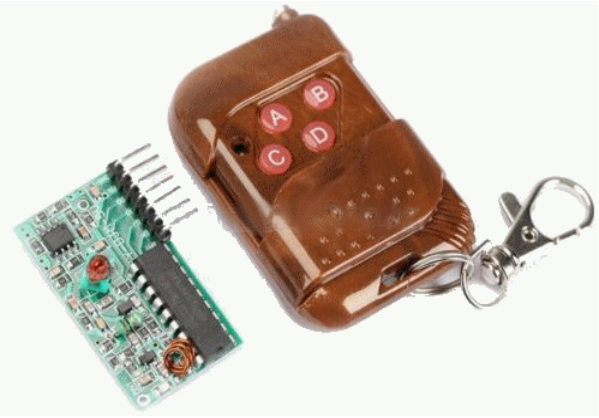
MERG **West of Scotland Area Group**

Tip of the month - January 2020

Fob remote controls

Here is a four channel wireless remote control system.



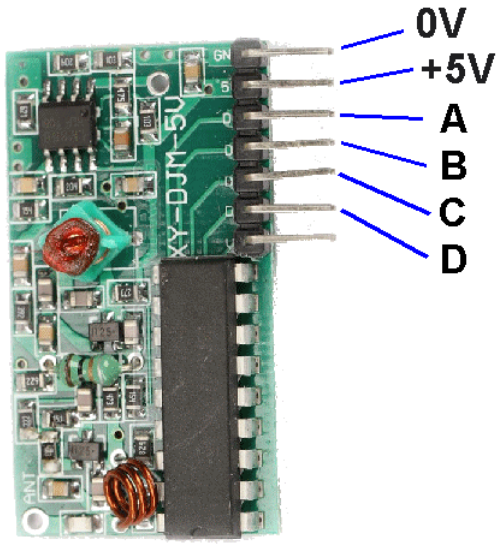
Now you can cheaply provide remote control of model railway devices.
Your kids/grand-kids can operate lights and animations on your layout – without touching your precious control panel.
Your club's exhibition layout can provide opportunities to involve visiting families.
You can add features to your garden railway without running long cables.
You have probably already thought of a number of uses for it around the home.

The technical bit

The system operates on 433MHz. This is legal to use under the Government's SRD (Short Range Devices) rules as it only radiates about 10mW of power. Despite this, it can easily cover useable distances (I have never tried its claim of 100m, although it I have used it at 60').
It is a radio frequency system, not an infrared system; which means you do not have to have line of sight to use it.

Using it

The system is very simple.
The receiver board has four outputs that correspond to the four buttons on the transmitter.
Normally, all outputs are at 0V,
Pressing button A results in the receiver's pin A going to +5V and will stay at the voltage until you stop pressing the button. Similarly, output pins B, C and D are activated by pressing buttons B, C and D. On the board, the outputs are actually labelled as D0, D1, D2 and D3.
There is also a pin labelled as *'VT'* and this is *'Valid Signal'* output that goes high when any one of the four buttons is pressed. I haven't yet thought of a use for this output – any suggestions?

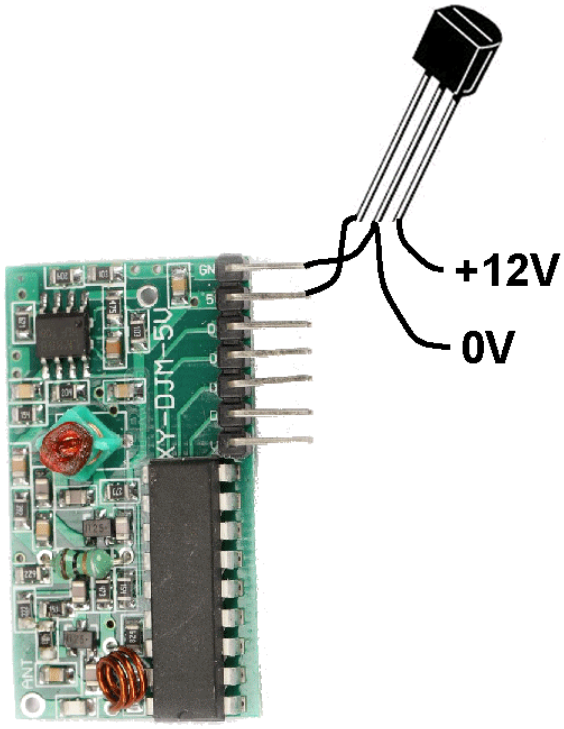


Power

The transmitter uses a small type 27A 12V battery and the unit takes about 10mA.

The receiver module needs a 5V DC supply. Most layouts have a 12V supply running under the baseboard and this can be used to power the receiver, if you use a 5V reulator such as the 78L05 to convert the 12V down to 5V for the module.

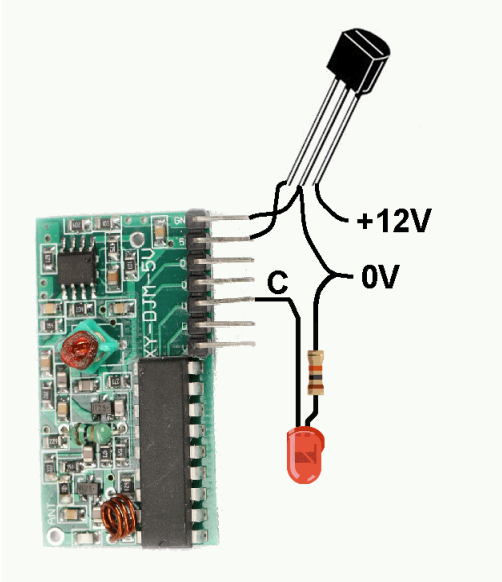
The illustration shows a very basic implementation of this, although you may want to mount the regulator on its own little piece of stripboard and add a 100nF between the +5V output and 0V.



Making it control stuff

So what can you make it control?
The answer is lots – LEDs, relays, motors, servos, audio, etc. It all depends on what you want to do with it. Of course, you can mix and match, with one button switching a light, while another operates an uncouplers, and so on. Its up to you.

Here is an LED being connected to output C.
When the output goes to +5V, the LED illuminates as its other end is connected to 0V



Here, output D is connected to an EzyPoints module. Although it only looks like a single wire connection, the +12V and the 0V on both modules share the same supply.