### Locally-built firmware

The following steps were adapted from the [build instructions](https://github.com/loboris/MicroPython_K210_LoBo/wiki/build).

#### Pre-requisites

The following packages support the build process. Some of these packages are often installed with the base image.

sudo apt install git cmake build-essential xz-utils python3 python3-serial wget zip

#### Clone the repository

Using the git clone method permits subsequent pull operations with less effort for the inevitable rebuild operations for incremental updates to the source. Using the ~/projects folder as a base in the example below is a local convention:

* Download the repository using the following commands

cd ~/projects

git clone <https://github.com/loboris/MicroPython_K210_LoBo.git>

#### Build the firmware

* Change the working directory to MicroPython\_K210\_LoBo/k210\_freertos



* Build the firmware locally with the following command:

 ./BUILD.sh

The option to use multiple threads was skipped inadvertently. The option is -jN where N is the number of threads.



#### Flash the firmware

Flash the firmware to the board from the current working directory with the following command:

./kflash.py -p /dev/ttyUSB0 -b 2000000 -t MaixPy.bin

The flash operation failed because the K210 was not detected. Two USB ports are detected as shown below. Two different USB Type-C cables were used. Both cables work with Pixel 2XL with the same desktop environment.



The motherboard is ASUS Prime H370M-PLUS CSM that has a USB 3.1 Gen 1 TypeC port. The ASUS user manual states that this is a 24-pin USB port for Type C devices. The Maixduino has been connected directly to this port as well as through a USB 2.0 port with a TypeC pin at one end.

<https://dlcdnets.asus.com/pub/ASUS/mb/LGA1151/PRIME_H370M-PLUS/E13887_PRIME_H370M-PLUS_UM_WEB.PDF>

The OS is Ubuntu 19.04 with all update/upgrade completed prior to building the firmware locally.

reza@BeUlta:~$ **lsb\_release -a**

No LSB modules are available.

Distributor ID: Ubuntu

Description: Ubuntu 19.04

Release: 19.04

Codename: disco

reza@BeUlta:~$ **uname -a**

Linux BeUlta 5.0.0-25-generic #26-Ubuntu SMP Thu Aug 1 12:04:58 UTC 2019 x86\_64 x86\_64 x86\_64 GNU/Linux

reza@BeUlta:~$

reza@BeUlta:~$ **lsusb**

Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub

Bus 001 Device 007: ID 0c45:0133 Microdia

Bus 001 Device 016: ID 2341:0043 Arduino SA Uno R3 (CDC ACM)

Bus 001 Device 020: ID 0403:6010 Future Technology Devices International, Ltd FT2232C/D/H Dual UART/FIFO IC

Bus 001 Device 015: ID 2341:0043 Arduino SA Uno R3 (CDC ACM)

Bus 001 Device 014: ID 046d:0990 Logitech, Inc. QuickCam Pro 9000

Bus 001 Device 013: ID 05e3:0607 Genesys Logic, Inc. Logitech G110 Hub

Bus 001 Device 012: ID 2341:0043 Arduino SA Uno R3 (CDC ACM)

Bus 001 Device 011: ID 2341:804e Arduino SA

Bus 001 Device 010: ID 0483:374b STMicroelectronics ST-LINK/V2.1

Bus 001 Device 009: ID 05e3:0607 Genesys Logic, Inc. Logitech G110 Hub

Bus 001 Device 008: ID 04d9:a09f Holtek Semiconductor, Inc. E-Signal LUOM G10 Mechanical Gaming Mouse

Bus 001 Device 021: ID 18d1:4ee1 Google Inc. Nexus Device (MTP)

Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub

reza@BeUlta:~$

Bus 001 Device 022: ID 0403:6010 Future Technology Devices International, Ltd FT2232C/D/H Dual UART/FIFO IC

Bus 001 Device 022: ID 0403:6010 Future Technology Devices International, Ltd FT2232C/D/H Dual UART/FIFO IC

Device Descriptor:

 bLength 18

 bDescriptorType 1

 bcdUSB 1.10

 bDeviceClass 0

 bDeviceSubClass 0

 bDeviceProtocol 0

 bMaxPacketSize0 8

 idVendor 0x0403 Future Technology Devices International, Ltd

 idProduct 0x6010 FT2232C/D/H Dual UART/FIFO IC

 bcdDevice 5.00

 iManufacturer 1 Kongou Hikari

 iProduct 2 Sipeed-Debug

 iSerial 3 01525E7649

 bNumConfigurations 1

 Configuration Descriptor:

 bLength 9

 bDescriptorType 2

 wTotalLength 0x0037

 bNumInterfaces 2

 bConfigurationValue 1

 iConfiguration 0

 bmAttributes 0x80

 (Bus Powered)

 MaxPower 100mA

 Interface Descriptor:

 bLength 9

 bDescriptorType 4

 bInterfaceNumber 0

 bAlternateSetting 0

 bNumEndpoints 2

 bInterfaceClass 255 Vendor Specific Class

 bInterfaceSubClass 255 Vendor Specific Subclass

 bInterfaceProtocol 255 Vendor Specific Protocol

 iInterface 0

 Endpoint Descriptor:

 bLength 7

 bDescriptorType 5

 bEndpointAddress 0x81 EP 1 IN

 bmAttributes 2

 Transfer Type Bulk

 Synch Type None

 Usage Type Data

 wMaxPacketSize 0x0040 1x 64 bytes

 bInterval 0

 Endpoint Descriptor:

 bLength 7

 bDescriptorType 5

 bEndpointAddress 0x02 EP 2 OUT

 bmAttributes 2

 Transfer Type Bulk

 Synch Type None

 Usage Type Data

 wMaxPacketSize 0x0040 1x 64 bytes

 bInterval 0

 Interface Descriptor:

 bLength 9

 bDescriptorType 4

 bInterfaceNumber 1

 bAlternateSetting 0

 bNumEndpoints 2

 bInterfaceClass 255 Vendor Specific Class

 bInterfaceSubClass 255 Vendor Specific Subclass

 bInterfaceProtocol 255 Vendor Specific Protocol

 iInterface 0

 Endpoint Descriptor:

 bLength 7

 bDescriptorType 5

 bEndpointAddress 0x83 EP 3 IN

 bmAttributes 2

 Transfer Type Bulk

 Synch Type None

 Usage Type Data

 wMaxPacketSize 0x0040 1x 64 bytes

 bInterval 0

 Endpoint Descriptor:

 bLength 7

 bDescriptorType 5

 bEndpointAddress 0x04 EP 4 OUT

 bmAttributes 2

 Transfer Type Bulk

 Synch Type None

 Usage Type Data

 wMaxPacketSize 0x0040 1x 64 bytes

 bInterval 0

Device Status: 0x0000

 (Bus Powered)