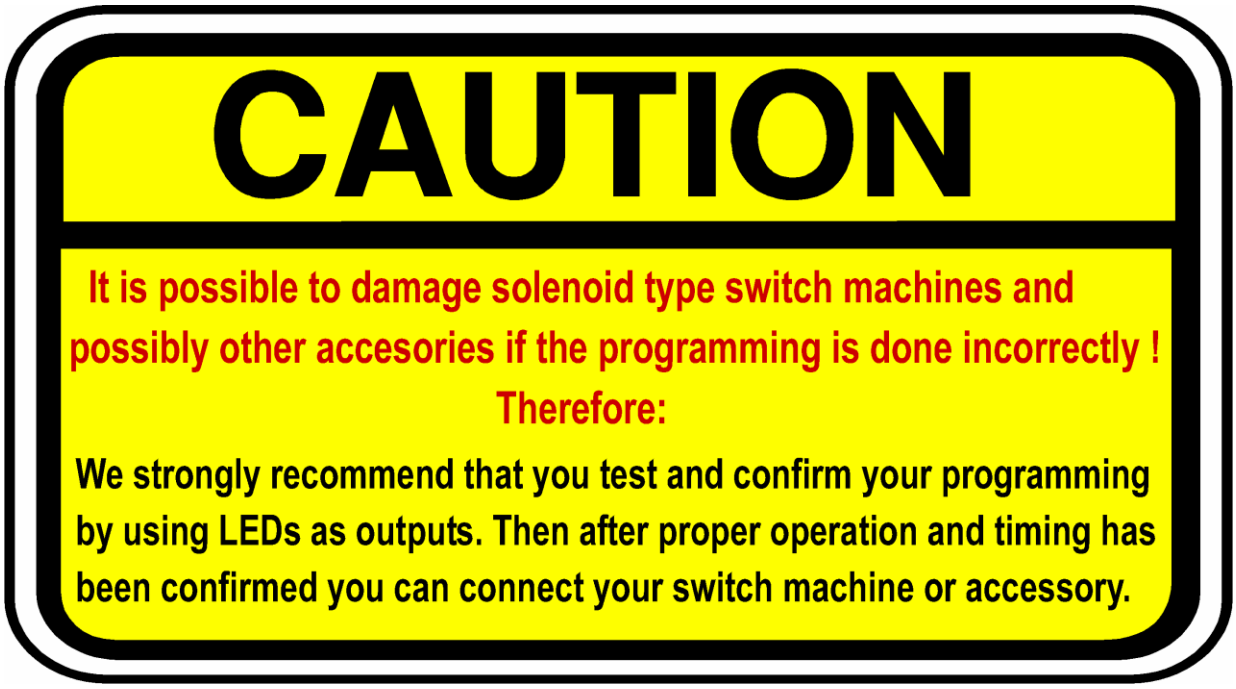
The 'Slow Snap' option

Slow Snap is a registered trademark

(How it works and How to use it)

Before you try the *Slow Snap®* feature please confirm that the attached snap switch works properly when using the Pulse Mode as described in the Quick Start and programming sections of this manual.



Please note that the Slow Snap feature DOES NOT work with the Atlas brand code 83 (brown mini solenoid) track switches. Do not attempt to use the Slow Snap feature with these particular solenoid switches. They will operate erratically and may be damaged by overheating.

The *Slow Snap*™ feature is designed to better control the movement of a dual solenoid track switch. Normally the dual solenoid 'snap' type track switches are thrown by sending them a high current pulse for up to 1/2 of a second.

The *Slow Snap* feature instead breaks the single high current pulse into twenty four short low current pulses that last in the range of two to twelve milliseconds in length and are spaced apart by up to 1/8 of a second thereby providing a smoother and slower action while greatly reducing the current requirements of the power supply. Additionally the *Slow Snap* control algorithm not only pulses the forward direction solenoid, but near the end of the forward pulse the opposing reverse direction solenoid is also pulsed for a short period of time. This simultaneous pulsing of the opposing coil creates the equivalent of a spring or damper action which provides a more precise and smoother actuation of the mechanism.

The *Slow Snap* feature allows programming the individual outputs of the *Universal Accessory Decoder* to match the characteristics of each snap switch. Each snap switch has its own characteristics dependant upon which type of snap switch is used as well as how much mechanical resistance is caused by the mounting of the switch, track incline and also the power supply voltage.

To choose the proper CV number some experimentation will be required. If necessary, please review the **Ops Mode** programming instructions on page 15 of the *Universal Accessory Decoder* manual.

The *Slow Snap* feature is programmed the same way that any of the other modes are programmed except the *Slow Snap* numbers are in the range of **128** decimal to **191** decimal. The complete **Slow Snap Timing Matrix** is shown on a following page. When reviewing the Slow Snap Timing Matrix you will note that there are eight zones with eight numbers for each zone.

The left two columns show the number that is programmed into the CV for the chosen output in both decimal and hex format. The remaining four columns describe the pulse timing for each value.

Note that there are color highlighted numbers within each zone of numbers. These are factory recommended starting numbers to select which zone your particular switch works well within.

Feel free to experiment, but **remember that these snap switches are designed for intermittent very low usage rates and therefore will heat up and possibly be damaged if activated too many times in too short a time period**. They may also heat up and bind and throw off your programming efforts. Take your time and pause between test periods.

Let's try some numbers and get a feel for how this works. First determine what style of snap switch you are controlling. This example demonstrates how to control the common Atlas 'above layout' snap switch.

151	**97**	2.5 ms	15 m.s.	0.5 ms	twenty four
150	**96**	2.5 ms	30 m.s.	0.5 ms	twenty four
149	**95**	2.5 ms	45 m.s.	0.5 ms	twenty four
148	**94**	2.5 ms	60 m.s.	0.5 ms	twenty four
147	**93**	2.5 ms	75 m.s.	0.5 ms	twenty four
146	**92**	2.5 ms	90 m.s.	0.5 ms	twenty four
145	**91**	2.5 ms	105 m.s.	0.5 ms	twenty four
144	**90**	2.5 ms	120 m.s.	0.5 ms	twenty four
143	**8F**	2 ms	15 m.s.	0.5 ms	twenty four
142	**8E**	2 ms	30 m.s.	0.5 ms	twenty four
141	**8d**	2 ms	45 m.s.	0.5 ms	twenty four
140	**8C**	2 ms	60 m.s.	0.5 ms	twenty four
139	**8B**	2 ms	75 m.s.	0.5 ms	twenty four
138	**8A**	2 ms	90 m.s.	0.5 ms	twenty four
137	**89**	2 ms	105 m.s.	0.5 ms	twenty four
136	**88**	2 ms	120 m.s.	0.5 ms	twenty four
135	**87**	1.5ms	15 m.s.	0.5 ms	twenty four
134	**86**	1.5ms	30 m.s.	0.5 ms	twenty four
133	**85**	1.5ms	45 m.s.	0.5 ms	twenty four
132	**84**	1.5ms	60 m.s.	0.5 ms	twenty four
131	**83**	1.5ms	75 m.s.	0.5 ms	twenty four
130	**82**	1.5ms	90 m.s.	0.5 ms	twenty four
129	**81**	1.5ms	105 m.s.	0.5 ms	twenty four
128	**80**	1.5ms	120 m.s.	0.5 ms	twenty four

Using your DCC controller, enter number 134 decimal (hex 86) into the CV location that controls the output to which the chosen Snap switch is attached.

Now test the snap switch action by sending a close or throw command to the desired output.

If the switch actuates smoothly, you are probably in the correct zone and you will find that by increasing the number to 135 decimal (hex 87) the switch will move faster and by decreasing the number the switch will move slower until at some number before 128 decimal the switch may move in discreet steps which become undesirable. You should experiment until you obtain the motion that is best for this snap switch.

Be sure to test both the throw and close action since the action may be different for each direction and some trade off may be necessary to compensate for any imbalance.

You may find that the switch does not completely activate when using the decimal number 134. If this occurs then try using decimal number 142 to try the next higher zone or even go up to decimal number 150. If your power supply voltage is low or limited in current, then you may even try the higher settings marked with highlighted color in the upper zones. Once you find one of the factory starting numbers that works, you can further experiment with numbers within that zone to enhance the movement.

And now some words about:
under the layout dual solenoid switch actuators.

► Accurate alignment is critical and difficult with this type of actuator and the travel length should be tested using the pulsed mode when doing final alignment. Only after the switch actuator is operating properly in pulse mode can the *Slow Snap* feature be properly calibrated.

► Some under the track actuators require higher than 12 volts to operate properly. Some require 14 volts while some others may demand as high as 17 volts. The *Universal Accessory Decoder* can accept up to 20 volts with no problems, but you must ensure that other accessories attached to the *Universal Accessory Decoder* can withstand these higher voltages. The input voltage to the *Universal Accessory Decoder* is connected to all of the outputs on the circuit board, so **be sure to confirm** that all accessories can stand the increased voltage.

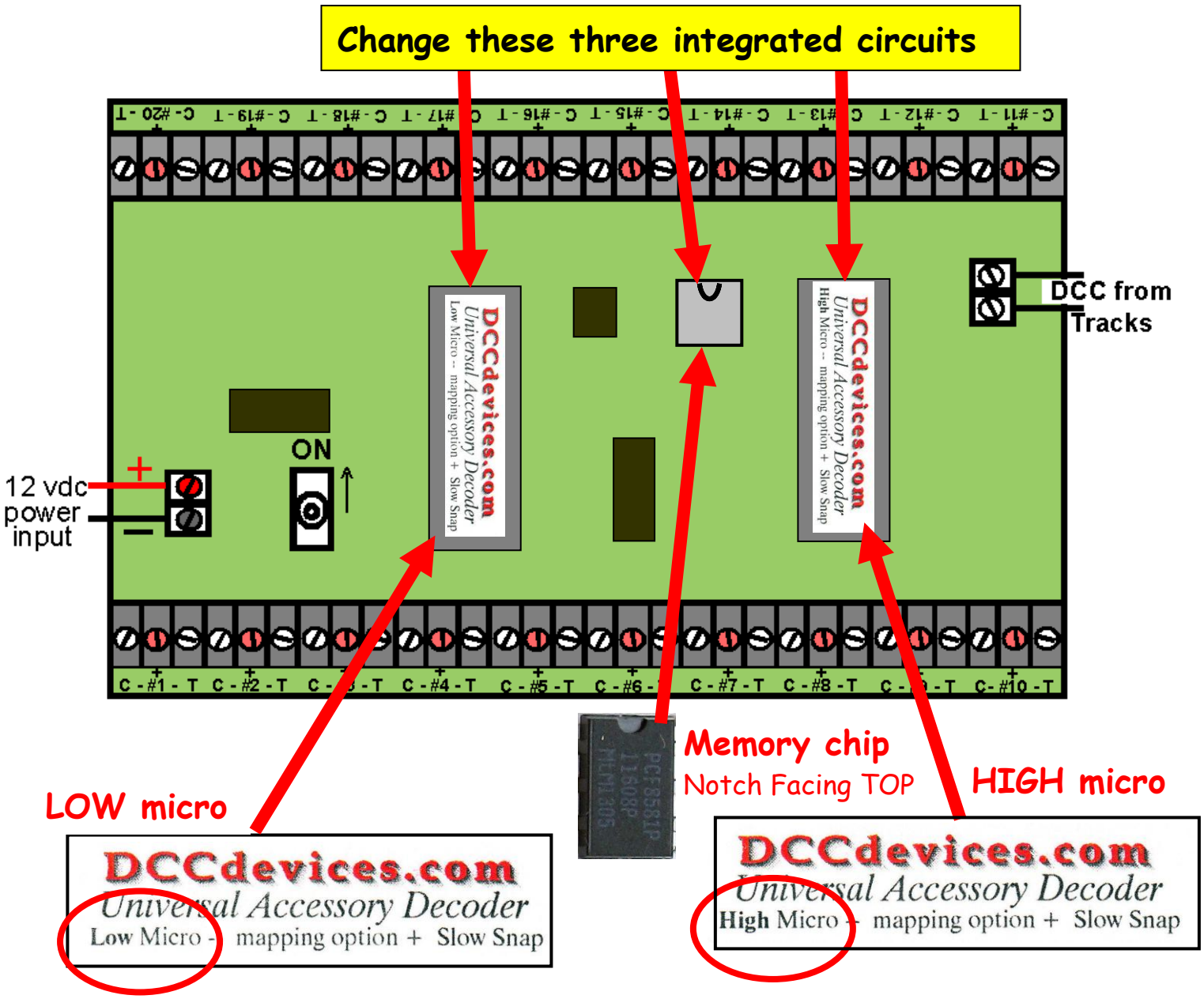
► Under the layout snap switches use the numbers in the higher zones since they require greater current per pulse.

► Unfortunately, there may be some combinations of under the layout track switches and voltage and current levels and incline and mounting that do not allow the *Slow Snap* feature to work as desired. If this occurs, you must use the Pulsed mode for this switch.

► **Remember:** Unless you are very practiced at programming the *Universal Accessory Decoder*, you should always test the programming using LEDs before connecting a dual solenoid track switch to the outputs. Testing with LEDs will prevent 'letting the smoke out' of the solenoids.

How to upgrade the *Universal Accessory Decoder* to include the Slow Snap and Mapping features

The upgrade is a simple task of replacing three integrated circuits with the newer version. The upgrade to slow snap also includes the mapping option software which is described in a later section of this manual addendum. The mapping option only affects the Slow Snap feature as it pertains to the selection of the proper memory chip to be replaced. If you are upgrading a *Universal Accessory Decoder* that uses addresses 1 to 20 then you need to install a memory chip that has those addresses. The same applies to addresses 21 to 40. Please select the proper memory chip before you begin the upgrade.



Notes:

Please note that the Slow Snap feature DOES NOT work with the Atlas brand code 83 (brown mini solenoid) track switches. Do not attempt to use the Slow Snap feature with these particular solenoid switches. They will operate erratically and may be damaged by overheating.

Decimal Value	Hex Value	Forward Pulse Width	Time between Pulses in m.s.	Reverse Pulse Width m.s.	Number of pulses		
191	BF	11.5 ms	15 m.s.	2 m.s.	twenty four		
190	BE	11.5 ms	30 m.s.	2 m.s.	twenty four		
189	BD	11.5 ms	45 m.s.	2 m.s.	twenty four		
188	BC	11.5 ms	60 m.s.	2 m.s.	twenty four		
187	BB	11.5 ms	75 m.s.	2 m.s.	twenty four		**Under**
186	BA	11.5 ms	90 m.s.	2 m.s.	twenty four		**Track**
185	B9	11.5 ms	105 m.s.	2 m.s.	twenty four		**Large**
184	B8	11.5 ms	120 m.s.	2 m.s.	twenty four		**Snap**
183	B7	8.5 ms	15 m.s.	1.5 ms	twenty four		
182	B6	8.5 ms	30 m.s.	1.5 ms	twenty four		
181	B5	8.5 ms	45 m.s.	1.5 ms	twenty four		
180	B4	8.5 ms	60 m.s.	1.5 ms	twenty four		
179	B3	8.5 ms	75 m.s.	1.5 ms	twenty four		
178	B2	8.5 ms	90 m.s.	1.5 ms	twenty four		
177	B1	8.5 ms	105 m.s.	1.5 ms	twenty four		
176	B0	8.5 ms	120 m.s.	1.5 ms	twenty four		
175	AF	6 ms	15 m.s.	1 m.s.	twenty four		
174	AE	6 ms	30 m.s.	1 m.s.	twenty four		
173	Ad	6 ms	45 m.s.	1 m.s.	twenty four		
172	AC	6 ms	60 m.s.	1 m.s.	twenty four		
171	AB	6 ms	75 m.s.	1 m.s.	twenty four		
170	AA	6 ms	90 m.s.	1 m.s.	twenty four		
169	A9	6 ms	105 m.s.	1 m.s.	twenty four		
168	A8	6 ms	120 m.s.	1 m.s.	twenty four		
167	A7	5.5 ms	15 m.s.	1 m.s.	twenty four		**Under**
166	A6	5.5 ms	30 m.s.	1 m.s.	twenty four		**Track**
165	A5	5.5 ms	45 m.s.	1 m.s.	twenty four		**Medium**
164	A4	5.5 ms	60 m.s.	1 m.s.	twenty four		**Snap**
163	A3	5.5 ms	75 m.s.	1 m.s.	twenty four		
162	A2	5.5 ms	90 m.s.	1 m.s.	twenty four		
161	A1	5.5 ms	105 m.s.	1 m.s.	twenty four		
160	A0	5.5 ms	120 m.s.	1 m.s.	twenty four		
159	9F	5 ms	15 m.s.	1 m.s.	twenty four		
158	9E	5 ms	30 m.s.	1 m.s.	twenty four		
157	9D	5 ms	45 m.s.	1 m.s.	twenty four		
156	9C	5 ms	60 m.s.	1 m.s.	twenty four		
155	9B	5 ms	75 m.s.	1 m.s.	twenty four		
154	9A	5 ms	90 m.s.	1 m.s.	twenty four		
153	99	5 ms	105 m.s.	1 m.s.	twenty four		
152	98	5 ms	120 m.s.	1 m.s.	twenty four		
151	97	2.5 ms	15 m.s.	0.5 ms	twenty four		
150	96	2.5 ms	30 m.s.	0.5 ms	twenty four		
149	95	2.5 ms	45 m.s.	0.5 ms	twenty four		
148	94	2.5 ms	60 m.s.	0.5 ms	twenty four		
147	93	2.5 ms	75 m.s.	0.5 ms	twenty four		
146	92	2.5 ms	90 m.s.	0.5 ms	twenty four		
145	91	2.5 ms	105 m.s.	0.5 ms	twenty four		
144	90	2.5 ms	120 m.s.	0.5 ms	twenty four		
143	8F	2 ms	15 m.s.	0.5 ms	twenty four		**above**
142	8E	2 ms	30 m.s.	0.5 ms	twenty four		**Track**
141	8d	2 ms	45 m.s.	0.5 ms	twenty four		**small**
140	8C	2 ms	60 m.s.	0.5 ms	twenty four		**Snap**
139	8B	2 ms	75 m.s.	0.5 ms	twenty four		
138	8A	2 ms	90 m.s.	0.5 ms	twenty four		
137	89	2 ms	105 m.s.	0.5 ms	twenty four		
136	88	2 ms	120 m.s.	0.5 ms	twenty four		
135	87	1.5ms	15 m.s.	0.5 ms	twenty four		
134	86	1.5ms	30 m.s.	0.5 ms	twenty four		
133	85	1.5ms	45 m.s.	0.5 ms	twenty four		
132	84	1.5ms	60 m.s.	0.5 ms	twenty four		
131	83	1.5ms	75 m.s.	0.5 ms	twenty four		
130	82	1.5ms	90 m.s.	0.5 ms	twenty four		
129	81	1.5ms	105 m.s.	0.5 ms	twenty four		
128	80	1.5ms	120 m.s.	0.5 ms	twenty four		

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