

EasyDCC, A Brief Tutorial

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Easy DCC and the Kitsap Western

The purpose of this document is to inform the reader of some of the capabilities of the EasyDCC system and how it is used in operation of Bremerton Northern Model Railroad's Kitsap Western HO layout.

This tutorial will mainly concern itself with command station use.

Kitsap Western uses two command stations. One is for operation of the layout and the other is for the programming track only. The latter has a RS232 serial computer port connected so that a program, such as DecoderPro, can be used for programming. With the latter command station, you cannot "program on main" or operate a locomotive. The former does not have the computer RS232 interface installed, so it cannot use DecoderPro.

This document was developed from the EasyDCC manual, reference (1), and is not meant to replace said manual. It is recommended that one refer to the manual when questions beyond the scope of this tutorial present themselves and for additional information not presented.

The BNMRR EasyDCC manual is kept in the layout's power supply box.

The Command Station

The command station picture on the front of this document should be referred to as you follow the key press sequences presented throughout the tutorial.

Each command station key is a simple “click” key. They work best by smartly pushing and releasing the key. Pushing too quickly may not allow the command station to respond to the key push. Holding too long may result in multiple entries. If you make a mistake, push the ESC key and start over. Watch the display on the command station for mistakes of entry or additional input requirements.

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Throttles

Kitsap Western mainly uses wireless throttles. Also, there are two throttles on the command station that may be used to operate trains.

The thing to remember here is only one throttle may be used at a time to control locomotives. No harm will come to the decoder, but the loco will run poorly or not at all.

The command station throttles do not have identification (ID) numbers and their operation bypasses the Transmitters, receivers and the throttle buss.

No decoder programming may be done using the wireless throttles.

WIRELESS THROTTLES

BNMRR wireless throttles are model T5000E and assigned ID numbers 9 through 16 and frequencies 8 through 15. They transmit to a different receiver than ID numbers 1 through 8 which are reserved for personally owned wireless throttles.

A list of ID numbers, frequencies, throttle model and their owners is provided in the BNMRR Show Book.

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More on Remote Throttles

Also, each remote throttle must have a unique ID number and (normally) must be using a unique radio frequency. On each of the BNMRR remote throttles, the ID and Frequency numbers assigned are printed on a tab that becomes a hinge for the throttle's battery compartment. The operator is to check and be sure the display indicates the identical ID and Frequency numbers after the throttle is turned on and after entering a locomotive's address. Refer to the throttle instruction manual in a pocket of the EasyDCC manual located in the bottom drawer of the power supply desk to correct the settings.

At the beginning of a show, the throttle will need batteries. In the drawer where the throttles are kept, there is a plastic box that has batteries in it. Select the batteries with the throttle ID number you are using. Do not use new batteries unless the old ones are spent.

Spent batteries go into a separate labeled container for recycling.

When new batteries are to be installed, "Sharpie" mark the batteries with the throttle's ID number upon installation.

At the end of the show, remove the batteries leaving the cover open. Place the batteries in the appropriate container. Place the throttle in the appropriate power Desk drawer.

Programming Track: Loco Address

It is recommended that locomotives decoders have their address programmed on the programming track. Though it is possible, and sometimes necessary, to program addresses on the main track, one needs to be extra careful so that other locomotives on the track aren't affected.

Select the locomotive and address you want to program. Place it on the programming track. Use the following keystrokes: **SVC PRGM; LOCO**; (enter the number using the number keypad); **ENT; ESC**. The ESC key always terminates the programming sequence and resumes the normal display.

If this doesn't seem to work, try programming the appropriate CV(s). CV1 is for short addresses , while CV17 and CV18 are for long addresses. Following that, change the value in CV29 appropriately. How to determine the values for CV's 17, 18 and 29 was covered in the Clinic "Basic Programming of DCC Locomotives".

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Programming Track: Speed Steps

It is important that the command station transmits the same speed steps as the decoder is expecting to receive. Odd operation or functions not operating properly may result if they don't match.

If you expect to operate extensively on the Kitsap Western, leave the command station's loco registry at the default of 28 steps and reprogram the locomotive to 28 steps by changing the value of configuration Variable (CV) 29. With the loco on the programming track, use the keystrokes: **SVC PRGM**; decoder type (**1, 2, 3** or **ENT**) (if requested); **#STEPS; 2** (28 steps). This will reset CV29 to an appropriate value required for 28 speed steps.

Alternately, you may select an appropriate value for CV29 (see pages 52 through 54 of the EasyDCC manual for more information) and change it by directly writing the value into CCV29. This process is described later under "Writing to any CV."

Programming Track: Fine Tuning Decoder Performance

There are many CV's that affect decoder performance. The one's listed here are the most commonly used for fine tuning. The bracketed number is the actual CV being modified when you push the word key.

MSV; [CV02] sets the initial or starting speed of the motor at the first speed step.

ACCL; [CV03] sets the time it takes the decoder to move between speed steps on the increase of throttle setting.

DECL; [CV04] sets the time it takes the decoder to move between speed steps on the decrease of throttle setting.

SPDTABLE; Although this is part of the more complex CV29, a single key is provided to access a change in the decoder's speed table. With this key, you can select which speed table stored in the decoder will be used, either the standard/default table of a custom table.

#STEPS; described on the previous page.

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Programming Track: Writing to Any CV

A value may be written to any CV using the following key strokes: **SVC PRGM; CV;** (enter the CV number using the number keypad); **ENT; 1** (“rite”); **1** (value); (enter the value desired using the number keypad); **ENT**.

The value is written and you can move on to another CV. When finished writing to CV’s, push **ESC** to return to the normal display.

The CV value can be verified by using key strokes: **SVC PRGM; CV;** (enter the CV number using the keypad); **ENT; 2** (verify); **1** (value); (enter the value using the keypad); **ENT**. If the value matches what is in the decoder, the “verified!!” message is displayed. If not, the message says “Verify Failed!”.

Or, use Macro 99 to see its value (See page 57 of the EasyDCC manual).

Make sure the green LED on the command station is OFF before removing the loco from the programming track.

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Main Track Programming:

Note: Only advanced decoders support Main Track Programming.

Again, it is recommended that locomotives decoders have their address programmed on the programming track. Though it is possible, and sometimes necessary (some decoders require main track programming), to program addresses on the main track, one needs to be extra careful so that other locomotives on the track aren't affected. Remove other locomotives or turn their tracks off.

If necessary, do such address change by writing directly to the appropriate CV's. Change CV29 last. When changing from one long address, to another long address, first change CV1 to a short address, then change CV29 to a number between 0 and 23. The decoder now has a short address. Next, change CV's 17 and 18 to their appropriate value, then change CV29 to its appropriate value. How to determine the values for CV's 17, 18 and 29 was covered in the Clinic "Basic Programming of DCC Locomotives".

The keystrokes: **OPS PRGM**; (old loco address); **LOCO**, will not work on the main track.

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Main Track Programming: Fine Tuning Decoder Performance

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SPDTABLE; Although this is part of the more complex CV29, a single key is provided to access a change in the decoder's speed table. With this key, you can select which speed table stored in the decoder will be used, either the standard/default table of a custom table. See the next slide and the EasyDCC Manual for more information on speed tables.

MSV; [CV02] sets the initial or starting speed of the motor at the first speed step.

ACCL; [CV03] sets the time it takes the decoder to move between speed steps on the increase of throttle setting.

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Main Track Programming: Speed Tables

EasyDCC has eight custom speed tables built into the software. These speed tables can be written to the decoder and used as is. If the table isn't acceptable for your purpose, modify the values of CV's 67 to 94 after downloading a table that is closest to what you'd like to the decoder.

For more information, read the EasyDCC Manual starting on page 59.

Since this system is community owned, **do not** modify the table in the EasyDCC system. That way, someone could look at the documentation and, maybe, determine the appropriate built-in table for them to use.

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Main Track Programming: Fine Tuning Example

If you want to change the acceleration rate (ACCEL) while on the main track, perform the following key strokes: **OPS PRGM**; (enter the decoder address using the keypad); **ENT**; **ACCEL**; (enter the new value desired); **ENT**. You may now program something else or push **ESC** to end the procedure.

The other fine tuning commands work the same way.

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Main Track Programming: Changing a CV's Value

A value may be written to any CV using the following key strokes: **OPS PRGM**; (enter the decoder address using the number keypad); **ENT**; **CV**; (enter the CV number using the number keypad); **ENT**; **1** (value); (enter the value desired using the number keypad); **ENT**.

The value is written. Note that the CV number indicated on the display has not changed. You can continue to enter new values to the same CV without having to reenter the specific CV again. This allows you to see (or hear) the effect of the change. When finished you can program another CV by pushing **OPS PRGM** or push **ESC** to conclude CV programming and return to the normal display.

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Multi-Unit Consists

A consist is a group of locomotives that operate together as if they were a single unit. When consisting locomotives, each locomotive should be speed matched to the others. A separate Clinic has been given for speed matching.

There are three types of consists supported by EasyDCC. They are Basic, Standard and Advanced Consists.

Advanced consists are the most complicated but provide more capability for how function commands are interpreted by each consisted locomotive. They are not discussed further in this document. For an explanation, see the EasyDcc manual starting on page 67.

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Multi-Unit Consists: Basic Consist

The Basic Consist is the easiest to establish but does not allow division of functions between locomotives.

To form a Basic Consist, simply address all locomotives' decoders to the same address. They will respond to the same commands. See Slide 5 of this document.

This works best where two or more locomotives will always operate together.

In addition to the addressing, various CV may need to be changed so that operation is proper. If one of the locomotives will be running in reverse, CV29 should be changed to have that onerun in reverse direction for a forward command. Do this programming on the programming track and programming only one locomotive at a time. Other CV's, such as those for lighting, could be changed to provide appropriate effects.

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Multi-Unit Consists: Standard Consist

The Standard Consist uses the address of the lead locomotive and up to seven more locomotives can be included in the consist. The function keys work only on the lead locomotive.

Example: Setup a Standard Consist of A-B-A diesel units using the following key strokes: **SETUP**; **CONSIST**; (enter the lead decoder address); **ENT**; **1** (add); enter the B-unit address); **ENT**; **N-ON** (normal direction); **1** (add); enter the second A-unit address); **ENT**; **R-OFF** (Reverse); **ESC**.

If the B-unit is fighting the other two, just turn it to run the other way. You had it on the track “backwards.”

Should you want to remove a locomotive from the consist, substitute the key **2** (remove) for **1** (add) in the above example.

Remove all locomotives in a consist by substituting **3** (kill) for **1** (add) in the example.

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Miscellaneous Info About EasyDCC

- Throttles remain active 2 to 3 minutes even if they are turned off.
- Throttles remain active as long as their speed setting is not zero. Always set the speed control to zero or turn it off when not in use.
- When not being used, the command station throttles (A and B) should be assigned to no locomotive.
- It's a good idea to address a remote throttle to an address that isn't being used (9999?) before turning it off, so that it doesn't immediately operate the previous address when it is turned back on.
- Remember, at the end of a show, remove the batteries from the remote throttles. Make sure each batter has the throttle ID number written on them. This pairs the batteries for longer battery life.

References:

- (1) EasyDCC, DCC Command Control, Installation, Operation And Reference Guide, Version 6 System Software, CVP Products, PO Box 835772, Richardson, TX 75083. www.cvpusa.com

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