

Cloudshell LCD Configuration

Cloudshell features a 2.2" TFT LCD with a 320×240 resolution. The display is controlled by the well-known ILI9340 controller.

It uses SPI @ 40Mhz to talk with the LCD. (SPI 1)

[Where to buy](#)

Tested on Ubuntu 16.04 Minimal

Module configuration

target

```
sudo -s
echo "options fbftft_device name=hktft9340 busnum=1 rotate=270" >
/etc/modprobe.d/odroid-cloudshell.conf
echo "spi_s3c64xx" >> /etc/modules
echo "spidev" >> /etc/modules
echo "fbftft_device" >> /etc/modules
```

Edit /etc/modprobe.d/blacklist-odroid.conf

Remove the blacklist on spi.

```
# Comment the required lines

# IO Board
blacklist ioboard_bh1780
blacklist ioboard_bmp180
blacklist ioboard_keyled

# SPI
# blacklist spidev
# blacklist spi_s3c64xx

# 3.2" LCD Touchscreen driver
blacklist ads7846
```

The commands above will ensure that at every boot the LCD is configured.

Reboot the board with **HDMI cable disconnected** and you should see already information going to the 2.2" LCD.

Last update:

2018/03/19 accessory:add-on_boards:xu4_cloudshell:lcd_config https://wiki.odroid.com/accessory/add-on_boards/xu4_cloudshell/lcd_config
16:53

Cloudshell NMON

Let me introduce this nice NMON by @David.B from odroid forum.

<https://forum.odroid.com/viewtopic.php?f=147&t=29996>

And Download sources via @David.B github. [cloudshell-nmon](#)

Here is some screenshot.

- **nmon main**

```
Hostname [ odroid ] Refresh= 2secs 01:21.04
Memory Usage
Total 2042420 Used 412404 Buff/Cache 103956 Free 1526060 Avail 1506400
CPU Utilization
CPU User% Sys% Wait% Idle% |25 |50 |75 |100|
1 0.0 0.0 0.0 100.0 |>
2 0.0 0.5 0.0 99.5 |>
3 0.0 0.0 0.0 100.0 |>
4 0.0 0.0 0.0 100.0 |>
5 0.0 0.5 0.0 99.5 |>
6 0.0 100.0 0.0 0.0 |>
7 0.0 0.0 0.0 100.0 |>
8 0.0 0.0 0.0 100.0 |>
-----
Avg 0.0 12.6 0.0 87.4 |>
Network I/O
I/F Name RecvKB/s TransKB/s packin packout insize outside Peak->Recv Trans
lo 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
eth0 0.2 0.2 2.0 1.5 83.0 142.0 2.7 9.0
Disk I/O /proc/diskstats -mostly in KB/s
DiskName Busy Read Write Xfers Size Peak% Peak=R+W InFlight
mcbk1k1 0% 0.0 0.0KB/s 0.0 0.0KB 17% 2107.0KB/s 0
mcbk1p1 0% 0.0 0.0KB/s 0.0 0.0KB 0% 0.0KB/s 0
mcbk1p2 0% 0.0 0.0KB/s 0.0 0.0KB 17% 2107.0KB/s 0
sda 0% 0.0 0.0KB/s 0.0 0.0KB 100% 167003.3KB/s 0
Totals Read-KB/s=0.0 Writes-KB/s=0.0 Transfers/sec=0.0
```

- **nmon help**

```
Hostname [ odroid ] Refresh= 2secs 06:44.50
HELP: Hit h to remove this info Hit q to Quit
Letters which toggle on/off statistics:
h = this help
c = CPU Util C = wide view
m = Memory & Swap L=Huge
n = Network
d = Disk I/O Graphs D=Stats
k = Kernel stats & loadavg
M = Mhz by thread & CPU
t = TopProcess 1=Priority/Nice/State
ReOrder by: 3=CPU 4=RAM 5=I/O
g = User Defined Disk Groups
[Start nmon with -g <filename>]
f = Memory stats similar to 'free'
Other Controls:
+ = double the screen refresh time
- = half the screen refresh time
. = Display only busy disks & CPU
r = Resources OS & Proc
l = longer term CPU averages
V = Virtual Memory
W = WFS
o = Disks %Busy Map
j = Filesystem Usage
x = Xu4 CPU temp/07 015 white
u = TopProc with command line
Hit u twice to update
G = with -g switches Disk graphs
to disk groups only
b = black & white mode
0 = reset peak marks (">") to zero
space refresh screen now
q = Quit

(C) Copyright 2009 Nigel Griffiths | See http://nmon.sourceforge.net
Colour: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20
Memory Usage
Total 2042420 Used 150200 Buff/Cache 316744 Free 1575404 Avail 1054568
CPU Utilization
CPU User% Sys% Wait% Idle% |25 |50 |75 |100|
1 0.0 0.5 0.0 99.5 |>
2 0.0 0.0 0.0 100.0 |>
3 0.0 0.0 0.0 100.0 |>
```

- **nmon disk per line**

```

(12074,513554) usb 4-1.1: cmd caplt err -71 Refresh= 2secs 06:56.15
Memory Usage
Total 2042420 Used 1210592 Buff/Cache 790060 Free 41776 Avail 8027746
CPU Utilization
CPU User% Sys% Wait% Idle%
1 0.0 0.5 0.0 99.5
2 0.0 0.0 0.0 100.0

```

• nmon nfs

```

Hostname [ odroid ] Refresh= 2secs 07:01.33
Memory Usage
Total 2042420 Used 157912 Buff/Cache 804040 Free 1000476 Avail 1055172
CPU Utilization
CPU User% Sys% Wait% Idle%
1 0.0 0.0 0.0 100.0
2 0.0 0.5 0.0 99.5
3 0.0 0.0 0.0 100.0
4 0.0 0.0 0.0 100.0
5 0.0 0.0 0.0 100.0
6 0.0 0.0 0.0 100.0
7 0.0 0.0 0.0 100.0
8 0.0 0.0 0.0 100.0
Avg 0.1 0.1 0.0 99.9
Network Filesystem (NFS) I/O Operations per second
Version 2 Client Server Version 3 Client Server
null 0.0 0.0 null 0.0 0.0
getattr 0.0 0.0 getattr 0.0 0.0
setattr 0.0 0.0 setattr 0.0 0.0
root 0.0 0.0 lookup 0.0 0.0
lookup 0.0 0.0 access 0.0 0.0
readlink 0.0 0.0 readlink 0.0 0.0
read 0.0 0.0 read 0.0 0.0
wrcache 0.0 0.0 write 0.0 0.0
write 0.0 0.0 create 0.0 0.0
create 0.0 0.0 mkdir 0.0 0.0
remove 0.0 0.0 symlink 0.0 0.0
rename 0.0 0.0 rmdir 0.0 0.0

```

• nmon nfs second

```

Hostname [ odroid ] Refresh= 2secs 07:02.35
Memory Usage
Total 2042420 Used 157908 Buff/Cache 804044 Free 1000476 Avail 1055208
CPU Utilization
CPU User% Sys% Wait% Idle%
1 0.0 0.5 0.0 99.5
2 0.0 0.5 0.0 99.5
3 0.0 0.0 0.0 100.0
4 0.0 0.0 0.0 100.0
5 0.0 0.5 0.0 99.5
6 0.0 0.0 0.0 100.0
7 0.0 0.0 0.0 100.0
8 0.0 0.0 0.0 100.0
Avg 0.0 0.2 0.0 99.8
Network Filesystem (NFS) I/O Operations per second
Version 4 Client (61 Stats found)
null 0.0 getattr 0.0
read 0.0 lookup 0.0
write 0.0 lookup_root 0.0
commit 0.0 remove 0.0
open 0.0 rename 0.0
open_conf 0.0 link 0.0
open_noat 0.0 symlink 0.0
open_dgrd 0.0 create 0.0
Close 0.0 pathconf 0.0
getattr 0.0 statfs 0.0
fsinfo 0.0 readlink 0.0
renew 0.0 readdir 0.0

```

• nmon resources

Last update:

2018/03/19 accessory:add-on_boards:xu4_cloudshell:lcd_config https://wiki.odroid.com/accessory/add-on_boards/xu4_cloudshell/lcd_config
16:53

```
~Hostname [ odroid ] Refresh= 2secs 01:20.16
Memory Usage
Total 2042420 Used 157552 Buff/Cache 805020 Free 1079856 Avail 1055364
Resources Linux & Processor
Linux: Linux version 4.14.27-122 (root@1604_builder_armhf)
Build: (gcc version 5.4.1 20160904 (Ubuntu/Linaro 5.4.1-2ubuntu1-16.04))
Release : 4.14.27-122
Version : #1 SMP PREEMPT Mon Mar 19 01:39:30 UTC 2018
cpuinfo: Vendor=not-set Model=ARMv7 Processor rev 3 (v7l)
cpuinfo: Hs=not-set bogomips=not-set
cpuinfo: ProcessorCpids=0 PhysicalCores=0
cpuinfo: Hyperthreads=0 VirtualCPUs=8
# of CPUs: 8
Machine : armv7l
Modename : odroid
/etc/os-release(1): DISTRO_ID=Ubuntu
/etc/os-release(2): DISTRO_RELEASE=16.04
/etc/os-release(3): DISTRO_CODENAME=xenial
/etc/os-release(4): DISTRO_DESCRIPTION="Ubuntu 16.04.4 LTS"
lch_release: Distributor ID: Ubuntu
lch_release: Description: Ubuntu 16.04.4 LTS
lch_release: Release: 16.04
lch_release: Codename: xenial
CPU Utilization
CPU User% Sys% Wait% Idle% | 25 | 50 | 75 | 100
1 0.0 0.5 0.0 99.5 |>
2 0.0 0.0 0.0 100.0 |>
3 0.0 0.0 0.0 100.0 |>
4 0.0 0.0 0.0 100.0 |>
```

• nmon utilisation

```
~Hostname [ odroid ] Refresh= 2secs 01:22.20
Memory Usage
Total 2042420 Used 157556 Buff/Cache 805032 Free 1079840 Avail 1055424
CPU Utilization
CPU User% Sys% Wait% Idle% | 25 | 50 | 75 | 100
1 0.0 0.0 0.0 100.0 |>
2 0.0 0.0 0.0 100.0 |>
3 0.0 0.0 0.0 100.0 |>
4 0.0 0.0 0.0 100.0 |>
5 0.0 0.0 0.0 100.0 |>
6 0.0 0.0 0.0 100.0 |>
7 0.0 0.5 0.0 99.5 |>
8 0.0 0.0 0.0 100.0 |>
Avg 0.0 0.1 0.0 99.9 |>
CPU Utilization Stats
ALL 0.0 0.0 0.5 799.1 0.0 0.0 0.0 0.0 0.0 0.0
CPU User% Nice% Sys% Idle% Wait% HWirq% SWirq% Steal% Guest% GuestNice%
1 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
2 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
3 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
4 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
5 0.0 0.0 0.0 99.4 0.0 0.0 0.0 0.0 0.0 0.0
6 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
7 0.0 0.0 0.0 99.9 0.0 0.5 0.0 0.0 0.0 0.0
8 0.0 0.0 0.0 99.9 0.0 0.0 0.0 0.0 0.0 0.0
Network I/O
I/F Name Recv=KB/s Trans=KB/s packin packout insize outside Peak->Recv Trans
Lo 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

• nmon temperature and cpu

```
~Hostname [ odroid ] Refresh= 2secs 01:25.36
XU4
Temp 54 C A15 @ 2000 Mhz A7 @ 1500 Mhz
Memory Usage
Total 2042420 Used 157600 Buff/Cache 805040 Free 1079700 Avail 1055300
CPU Utilization
CPU User% Sys% Wait% Idle% | 25 | 50 | 75 | 100
1 0.0 0.0 0.0 100.0 |>
2 0.0 0.0 0.0 100.0 |>
3 0.0 0.0 0.0 100.0 |>
4 0.0 0.0 0.0 100.0 |>
5 0.0 0.5 0.0 99.5 |>
6 0.0 0.0 0.0 100.0 |>
7 0.0 0.5 0.0 99.5 |>
8 0.0 0.0 0.0 100.0 |>
Avg 0.1 0.1 0.0 99.8 |>
Network I/O
I/F Name Recv=KB/s Trans=KB/s packin packout insize outside Peak->Recv Trans
eth0 0.2 0.0 2.5 0.0 83.6 0.0 2.7 9.0
Disk I/O /proc/diskstats -mostly in KB/s
DiskName Busy Read Write Xfers Size Peak% Peak=R+W InFlight
mcbk1k1 0% 0.0 2.0MB/s 0.5 4.0KB 17% 2107.0MB/s 1
mcbk1k1 0% 0.0 0.0MB/s 0.0 0.0KB 0% 0.0MB/s 0
mcbk1k2 0% 0.0 2.0MB/s 0.5 4.0KB 17% 2107.0MB/s 1
cda 0% 0.0 0.0MB/s 0.0 0.0KB 100% 167803.3MB/s 0
Totals Read=KB/s=0.0 Writes=KB/s=0.0 Transfers/sec=1.0
```

• nmon top process

```

Hostname [ odroid ] Refresh= 2secs 07:21.48
Memory Usage
Total 2042420 Used 157560 Buff/Cache 805020 Free 1079840 Avail 1055420
CPU Utilization
CPU User% Sys% Wait% Idle|0 |25 |50 |75 |100
 1 0.0 0.0 0.0 100.0|>
 2 0.5 0.5 0.0 99.0|>
 3 0.0 0.0 0.0 100.0|>
 4 0.0 0.0 0.0 100.0|>
 5 0.0 0.0 0.0 100.0|>
 6 0.0 0.0 0.0 100.0|>
 7 0.0 0.0 0.0 100.0|>
 8 0.0 0.0 0.0 100.0|>
-----
Avg 0.1 0.2 0.0 99.7|>
Network I/O
I/F Name Recv=KB/s Trans=KB/s packin packout insize outside Peak->Recv Trans
lo 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
eth0 0.1 0.0 1.5 0.0 70.0 0.0 2.7 9.0
Disk I/O /proc/diskstats -mostly in KB/s
DiskName Busy Read Write Xfers Size Peak% Peak=R+W InFlight
mcblk1 0% 0.0 0.0MB/s 0.0 0.0KB 17% 2107.0KB/s 0
mcblk1p1 0% 0.0 0.0MB/s 0.0 0.0KB 0% 0.0KB/s 0
mcblk1p2 0% 0.0 0.0MB/s 0.0 0.0KB 17% 2107.0KB/s 0
Top Processes Proc=152 mode=3-1-Base 3=Perf 4=Size 5=I/O u=Args
PID CPU Size Res Res Res Res Shared Faults Command
Used KB Set Text Data Lib KB Min Maj
5922 1.5 6048 3436 124 4024 0 0 0 nmon-xu4
6254 0.5 0 0 0 0 0 0 0 kworker/4:0

```

• nmon virtual memory

```

Hostname [ odroid ] Refresh= 2secs 07:23.47
Memory Usage
Total 2042420 Used 157560 Buff/Cache 805036 Free 1079832 Avail 1055420
CPU Utilization
CPU User% Sys% Wait% Idle|0 |25 |50 |75 |100
 1 0.0 0.0 0.0 100.0|>
 2 0.0 0.0 0.0 100.0|>
 3 0.0 0.0 0.0 100.0|>
 4 0.0 0.0 0.0 100.0|>
 5 0.0 0.0 0.0 100.0|>
 6 0.0 0.0 0.0 100.0|>
 7 0.0 0.0 0.0 100.0|>
 8 0.0 0.0 0.0 100.0|>
-----
Avg 0.0 0.1 0.0 99.9|>
Virtual Memory
nr_dirty = 0 pgpgin = 0 High Normal DRR
nr_writeback= 0 pgpgout = 0 alloc 0 0 0
nr_unstable = 0 pgpswpin = 0 refill 0 0 0
nr_table_pgs= 493 pgpswpout = 0 steal 0 0 0
nr_mapped = 11674 pgfree = 4 scan_kswpd 0 0 0
nr_slab = -1 pgactivate = 0 scan_direct 0 0 0
pgdeactivate= 0
allocstall = 0 pgfault = 0 kswpd_steal = 0
pageoutrun = 0 pgmajfault = 0 kswpd_inodesteal= 0
slabs_scanned= 0 pgrtated = 0 pginodesteal = 0
Network I/O
I/F Name Recv=KB/s Trans=KB/s packin packout insize outside Peak->Recv Trans
lo 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

```

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Permanent link: https://wiki.odroid.com/accessory/add-on_boards/xu4_cloudshell/lcd_config

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