



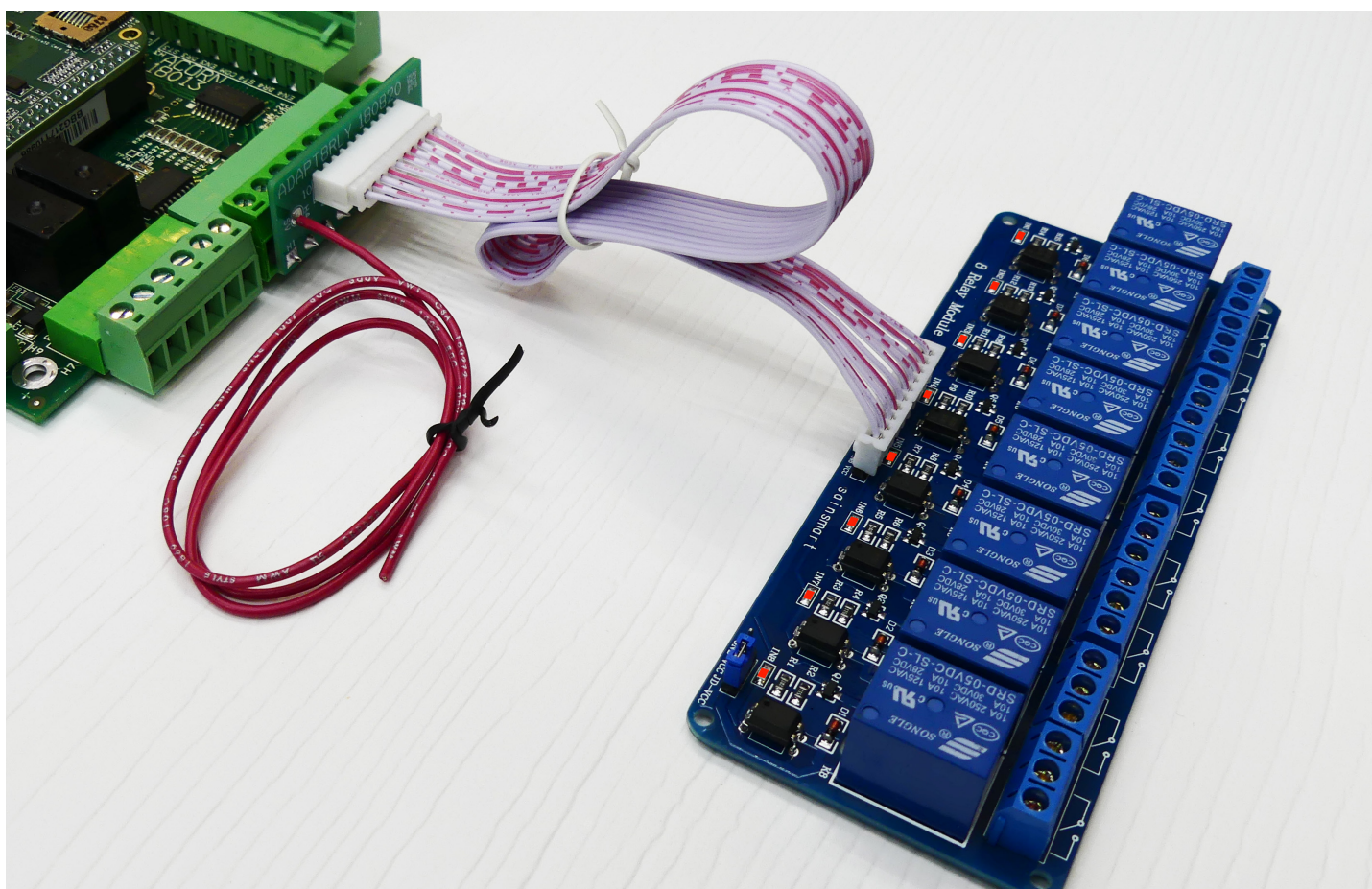
### Centroid Acorn CNC Relay Board Kit

Software version: CNC12 V.4.12+

Models: Acorn CNC

#### Plug and Play Relay Outputs with the Acorn CNC Relay Board kit.

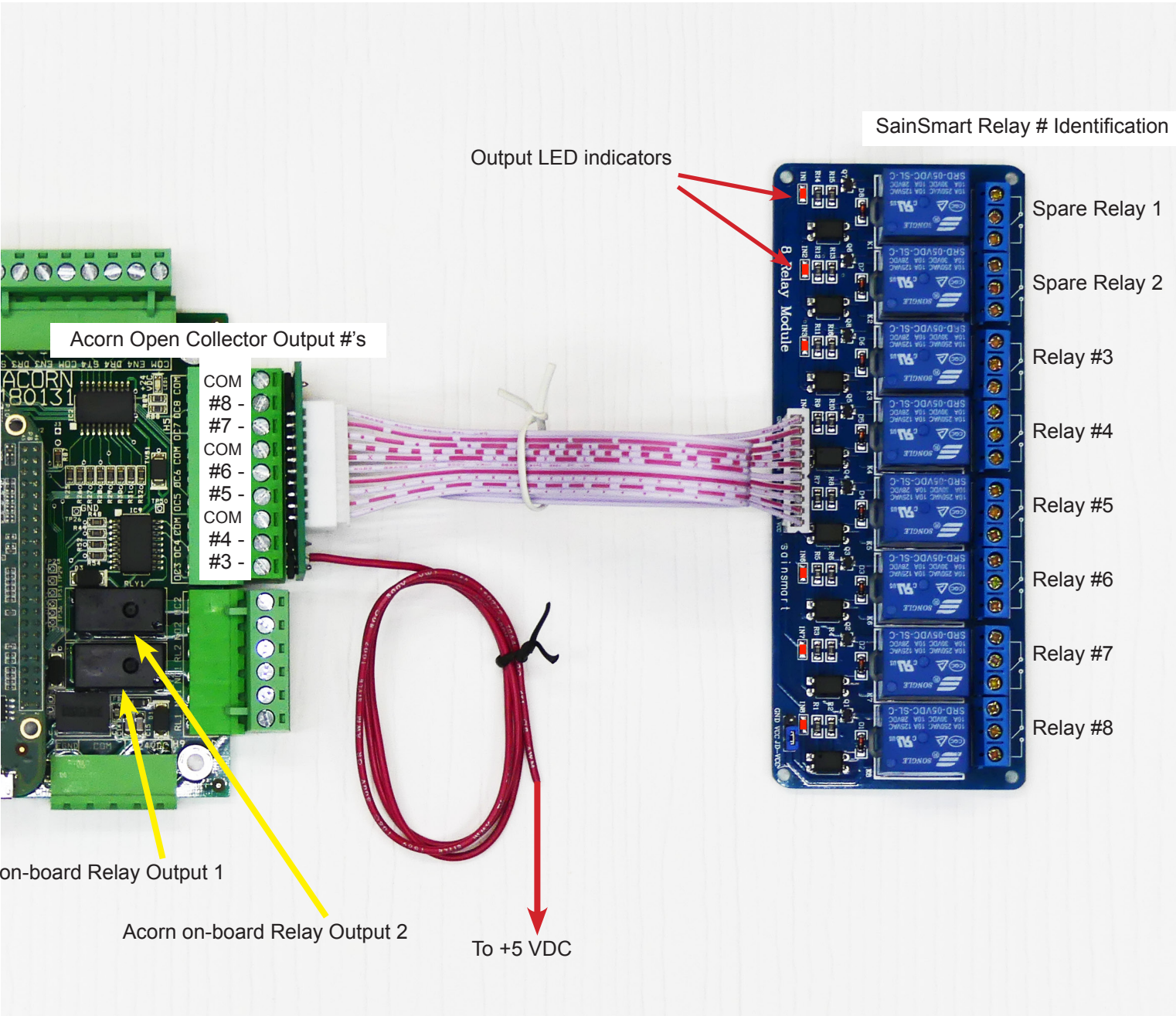
This kit will convert Acorn's six open collector outputs into Relay Outputs in under a minute. The kit uses an off the shelf SainSmart "8 Relay Module" combined with Centroid's Relay Module Adapter Card and a ribbon cable for easy installation. The adapter card simply inserts into the Acorn Output Connector header screw terminals. Powered by 5 Volts DC the Adapter card comes with a pre-installed 5 VDC pig tail which connects to the 5 VDC terminal on the Acorn Logic Power supply. This allows CNC controlled connections to various CNC devices such as VFD's, solenoids, lights, fans, pumps, motors, other larger relays and contactors in a compact format. The 8 relay module contains eight SPDT (Single Pole Double Throw) high current relays (10 AMPS at 250 VAC, and 10 amps at 30 VDC) which can directly control any device rated at or below the maximum rating of the relays. If higher current devices are required these relays can then in turn control larger relays or contactors to control the higher current device.



#### Acorn Relay Board Kit Includes:

- SainSmart "8 Relay Module"
- Ribbon Cable
- Acorn Relay Adapter Card with 5 vdc pig tail.

Acorn Outputs Numbers 3 through 8 are utilized to control the relays on the SainSmart 8 Relay Module



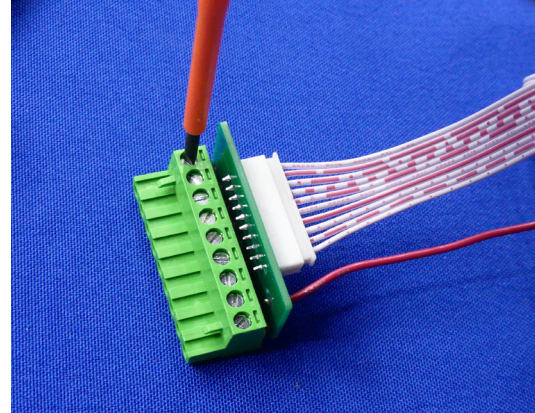
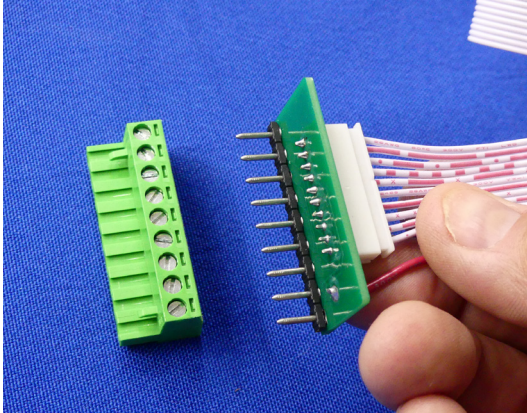
Acorn Output Number	...controls SainSmart Relay Number
3	3
4	4
5	5
6	6
7	7 and 2 *
8	8 and 1 *

\* Note: Acorn Output #7 activates both SainSmart Relay #7 and Spare Relay #2  
Acorn Output #8 activates both SainSmart Relay #8 and Spare Relay #1



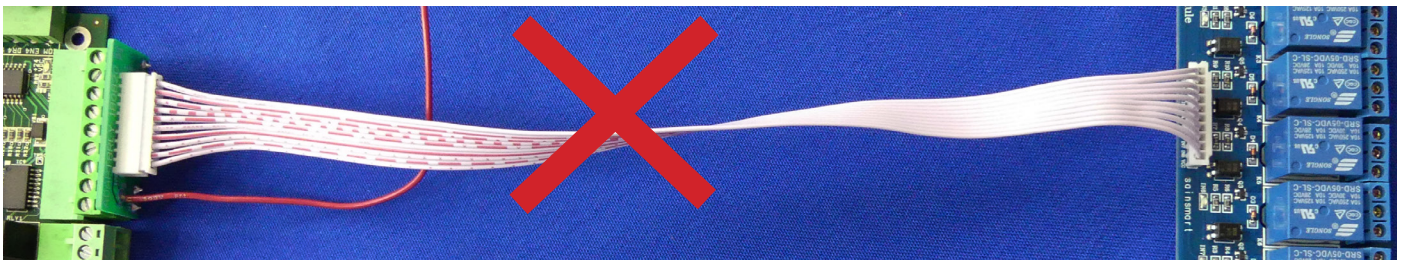
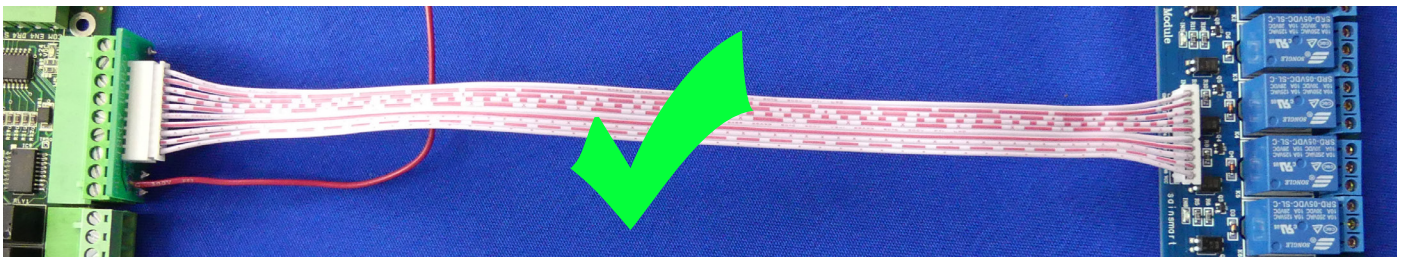
## Installation of the Acorn Relay adapter card.

- 1.) Bench Test the Acorn CNC control board without the Relay board connected to verify CNC12 Communication to Acorn. See videos on the forum for Acorn Bench Test procedure. After successful Acorn Bench test, with the power off, insert the Centroid Adapter card into the Acorn connector and tighten down the terminal screws.

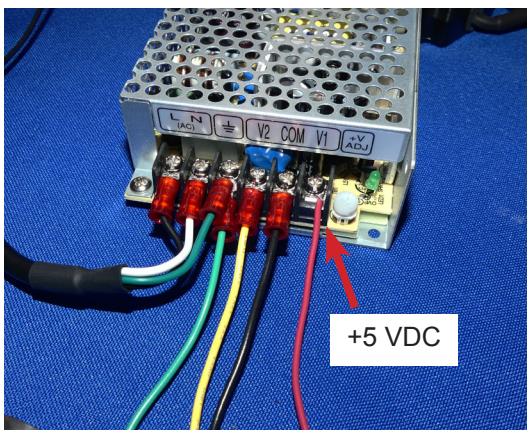


- 2.) Reinsert the Acorn Output connector onto the Acorn board.

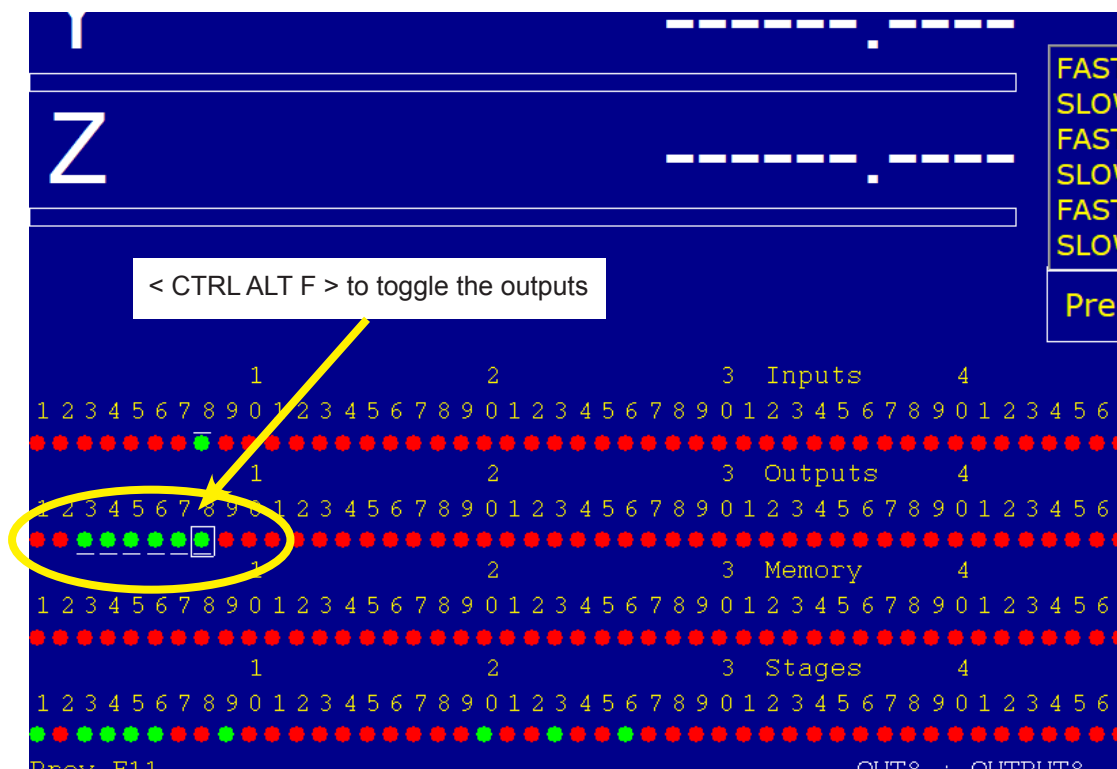
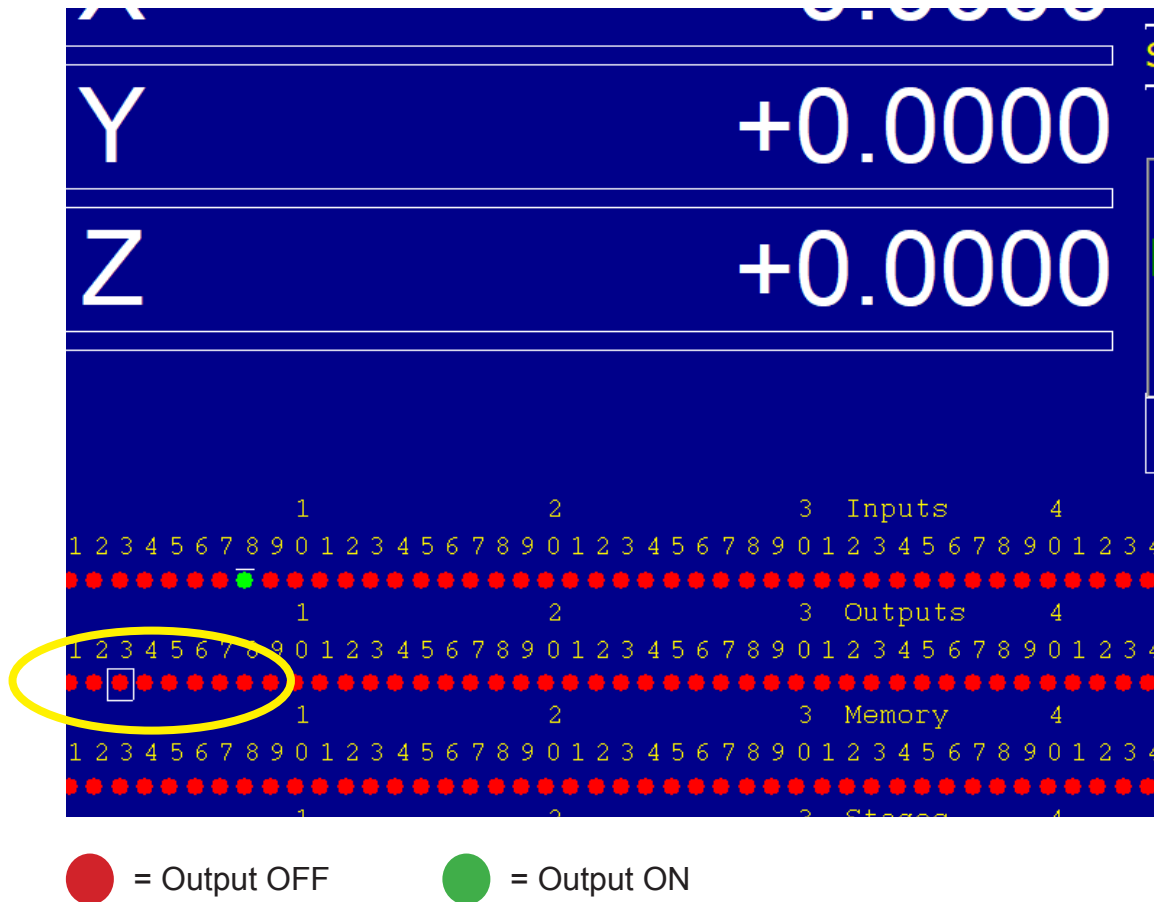
Be sure to make sure the ribbon cable is connected “straight through” from the Centroid Relay Adapter card to the SainSmart relay module. Both connectors are labeled at the base of the connector for your reference.  
Do not flip the ribbon cable.



- 3.) With the power off, connect the red pig tail wire from the Centroid Relay Adapter card to the 5 VDC terminal on the Logic power supply.



4.) **Bench Test the Relay Kit:** Power up Acorn wait for heart beat and then start CNC12. At the main screen press <Alt i> to enter the PLC diagnostic menu. Navigate the cursor box to the Output #3 indicator LED and toggle the output with the hot keys < CTRL ALT F > and observe the LED's on the SainSmart Relay Module, do the same for outputs 4,5,6,7 and 8. When you toggle you will see the LED on the SainSmart module light up and hear a distinct click" noise from the relay(s). Cycle through each one and verify that the Relays and Outputs are working. < CTRL ALT F > is a 3 step cycle: force on, force off, and normal. Press < CTRL ALT F > again to cycle through.





[illegible]

- 5.) Use the Acorn CNC setup Wizard to configure the Relays for a particular purpose. When selecting a Drive Type the I/O map automatically populates with the Centroid Acorn defaults for the input and output definitions that match the corresponding Acorn schematic for that drive type. Use the defaults I/O map as is or customize it by selecting any one of the custom output labels in the drop down box.

## Drive Type and I/O Definitions

### Select Axis Drive Type

- ☐ Gecko G540 "Legacy"

☐ Gecko G540 "Drive Only"

☐ Gecko G201, G214, and others

☐ Clearpath SDSK/SDHP

☐ DMM DYN2/DYN4

☒ Custom Leadshine

☐ Estun Pronet

☐ Yaskawa Sigma 5/7

☐ Delta

☐ TECO

☐ Chinese Router/Engraver

☐ Other

☐ Bench Test

Restore Drive Defaults

Schematics and Other Info

### Input and Output Map

**Note:** Modify this I/O assignment *only if* different Input and Output assignments are required. Otherwise, follow these standard I/O assignments which match the standard Acorn hookup schematics.

	Input Definition	Input Type		Output Definition
Input 1	HomeAll	NC	Output 1	NoFaultOut
Input 2	Unused	NO	Output 2	Lube
Input 3	Unused	NO	Output 3	SpindleBrakeRelease
Input 4	Unused	NO	Output 4	SpinFWD
Input 5	DriveOk	NO	Output 5	SpinREV
Input 6	Unused	NO	Output 6	DriveResetOut
Input 7	Unused	NO	Output 7	Flood
Input 8	EStopOk	NC	Output 8	OUTPUT8

NC = Normally Closed, NO = Normally Open, TTL Output Open Collector: See hookup schematics for proper wiring.

The example above shows the standard Leadshine input and output map with Output 8 customized.

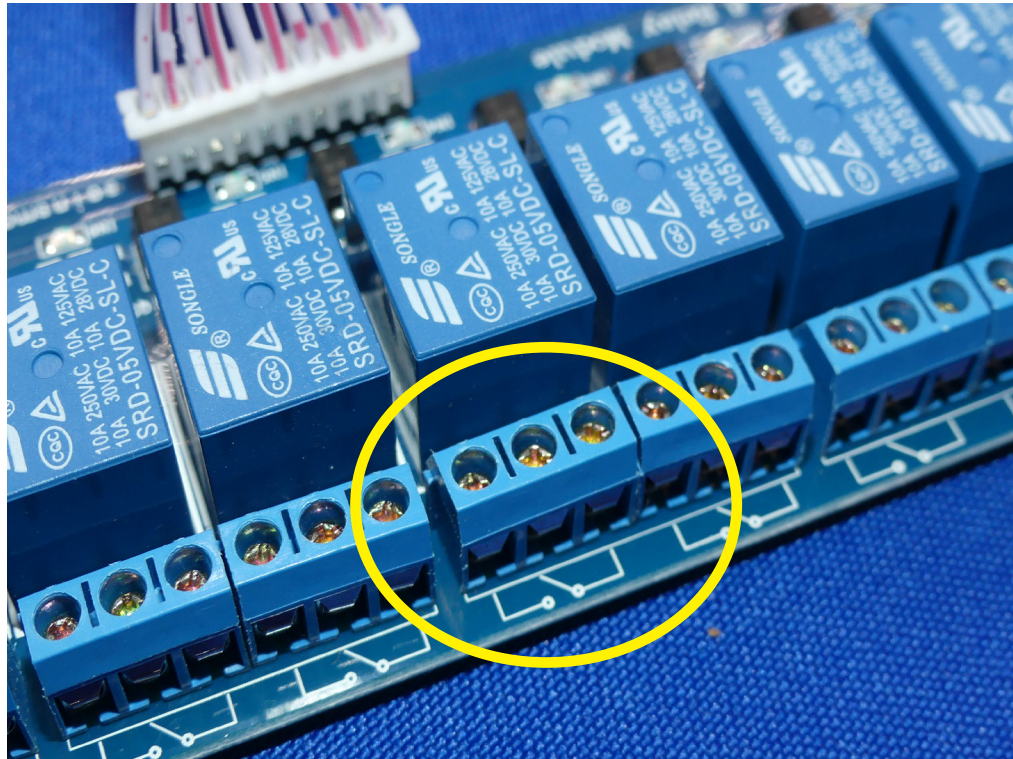
We used the drop-down list for Output 8 and selected the generic output label "OUTPUT8".

These generic output labels are available for the case where the output drop down list does not contain an output label to match a particular application. These are general purpose Labels that use M codes M61 thru M68 and M81 thru M88. For example: You may use the generic label "OUTPUT3" for Output 3 and then use M63 to activate the #3 relay and M83 to turn off relay #3, you may use the generic "OUTPUT4" for Output 4 and use M64 to activate the #4 relay and M84 to turn off relay #4, and so on for outputs 5,6,7..and 8. Use generic "OUTPUT8" for Output 8 and use M68 to activate the #8 relay and M88 to turn off relay #8.

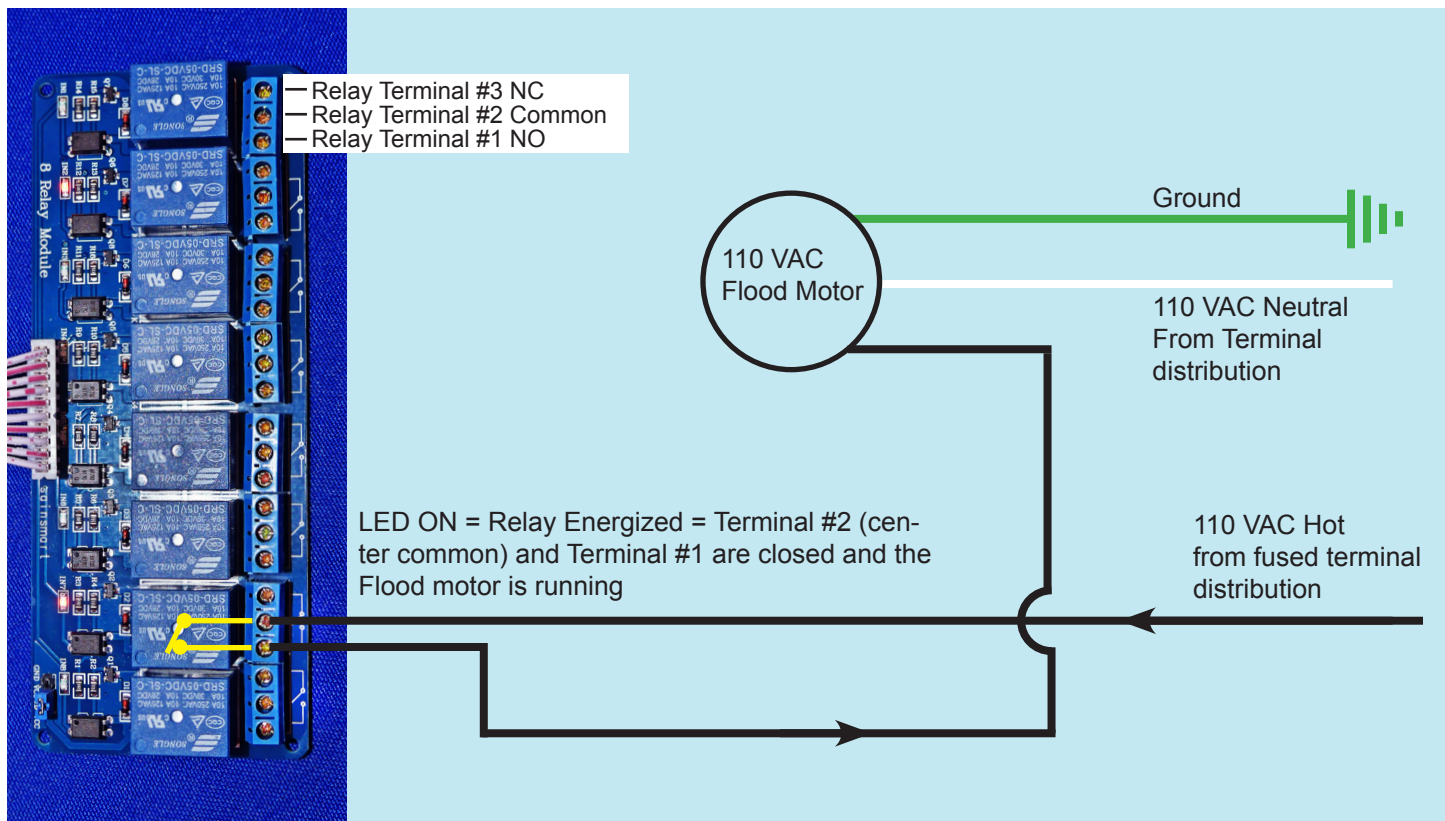


6.) Connect devices to be controlled to the Relay Module terminals.

The relays on the SainSmart Relay Module are single pole double throw (SPDT) relays. Relays are just a switch. SPDT relays are a switch with connections on either side of the switch so when the switch is ON two of the terminals are connected and when the relay is OFF the other two of the terminals are connected. That is, a common terminal connects to either of two others, never connecting to both at the same time. Each relay has three connection terminals as see in the image below.



110 VAC Flood Pump wiring example using Output 7 set to “Flood”. The number 7 relay will be energized when “Flood” is activated by either manually using the Coolant controls on the VCP or by using the M-code “M8”.





How to tell the difference between Acorn\_rev2 and Acorn\_rev3  
Acorn\_rev2 has FIXED green screw terminal blocks  
Acorn\_rev3 has REMOVABLE green screw terminal blocks

