

Control your project using an Infra red Remote Control unit

Our Infra red Decoder kit can decode signals from most Universal Remote Controls set to the Philips RC5 protocol.

8 open collector outputs can be set as 8 latching outputs or 4 latching and 4 momentary outputs.

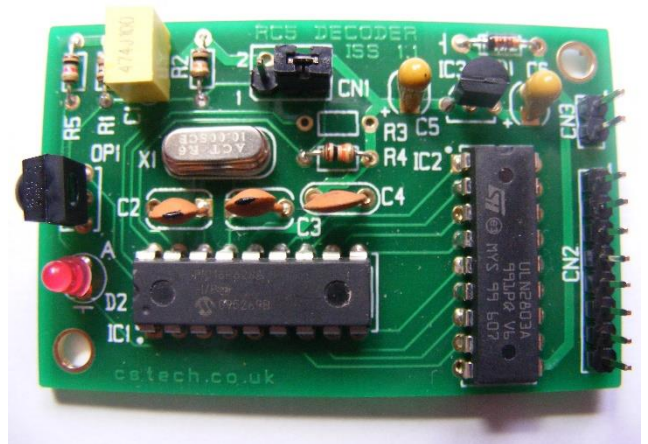
User programmable 4 digit security code to prevent unauthorised operation – can be turned off if not required.

Good quality gold plated PCB  
60mm x 38mm x 13mm high (approx.).

Supply Voltage +8V to +15V  
Quiescent current 6mA @ 12V

Range: Tested at 12m indoors with our Remote Control Unit. (Infra red receiver IC data sheet states 45m but test conditions not specified)

The unit is supplied with a security code 1234 enabled.



## Mode 1- 8 Latching outputs

With no jumper links fitted to CN1 apply power to the unit.

To turn on an output send 1234 followed by the required output number.

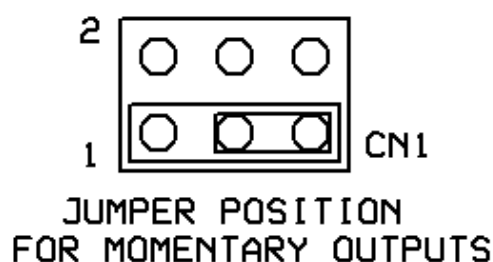
So, to turn on output 2 send 12342. To turn off output 2 send 12342 again.

To turn off ALL outputs send 12340. If you make a mistake and want to start again send V- (V minus)

LED D2 will light each time a button press from the Remote Control is received.

## Mode 2- 4 Latching outputs and 4 momentary outputs.

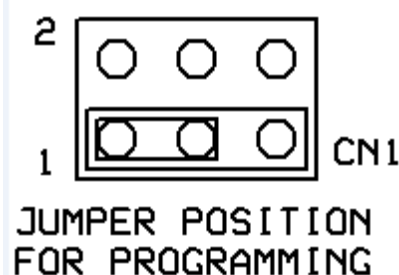
Turn off the power to the unit. Fit a jumper to CN1 in the Momentary position – see diagram.



Turn on the power again. Now sending the code as above will latch outputs 1 to 4. Outputs 5 to 8 will turn on for 0.5 seconds then turn off again.

## To Change the Security code.

Turn off the power to the unit. Fit the jumper to CN1 in the Programming position – see diagram.



Turn on the power again. Send your new 4 digit code. LED D2 will light each time a button press from the Remote Control is received. After the fourth digit is received the LED will flash twice to show that the new code has been accepted. Turn off the power and remove the jumper. Turn on the power and the new code will be set.

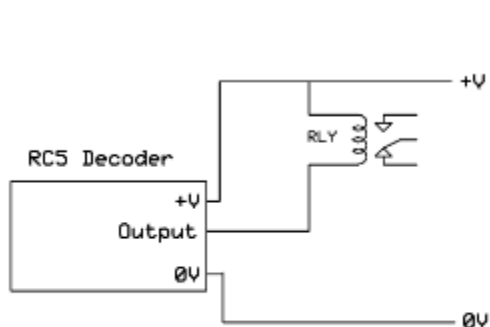
**To turn the Security code OFF** – as above but set the code to 0000.

Now just send the output number required. Send 1 for output 1 and so on.

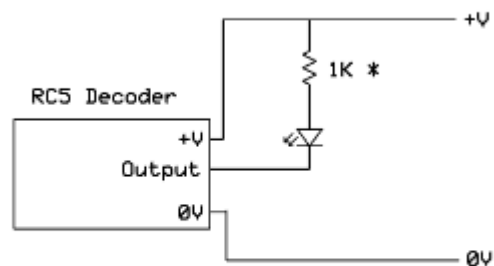
**Setting your Universal Remote Control** Set your Universal control to PHILIPS using the manufacturers instructions. Must correspond to Philips RC5 protocol. You may have to try several PHILIPS codes. Instructions for setting our Remote Control are on the data sheet.

Our decoder has 8 outputs that can be switched on/off using infra red, they are all implemented as open collector NPNs in the ULN2803A Darlington driver chip, there are also 'back EMF' protection diodes on chip with their common connected to the +8 to 15V supply pin. When driving relays, the relays should be connected between the output pin and the + supply, we recommend using 12V relays with coils of at least 120 ohms and a 12V supply.

See connection diagrams below.



Connecting a 12V relay to an output



Connecting an LED to an output  
\* Value to suit LED

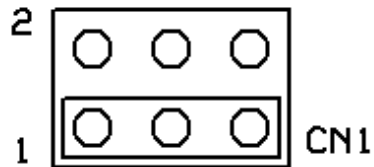
## Constructing the kit

When building the kit fit the resistors and diode D1 first, then IC1 and IC2 and the crystal.

Next the capacitors, connectors, IC1, D2 and finally OP1. Resistor R3 is NOT fitted.

Observe polarity of the 1uF tantalum capacitors and orientation of the IC's, diode, LED (long lead to A - anode) and OP1 (see picture above and PCB Markings).

Connector CN1 is now a single in line 3 way header. See the diagram below for the fitting position



Fit CN1 to lower 3  
holes as per diagram

## Infra Red Decoder Parts List.

IC1	PIC16F628A (programmed )
IC2	ULN2803A
IC3	78L05
D1	1N4148
D2	LED
OP1	TSOP34838
R1	100R
R2,R4	10K
R3	Not fitted
R5	1K
C1	470n (marked 474)
C2,C3	33pF
C4	100n (marked 104)
C5, C6	1uF Tantalum
X1	10MHz Crystal
CN1	3 pin header
CN2	8 pin header
CN3	2 pin header

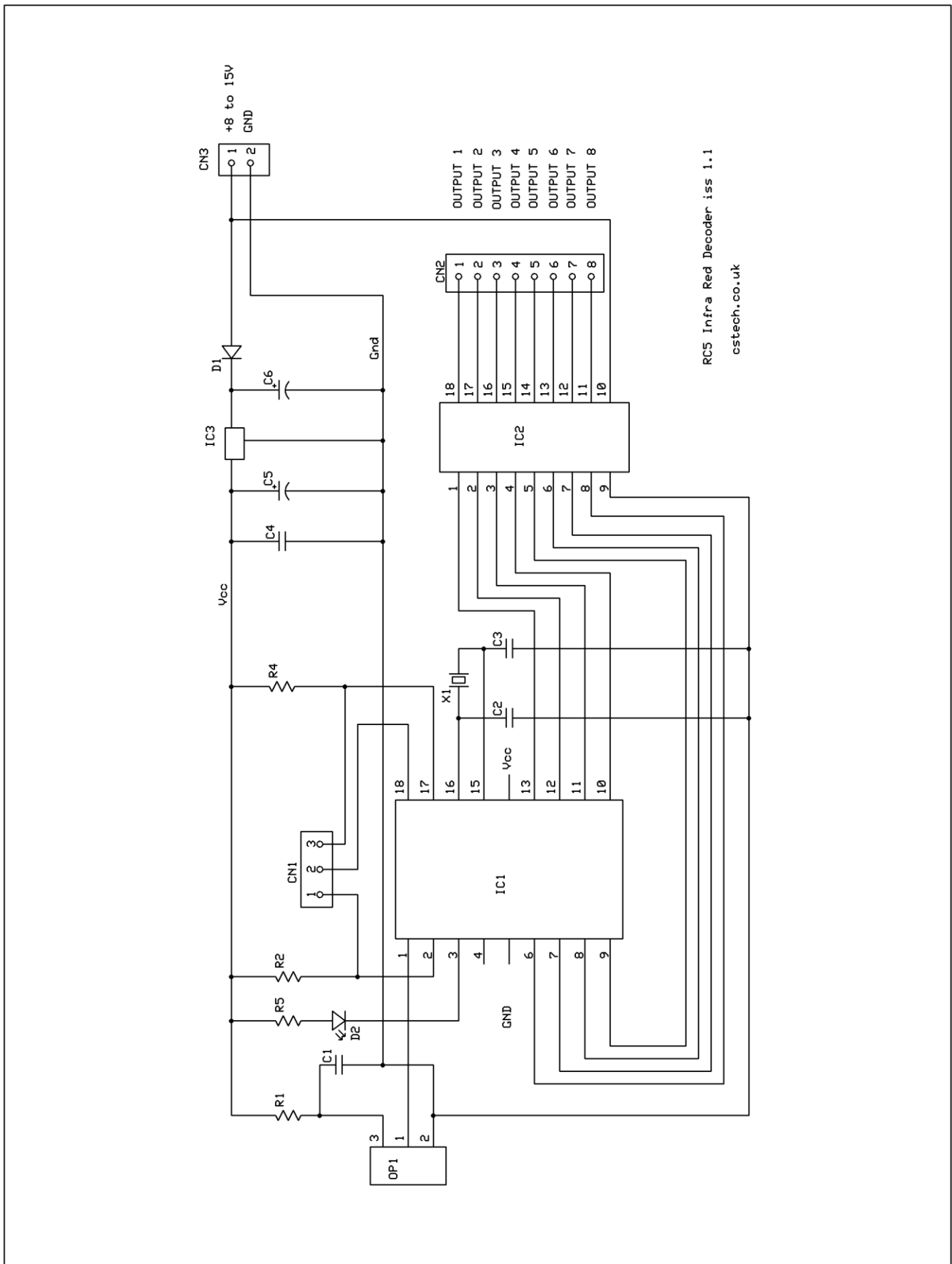
Also supplied:-

RC5 Decoder PCB Issue 1.1

1 x 0.1" jumper link

Crystal insulator pad

**See next page for circuit diagram**



RCS Infra Red Decoder iss 1.1  
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