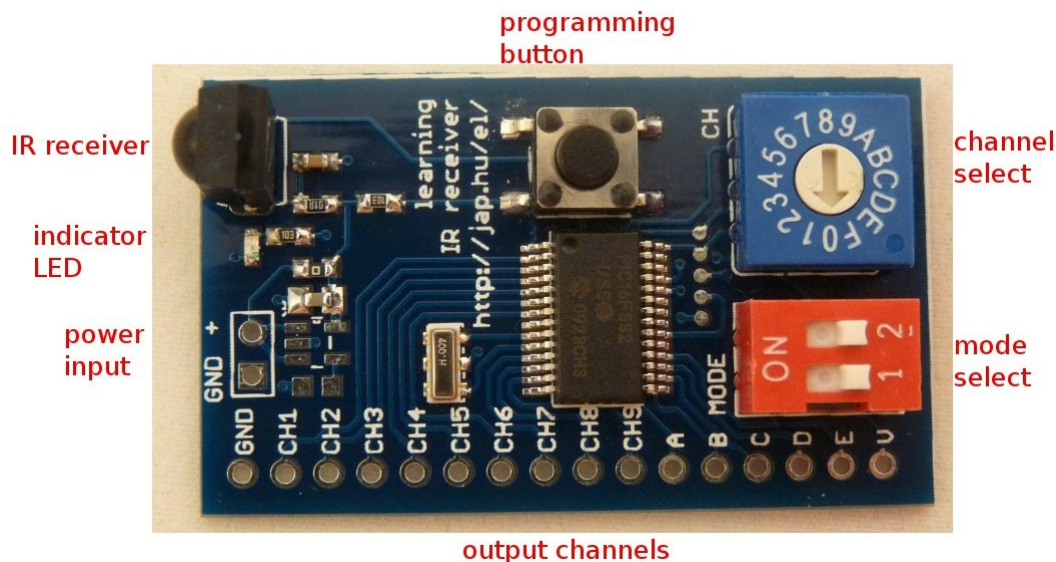




Peter's electronic projects

Learning 14-channel IR remote control receiver



description

Control anything with your existing remote control. This receiver works with either RC-5 or NEC format IR remote controls, depending on the firmware version. The receiver has 14 output channels, and each channel can have up to 4 buttons (on, off, toggle, momentary-on operation mode) associated with it.

Each button can operate the output in four different operation modes:

- off: turn the associated output channel off
- on: turn the associated output channel on
- toggle: turn the associated channel output on then off
- momentary-on: turn the associated channel on for the time the button is being pressed

The board has the following connectors:

- 2-pin connector for power input
- 16-pin connector with TTL outputs for each channel, GND and VALID output

Board size	44x26mm (1.73x1 inch)
Supply voltage	2.5-5.5VDC
Maximum current per channel	+/- 20mA
Maximum current for all channels	+/- 90mA

For more information on the remote control formats, please check these links:

- [RC-5 remote control format](#)
- [NEC remote control format](#)

teaching buttons

To erase all button associations, set the channel selector to position "F" and hold the programming button pressed while turning on the circuit. To enter programming mode, set the channel selector to any position other than "F" and hold the programming button pressed while turning on the circuit.

After entering the programming mode, the two mode select switches determine the operation mode of the remote control button being learnt.

operation mode	1	2
the next button pressed turns the selected output channel OFF	ON	OFF
the next button pressed turns the selected output channel ON	OFF	ON
the next button pressed toggles the selected output channel	OFF	OFF
the next button pressed turns the selected output channel ON for the time being pressed	ON	ON

To erase the next remote control button pressed from the memory, hold the programming button down while pressing the remote control button.

Setup the two mode select switches according to the desired operation mode, then select the associated channel with the channel selector. Channels are numbered as 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E. If you select position "F" or "0", you can't teach buttons in programming mode.

After the operation mode and the channel is selected, push a button on the remote control to teach. If the button was learnt successfully, the indicator LED flashes for a moment. If you can't see the LED light up for a moment, the button pressed is already associated to something, and can't be used again.

If you want to erase a remote control from the memory, hold the programming button down while pressing the remote control button. Leave the operation mode switches and channel selector as is, their state is not significant. Then push the remote control button to be erased. The indicator LED flashes for a moment, signaling the button is erased.

When you have finished programming, set the channel selector to position "0" and turn off the circuit.

An example programming session:

- set the channel selector to position "F"
- turn off the circuit
- hold down the programming button while turning on the circuit - all button associations are erased
- setup the operation mode select switches as: 1: ON, 2: ON - momentary-on operation mode is selected
- select position "1" on the channel selector - channel #1 is selected
- push button 1 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- select position "2" on the channel selector - channel #2 is selected
- push button 1 on the remote control - nothing happens, as this button is already associated to something, and can't be used
- push button 2 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- select position "3" on the channel selector - channel #3 is selected

- push button 3 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- setup the operation mode select switches as 1: OFF, 2: OFF - toggle operation mode is selected
- select position "6" on the channel selector - channel #6 is selected
- push button 6 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- select position "7" on the channel selector - channel #7 is selected
- push button 7 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- select position "8" on the channel selector - channel #8 is selected
- push button 8 on the remote control - the indicator LED is lit for a moment, signaling successful learning
- hold down the programming button while
- push button 3 on the remote control - the indicator LED is lit for a moment, signaling successful erase
- push button 8 on the remote control - the indicator LED is lit for a moment, signaling successful erase
- setup the operation mode switches as 1: OFF, 2: ON - turn on output channel operation mode is selected
- select position "B" on the channel selector - channel #11 is selected
- push button VOL+ on the remote control - the indicator LED is lit for a moment, signaling successful learning
- setup the operation mode switches as 1: ON, 2: OFF - turn off output channel operation mode is selected
- push button VOL- on the remote control - the indicator LED is lit for a moment, signaling successful learning

The resulting button layout is:

channel	toggle	off	on	momentary
1				1
2				2
3				
4				
5				
6	6			
7	7			
8				
9				
A				
B		VOL -	VOL +	
C				
D				
E				

operation: decoding

The programming button must not be held down when powering on the circuit to enter normal decoding operation. In this mode, any remote control button learnt will light up the indicator LED for the duration the button is pressed. Output channel states will change according to the operation mode learnt.