will be automatically loaded from the JMRI roster list. If you have a long roster, you can start entering the address to filter your available options. Use the scroll wheel or chevrons to navigate to the desired locomotive, then press the Enter button to select it and return to the drive window. To assume control of a different locomotive, press the locomotive button on the keypad again.

> Pro Tip (Digitrax users): If you would like to relinquish control of your currently selected address, enter the Menu and select “Operations” followed by either the “Release” or “Dispatch” options. Once a locomotive address has been released, it will become the first option available in the recall list.

Using Loco Functions

Pressing the numerical buttons on the keypad will operate the function assigned to that number on your locomotive. When a function is turned on, the function number will be displayed on the screen.

To select higher function numbers than 9, press the Shift button. The new function page selected will “persist.” You must press the shift button again in order to continue through function pages. This was designed to allow for easy repeated operation of higher-number functions. On the left side of the screen, a small “1” or “2” will indicate that you are controlling higher functions: 1 for F10 - F19, or 2 for F20 - F28.

Reverse Direction

The direction of the locomotive is indicated by the arrow displayed under the cab number. The upward facing arrow ↑ indicates the unit will travel in its forward direction, and the downward facing arrow ↓ indicates it will travel in reverse. Users may change the direction of the unit by using the Reverse Direction [⇔] button directly below the thumb wheel.

Change Speed

To adjust the speed of the active locomotive, rotate the knob clockwise to increase speed, and counter clockwise to decrease the speed. The throttle will always display 128 speed step mode but can still control locomotives operating in 28 or 14 speed step mode.

Emergency Stop

The UWT-50 has a unique 3-Stage Emergency Stop function. Some stages will not be supported on certain DCC systems. Stage 1 is supported under all DCC systems that communicate via the WiThrottle Protocol. LCC supports all 3 stages.

Stage 1: Press the E-Stop button once to bring your current locomotive to a stop.
Stage 2: Quickly press the E-Stop button again to stop all of the locomotives on the layout.
Stage 3: Quickly press the E-Stop button a third time to turn layout power off completely.

When E-Stop is initally pressed, a small countdown timer will appear in the drive window. Pressing the E-Stop button again before the timer runs out will escalate the E-Stop to the next stage. To release any of these stages of E-Stop, wait until the countdown has finished and press the E-STOP button again.

E-Stop stages can be disabled in the “E-Stop Settings” menu.

Consisting

It is common for operators to create and disband Multiple Unit “MU” consists during operating sessions. The UWT-50 features a simple method for quickly creating and managing consists that is completely self-contained in the throttle. This method is konwn as “in-throttle” consisting which operates independently of the command station. In-throttle consisting can be used in conjunction with or independently of decoder-based “advanced” consists.

The UWT-50 consisting system is capable of controlling the speed, direction, and functions for all locomotives within a consist. The UWT-50 can also select JMRI-created and managed consists.

Our consisting system features “in-cab control” which allows the user to select the lead locomotive of the consist, effectively putting you “in the cab” as an operator. The Enter button can be used to quickly page through consist members and select the active cab.

Managing Consists

When a consist is created, the current cab address will become the first member of that consist. The following options in the “Consisting” menu can be used to manage consists.

Add Loco To Consist
Enter the address of the locomotive to be added, or select from a list. Pressing the button changes the direction of the locomotive being added to the consist.

View Current Consist
Shows all members of current consist and their direction within the consist. Selecting a locomotive from the consist provides options to switch to that cab, remove that member, or change direction.

Clear Current Consist
Dispands the consist, returning all locomotives to independent operation.

Consist Functions
Determines what functions are assigned to the consist or to the selected cab.

Yard Mode

Yard Mode is a special operations mode of the UWT-50 that is suited especially for switching movements. Yard Mode allows users to quickly and conveniently switch between a slow forward speed, a stopped locomotive, and a slow backwards speed using only the knob.

In Yard Mode, the locomotive is stopped when the knob is in the “center” position. Rotating clockwise, from the center position, increases the locomotive speed in the forward direction. Rotating counter clockwise, from the center position, increases the speed in the reverse direction.

The potentiometer version has a center detent for the stopped position. On the encoder version, the knob may be pressed in to “home” its “center” position.

Throttle Reset

If for any reason the throttle encounters a problem that it cannot recover from, the LED flashlight blinks a diagnostic code, which may be helpful to TCS support. If you encounter this condition, it can be cleared by removing and reinserting the batteries.

In the event that removing the batteries from the UWT-50 does not solve the problem, a factory reset may be performed. Navigate to Menu > Settings > Factory Reset. Performing a factory reset will erase all network profiles, user settings, and throttle settings. After performing a factory reset, you will need to re-enter your WiFi connection information as outlined in the section “First-Time Setup.”

Warranty Information

Train Control Systems, Inc. warrants this product to be free from defects in workmanship and materials, under normal use and conditions, for a period of one (1) year from the original invoice date. Please visit our website for additional warranty information.

Support and Contact

If you experience issues with your UWT-50 unit or would like to speak with a technical support representative, please contact us.

TCS Technical Support
techsupport@tcsdcc.com
(267) 733-3408

Safety and Regulatory Information

Train Control Systems Inc.
845 Blooming Glen Rd, Blooming Glen, PA 18911 USA
https://tcsdcc.com/contact
Model: UWT-50
FCC ID: 2AUJ6-UWT50
IC: 25442-UWT50
CAN ICES-3(B)/NMB-3(B)
SAR (CE/UK/AU/NZ): 0.022 W/Kg

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

FCC 15.21 Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC 15.105 This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

ISED warning RSS-Gen 8.4

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

United Kingdom and European Users

Train Control Systems Inc. UK Support Contact Information:
15 Clifton St, Lincoln LN5 8LQ, United Kingdom
Train Control Systems Inc. EU Support Contact Information:
Unit 8, The Hyde Building,The Park, Carrickmines, Co. Dublin, D18 Y3F9, Ireland

Hereby, Train Control Systems, Inc, declares that this device is in compliance with Radio Equipment Regulations 2017. The full text of the EU and UK declaration of conformity is available at the following internet address: https://tcsdcc.com/DoC

EU & UK SAR Compliance

In order to protect human health, this device meets the thresholds for exposure of the general public to electromagnetic fields according to Council Recommendation 1999/519/EC.

Waste Electrical and Electronic Equipment (WEEE)
This symbol means that according to local laws and regulations your product and/or its battery shall be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Proper recycling of your product will protect human health and the environment.

• **Caution:** risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

• **RF Exposure Information (SAR)** This device has been tested and meets applicable limits for Radio Frequency (RF) exposure. Specific Absorption Rate (SAR) refers to the rate at which the body absorbs RF energy. SAR limits are 1.6 Watts per kilogram (over a volume containing a mass of 1 gram of tissue) in countries that follow the United States FCC limit and 2.0 W/kg (averaged over 10 grams of tissue) in countries that follow the Council of the European Union limit. Tests for SAR are conducted using standard operating positions with the device transmitting at its highest certified power level in all tested frequency bands.

• **Avertir:** risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées conformément aux instructions.

• **Informations sur l'exposition aux RF (SAR)** Cet appareil a été testé et respecte les limites applicables en matière d'exposition aux radiofréquences (RF). Le taux d'absorption spécifique (DAS) fait référence à la vitesse à laquelle le corps absorbe l'énergie RF. Les limites DAS sont de 1,6 watt par kilogramme (sur un volume contenant une masse de 1 gramme de tissu) dans les pays qui suivent la limite FCC des États-Unis et de 2,0 W/kg (en moyenne sur 10 grammes de tissu) dans les pays qui suivent le Conseil de la Limite de l'Union européenne. Les tests de DAS sont effectués en utilisant des positions de fonctionnement standard avec l'appareil transmettant à son niveau de puissance certifié le plus élevé dans toutes les bandes de fréquences testées.

E-Labelling, Compliance and Certification

To access the certification and compliance details of your UWT-50 follow the steps below
1) Power on the UWT-50 by pressing button 2 until the screen lights up and then pressing button 2 again.
2) Press the Menu ([≡]) button, scroll to [Settings], and press Enter ([↵])
3) Scroll to [Regulatory] from the [Settings] menu, and press Enter ([↵]).
You can now read and review the e-labelling details of your UWT-50

UWT-50 DIAGRAM

For more information about your UWT-50 device, please visit our website.
www.tcsdcc.com

UWT-50 QSG Revised July 2021