https://www.scarabhardware.com/product/minispartan6-with-spartan-6-lx-25/

https://github.com/scarabhardware/miniSpartan6-plus/blob/master/miniSpartan6%2B_Rev_B.pdf

programming

```
apt-get install libusb-dev libftdi-dev

dpavlin@nuc:/nuc/FPGA$ git svn clone -s https://svn.code.sf.net/p/xc3sprog/code/ xc3sprog
dpavlin@nuc:/nuc/FPGA$ cd xc3sprog/
dpavlin@nuc:/nuc/FPGA/xc3sprog$ mkdir build
dpavlin@nuc:/nuc/FPGA/xc3sprog$ cd build/
dpavlin@nuc:/nuc/FPGA/xc3sprog/build$ cmake ..
```

xc3sprog

http://hamsterworks.co.nz/mediawiki/index.php/MiniSpartan6%2B_bringup

```
dpavlin@nuc:/nuc/FPGA/xc3sprog/build$ ./xc3sprog -c ftdi
XC3SPROG (c) 2004-2011 xc3sprog project $Rev: 774 $ OS: Linux
Free software: If you contribute nothing, expect nothing!
Feedback on success/failure/enhancement requests:
        http://sourceforge.net/mail/?group_id=170565
Check Sourceforge for updates:
        http://sourceforge.net/projects/xc3sprog/develop

Using Libftdi,
JTAG loc.:   0  IDCODE: 0x24004093  Desc:                       XC6SLX25 Rev: C  IR length:  6


dpavlin@nuc:/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware$ xc3sprog -c ftdi ../scarab-soc/build/gate
XC3SPROG (c) 2004-2011 xc3sprog project $Rev: 774 $ OS: Linux
Free software: If you contribute nothing, expect nothing!
Feedback on success/failure/enhancement requests:
        http://sourceforge.net/mail/?group_id=170565
Check Sourceforge for updates:
        http://sourceforge.net/projects/xc3sprog/develop

Using Libftdi,
DNA is 0x99c82c33404496ff


(H2U P=opsis) dpavlin@nuc:/nuc/FPGA/HDMI2USB/scarab-soc$ cat ~/bin/fpgaprog
#!/bin/sh -xe

LD_LIBRARY_PATH= LD_PRELOAD= xc3sprog -c ftdi -v $3
```

HDMI2USB

- https://hdmi2usb.tv/

```
dpavlin@klin:/klin/HDMI2USB/HDMI2USB-litex-firmware$ git remote -v
origin  https://github.com/mithro/HDMI2USB-litex-firmware (fetch)
origin  https://github.com/mithro/HDMI2USB-litex-firmware (push)
dpavlin@klin:/klin/HDMI2USB/HDMI2USB-litex-firmware$ . scripts/enter-env.sh

(H2U P=opsis R=nextgen) dpavlin@klin:/klin/HDMI2USB/HDMI2USB-litex-firmware$ export PLATFORM=mini
(H2U P=minispartan6 R=nextgen) dpavlin@klin:/klin/HDMI2USB/HDMI2USB-litex-firmware$ export TARGET


(H2U P=minispartan6 T=video R=nextgen) dpavlin@klin:/klin/HDMI2USB/HDMI2USB-litex-firmware$ make


(H2U P=minispartan6 T=base R=nextgen) dpavlin@nuc:/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware$ mak



dpavlin@nuc:/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware$ xc3sprog -c ftdi -v /mnt/klin/klin/HDMI2U
XC3SPROG (c) 2004-2011 xc3sprog project $Rev: 774 $ OS: Linux
Free software: If you contribute nothing, expect nothing!
Feedback on success/failure/enhancement requests:
        http://sourceforge.net/mail/?group_id=170565
Check Sourceforge for updates:
        http://sourceforge.net/projects/xc3sprog/develop

Using built-in device list
Using built-in cable list
Cable ftdi type ftdi VID 0x0403 PID 0x6010 dbus data 00 enable 0b cbus data 00 data 00
Using Libftdi, Using JTAG frequency   1.500 MHz from undivided clock
JTAG chainpos: 0 Device IDCODE = 0x24004093     Desc: XC6SLX25
Created from NCD file: top.ncd;UserID=0xFFFFFFFF
Target device: 6slx25ftg256
Created: 2017/01/01 11:35:33
Bitstream length: 6416144 bits
DNA is 0x99c82c33404496ff
done. Programming time 4261.8 ms
USB transactions: Write 410 read 17 retries 24


(H2U P=minispartan6 T=base R=nextgen) dpavlin@nuc:/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware$ lit


[TERM] Starting....

BIOS> serialboot
Booting from serial...
sL5DdSMmkekro
[TERM] Received firmware download request from the device.
[TERM] Uploading /mnt/klin/klin/HDMI2USB/HDMI2USB-litex-firmware/build/minispartan6_base_lm32/sof
[TERM] Upload complete (10.2KB/s).
[TERM] Booting the device.
[TERM] Done.
Executing booted program.

Opsis CPU testing software built Jan  1 2017 11:32:34
hardware version infoException in thread Thread-1:
Traceback (most recent call last):
  File "/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware/build/conda/lib/python3.5/threading.py", line
    self.run()
  File "/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware/build/conda/lib/python3.5/threading.py", line
    self._target(*self._args, **self._kwargs)
```

```
  File "/nuc/FPGA/HDMI2USB/HDMI2USB-litex-firmware/third_party/litex/litex/soc/tools/litex_term.p
    sys.stdout.write(b"\n")
TypeError: write() argument must be str, not bytes
```