

# IR Remote Control Transmit

Using an InfraRed LED and this embedded C module you can send Sony compatible IR control signals to another Micromite or even a compatible Sony device.

**This CSub provides an exact replacement for the IR SEND command that was built into version 5.3 of MMBasic and earlier. Existing programs should run unchanged with this module installed on both the Micromite and Micromite+.**

## IRSEND CSub

To add the IRSEND command to MMBasic you need to insert the following code somewhere in your BASIC program (you can use copy and paste from this document). The exact spot is not important but at the end is normal.

```
CSub IRSEND integer, integer, integer
00000049 27BDFFF8 AFBF0004 00852023 03E42021 ACC40000 8FBF0004 03E00008
27BD0008 27BDFFE0 AFBF001C 00002021 3C059D00 24A50040 27A60010 0411FFF1
00000000 8FA30010 3C029D00 8C4200BC 3C049D00 24840238 0040F809 00832021
8FBF001C 03E00008 27BD0020
27BDFFD0 AFBF002C AFB50028 AFB40024 AFB30020 AFB2001C AFB10018 AFB00014
0080A821 00A08021 3C029D00 8C440000 3C027735 34429400 8C840000 0044001B
008001F4 00001012 24113390 0222001B 004001F4 00008812 2631FFF2 00009021
2414FFFF 10000009 3C139D00 02A02021 0040F809 24050007 40924800 40024800
0051102B 1440FFFD 00000000 2610FFFF 5614FFF6 8E62001C 8FBF002C 8FB50028
8FB40024 8FB30020 8FB2001C 8FB10018 8FB00014 03E00008 27BD0030
27BDFFD8 AFBF0024 AFB40020 AFB3001C AFB20018 AFB10014 AFB00010 00809821
00A09021 3C029D00 8C420000 8C430000 3C020098 34429680 0062102B 10400003
00C08021 0411FFAD 00000000 3C029D00 8C420010 8E640000 24050008 0040F809
00003021 8E110000 3231007F 8E420000 3042001F 000211C0 02228825 8E640000
240500BA 0411FFAF 00000000 00008021 3C129D00 2414000C 8E420004 0040F809
24040258 32220001 10400006 8E640000 2405005C 0411FFA3 00000000 10000005
26100001 2405002E 0411FF9E 00000000 26100001 1614FFF0 00118842 3C029D00
8C420010 8E640000 00002821 0040F809 00003021 8FBF0024 8FB40020 8FB3001C
8FB20018 8FB10014 8FB00010 03E00008 27BD0028
20555043 65657073 6F742064 6F6C206F 000A0D77
End CSub
```

## Usage

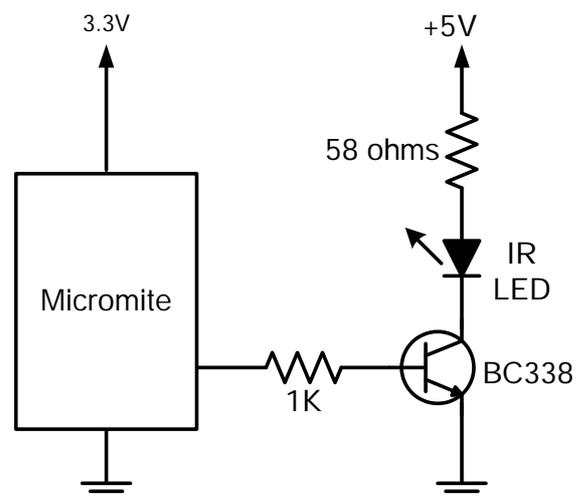
Using this command you can transmit a 12 bit Sony infrared remote control signal. This is intended for Micromite to Micromite communications but it will also work with Sony equipment that uses 12 bit codes. Note that all Sony products require that the message be sent three times with a 26 ms delay between each message.

The circuit on the right illustrates what is required. The transistor is used to drive the infrared LED because the output of the Micromite is limited to about 10mA. This circuit provides about 50 mA to the LED.

To send a signal you use the command:

```
IRSEND pin, dev, key
```

'pin' is the I/O pin to use. This can be any I/O pin which will be automatically configured as an output and should be connected to an infrared LED. Idle is low with high levels indicating when the LED should be turned on.



'dev' is the device being controlled and is a number from 0 to 31, 'key' is the simulated key press and is a number from 0 to 127. The IR signal is modulated at 38kHz and sending the signal takes about 25ms. The CPU speed must be 10MHz or above.

### **Adding the IRSEND command to the Library**

If you add this CSub to the MMBasic library it will act exactly the same as a built in command and you will not have to add the above code to any program that uses this command. It will take up a minimum of memory and it will not be erased when you use NEW or load a new program. To do this you can follow these steps:

- Load the CSub code listed above into the Micromite using either AUTOSAVE, XMODEM or the MMEDIT program. Do not include any other program lines unless you also want them stored in the library.
- Enter the command LIBRARY SAVE

This will transfer the CSub code to the library area and delete it from the main memory. You can now use the command in your programs exactly the same as if it was a built in command. The only way it can be removed is by using the command LIBRARY DELETE or by reprogramming the chip with the Micromite firmware.