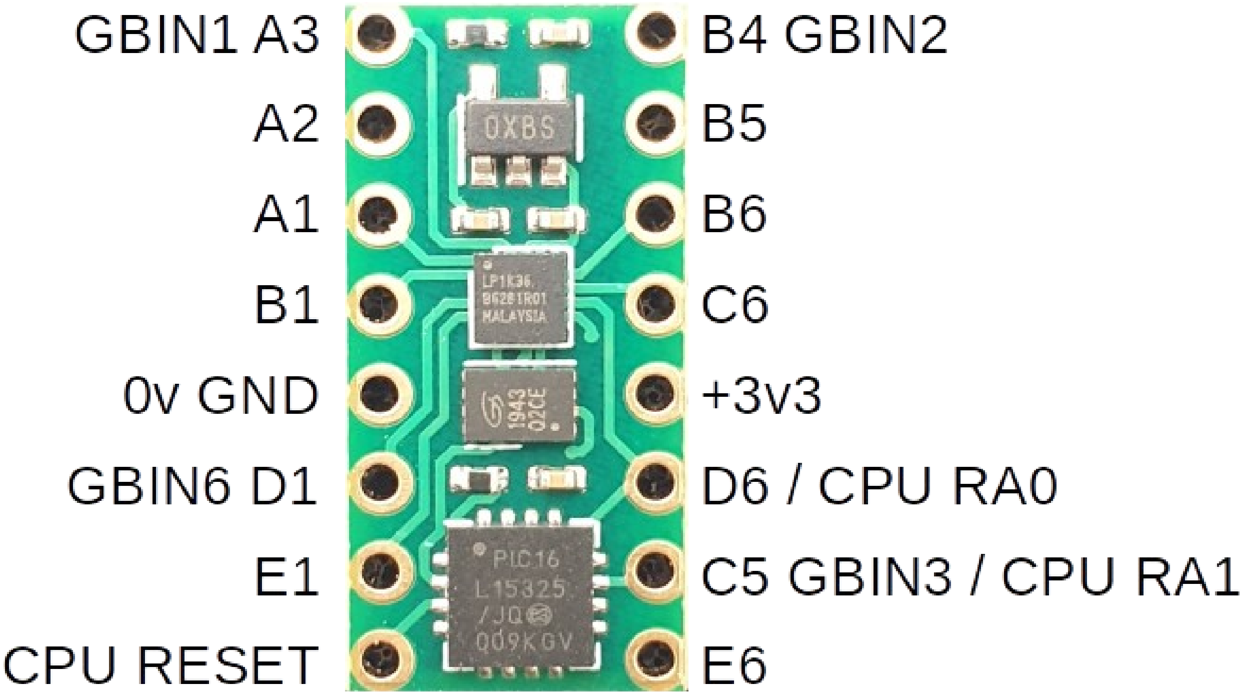
IceBlip iCE40 LP1K module

The FPGA (A Lattice ICE40LP1K-CM36) is internally connected to the GD25Q20 2Mbit (256KB) Flash and the PIC16F15325 CPU. Additionally an 8MHz clk form the CPU is available to the FPGA .

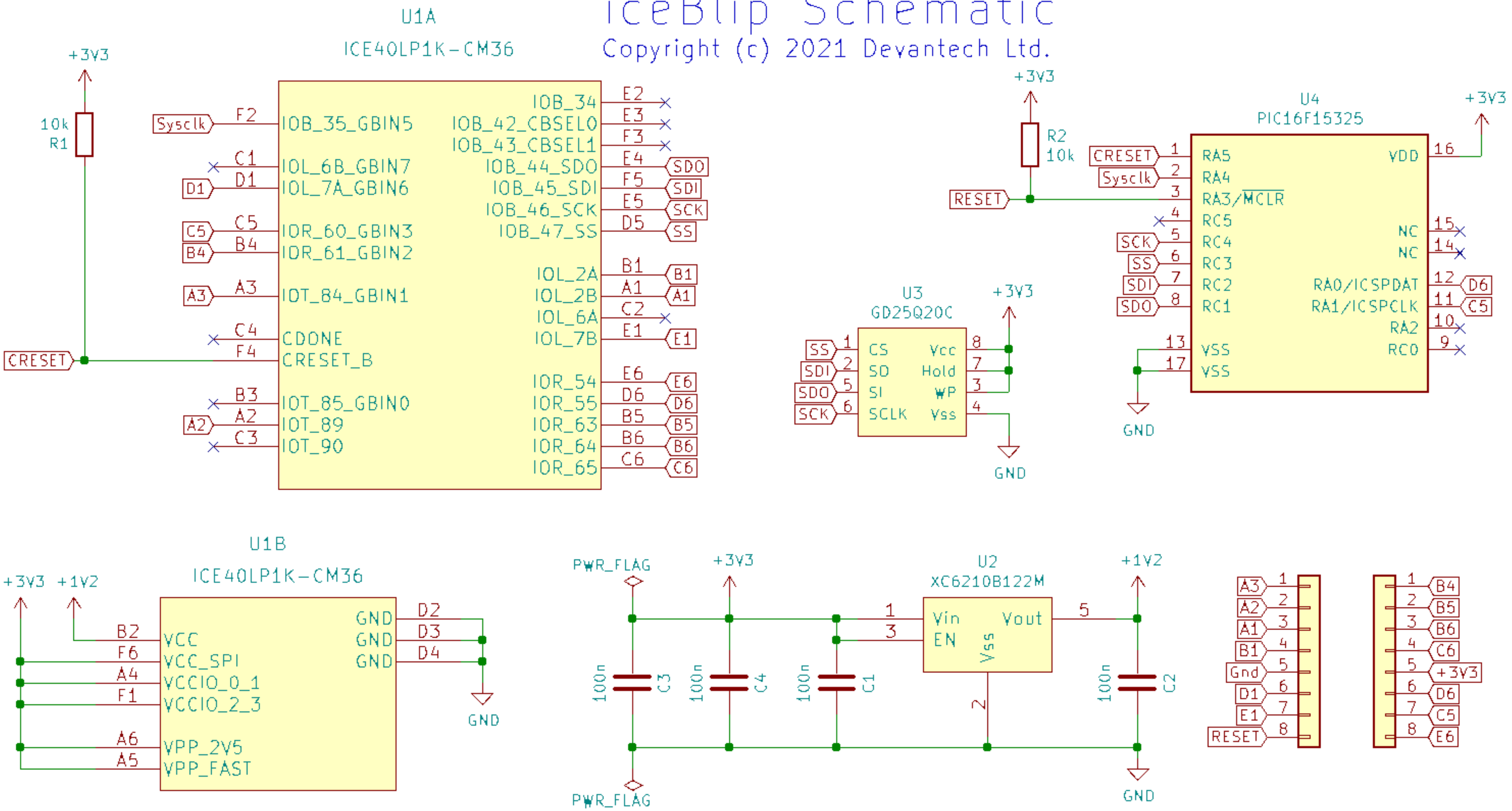


Signal	FPGA	CPU
SS	D5	RC3
SDI (SDO on Flash)	F5	RC2
SDO (SDI on Flash)	E4	RC1
SCK	E5	RC4
SysClk (8MHz)	F2 GBIN5	RA4

The iceBlip module is powered from an external 3.3v supply. There is an on-board 1.2v regulator for the FPGA. All PIC and FPGA I/O pins are 3.3v, do not connect these to 5v devices. IceBlip is programmed using iceBliprog. Linux and Windows programming software and source code, is available at from www.robot-electronics.co.uk.

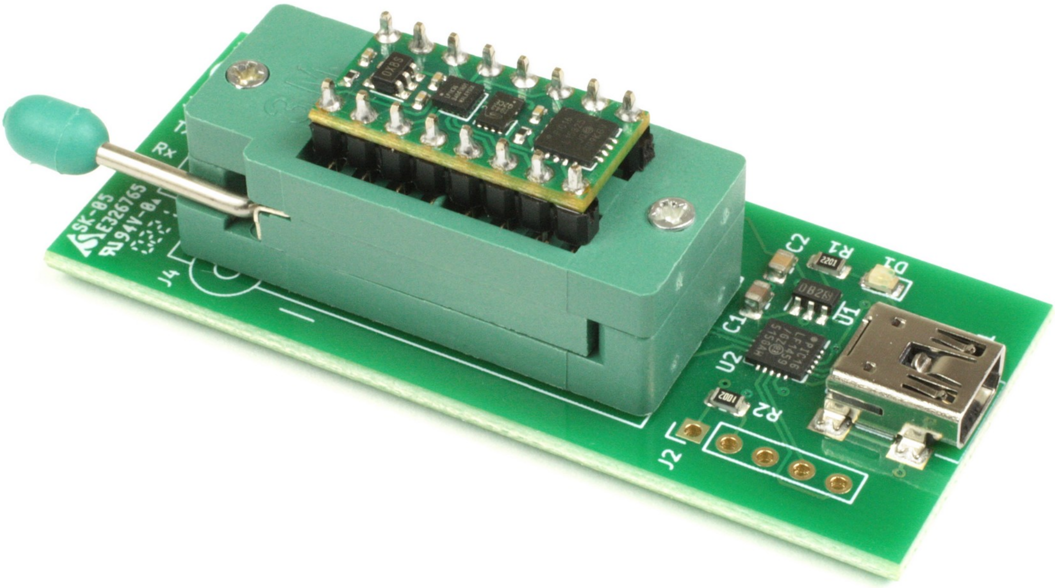
Any toolchain which generates a binary bit stream may be used, such as lattice iCEcube2. Linux users also have the icestorm tools with yosys and nextpnr.
http://www.clifford.at/icestorm/

iceBlip Schematic

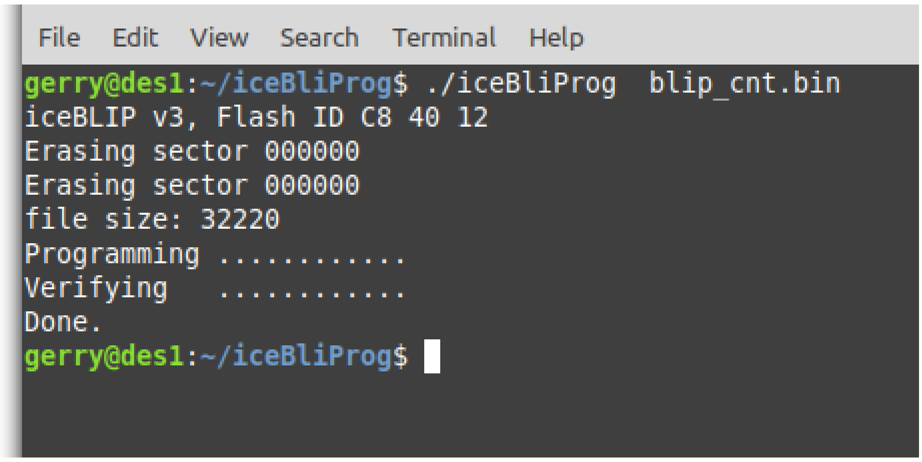


Loading bit-streams onto the iceBlip module.

This requires the iceBliProg programmer module. The module is inserted into the zero insertion force (ZIF) socket as shown below.



If you are using Linux, the module is programmed from the command line with:



```
gerry@des1:~/iceBliProg$ ./iceBliProg  blip_cnt.bin
iceBLIP v3, Flash ID C8 40 12
Erasing sector 000000
Erasing sector 000000
file size: 32220
Programming ...........
Verifying   ...........
Done.
gerry@des1:~/iceBliProg$
```

Bit stream files for the iceBlip are 32.2k and the flash is 256k so there is plenty of space for any additional data you may want to provide for the FPGA. The offset option allows programming any part of the flash.

```
./iceBliProg -o 0x10000 myData.bin
```

To leave the iceBlip module powered up after programming:

```
./iceBliProg -p blip_cnt.bin
```

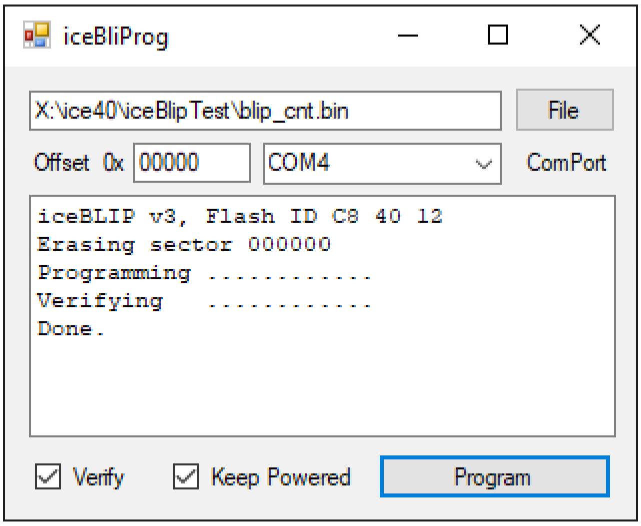
To skip verification:

```
./iceBliProg  -v blip_cnt.bin
```

For further information:

```
./iceBliProg  --help
```

Win10 users should use iceBliProg.exe, available for download from our website.



iceBliProg

X:\ice40\iceBlipTest\blip_cnt.bin

Offset 0x 00000

COM4

```
iceBLIP v3, Flash ID C8 40 12
Erasing sector 000000
Programming ............
Verifying   ............
Done.
```

☑ Verify ☑ Keep Powered

For uses who prefer to compile their own code, the C# source is available from our website. It can be compiled with Visual Studio Community 2019.

In Circuit Programming

The iceBlip module may also be programmed in circuit by using the header on the programmer module. Just make sure your own circuits are not driving the module at the same time.