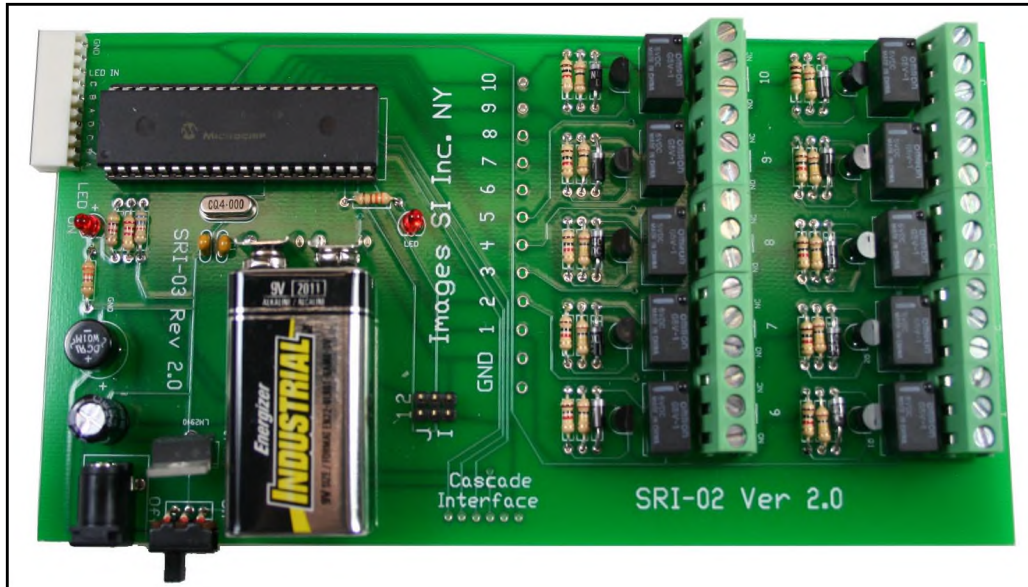


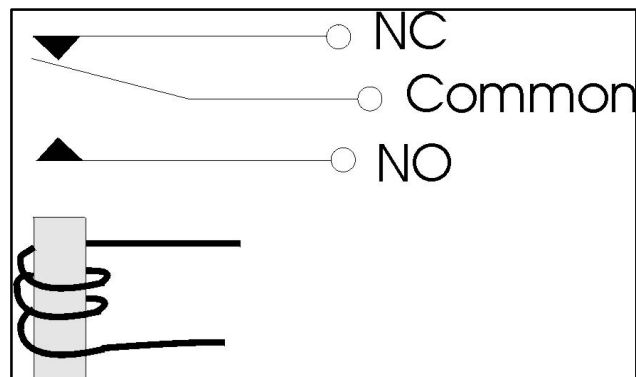
SRI-02 Speech Recognition Interface



Data & Construction Booklet

The Speech Recognition Interface SRI-02 allows one to use the SR-07 Speech Recognition Circuit to create speech controlled electrical devices. The SRI-02 incorporates ten relay switches corresponding to the first ten recognized words by the SR-07 Speech Recognition Circuit. Using this interface allows the speech recognition kit to activate or deactivate 10 electrical circuits or devices.

Each on-board relay contains two switches. One switch is normally open, identified as NO on the printed circuit board (pcb). The other switch is normally closed, identified as NC on the pcb, see diagram on below. Connections to each relay switch are made through a three screw-terminal connector in front of each relay. The center terminal of each connector is labeled with a number, 1 through 10. This number identifies the relay it is connected to. The center terminal is the common terminal for the NO and NC switch. When the relay is activated the open switch closes and the closed switch opens.





General Recognition Information:

The SR-07 Speech Recognition Circuit should be trained before connecting to the SRI-02 interface. The SR-07's 10-position display header plugs into the speech recognition 10-position female header.

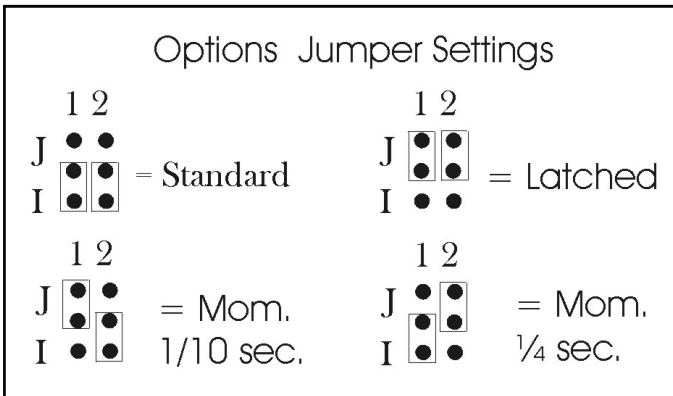
There is approximately 1/4 second delay from word recognition to relay activation. The circuit automatically detects and discards the three possible error codes 55, 66 and 77 from the Speech Recognition Circuit (SR-07).

The SR-07's trained word number 1 activates relay 1 on the speech interface board. Trained word number 2 activates relay number 2. And so on.

Setting the Option Mode:

The SRI-02 has two jumpers labeled J and I. Setting these jumpers determine which mode the SRI-02 will operate in; Standard, Momentary 1/10 sec. or 1/4 sec., Latched. Options are only read on power up. Changing the option setting with the power on will not change the options mode.

Using the standard option SRI-02 only one relay may be activated at a time.



Standard Option:

Using the standard SRI-02 option, only one relay may be activated at a time. The SRI-02 also has a latch and momentary option; see latch option below for more information).

To turn any relay off:

To turn any relay off use the "stop or control" word (trained as word number 11).

To turn one relay off and another relay on:

Say the control word to turn off any relay on the board. To automatically turn one relay off while turning another relay on, simply say the trained word for the relay you wish to activate.

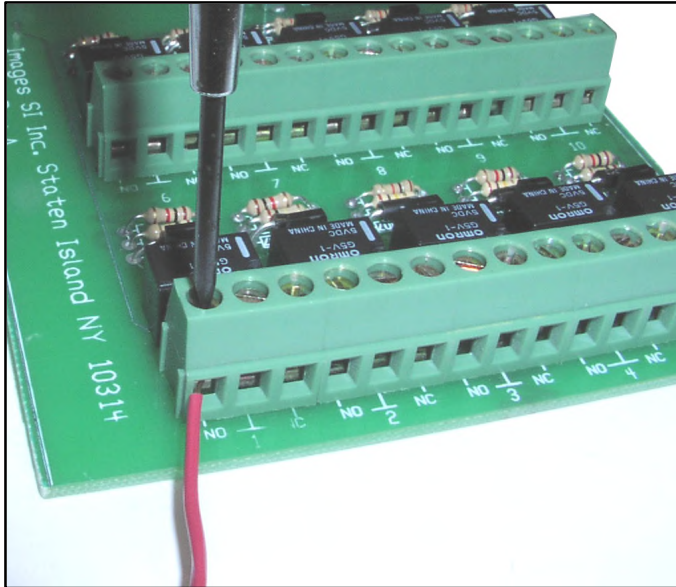
Momentary Options:

Similar to standard option, with the exception that the relay remains on only momentarily. As defined in Options Settings box.

Latch Option:

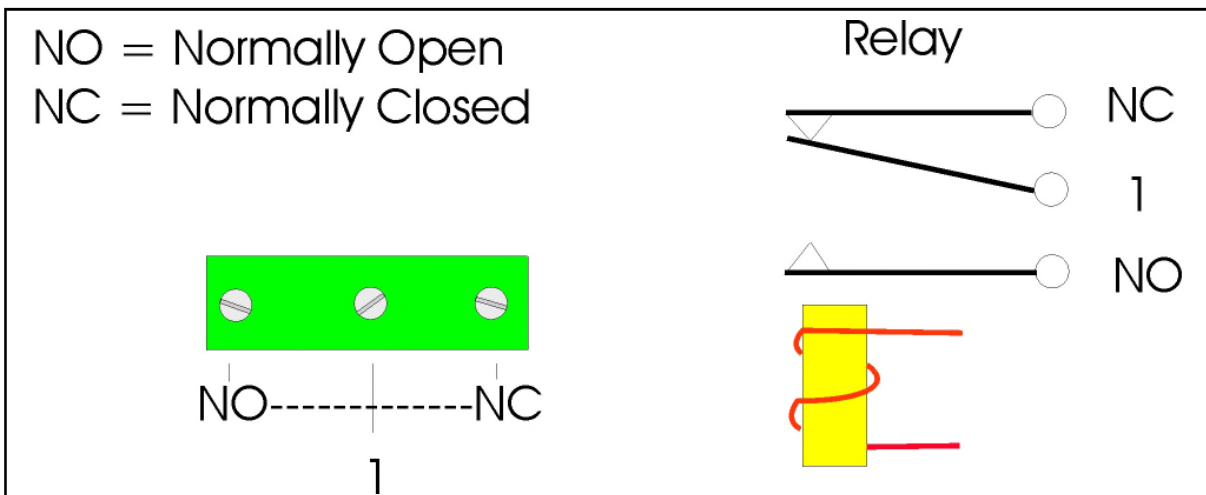
The standard and momentary options can only activate one relay at a time. The latch option, overcomes this limitation, allowing the user to operate multiple devices at the same time. Using the latch option any relay may remain on while other relays are being activated or deactivated.

The latch function operates in the following manner. The first time a trained word number is recognized, it activates the relay associated with the word number as before. This relay will remain on until the trained word is recognized a second time. So the first time a trained word is recognized it activates the relay. The second time a trained word is recognized it will deactivate the relay. In between activating and deactivating any particular relay, you may activate and deactivate any and all other relays.



Electrical Connections:

Electrical connections to the relay switches are made through the screw-terminals. Unscrew the top screw. Strip approximately 3/8" of insulation from 22 gauge electrical wire. Insert 3/8" length of stripped wire into the front of the screw terminal. Tighten top screw down to make good electrical connection.



The above drawing shows the three screw terminals for relay number 1 as well as the electrically equivalent relay. The electrical power for the device to be controlled is passed through the relay switch.

Construction:

The components are mounted on the top (silk screen side) of the pc board. Soldering the components on the opposite side. After soldering the component excess wire is clipped off.

Begin construction by mounting and soldering the ten 100K ohm resistors (color bands brown, black, yellow, gold/silver). Next mount and solder the ten 1 K ohm resistors (color bands brown, black, red, gold/silver), R10 is 4.7 K ohm resistor (color bands yellow purple, red, gold/silver), R11, 2.2K ohm, (color bands red, red, red, gold) and the R12 is 6.8K, (color bands blue, gray, red, gold), two 330 ohm resistors (color bands orange, orange, brown, gold/silver).

Next mount and solder the 1N4007 diodes. Make sure to orientate the band on the diode to the band printed on the pcb.

Mount and solder the IC socket for the 16F877A. If the IC socket has a half circle cutout or mark on one end, orientate that end with the half circle cutout on the white silkscreen drawing. This will help you orientate the installation of the IC later on. Next mount and solder the 10-position right angle female header, 4.0 MHz crystal and two .22pf capacitors, marked C1 and C2 by the crystal. Next mount and solder, on-off pc mounted switch, DC Power Jack, and the LM2940 voltage regulator. When mounting the two red LED's the longer lead on the LED is the positive terminal.

Next mount and solder the ten 2N3904 transistors Q1-Q10 and the ten relays. The next components to mount and solder are the three screw terminal connectors. These terminals may be locked together using the tongue and groove slots on the side. Mount five units together using the tongue and groves before placing them onto the pc board. Make sure the wire opening for the terminals are facing outward before soldering. Next mount the second line of screw terminals in the same manner as described.

Mount and solder the capacitor C3(150 uf), value between 100uf and 470uf and bridge rectifier making sure to orientate the positive terminal of each component to the positive lead on the pc board. Mount and solder two 3 pin straight headers on place marked J1 and J2 on pcb.



Mount and solder the 9 Volt battery terminals. Now you are ready to install the IC into its respective socket making sure to orientate the chip properly. Begin first by identifying the top of the IC. The top of the IC has a marker. Many times it is a half circle cutout. Other times it is a small mark or dot that identifies pin 1 on the IC. In every case the top mark locates pin 1 on the top of the IC package. Orientate the top of the IC with the white silkscreen drawings on the pc board. The white silkscreen drawing will have a half circle cutout. Install the IC into its socket.

Parts List:

1	Printed Circuit Board
10	Three terminal connectors
10	Relays
10	2N3904 Transistors
10	1N4007 diodes
10	resistors 100K (brown, black, yellow, gold/silver)
10	resistors 1K (brown, black, red, gold/silver)
1	resistor 4.7K (yellow, purple, red, gold/silver)
2	resistor 330 ohm (orange, orange, brown)
1	2.2K resistors
1	6.8K resistors
1	LM2940 voltage regulator
1	on-off pc mounted switch
2	Red LED
1	4.0 MHz crystal
1	10-position right angle female header
1	Bridge rectifier
1	100 uf capacitor (May be substituted with any value between 100 & 470 uf)
2	Battery terminals
1	DC power jack
2	.22pf capacitors
1	PIC 16F877A Pre-programmed
1	ICS 40
2	3 Pin headers
2	Jumpers

Images SI Inc.
109 Woods of Arden Road
Staten Island NY 10312
718.966.3694
718.966.3695 Fax
<http://www.imagesco.com>