



North Raleigh Model Railroad Club

Digital Command Control

Summary Throttle Operations

Digitrax DT100R Simplex Radio Throttles

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This Appendix provides summary operating instructions and helpful hints for the Digitrax DT100R Simplex throttles that may be used on the DCC portion of NTRAK show layouts. Refer to this Appendix as needed for help. The information offered will provide improved performance and radio signal reception.



Throttle Knob Movements. When operating in radio mode, throttle knob tracking will feel slightly different than when connected to LocoNet. *In radio mode, slow movement of the throttle knob will result in improved response.* It will also provide less congestion to the radio receivers and LocoNet.

Throttle Orientation. The optimum orientation to hold the throttle in normal usage is from horizontal to 30° upward in a natural hand position about 12" out from your body. This gives the best radio coverage. Although there are usually several UR91 radio receivers located in and about the layout,

occasionally wiring, metal plumbing, HVAC ducting and other items may cause small areas of poor radio reception. **Moving about 6" – 24" in any direction or varying the orientation of the DT100R will typically overcome any dropouts.**

Display Power Down. If an untethered DT100R throttle detects no user throttle activity for about 3 minutes, it will enter Power Saver Mode and display r-PS on the display until a throttle or button action restores normal activity and displays. If the DT100R has a locomotive assigned to it and is in Power Saver Mode, it will continue to "check in" with the system every 60 seconds telling the system "I'm still here." This keeps the system from releasing the locomotive back to "common." **The easiest and fastest way to signal the DT100R to exit from Power Saver Mode is to hold down either the + or - button.** Optionally you can disable Power Saver Mode as described later in this Appendix.

DT100R Throttle Operations

The tables below provide directions for the operations of the DT100R throttle normally encountered during NTRAK shows.

Select Locomotive to Drive	Controlling Lights & Functions	Locomotive Speed & Direction
<ul style="list-style-type: none"> DT100R must be connected to LocoNet. Turn desired throttle knob at least ¼ turn in either direction until display shows SE:L-. To select 2-Digit Address, press SEL/SET. Display shows 00:03 with "00" flashing. Turn either throttle knob until desired locomotive address appears on display. Press SEL/SET to set address active. To select 4-Digit Address, press and hold SEL/SET then turn one throttle knob. DT100R enters 4-digit address range & RED EXP indicator lights. Select 4-digit address (left knob changes in hundreds, right in units). Press SEL/SET to set address active. 	<ul style="list-style-type: none"> Press FUNC/F0 to get to Light/Function mode for display active throttle. Display shows Fn:00 with n flashing to indicate the function number of desired function needs to be selected. Use one of five BLUE buttons to choose desired function. FUNC/F0 controls lights. Pressing FUNC/F0 toggles light from off (F0:of) to on (F0:on) to off, etc. Operation is the same for other functions F1, F2, F3, and F4. To access functions F5–F7 press & hold FUNC/F0 while pressing the BLUE F5, F6, F7 or F8 buttons to toggle between on & off. Adjust either throttle to return to Loco mode. 	<ul style="list-style-type: none"> Turn throttle knob for locomotive whose speed is to be changed. UP/+ & DOWN/- can also be used. With 2-digit address speed is shown on right side of display. With 4-digit address speed flashes up as SP:XX. Display will return to 4-digit address. To change direction press c/R for right throttle knob or L/t for left throttle knob. Direction indicator changes color (to RED for reverse or GREEN for forward.)

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Dispatching/Releasing Address	Stealing a Loco/Slot Following	Status Editing a Decoder
<ul style="list-style-type: none"> DT100R must be connected to LocoNet. Ensure the locomotive speed is 00. Press SEL/SET then MODE/DISP. DT100 LCD will show SEL. <p>Note: if the throttle is not plugged into LocoNet when this step is carried out the address will be released from the throttle, but will not be dispatched from the system.</p>	<ul style="list-style-type: none"> DT100R must be connected to LocoNet. Press SEL/SET to enter selection mode. Dial up address to be stolen. Press SEL/SET. Disconnect DT100R from LocoNet. Display should go to idle. Press and hold Direction Arrow button for throttle knob used above and plug DT100R back into LocoNet. After DT100R beeps release direction button. Slot following mode is active. 	<ul style="list-style-type: none"> DT100R must be connected to LocoNet. Press SEL/SET to enter selection mode. Be sure desired address is displayed. Press FUNC to enter status edit mode. Current status code xy at right of test area flashes. Use either throttle knob to change status code value. Once desired code is displayed press SEL/SET to change status code and select address to run.

Setting Throttle Options
<ol style="list-style-type: none"> Unplug the DT100R from LocoNet. Press/hold SEL/SET key while plugging DT100R back into LocoNet. The display will show "oP:0x", where "x" is the current setting. Use R or L throttle knob to change setting to "oP:01". Press SEL/SET key to save setting & advance to next option. The display will show "oS:xx". Use R or L throttle knobs to change the setting to the desired setting. Press SEL/SET to save setting then press SEL/SET two more times to complete the process.

Note: DT100R throttles will time out and return to RUN mode in 5 or 6 seconds if no action is taken following each step above.

It is strongly recommended that all locomotives assigned to the throttle (both throttle knobs) are released (i.e. dispatched) before any throttle options are changed.

The values to assign for throttle options OP#2 are:

Desired Action	DT100R
Ballistic tracking ON	OP#1 = x01
Ballistic Tracking OFF	OP#1 = x00
Normal radio mode with power saver, 128 speed steps	OP# 2 = x03
Normal radio mode without power saver, 128 speed steps	OP#2 = x83

Any changes to throttle options should be made at a Programming Station, not while operating on the layout.

DT100R Throttle Consisting

The consisting methods that will be permitted at NTRAK shows will depend on the total number of operators expected to participate in the show, and whether the maximum of 120 slots in the DCS100 Command Station may be reached. Basic or Advanced (Decoder Assisted) Consisting use only use one memory slot per consist. UniVersal (Command Station Assisted) Consisting requires a memory slot in the Command Station per locomotive. Basic or Advanced Consisting can be set up prior to the Convention or at the Programming Stations; UniVersal consisting must be set up on the layout.

Basic Consisting. With Basic Consisting all locomotives in the consist are programmed to the same address. For locomotives moving in the forward physical direction program CV29 to x06 for 2-digit address or x26 for 4-digit address. For locomotive(s) moving in the reverse physical direction program CV29 to x07 for 2-digit address or x27 for 4-digit address. (Note: the DT100R program in hexadecimal.) For non-Digitrax decoders these values may be different; check the decoder manual.

UniVersal (Command Station Assisted) Consisting. Where permitted, UniVersal Consisting is set up as follows:

- DT100R must be connected to LocoNet.
- Select the address of the **TOP** locomotive on the right throttle knob.
- Select the address of the locomotive to be consisted to the TOP locomotive on the left throttle knob.
- Ensure the two locomotives are traveling in the same direction on the track, and any functions on the left locomotive are set.
- Press the **MODE** button twice until the **MU** mode indicator on the LCD display is lit, then press + to add the locomotive to the consist.
- Repeat to consist additional locomotives.

To remove locomotive(s) from a consist do the following:

- DT100R must be connected to LocoNet.
- Select the address of the locomotive to be removed on the left throttle knob.
- Press the **MODE** button twice until the **MU** mode indicator on the LCD display is lit, then press - to remove the locomotive from the consist.
- Repeat to remove additional locomotives.

Advanced (Decoder Assisted) Consisting. Digitrax FX decoders (DNxxFX, DN14x, DN16x, DZ12x and DZ14x) can be used with Advanced Consisting, but other decoders may not be capable of Advanced Consisting. For compatibility of non-Digitrax decoders with Advanced Consisting check your decoder manual. Programming of Advanced Consists should be carried out in advance at home or at the Programming Station.

Programming Decoders

Throttle directions for programming decoders are not provided here since Programming Stations are available at most NTRAK show layouts. The programming staff should be fully qualified to provide assistance as needed in programming decoders.

Operations Mode Programming on the layout tracks is prohibited on NTRAK show layouts. It is too easy to make an unintentional error with Operations Mode Programming that could cause problems for another locomotive or the entire layout.

Throttle Problems & Maintenance

If problems with a throttle are encountered during the Convention check the following items. If these do not solve the problem the throttle should be taken to the on-duty Digital Master or a Programming Station, to be checked out.

Battery. Be sure the battery is installed with the correct polarity. Check this especially if the throttle display goes blank when unplugged from LocoNet.

A good battery is key to successful operation in the radio (tetherless) mode. A battery is not needed when the throttle is plugged into LocoNet. Whatever may appear to be wrong with a throttle, the first thing to suspect is the battery. Replace the 9V battery with a new or known good battery. Try two or three batteries before deciding there is a fault with the throttle. Examples of problems caused by weak or dying batteries include:

- The throttle operates correctly when plugged into LocoNet, but you cannot control the train after it is unplugged.
- The throttle loses control of a train after a period of time.
- The throttle makes beeping noises.

Don't assume that a newly purchased battery will always be a good battery. A new battery can have a high internal resistance that prevents it from putting out sufficient voltage and/or current to operate the throttle. Always purchase batteries from a store that sells lots of batteries and therefore always has fresh batteries on hand. Batteries have a "shelf life" as they will deteriorate even if not used.

No Radio Operation. If the throttle operates correctly when connected to LocoNet but not when untethered, even after ensuring the battery is good, the problem may be that radio transmission has been turned off. Bring the throttle to the on-duty Digital Master or a Programming Station to be checked out and make sure radio transmission is turned on.

Loose Throttle Knob. The throttle knobs are held in place by two 0.050" screws, which can work loose over time. The screws require a 0.050" Allen wrench to tighten them. When tightening the screws, be careful not to put too much sideways pressure on the knob, as the encoder shaft can be damaged. If the throttle knob(s) gets loose bring the throttle to the on-duty Digital Master, who will have the required Allen wrench.

RJ12 Plug. There are 3 potential problems relating to the RJ12 plug on the end of the stubby LocoNet cable:

- The locking tab breaks off,
- The contacts on the plug are bent or otherwise damaged (rare), or
- The wires are not making a good connection with the contacts in the plug.

The solution to any of these problems is to replace the RJ12 plug. The on-duty Digital Master is equipped to replace your damaged RJ connector.