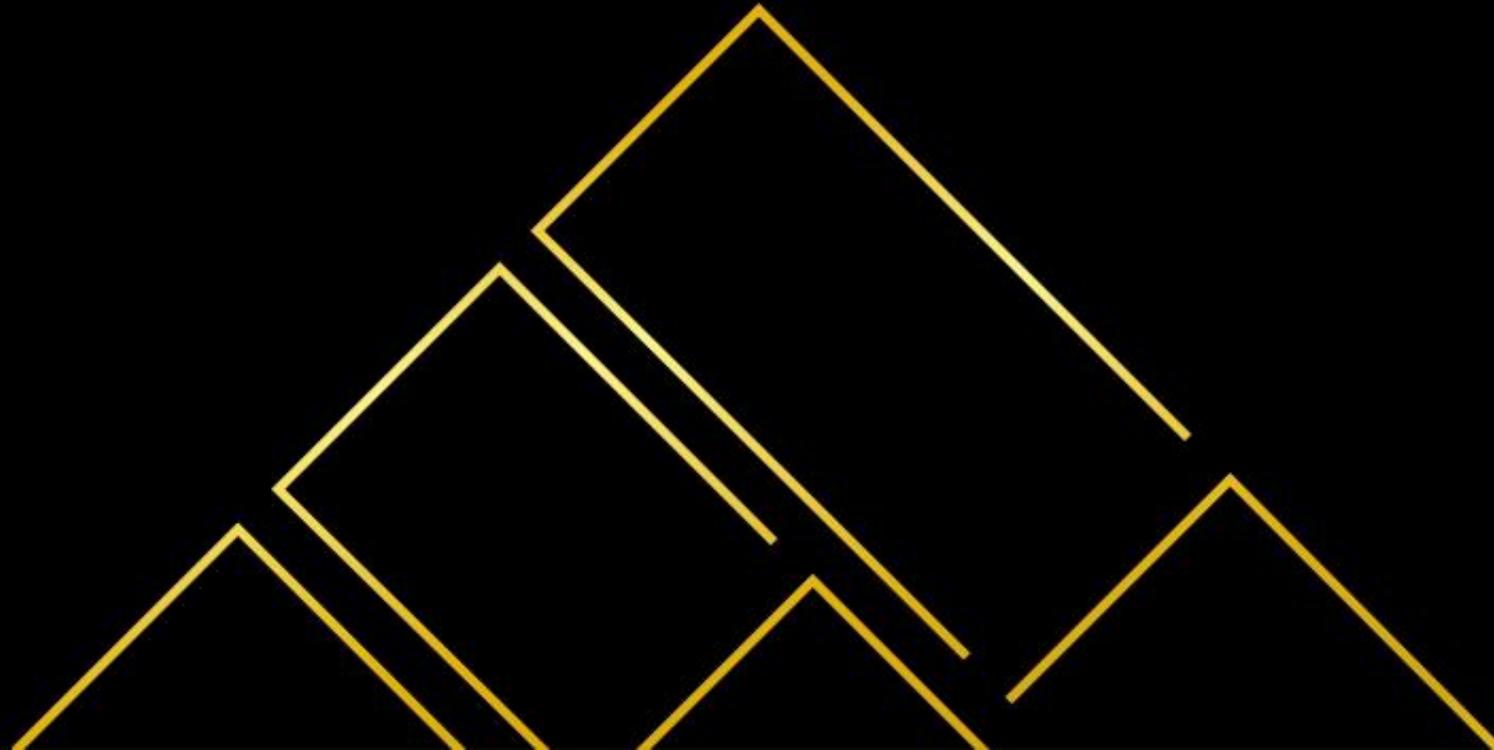


Brickcom

Development manual

ITM-1261

2021. v1



Requirements

■ Hardware

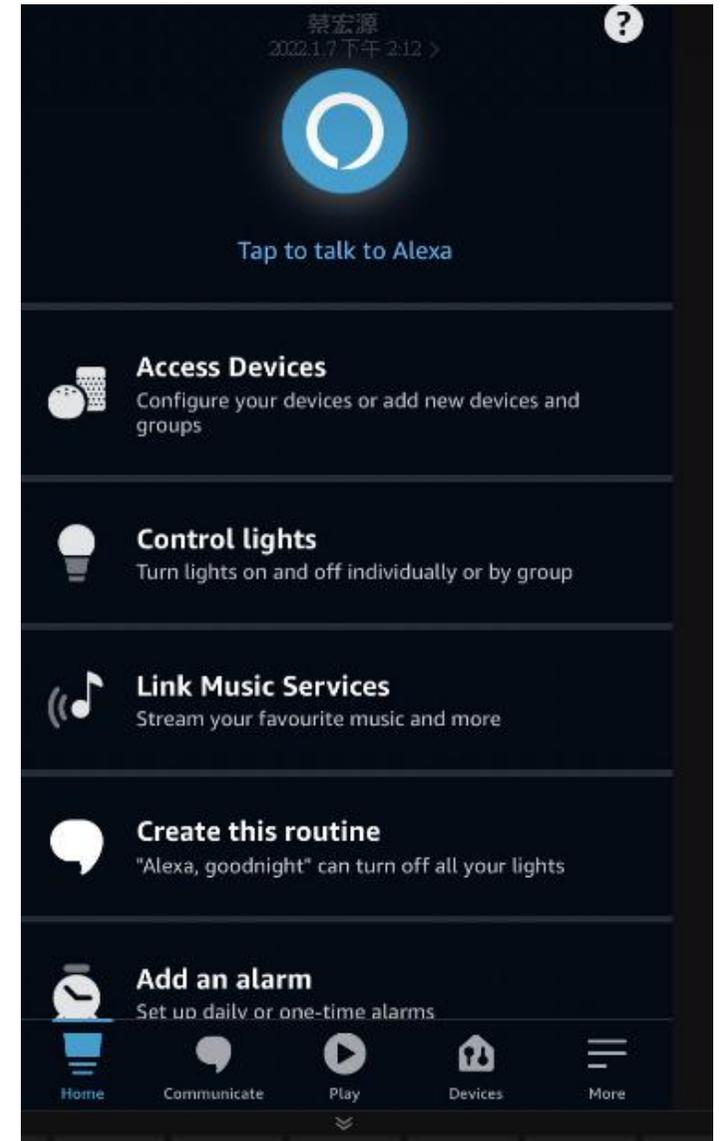
- An ACK module board (USI MT7697H development kit)
- A Nuvoton debug board and UART to USB module
- An internet-accessible **2.4G** Wi-Fi router
- A mobile phone with Amazon Alexa APP
- Some Dupont lines, module USB to TTL and an USB Mini line

■ Software/Drivers

- Keil MDK 5.26
- Latest Nu-Link Keil drivers
- Python-3.8 environment, see [Python download](#)
- Java SE 8 or later. For Java installation instructions, see [Java SE Downloads](#)

Prepare Amazon account

- Register for an Amazon developer account.
 - [Get an Amazon developer account](#)
 - Mobile device download APP : Amazon Alexa APP
- The Amazon account must be the same as the APP.



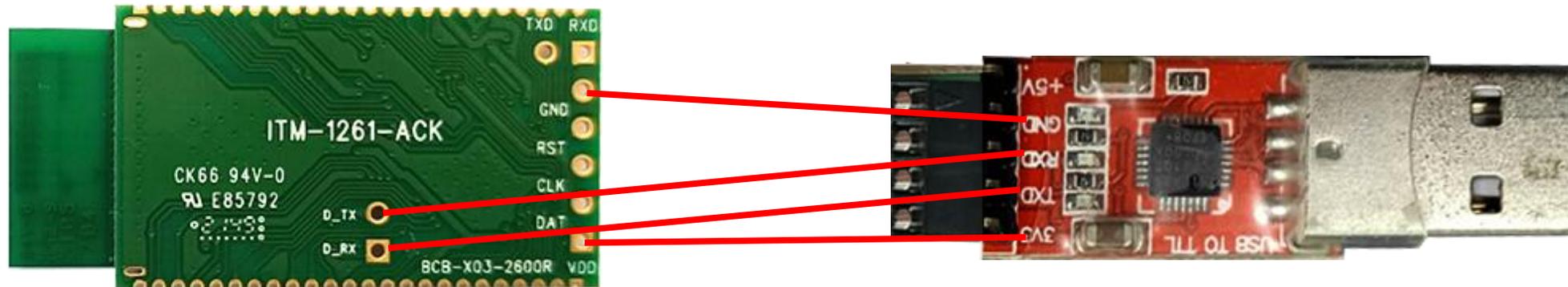
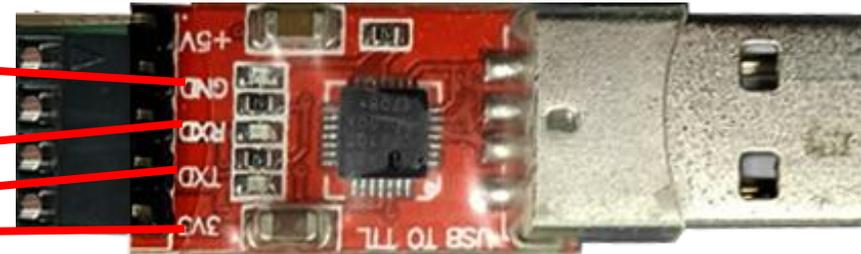
Hardware Connect

- Connect to console(USB)
- Connect to WiFi debug port: following below picture TX to RX, TX to RX, GND to GND, 3V3 to VDD

ACK module



CP2102 console



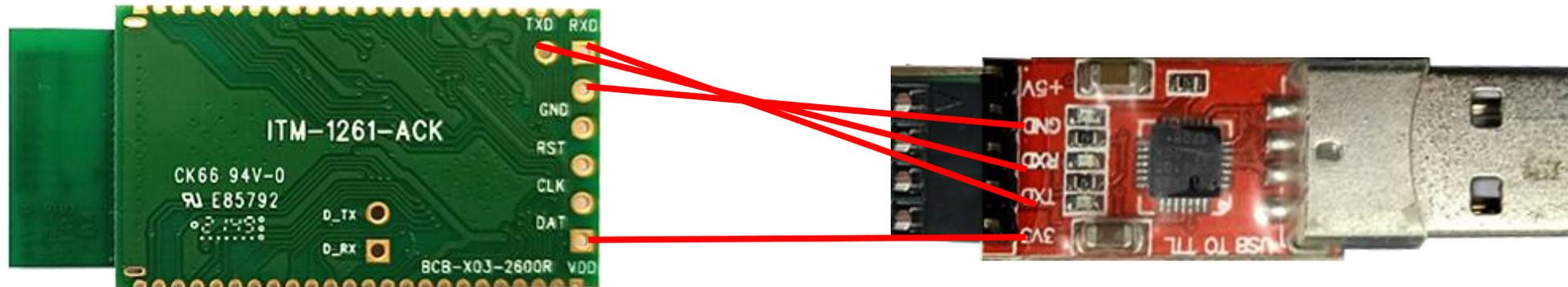
Hardware Connect

- Connect to console(USB)
- Connect to MCU debug port: following below picture TX to RX, TX to RX, GND to GND, 3V3 to VDD

ACK module



CP2102 console



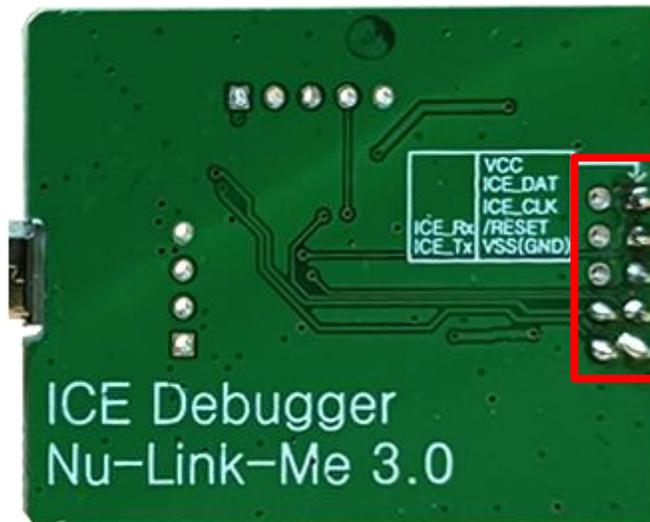
Hardware Connect

- Connect to Nuvoton debug board
- Connect to the pins to load firmware into MCU : VCC/DAT/CLK/RST/GND/TX to RX/RX to TX

ACK module



Nuvoton debug board



USB to PC

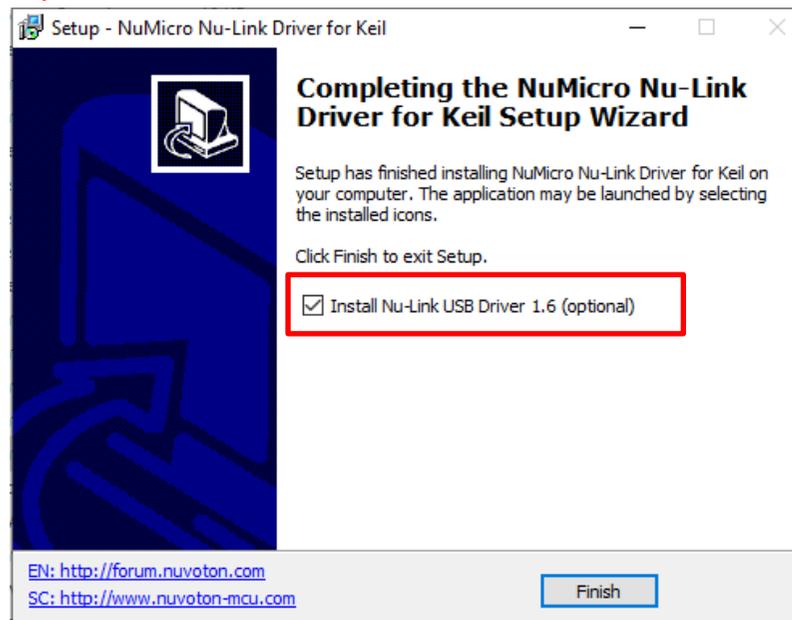


Software Preparation

- Download python and java
 - [Python download](#)
 - [Java download](#)
 - Remember to add python and java execution to **PATH** variable.
- Ready to develop software
 - Download [ACK Device SDK 4](#).
 - Download [Github code](#)
 - Put the Github file under the path of <ACK_Device_SDK_4>\user\platform

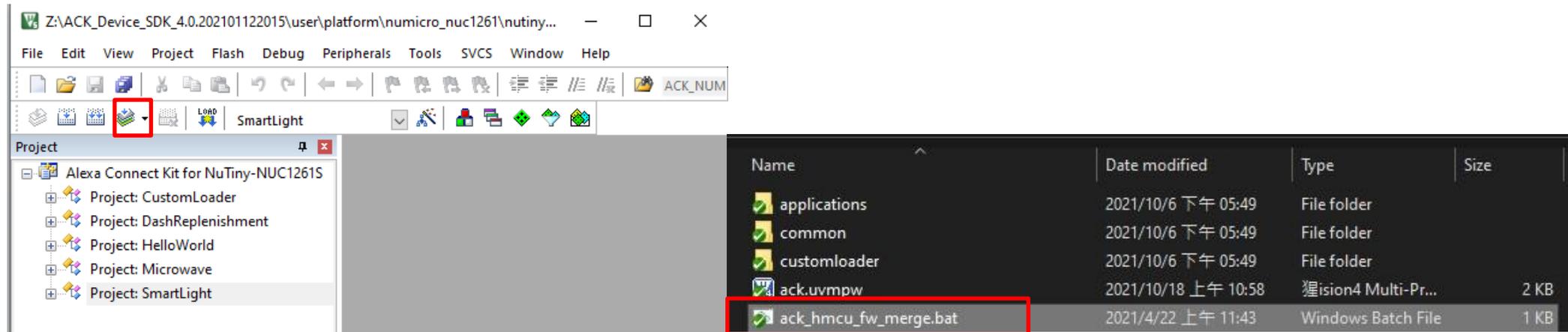
Driver Installation

- Install “Nu-Link Driver for Keil” on Window platform
 - [Download Nu-Link Driver for Keil](#)
 - Nuvoton provides installshield wizard to help user to install these utilities for keil.
 - It also includes a Nu-Link USB Driver. Please **install it for MDK-ARM debugger and Nuvoton virtual COM(VCOM) function.**



Build Steps

- Open ack.uvmpw Keil multiple project file using MDK 5.26.
Path: <Path-to-ACK_Device_SDK>\user\platform\numicro_nuc1261\nutiny-nuc1261s\ack.uvmpw
- Press “Batch rebuild” to build all examples.
- Finally, execute “ack_hmcu_fw_merge.bat” to merge customer_loader and example into a hex file.



ACK HMCU Firmware Installation

The image displays three screenshots from the Nuvoton NuMicro ICP Programming Tool 3.03, illustrating the steps for installing HMCU firmware on an NUC126 Series chip.

Screenshot 1: Select Target Chip
The 'Select Target Chip' dropdown menu is highlighted with a red circle, showing 'NUC126 Series' selected.

Screenshot 2: Load File
The 'Load File' section shows the 'APROM' file selected, with its file name highlighted by a red circle: `Z:\VACK_Device_SDK_4.0.202101122015\user\platform\numicro_nuc1261\nutiny-nuc1261s\Merged_Sme`. The 'Config Bits' section shows 'Config 0: 0xFFFFFFFF' and 'Config 1: 0x000FFFFF'. The 'Programming' section at the bottom shows 'APROM' and 'Config' checked, with the 'Start' button highlighted by a red circle.

Screenshot 3: Chip Settings
The 'Chip Settings' dialog box shows the 'Boot Options' section with 'APROM with IAP' selected, highlighted by a red circle. The 'Start' button in the previous screenshot is also highlighted by a red circle, and a red arrow points from this button to the 'OK' button in this dialog box.

ack_hmcpu_fw_merge.bat

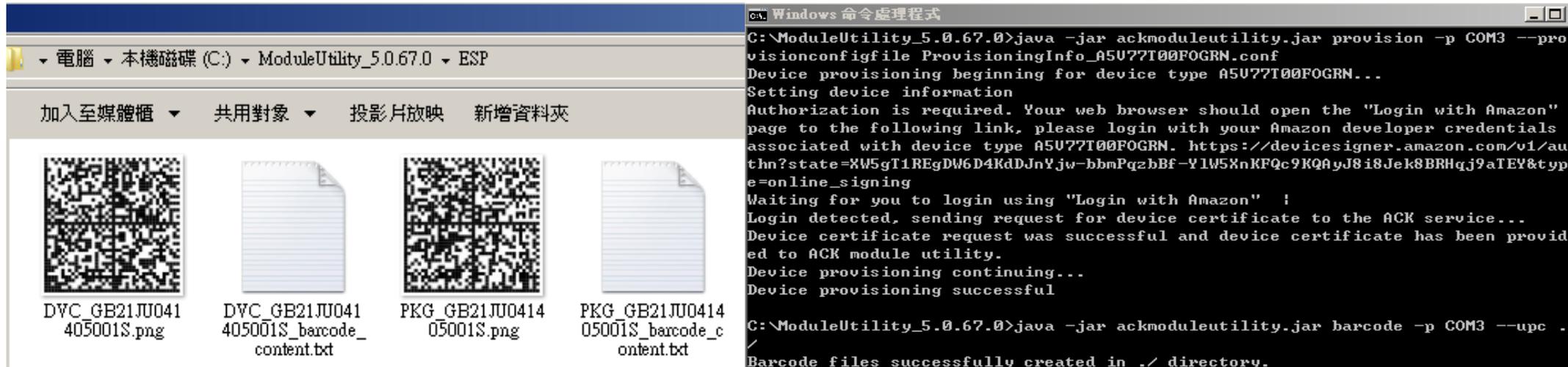
- This is batch script for window platform. Help user to get all merged firmwares for programming, just a double-click step.
 - It invokes some python utilities Amazon provided
 - For producing a merged firmware for NuMicro MCU.
 - Connect to Nuvoton debug board.
 - For OTA upgrading file for publishing on Amazon Cloud.
- Please remember to modify the device type for yours.

| Name | Date modified | Type | Size |
|------------------------|---------------------|-----------------------|------|
| applications | 2021/10/6 下午 05:49 | File folder | |
| common | 2021/10/6 下午 05:49 | File folder | |
| customloader | 2021/10/6 下午 05:49 | File folder | |
| ack.uvmpw | 2021/10/18 上午 10:58 | Revision4 Multi-Pr... | 2 KB |
| ack_hmcpu_fw_merge.bat | 2021/4/22 上午 11:43 | Windows Batch File | 1 KB |

| | | | |
|------------------------------|--------------------|----------|--------|
| Merged_DashReplenishment.hex | 2021/4/26 下午 07:28 | HEX File | 112 KB |
| Merged_HelloWorld.hex | 2021/4/26 下午 07:28 | HEX File | 127 KB |
| Merged_Microwave.hex | 2021/4/26 下午 07:28 | HEX File | 156 KB |
| Merged_SmartLight.hex | 2021/4/26 下午 07:28 | HEX File | 157 KB |

Product registration(WiFi debug console)

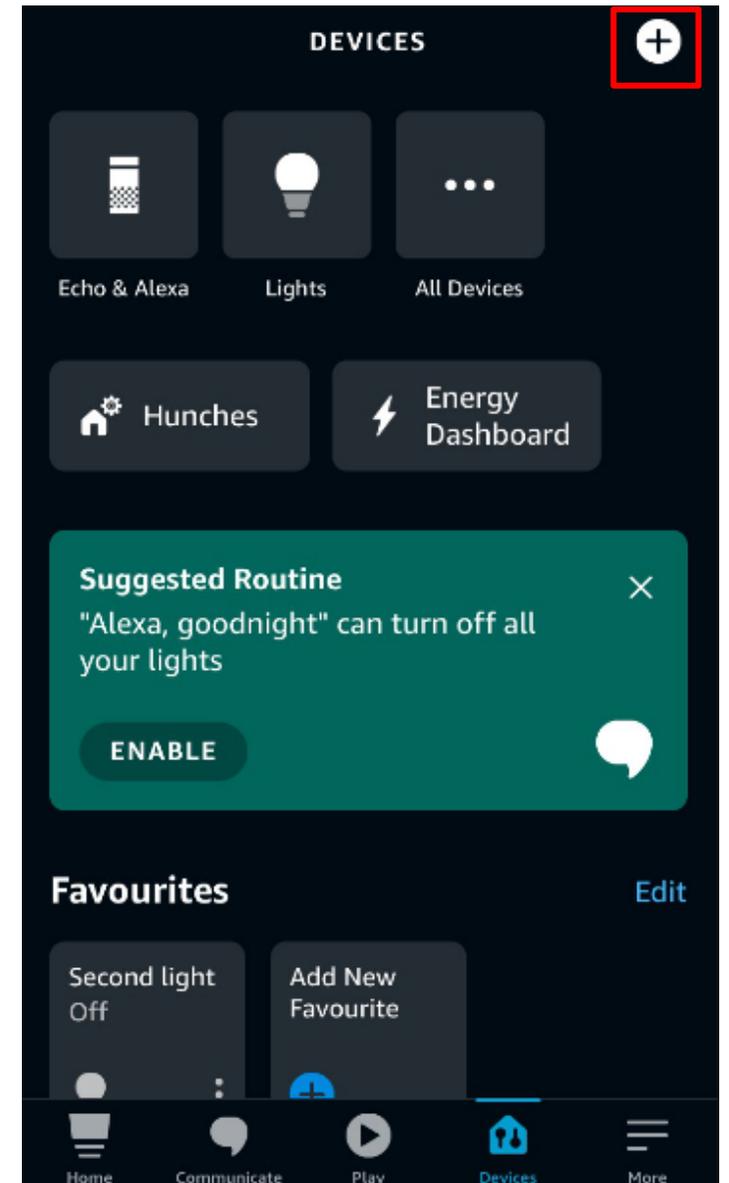
- Generate QR codes for new products
 - Refer to Alexa to [create a new virtual product](#) and [download your configuration file](#).
 - Connect to WiFi debug console.
 - Download the [ACK Module Utility](#) and execute the following java command.
 - Import virtual products : `java -jar <path>\ackmoduleutility.jar provision -p <port> --provisionconfigfile ProvisioningInfo_<devicetypeid>.conf`
 - Generate QR code : `java -jar <path>\ackmoduleutility.jar barcode --port <port> --upc ./`



Test product action

- App operation

- Check development board power on.
- On the mobile device App, select devices, and add new devices as shown on the right.
- Choose Development Device and ack. Then scan the QR code.
- After the mobile device is successfully connected, the status light can be operated.





THANK YOU

BRICKCOM,
YOUR BEST PARTNER

About

- Amazon ACK HMCU On NuTiny-NUC1261S
 - https://raw.githubusercontent.com/OpenNuvoton/ACK-HMCU/master/numicro_nuc1261/docs/Amazon%20ACK%20HMCU%20on%20NuTiny-NUC1261S.pdf
- Prototype Your Product
 - <https://developer.amazon.com/en-US/docs/alexa/ack/steps-to-prototype-a-product.html>

Download

- Amazon Developer Account
 - <https://developer.amazon.com/en-US/docs/alexa/ack/developer-account.html>
 - <https://developer.amazon.com/alexa/console/ack/>
- Python
 - <https://www.python.org/ftp/python/3.8.6/python-3.8.6-amd64.exe>
- ACK Device
 - <https://developer.amazon.com/alexa/console/ack/resources>
- Github
 - <https://github.com/Brickcom/ACK-HMCU>
- Java
 - <https://www.oracle.com/java/technologies/downloads/>

Note:

- <path>:File placement. Ex: C:\ModuleUtilit5.0.67.0
- <port>: Com port Name. Ex: COM3
- [devicetypeid]:Virtual product device type ID. Ex: A5V77T00FOGRN

[Return](#)