

The RPi3B Running Ultibo provides the capability to update the kernel7.img **tftp xx.xx.xx** < **cmdstftp tftp> Sent 3223812 bytes in 12.6 second**

In addition it provides a WebStatus and remote shell
The remote shell can be use to examine files and restart the RPi3B+ Ultibo.

Ultibo Core (Release: Beetroot Version: 2.1.341 Date: 21 March 2022)

telnet xx.xx.xx.xx

Ultibo Core (Release: Beetroot Version: 2.1.341 Date: 21 March 2022)

(Type HELP for a list of available commands)

Available commands:

HELP

INFO

VER

TIME

CLS

RESTART

SHUTDOWN

UPTIME

THREAD

MEMORY

DEVICE

FILESYSTEM

CONTROLLER

DISK

PARTITION

VOLUME

DRIVE

CACHE

DIR

CD

MD

RD

TYPE

COPY

MOVE

DEL

REN

ATTRIB

TOUCH

VOL

LABEL

DELTREE

XCOPY

UPDATE

LOGOUT

type pico.log

LASS_SERIAL Name=Serial1)

0000007E - 01617F54:2 - USB: Bound USB CDC ACM Serial Driver to full-

speed USB 2.0 device (Pico) (idVendor=2E8A idProduct=000A) (Interface=0)

0000007F - 01617F54:2 - Device: Sending device notification (Name=USB3

Class=DEVICE_CLASS_USB Notification=DEVICE_NOTIFICATION_BIND)

00000080 - 01617F54:2 - Device: Sending device notification (Name=USB4

Class=DEVICE_CLASS_USB

Notification=DEVICE_NOTIFICATION_REGISTER)

00000081 - 01617F54:2 - Device: Registered device (Handle=029AA214

Class=DEVICE_CLASS_USB Name=USB4)

00000082 - 01617F54:2 - USB: Device3: Hub: New high-speed device connected to port 1

00000083 - 01617F54:2 - Device: Sending device notification (Name=USB4

Class=DEVICE_CLASS_USB

Notification=DEVICE NOTIFICATION ATTACHING)

(Type HELP for a list of available commands)

>restart

Restarting in 1000 milliseconds

The RPi3B+ is programmed using repo

https://github.com/develone/Ultibo_Projects

https://github.com/develone/Ultibo Projects/blob/master/picotransfer/RPi3/picokltdwtultibo.lpr

The pico is programmed using repo

https://github.com/develone/rp2040-freertos-project

https://github.com/develone/rp2040-freertos-project/blob/master/kltdwt-ultibo/main.c

https://github.com/develone/rp2040-freertos-project/blob/master/kltdwt-ultibo/CMakeLists.txt

cmake ../

PICO SDK PATH is /home/devel/rp2040-freertos-project/pico-sdk

PICO platform is rp2040.

PICO target board is pico.

Using board configuration from

/home/devel/rp2040-freertos-project/pico-sdk/src/boards/include/boards/pico.h TinyUSB available at /home/devel/rp2040-freertos-project/pico-sdk/lib/tinyusb/src/portable/raspberrypi/rp2040; enabling build support for USB.

- -- Configuring done
- -- Generating done
- -- Build files have been written to: /home/devel/rp2040-freertos-project/build devel@pi4-27:~/rp2040-freertos-project/build \$ make
- [1%] Built target bs2_default
- [2%] Performing build step for 'ELF2UF2Build'
- [100%] Built target elf2uf2
- [2%] No install step for 'ELF2UF2Build'
- [2%] Completed 'ELF2UF2Build'
- [2%] Built target ELF2UF2Build
- [2%] Built target lifting
- [2%] Built target bs2_default_padded_checksummed_asm
- [3%] Built target klt
- [3%] Built target crc
- [12%] Built target kltdwt-ultibo
- [21%] Built target multicore
- [29%] Built target klt-test
- [31%] Built target freertos
- [40%] Built target Semaphore
- [48%] Built target Mutex
- [56%] Built target Scheduling
- [62%] Built target 50_pwm
- [70%] Built target 2tasks
- [79%] Built target ultibo_blink
- [87%] Built target hello_usb
- [95%] Built target pico-lifting
- [100%] Built target blink

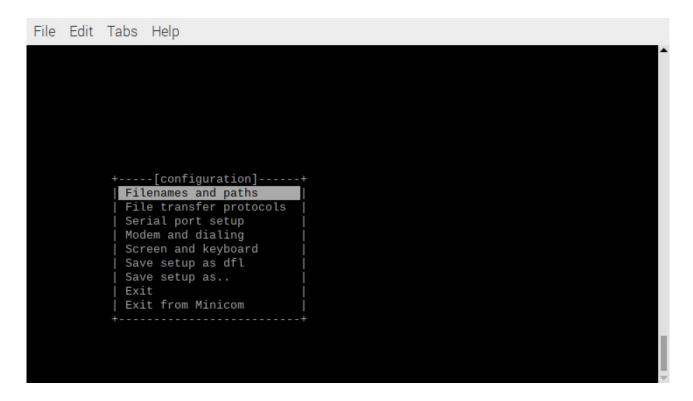
Rpi3B+



Pico



sudo minicom -s



Scroll Down to Serial port setup. Depress Enter

```
File Edit Tabs Help

A - Serial Device : /dev/ttyACM0

B - Lockfile Location : /var/lock

C - Callin Program :

D - Callout Program :

E - Bps/Par/Bits : 115200 8N1

F - Hardware Flow Control : Yes

G - Software Flow Control : No

H - RS485 Enable : No

I - RS485 Rts On Send : No

J - RS485 Rts On Send : No

K - RS485 Rx During Tx : No

L - RS485 Terminate Bus : No

M - RS485 Delay Rts Before: 0

N - RS485 Delay Rts After : 0

Change which setting?
```

Depress Enter

Scroll Down to Exit

Depress Enter

New minicom

```
File Edit Tabs Help

Welcome to minicom 2.8

OPTIONS: I18n
Port /dev/ttyACM0, 15:00:48

Press CTRL-A Z for help on special keys
```

openocd -f interface/raspberrypi-swd.cfg -f target/rp2040.cfg -c "program kltdwt-ultibo/kltdwt-ultibo.elf verify reset exit"

Open On-Chip Debugger 0.10.0+dev-g71510a7-dirty (2021-08-15-17:08)

Licensed under GNU GPL v2

For bug reports, read

http://openocd.org/doc/doxygen/bugs.html

adapter speed: 1000 kHz

Info: Hardware thread awareness created Info: Hardware thread awareness created Info: RP2040 Flash Bank Command

Info: BCM2835 GPIO JTAG/SWD bitbang driver

Info: clock speed 1001 kHz Info: SWD DPIDR 0x0bc12477 Info: SWD DLPIDR 0x00000001 Info: SWD DPIDR 0x0bc12477 Info: SWD DLPIDR 0x10000001

Info: rp2040.core0: hardware has 4 breakpoints, 2 watchpoints Info: rp2040.core1: hardware has 4 breakpoints, 2 watchpoints

Info: starting gdb server for rp2040.core0 on 3333 Info: Listening on port 3333 for gdb connections

target halted due to debug-request, current mode: Thread xPSR: 0xf1000000 pc: 0x000000ee msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0xf1000000 pc: 0x000000ee msp: 0x20041f00

** Programming Started **

Info: RP2040 B0 Flash Probe: 2097152 bytes @10000000, in 512 sectors

target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 Info: Writing 73728 bytes starting at 0x0 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00 ** Programming Finished ** ** Verify Started ** target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00

target halted due to debug-request, current mode: Thread xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00

** Verified OK **

** Resetting Target ** shutdown command invoked

10 Sysc and 10 Ready

```
File Edit Tabs Help
Press CTRL-A Z for help on special keys
Sync
Ready
```

Selecting upload mode.

```
File
      Edit Tabs Help
Sync
Sync
Sync
Sync
Sync
Sync
Sync
Sync
                                +-[Upload] --+
                                  zmodem
                                  ymodem
Sync
Sync
                                  xmodem
Ready
                                 kermit
Ready
                                ascii
Ready
Ready
Ready
Ready
Ready
Ready
Ready
Ready
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyACMO
```

Selecting a64.bin

```
File Edit Tabs Help
Sync
                                -[Select a file for upload]--
Sync
Sync
       |Directory: /root
Sync
Sync
         [.cache]
         [.config]
Sync
Sync
         [.ecryptfs]
Sync
         [.local]
         [.ssh]
Sync
Sync
         .bash_history
Ready
Ready
         .bashrc
Ready
Ready
         a.bin
Ready
         a64.bin
         bb.bin
Ready
        devel@pi4-28
Ready
         minicom.cap
Ready
Ready
                       ( Escape to exit, Space to tag )
Ready
                       [Goto] [Prev] [Show]
                                                [Tag] [Untag] [Okay]
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyACMO
```

After selecting the file a64.bin

```
File Edit Tabs Help
Sync
Sync
Sync
Sync
Sync+-----Cascii upload - Press CTRL-C to quit]----
Sync|ASCII upload of "a64.bin"
Sync
Sync|4.1 Kbytes transferred at 4160 CPS... Done.
Sync|
Sync| READY: press any key to continue...
Read
Read
Read+-
Ready
Ready
Ready
Ready
Ready
Ready
Ready
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyACMO
```

4160 data values sent. Depress Enter

```
File
      Edit Tabs Help
Sync
Ready
Command (1 = Send or \theta = Wait):
```

Depress 1

```
File Edit
               Tabs Help
 1,1,1,2,2,-7,8,12,-2,0,-7,5,-3,-3,2,-3,16,-5,3,1,-14,19,10,-5,-44,0,-1,1,1,0,0,-1,1,-1,
12,-5,0,1,1,0,-6,-15,24,-12,9,2,19,7,5,29,-46,15,4,1,5,2,-2,0,-25,58,-4,0,0,1,-1,-1,2,-1,
-5,3,1,-2,-1,1,0,3,-6,14,-6,1,-34,5,-5,10,-14,-6,9,1,-1,-1,-3,1,5,-41,20,3,-2,1,1,-1,2,-1,
-4,3,1,1,5,-6,1,10,-15,6,-1,48,18,-4,1,0,3,-1,0,1,1,-1,-1,-1,3,9,-2,5,2,2,5,0,6,-4,-4,-14,
-1,0,1,2,0,6,-2,-48,33,-4,6,-61,56,-31,2,4,-1,4,-4,-2,3,1,2,2,-3,1,-2,0,18,-13,-10,2,2,-3,8,-2,3,0,-1,1,7,25,-2,10,7,37,-31,6,2,-2,-1,-1,3,0,1,1,1,3,-15,7,1,0,7,-32,6,5,3,5,23,-7,,13,-3,-1,1,-1,-1,6,6,4,9,3,-3,7,-2,-6,4,1,3,1,2,-1,0,0,1,11,4,3,-1,-2,4,-4,4,0,2,-15,36,1,
-33,11,13,-8,-9,12,-8,-15,8,-7,-3,-1,0,5,0,0,-1,1,1,0,-1,0,2,13,-14,0,7,-1,-6,39,-24,3,8,-9,-12,15,28,-17,4,3,4,-5,3,3,5,3,-9,3,1,2,-1,1,-1,1,1,-2,3,-20,-4,8,2,15,-37,15,-10,5,,
2,1,8,1,-11,4,0,-7,-14,8,4,0,1,0,-5,6,1,2,-3,-6,4,1,1,0,4,1,5,-1,0,-11,4,-10,22,-3,9,-31,,
0,5,5,-8,3,1,-8,6,7,-2,0,0,1,1,6,-1,2,-2,4,4,0,1,-1,0,2,-1,-4,0,-1,5,-3,4,-24,20,-34,6,-1,
-9,8,-6,0,2,-11,9,3,2,0,0,-1,-1,1,4,-7,4,-18,5,3,1,-1,3,3,17,-15,7,-1,1,-1,3,8,9,-26,0,-1,
86,-7,2,-1,-28,22,5,-2,0,0,2,0,0,0,-1,0,0,19,-4,-2,-1,0,0,19,-76,0,2,2,7,-7,5,-18,31,4,-5,
Ready
```

4160 data values sent.

File Edit Tabs Help Ready Ready Ready Ready Ready Ready 84 86 90 94 recCRC 0x18 0x20005e06 0x20005e06 0x20005e4c 0x20005dcc 0x20002420 99 100 101 184 235 235 235 235 235 235 235 235 234 204 204 213 211 207 195 214 213 218 216 223 223 224 171 129 132 131 132 0x13 20 28 32 34 33 32 20 18 19 24 23 24 38 48 48 56 109 181 215 165 54 90 75 73 107 73 105 218 81 41 53 105 104 114 94 49 93 109 99 101 61 39 33 74 120 125 176 187 recCRC 0x18 0x20005e2e 0x20005e2e 0x20005e4c 0x20005dcc 0x20003ca0 0x14 34 39 38 35 29 19 18 19 24 21 25 47 43 46 53 59 135 184 196 124 98 89 89 108 89 96 105 218 81 41 53 105 104 114 94 49 93 109 99 101 61 39 33 74 120 125 176 187 recCRC 0x18 0x20005ded 0x20005ded 0x20005e4c 0x20005dcc 0x20003d20 0x4 34 39 38 35 29 19 18 19 24 21 25 47 43 46 53 59 135 184 196 124 98 89 89 108 89 96 228 135 87 48 45 43 48 80 84 79 75 59 52 45 72 65 46 66 134 191 235 235 235 recCRC 0x18 0x20005e2d 0x20005e2d 0x20005e4c 0x20005dcc 0x20003da0 Command (1 = Send or 0 = Wait):

Ultibo Now can detect Sync

```
Welcome to Pico Test Program.
Serial Port State Finding
trying to find USB CDC ACM Serial
Serial Port State Opening
Serial Port State Processing0
Received a line: ""
Received a line: "S"
Received a line: "Syn"
Received a line: "Syn"
Received a line: "Syn"
Length of Characters 4
Characters S
Serial Port State Processing1
```

Ultibo Now can detect Ready

```
Welcome to PIco Test Program.
Serial Port State Finding
trying to find USB CDC ACM Serial
Serial Port State Opening
Serial Port State Processing@
Received a line: ""
 Received a line: "S"
 Received a line: "Su"
 Received a line: "Sym"
 Received a line: "Sync"
 Length of Characters 4
  Characters 3
  Serial Port State Processing1
Received a line: ""
  Length of Characters 0
  Received a line: ""
   Received a line: "R"
   Received a line: "Re"
   Received a line: "Rea"
   Received a line: "Read"
   Received a line: "Readu"
    Length of Characters 5
    Characters R
    Serial Port State Processing2
```

This version receive 10 Sync followed by 10 Ready.

Then sends either a64.bin or bb.bin which and image 64 X 64 with an

8 bit CRC 4160 char

Command (1 = Send or 0 = Wait):

a64.bin

Feature #0: (24.000000,32.000000) with value of 4472 Feature #1: (34.000000,39.000000) with value of 3461 Feature #2: (36.000000,29.000000) with value of 3100

bb.bin

Feature #0: (37.000000,29.000000) with value of 19844 Feature #1: (28.000000,39.000000) with value of 9270 Feature #2: (24.000000,29.000000) with value of 4393 Feature #3: (38.000000,39.000000) with value of 465

The 64 X 64 image is sent to the pico in 64 lines of 65 characters. The value at position 65 is the CRC of the image. The data is in the file a64.bin



The data is in the file bb.bin



xx The pico sends Command (1 = Send or 0 = Wait):

```
Received a line: "ReadyReadyCommand (1 = Send or 0 = Wa"
Received a line: "ReadyReadyCommand (1 = Send or 0 = Wai"
Received a line: "ReadyReadyCommand (1 = Send or 0 = Wait"
Received a line: "ReadyReadyCommand (1 = Send or 0 = Wait)"
Received a line: "ReadyReadyCommand (1 = Send or 0 = Wait):
Length of Characters 41
Characters R
Serial Port State Processing4
```

```
xx
need to copy the data received from host to img1
img1 = 0x2003ffd8 img2 = 0x20040fd8
0 img1 161 ptrs.buf 161
1 img1 157 ptrs.buf 157
2 img1 156 ptrs.buf 156
3 img1 157 ptrs.buf 157
4 img1 159 ptrs.buf 159
4091 img1 62 ptrs.buf 62
4092 img1 67 ptrs.buf 67
4093 img1 63 ptrs.buf 63
```

```
4094 img1 59 ptrs.buf 59
4095 img1 91 ptrs.buf 91
need to copy the data from img1 to img2
0 img2 161 img1 161
1 img2 157 img1 157
2 img2 156 img1 156
3 img2 157 img1 157
4 img2 159 img1 159
4091 img2 62 img1 62
4092 img2 67 img1 67
4093 img2 63 img1 63
4094 img2 59 img1 59
4095 img2 91 img1 91
Feature #0: (24.000000,32.000000) with value of 4472
Feature #1: (34.000000,39.000000) with value of 3461
Feature #2: (36.000000,29.000000) with value of 3100
Feature #3: (-1.000000,-1.000000) with value of -1
Feature #4: (-1.000000,-1.000000) with value of -1
Feature #5: (-1.000000,-1.000000) with value of -1
Feature #6: (-1.000000,-1.000000) with value of -1
Feature #7: (-1.000000,-1.000000) with value of -1
Feature #8: (-1.000000,-1.000000) with value of -1
Feature #9: (-1.000000,-1.000000) with value of -1
Feature #10: (-1.000000,-1.000000) with value of -1
Feature #11: (-1.000000,-1.000000) with value of -1
Feature #12: (-1.000000,-1.000000) with value of -1
Feature #13: (-1.000000,-1.000000) with value of -1
Feature #14: (-1.000000,-1.000000) with value of -1
Feature #15: (-1.000000,-1.000000) with value of -1
Feature #16: (-1.000000,-1.000000) with value of -1
Feature #17: (-1.000000,-1.000000) with value of -1
Feature #18: (-1.000000,-1.000000) with value of -1
Feature #19: (-1.000000,-1.000000) with value of -1
Feature #20: (-1.000000,-1.000000) with value of -1
Feature #21: (-1.000000,-1.000000) with value of -1
Feature #22: (-1.000000,-1.000000) with value of -1
Feature #23: (-1.000000,-1.000000) with value of -1
Feature #24: (-1.000000,-1.000000) with value of -1
Feature #25: (-1.000000,-1.000000) with value of -1
Feature #26: (-1.000000,-1.000000) with value of -1
Feature #27: (-1.000000,-1.000000) with value of -1
Feature #28: (-1.000000,-1.000000) with value of -1
Feature #29: (-1.000000,-1.000000) with value of -1
Feature #30: (-1.000000,-1.000000) with value of -1
Feature #31: (-1.000000,-1.000000) with value of -1
Feature #32: (-1.000000,-1.000000) with value of -1
Feature #33: (-1.000000,-1.000000) with value of -1
Feature #34: (-1.000000,-1.000000) with value of -1
Feature #35: (-1.000000,-1.000000) with value of -1
Feature #36: (-1.000000,-1.000000) with value of -1
Feature #37: (-1.000000,-1.000000) with value of -1
Feature #38: (-1.000000,-1.000000) with value of -1
```

```
Feature #39: (-1.000000,-1.000000) with value of -1
Feature #40: (-1.000000,-1.000000) with value of -1
Feature #41: (-1.000000,-1.000000) with value of -1
Feature #42: (-1.000000,-1.000000) with value of -1
Feature #43: (-1.000000,-1.000000) with value of -1
Feature #44: (-1.000000,-1.000000) with value of -1
Feature #45: (-1.000000,-1.000000) with value of -1
Feature #46: (-1.000000,-1.000000) with value of -1
Feature #47: (-1.000000,-1.000000) with value of -1
Feature #48: (-1.000000,-1.000000) with value of -1
Feature #49: (-1.000000,-1.000000) with value of -1
Feature #50: (-1.000000,-1.000000) with value of -1
Feature #51: (-1.000000,-1.000000) with value of -1
Feature #52: (-1.000000,-1.000000) with value of -1
Feature #53: (-1.000000,-1.000000) with value of -1
Feature #54: (-1.000000,-1.000000) with value of -1
Feature #55: (-1.000000,-1.000000) with value of -1
Feature #56: (-1.000000,-1.000000) with value of -1
Feature #57: (-1.000000,-1.000000) with value of -1
Feature #58: (-1.000000,-1.000000) with value of -1
Feature #59: (-1.000000,-1.000000) with value of -1
Feature #60: (-1.000000,-1.000000) with value of -1
Feature #61: (-1.000000,-1.000000) with value of -1
Feature #62: (-1.000000,-1.000000) with value of -1
Feature #63: (-1.000000,-1.000000) with value of -1
Feature #64: (-1.000000,-1.000000) with value of -1
Feature #65: (-1.000000,-1.000000) with value of -1
Feature #66: (-1.000000,-1.000000) with value of -1
Feature #67: (-1.000000,-1.000000) with value of -1
Feature #68: (-1.000000,-1.000000) with value of -1
Feature #69: (-1.000000,-1.000000) with value of -1
Feature #70: (-1.000000,-1.000000) with value of -1
Feature #71: (-1.000000,-1.000000) with value of -1
Feature #72: (-1.000000,-1.000000) with value of -1
Feature #73: (-1.000000,-1.000000) with value of -1
Feature #74: (-1.000000,-1.000000) with value of -1
Feature #75: (-1.000000,-1.000000) with value of -1
Feature #76: (-1.000000,-1.000000) with value of -1
Feature #77: (-1.000000,-1.000000) with value of -1
Feature #78: (-1.000000,-1.000000) with value of -1
Feature #79: (-1.000000,-1.000000) with value of -1
Feature #80: (-1.000000,-1.000000) with value of -1
Feature #81: (-1.000000,-1.000000) with value of -1
Feature #82: (-1.000000,-1.000000) with value of -1
Feature #83: (-1.000000,-1.000000) with value of -1
Feature #84: (-1.000000,-1.000000) with value of -1
Feature #85: (-1.000000,-1.000000) with value of -1
Feature #86: (-1.000000,-1.000000) with value of -1
Feature #87: (-1.000000,-1.000000) with value of -1
Feature #88: (-1.000000,-1.000000) with value of -1
Feature #89: (-1.000000,-1.000000) with value of -1
Feature #90: (-1.000000,-1.000000) with value of -1
```

```
Feature #91: (-1.000000,-1.000000) with value of -1
Feature #92: (-1.000000,-1.000000) with value of -1
Feature #93: (-1.000000,-1.000000) with value of -1
Feature #94: (-1.000000,-1.000000) with value of -1
Feature #95: (-1.000000,-1.000000) with value of -1
Feature #96: (-1.000000,-1.000000) with value of -1
Feature #97: (-1.000000,-1.000000) with value of -1
Feature #98: (-1.000000,-1.000000) with value of -1
Feature #99: (-1.000000,-1.000000) with value of -1
2,-1,0,-5,2,19,-14,3,-2,0,-1,-2,0,1,-2,1,0,-1,2,-2,1,3,-3,0,-9,20,-12,-2,2,-15,,
0,2,0,6,-9,7,0,-2,1,3,-3,-1,1,1,0,1,2,0,0,0,2,-2,-2,11,-1,-9,6,2,3,5,-8,1,1,-2,
-3,3,-1,-1,1,0,1,2,1,0,1,-1,-1,1,1,-2,-1,-1,0,1,0,0,1,-2,0,3,0,2,2,1,-1,-3,1,5,
3,-3,0,1,-1,-1,0,1,1,2,2,0,0,3,2,0,-1,0,2,0,0,0,0,-1,6,4,1,3,0,-2,3,3,13,14,14,,
0,1,0,0,-1,1,0,0,2,0,1,0,1,1,1,1,1,2,-1,-7,9,-3,32,1,24,-5,-11,-10,-2,-12,15,-3,
0,3,1,1,-1,1,0,-1,0,1,1,0,1,1,2,2,13,5,9,-9,-2,16,8,1,-25,7,-4,-6,-15,-3,-4,3,
0,-1,1,1,1,0,3,2,0,0,1,0,0,2,-2,0,-3,-7,-2,15,2,14,-14,11,9,-14,-20,34,-9,-1,-4,
0,-1,0,1,0,-1,0,5,-1,-7,4,2,-8,8,2,1,-2,36,-5,3,-12,-4,8,-5,31,-33,-16,5,-3,4,7,
1,1,0,1,0,1,-10,20,-6,-2,3,3,-6,-6,-5,8,26,4,13,6,33,-11,30,-6,-16,13,19,-1,-2,,
-1,0,-1,2,-6,8,1,0,-3,4,-1,-2,-6,5,-8,11,-22,8,8,-9,7,-12,23,-31,12,8,4,19,9,34,
1,0,1,1,-7,4,-1,-3,-3,6,17,-16,-4,4,24,-6,1,6,15,-31,31,3,-56,-37,-21,-23,25,2,
2,2,1,3,-1,0,1,5,13,12,-17,-5,0,17,1,-8,35,-3,-15,18,22,10,-44,1,11,-18,17,-17,,
2,0,1,4,-2,1,1,19,20,-13,-4,-3,8,-1,7,-16,33,14,-2,-10,26,18,5,0,-1,-2,2,-7,8,-,
0,1,0,2,-1,-1,0,-6,-9,0,-4,-13,-12,-15,-7,10,-44,20,49,-69,16,-6,5,5,-5,2,6,-5,,
0,0,-2,5,5,0,-10,-10,5,4,0,1,-9,-5,11,0,-7,45,11,1,0,2,3,-1,-5,-2,9,3,12,-38,19,
0,2,4,11,-1,8,14,-9,3,7,-3,23,-22,10,22,2,40,13,-1,1,0,1,1,8,-6,0,-8,-4,6,-4,1,
2,0,1,-9,-8,-6,-1,0,-2,-3,-6,-15,-24,-10,-5,42,-1,-17,2,-1,1,-7,4,0,2,-2,-3,0,-,
0,1,0,13,34,6,4,0,0,2,0,11,18,-2,4,-8,-40,-28,2,1,2,1,-6,2,2,1,-1,0,0,2,1,-2,0,
-1,2,-1,0,-29,11,1,-2,9,3,-1,17,3,-4,-14,9,17,-7,1,-2,7,-9,5,8,7,-1,0,-1,0,-1,1,
0,0,1,1,1,-46,31,-2,0,-3,-14,4,0,-6,-1,-1,-8,14,0,-1,-10,-1,-6,8,10,-1,-1,-2,1,,
11,0,1,1,0,-1,-37,47,-22,6,0,-1,-4,-1,0,-9,19,13,6,-2,4,-11,0,-1,-25,-7,1,0,-2,,
0,1,-1,1,0,0,0,17,-23,-2,2,0,38,5,4,26,-21,-29,2,6,1,-3,-3,2,14,27,-13,1,-1,-1,
-1,-1,0,0,-4,5,1,0,-2,-3,-1,-5,-18,9,-8,-7,8,3,0,3,-2,0,2,1,0,35,-13,10,-2,1,1,
1,1,-1,-1,6,-5,1,30,60,0,-6,14,-15,-15,-5,2,3,-2,7,0,4,-1,-11,-3,-2,1,0,-3,-8,-,
0,0,0,1,-1,-2,10,-6,5,2,-7,-55,2,18,-1,4,0,-2,-1,-13,2,3,-1,-2,-13,3,0,0,1,-5,1,
18,0,1,0,1,1,-5,5,-5,-2,-20,-17,20,-1,5,-6,-7,6,-5,0,-1,0,1,0,2,2,-1,1,1,-7,3,4,
-7,0,-15,7,0,-6,27,-71,23,-29,-2,-1,4,-13,13,-9,4,0,-1,2,2,0,-1,0,3,0,1,-3,-2,-
26,-35,28,10,-42,18,-2,-1,-1,0,2,-5,15,-3,4,-1,0,-2,1,0,-1,1,2,1,1,15,-18,16,7,
0,0,11,-18,-36,11,-4,2,15,-16,12,-2,0,-2,-4,3,1,-1,0,7,-4,1,2,-6,7,6,1,3,3,1,20,
1,0,12,-33,2,-8,-3,-29,35,-11,1,2,-1,-1,0,2,2,0,-13,16,-2,-1,-1,3,0,2,3,-10,1,0,
2,15,-33,4,-4,-3,-28,-9,6,-1,2,0,-1,1,1,-1,1,-9,13,-5,1,1,-1,-3,5,-54,-7,7,-12,,
3,0,0,3,3,-5,-1,-3,3,1,-2,0,1,1,2,0,0,5,1,-1,2,0,1,2,-9,9,4,-1,0,-6,15,-5,9,-11,
-1,-1,7,0,-4,3,-1,-1,0,0,0,3,2,0,1,1,0,1,0,0,-1,2,4,3,6,-9,6,-2,-1,0,3,5,14,-10,
4,1,1,1,0,0,0,2,1,1,1,1,0,1,1,-1,0,2,0,-3,2,0,7,0,-2,-8,-3,-1,3,2,1,-2,1,1,0,12,
2,1,0,1,-2,0,1,0,2,0,2,-2,0,-1,1,0,-3,7,2,10,-4,0,4,5,28,3,-6,4,-2,0,2,-2,0,0,1,
1,0,0,2,0,1,0,-2,2,-1,0,1,0,0,1,1,-1,-18,11,6,3,11,-4,-8,-5,16,-4,1,5,3,-1,-1,1,
1,1,0,3,-1,0,1,2,2,-3,0,2,-1,3,4,1,8,43,0,4,10,-5,7,-5,-4,12,0,5,-8,-2,-3,-6,1,,
1,1,-1,2,-1,1,0,-8,4,5,-5,5,10,-11,2,2,19,-15,15,6,0,-14,-2,23,-2,-1,-3,-4,3,-3,
1,1,1,3,0,2,1,7,-3,-4,0,-2,-3,13,1,5,0,1,-9,3,-5,14,-12,-21,-3,0,3,-3,3,19,2,2,...
0,1,-1,1,5,-5,1,-1,4,4,-3,-4,8,-5,7,3,13,8,17,-4,-10,-29,2,22,23,2,-1,0,17,-2,-
1,1,0,-3,-9,5,0,6,3,-2,2,4,-5,5,-17,-1,-2,6,3,41,-42,34,17,-14,-14,-5,6,32,-16,,
```

0,0,1,3,0,-3,1,5,-8,5,3,-5,4,0,4,1,-1,-3,-2,-14,50,-23,-17,-1,1,-3,1,-20,-8,2,1,3,2,-1,9,-5,-2,2,-23,11,1,-2,3,9,3,-9,3,1,-9,10,27,-19,4,2,1,0,0,-1,-1,0,-3,10,, 1,3,-5,19,1,-2,-2,24,1,1,8,5,-27,0,16,-15,2,23,-7,-19,5,3,0,-5,1,-3,1,1,6,6,-17, 1,2,-7,22,2,8,-8,-7,4,-3,11,0,9,-7,-18,5,20,-16,4,1,0,1,4,3,4,-2,2,5,-5,-4,6,0, 2,3,3,14,-2,-9,12,4,-3,2,7,-3,3,-19,24,11,-30,18,8,1,1,-1,1,10,-14,-1,2,0,3,1,1, 1,1,1,-27,19,3,-5,1,5,6,2,-22,-8,1,-3,-15,-62,11,10,1,0,8,5,2,-8,0,0,-1,0,0,0,0, 2,1,0,7,-21,9,0,-1,4,-2,6,-70,18,0,1,30,-20,5,3,2,-2,4,-1,5,2,-3,1,1,0,-1,2,2,4, 0,2,0,1,-7,9,5,2,-3,6,-6,8,0,-1,1,6,-3,2,0,-5,-30,40,22,12,-4,6,0,0,0,2,-1,1,1,-1,1,1,2,2,-7,8,12,-2,0,-7,5,-3,-3,2,-3,16,-5,3,1,-14,19,10,-5,-44,0,-1,1,1,0,0, 12,-5,0,1,1,0,-6,-15,24,-12,9,2,19,7,5,29,-46,15,4,1,5,2,-2,0,-25,58,-4,0,0,1,-, -5,3,1,-2,-1,1,0,3,-6,14,-6,1,-34,5,-5,10,-14,-6,9,1,-1,-1,-3,1,5,-41,20,3,-2,1, -4,3,1,1,5,-6,1,10,-15,6,-1,48,18,-4,1,0,3,-1,0,1,1,-1,-1,-1,3,9,-2,5,2,2,5,0,6, -1,0,1,2,0,6,-2,-48,33,-4,6,-61,56,-31,2,4,-1,4,-4,-2,3,1,2,2,-3,1,-2,0,18,-13,8,-2,3,0,-1,1,7,25,-2,10,7,37,-31,6,2,-2,-1,-1,3,0,1,1,1,3,-15,7,1,0,7,-32,6,5,, 13,-3,-1,1,-1,-1,6,6,4,9,3,-3,7,-2,-6,4,1,3,1,2,-1,0,0,1,11,4,3,-1,-2,4,-4,4,0,, -33,11,13,-8,-9,12,-8,-15,8,-7,-3,-3,-1,0,5,0,0,-1,1,1,0,-1,0,2,13,-14,0,7,-1,-8,-9,-12,15,28,-17,4,3,4,-5,3,3,5,3,-9,3,1,2,-1,1,-1,1,1,-2,3,-20,-4,8,2,15,-37, 2,1,8,1,-11,4,0,-7,-14,8,4,0,1,0,-5,6,1,2,-3,-6,4,1,1,0,4,1,5,-1,0,-11,4,-10,22, 0,5,5,-8,3,1,-8,6,7,-2,0,0,1,1,6,-1,2,-2,4,4,0,1,-1,0,2,-1,-4,0,-1,5,-3,4,-24,2, -9.8, -6.0.2, -11.9.3, 2.0.0, -1. -1.1.4, -7.4, -18.5, 3.1, -1.3, 3.17, -15.7, -1.1, -1.3.8,86,-7,2,-1,-28,22,5,-2,0,0,2,0,0,0,-1,0,0,19,-4,-2,-1,0,0,19,-76,0,2,2,7,-7,5,-,

File Edit Tabs Help

```
73 105 218 81 41 53 105 104 114 94 49 93 109 99 101 61 39 33 74 120 125 176 187
recCRC 0x18 0x20005e2e 0x20005e2e 0x20005e4c 0x20005dcc 0x20003ca0
0x14
34 39 38 35 29 19 18 19 24 21 25 47 43 46 53 59 135 184 196 124 98 89 89 108 89
96 105 218 81 41 53 105 104 114 94 49 93 109 99 101 61 39 33 74 120 125 176 187
recCRC 0x18 0x20005ded 0x20005ded 0x20005e4c 0x20005dcc 0x20003d20
34 39 38 35 29 19 18 19 24 21 25 47 43 46 53 59 135 184 196 124 98 89 89 108 89
96 228 135 87 48 45 43 48 80 84 79 75 59 52 45 72 65 46 66 134 191 235 235 235
recCRC 0x18 0x20005e2d 0x20005e2d 0x20005e4c 0x20005dcc 0x20003da0
Command (1 = Send or 0 = Wait):
need to copy the data received from host to img1
img1 = 0x2003ffd8 img2 = 0x20040fd8
0 img1 95 ptrs.buf 95
1 img1 100 ptrs.buf 100
2 img1 103 ptrs.buf 103
3 img1 106 ptrs.buf 106
4 img1 108 ptrs.buf 108
4091 img1 57 ptrs.buf 57
4092 img1 98 ptrs.buf 98
4093 img1 66 ptrs.buf 66
4094 img1 78 ptrs.buf 78
4095 img1 91 ptrs.buf 91
need to copy the data from img1 to img2
```

Edit Tabs Help -27,2,-27,-23,-11,14,-21,-32,89,42,0,16,10,3,-6,-55,58,-32,0,1,-1,19,3,-5,2,4,0, -35,5,1,7,6,-3,6,4,19,-17,-3,-1,-4,-3,-9,-7,41,7,-1,3,-9,9,-1,-15,13,0,-3,-7,21, -45, -9, 16, -12, 0, -1, 5, 9, 38, -1, 0, -3, 2, 0, 4, -7, -52, 2, 1, -7, 8, 8, -3, 17, -2, -1, -1, 2, -5, -, -44,7,11,3,-13,5,-20,-2,38,-3,0,1,0,1,-13,54,-23,0,-6,11,0,-9,10,-6,0,-2,-2,-3,, -26,10,-17,1,8,20,8,9,19,-1,0,0,0,-1,4,39,4,-4,2,6,1,2,6,11,-5,0,0,0,3,2,-40,45, -13,17,-12,-7,1,42,-10,18,24,0,0,0,0,-2,17,-52,8,-8,-1,-27,-1,4,12,-34,1,-3,3,0, 30, 22, -9, 3, -2, -5, 32, -10, 18, 0, 0, 0, -2, 20, -3, -3, -1, -4, 39, -9, 4, -3, -51, 51, -19, 4, -3, 2, 109, 32, 4, -7, -7, 1, 1, 29, 24, 0, 0, -2, 24, -22, -2, 5, -2, 11, 33, 1, 2, -13, -20, 45, -100, -6, 16, 132, -26, 17, -1, 0, -1, 14, -19, 15, 1, -4, 28, -33, 4, 12, -3, 2, 5, -5, -5, 18, -13, -37, 48, -95, -2, 143, -1, 3, 6, 6, 2, -5, 20, -17, 39, -18, 5, -19, 5, -1, 2, -1, 2, -1, -3, 6, -13, -20, 32, -2, 0, 5, 24, , 144, -29, 29, 0, 37, 9, 6, 26, -46, 28, -1, -5, 7, 16, -7, 0, 0, -1, 0, -2, 1, -2, -4, 22, 58, -57, 4, 24, 142, -29, 31, 17, -37, 7, 22, -9, -5, -25, 14, -1, -2, 4, 5, -4, 2, 1, -6, -2, -3, 7, -3, -35, 25, -65, -95, -5, -1, -14, 5, 5, 2, 14, -19, 8, 21, 0, 8, -2, 11, -15, 5, 16, -18, -1, -5, 11, -1, -20, 25, 5, -11, , Ready Ready Ready Ready Ready Ready Ready Ready Ready Ready

http://xx.xx.xx.xx/status//usb?action=usbdevice&id=3

Ultibo Core (Release: Beetroot Version: 2.1.341 Date: 21 March 2022)

General		USB Device Information
<u>Platform</u>		
Memory	Device	
Heap Blocks		
CPU	Name:	USB3
<u>FPU</u>	Type:	USB_TYPE_NONE
<u>GPU</u>	Flags:	USB_FLAG_NONE
RTL	Description:	
Clock		
Locale	ld:	3
Threading	State:	USB_STATE_ATTACHED
Thread List	Status:	USB_STATUS_BOUND
Scheduler		
Devices	Address:	4
<u>Drivers</u>	Speed:	USB_SPEED_FULL
Handles	Depth:	2
<u>USB</u>	Port Number:	3
<u>PCI</u>	Configuration Value:	1
MMC / SD / SDIO		
Network	Parent:	USB1
<u>Storage</u>	Driver:	
<u>Filesystem</u>		
Disk Cache	Product:	Pico
<u>Keyboard</u>	Manufacturer:	Raspberry Pi
<u>Mouse</u>	SerialNumber:	E6603828238EA535
Touch		
<u>Framebuffer</u>	Request Count:	122
Environment	Request Errors:	0
Page Tables		
<u>Vector Tables</u>	Class:	Miscellaneous
IRQ / FIQ / SWI	VID/PID:	2E8A:000A
<u>GPIO</u>		
Configuration	Device Descriptors	
Device Tree	FUED Davice Td. 2 Address: 41	

http://xx.xx.xx.xx/status//platform

Ultibo Core (Release: Beetroot Version: 2.1.341 Date: 21 March 2022)

General	Platform	
<u>Platform</u>		
Memory	Board Type:	BOARD_TYPE_RPI3B_PLUS
Heap Blocks	Board Model:	0
CPU	Board Serial:	0x00000007407C334
<u>FPU</u>	Board Revision:	0x00A020D3
GPU		
RTL	Chip Revision:	0x0000000
Clock		
Locale	Firmware Revision:	0x608C2879 (1619798137)
Threading		
Thread List	Machine Type:	MACHINE_TYPE_BCM2710
Scheduler		
Devices	Memory Base:	0x0000000
<u>Drivers</u>	Memory Size:	1073741824
<u>Handles</u>		
<u>USB</u>	Page Size:	4096
PCI	Large Page Size:	65536
MMC / SD / SDIO		
Network	Section Size:	1048576
Storage		