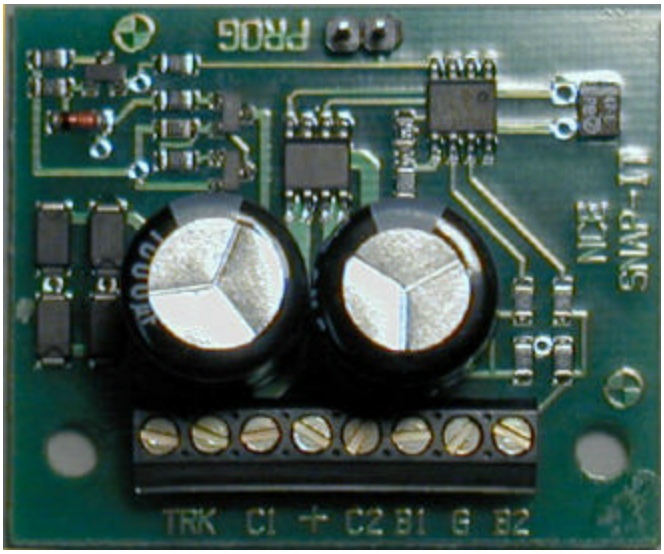
# SNAP-IT

Accessory Decoder




## $19.95

FOR USE WITH ATLAS TWIN COIL SWITCH MACHINES

Dimensions: 1.80" x 1.50" (46 x 38 mm)

Decoder revision A

**This is an accessory (switch machine) decoder**

- Control for one twin coil switch machine
- Capacitive discharge for very low current draw of track power
- Snap-It supports the full range of DCC accessory addresses (1-2044)
- Easy address programming, no need to connect it to programming track
- Simple hook up, 2 wires to the track, 3 wires to switch machine
- Includes optional connections for "local" control push buttons
- An external power supply can be connected for more power

**Every attempt has been made to ensure this decoder complies with all applicable NMRA Standards and Recommended Practices**



Last revised: 25 February 2003

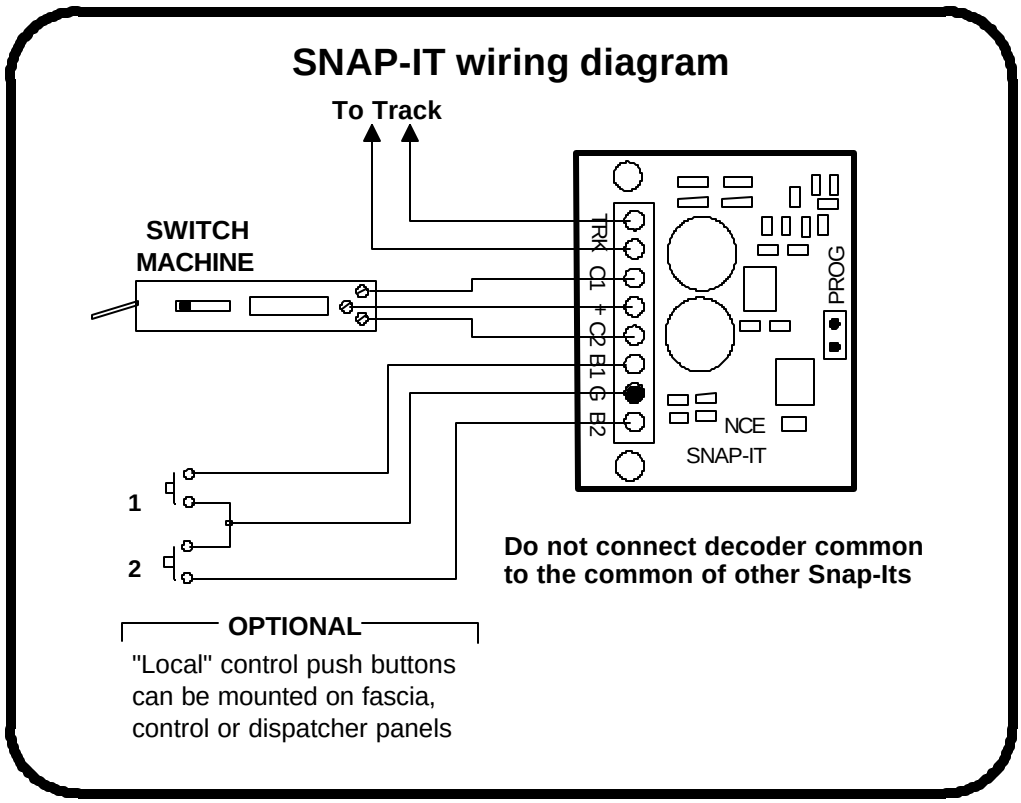
## Installation Notes:

This decoder is designed to control one “twin coil” type switch machine. The output is driven by a capacitive discharge supply. A capacitive discharge supply draws a small amount of current over a period of time and stores this energy in capacitors. When it comes time to throw a switch the stored energy in the capacitor is released all at once to the switch machine. This provides the large amount of power needed by twin coil machines without drawing a large amount of power from the track.

The Snap-It draws the most current when the layout power is first turned on to charge the capacitors. It will never draw more than 65mA (.065 Amps) during this time. After the capacitors are charged the current drops to about 2mA (.002 Amp). This means that 30 Snap-Its will draw about 2 Amps when the layout is first turned on, then the current will drop to about 60mA which is about the amount of current drawn by 1 locomotive headlight. Most DCC systems can easily supply twice this much power.

**Wiring:**

See the diagram below for wiring particulars. The Snap-It only needs two wires to the track and three wires to the switch machine. Make sure to keep the wires to the switch machine short to prevent voltage drop while the switch is throwing. We suggest 22 AWG wires to the switch machine for runs of less than 3 feet. If you need longer runs 18 AWG is more appropriate. Wire from the track to the Snap-It can be small (22, 24 or 26 AWG are OK) as there is little current draw from the track.




**Optional push buttons:**

Push buttons may be added for local control of the switches. Use momentary contact switches for local control. **Do not use a toggle switch** (unless it is momentary), its continuous connection will prevent DCC control of the turnout. You can have multiple buttons wired in parallel for operation of the machine from more than one control panel. You can also program the Snap-It to “toggle” the outputs with each push of the local control pushbuttons.

### Factory default values for decoder

The Snap-It is factory programmed to accessory address 1 (decoder addr 1, output 1)
CV548 is set to 0 (normal dual pushbutton operation)
CV550 is set to 15 (1.5 second capacitor recharge time)
CV552 is set to 125 (the output is activated for .125 seconds when a command is received)

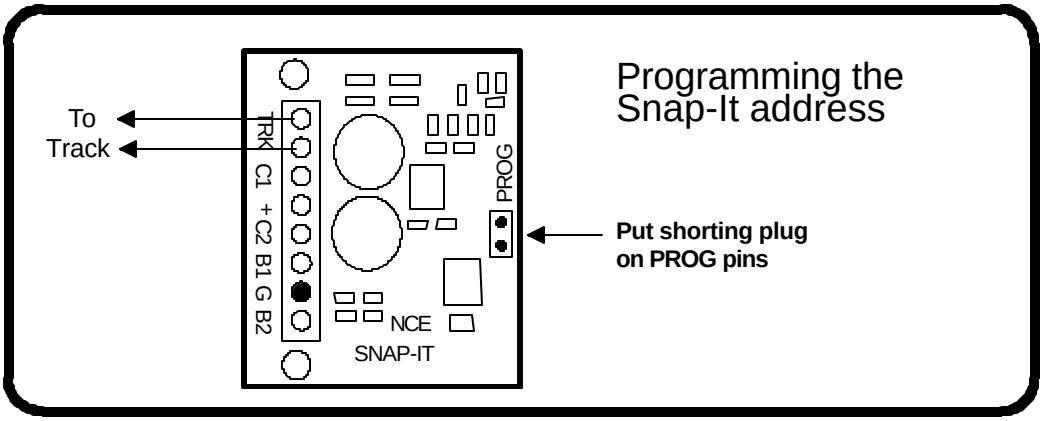
### Programming information

The Switch-It **cannot** be programmed on your programming track. It is always programmed while connected to the mainline track. This decoder can be programmed by all systems that support accessory control using the procedure below.

### To program the Snap-It to a new address:

1) Connect wires from the track to the decoder **TRK** connections.
2) Place the supplied shorting plug on the PROG connector as shown below.
3) Use your DCC system to control the accessory (switch) number you wish the decoder to use as its address for the Snap-It.
4) Remove the shorting jumper.

Do ***not*** leave the jumper in place after programming or you won't be able to control the switch.




### To set the CV550 to allow 4 seconds for the capacitors to recharge:

1) Disconnect track power to the Snap-It
2) Connect **B1** and **B2** to the **G** terminal *AND* put the programming shorting plug in place.
3) Re-connnect track power
4) Remove the shorting plug and **B1/B2/G** connections
5) The Snap-It will now allow 4 seconds for th capacitors to fully charge between switch operations

Note: Don't issue any accessory commands while these jumpers are connected or you will also program the decoder address.

You can also use the PROG ACCESSORIES feature of your NCE Powerhouse Pro. Push "PROG" followed by "7" to access this feature. Set CV550 to ten times the number of seconds you wish to allow for the capacitors to recharge after throwing a switch machine. If you want to allow 2 seconds set CV550 to 20. If you want 5.5 seconds set it to 55. The maximum time allowed is 10 seconds (CV550 =100).

### To set pushbutton 1 to "toggle" the outputs (disables pushbutton 2):

Use the PROG ACCESSORIES feature of your NCE Powerhouse Pro. Set CV548 = 1 (use the accessory address of SWA) to enable the 'toggle' option or set CV548 = 0 to disable it.

### To set the "on time" of the output when a switch is thrown:

Use the PROG ACCESSORIES feature of your NCE Powerhouse Pro. Set CV552 = to the number of milliseconds (1/1000 second) the output is to be activated 1. The range is 1-255. 125 is factory default.

NOTE: Some entry level DCC systems do not have the "Program Accessories on the Main" (ops mode) feature**.** You will not be able to change CV548 and CV552 if you have one of these systems.

**Factory reset:**

1) Disconnect track power to the Snap-It.
2) Connect **B1** to **B2**.
3) Re-connect track power to the Snap-It
4) Remove the **B1** to **B2** connection
5) The Snap-It is reset to address 1, a recharge time of 1.5 seconds, no output toggle and and activation time of .125 seconds

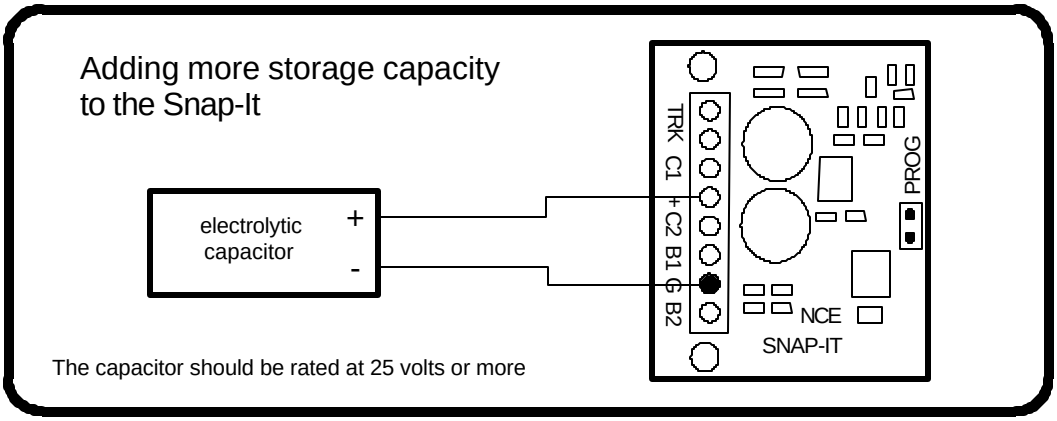
The warranty is void if the decoder is miswired, connected to more than 22 volts, or used with switch motors drawing more than 40mA.

The Snap-it is designed to power Atlas Snap switch machines or other low current twin coil switch machines from Lifelike, Bachmann, etc. If you wish to power higher current models such as NJ, Kemtron, Rix or others you will need to add more energy storing capacity. This can be done by connecting an external capacitor to the Snap-It. The diagram below illustrates the addition of an external capacitor. We suggest an electrolytic capacitor of 2200 to 4700UF with a rating of 25 volts or more. Keep the leads to the capacitor very short as length will affect performance

Suggested capacitor part numbers:

Digikey (1-800-DIGIKEY) part numbers
P-5544 - 1000uF @ 25VDC
P-5545 - 2200uF @ 25VDC
P-5546 - 3300uF @ 25VDC
P-5547 - 4700uF @ 25VDC

Most Radio Shack stores stock electrolytic capacitors




**External DC power can be connected to the SNAP-IT to provide more "OOMPH" in throwing the switch machines. Connect a DC supply in the range of 12 to 18 volts DC to the + and G terminals. Power supply positive goes to the + terminal.**

**Warranty**

This decoder is fully factory tested and warranted against manufacturing defects for a period of 1 year. As the circumstances under which this decoder is installed can not be controlled, failure of the decoder due to installation problems can not be warranted. This includes misuse, miswiring, operation under loads beyond the design range of the decoder or short ciruits in the locomotive manufacturer's factory wiring. If the decoder fails for non-warranted reasons NCE will replace the decoder, no questions asked, for $10 U.S. plus $2 shipping. For warranty or non-warranty replacement send the decoder (an any payment, if required) to:

**NCE Warranty Center 899 Ridge Road Webster, New York 14580**

Barcode