Sipeed M1s Dock Datasheet v1.0

Characteristic:

- BL808 RV64 480MHz + RV32 320MHz + NPU BLAI 100GOPS
- Onboard dual USB port (USB-UART port and USB-OTG port)
- Onboard display connector (Optional 1.69 "240x280 cap touch screen)
- Onboard MIPI camera connector (Optional 2M pixel camera)
- Support 2.4G WIFI / BT / BLE
- Onboard 1 MEMS analog Mic, 1 LED and 1 TF card slot
### Update record of this document

<table>
<thead>
<tr>
<th>Version</th>
<th>Date/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>Edited on November 14, 2022; Original document</td>
</tr>
</tbody>
</table>

### Hardware overview

#### BL808 processor
- Trinuclear isometric RISC-V CPUs: RV64GCV 480MHz + RV32GCP 320MHz + RV32EMC 160MHz
- AI NN (Universal Hardware Accelerator)
- NPU BLAI-100 (For video/audio detection/recognition, 100 GOPS computing power)
- Built-in 768KB SRAM + 64MB UHS PSRAM

#### Encoding and decoding:
- MJPEG and H264 (Baseline/Main)
- 1920x1080@30fps + 640x480@30fps

#### Interface:
- Camera: DVP and MIPI-CSI
- Display: SPI, DBI, DPI (RGB)

#### Wireless:
- Support Wi-Fi 802.11 b/g/n
- Support Bluetooth 5.x Dual-mode (BT+BLE)
- Support Wi-Fi / Bluetooth Coexistence
- USB 2.0 HS OTG

#### Onboard component
- Onboard USB to dual UART IC (It can be used to download firmware and serial communication)
- Onboard display connector (Optional 1.69" 240x280 cap touch screen)
- Onboard MIPI camera connector (Optional 2M pixel camera)
- Onboard 1 MEMS analog Mic, 1 LED and 1 TF card slot
## Software overview

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Complete support FreeRTOS, Basic support Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development language</td>
<td>C SDK, MaixHAL C module, pikascript python script</td>
</tr>
<tr>
<td>Firmware download method</td>
<td>UART download</td>
</tr>
<tr>
<td></td>
<td>Virtual disk drag and drop update</td>
</tr>
<tr>
<td>AI Reasoning framework</td>
<td>Support the BLAI accelerated reasoning engine of the original SDK</td>
</tr>
<tr>
<td></td>
<td>Support the general TinyMaix reasoning engine</td>
</tr>
<tr>
<td>AI Model download</td>
<td>Download from MaixHub</td>
</tr>
<tr>
<td></td>
<td>Support face recognition, pose detection, gesture detection, etc</td>
</tr>
<tr>
<td>Sipeed Reference example</td>
<td><a href="https://github.com/sipeed">https://github.com/sipeed</a></td>
</tr>
</tbody>
</table>

## Working conditions

<table>
<thead>
<tr>
<th>Power supply demand</th>
<th>USB TYPE-C: 5V±10% 0.5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature rise</td>
<td>&lt;30K</td>
</tr>
<tr>
<td>Operating ambient temperature range</td>
<td>-10°C ~ 65°C</td>
</tr>
</tbody>
</table>
Functional annotation

- BL808 M1s module
- BL702 USB-TTL
- Camera Connector
- GPIO Connector 26 27 GND 5V
- TF card connector
- LCD connector
- USB OTG Connector
- USB-UART Connector
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>55.4 mm</td>
</tr>
<tr>
<td>Width</td>
<td>27.4 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>Please check the 3D drawing</td>
</tr>
</tbody>
</table>
### Matters needing attention

<table>
<thead>
<tr>
<th>Matter</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD protection</td>
<td>Please pay attention to avoid static electricity hitting PCBA</td>
</tr>
<tr>
<td></td>
<td>Please release the static electricity from the handle before contacting PCBA</td>
</tr>
<tr>
<td></td>
<td>When designing the PCB board, you must take the following measures to protect M1s module: Series resistance, Use ESD diode, etc</td>
</tr>
<tr>
<td>Tolerance voltage</td>
<td>The working voltage of each GPIO has been marked in the schematic. Please do not let the actual working voltage of GPIO exceed the rated value, otherwise it will cause permanent damage to PCBA</td>
</tr>
<tr>
<td>FPC connector</td>
<td>When connecting FPC flexible cable, please ensure that the cable is completely inserted into the cable without offset;</td>
</tr>
<tr>
<td>Plugging</td>
<td>Please disconnect the power completely before plugging in and out the camera</td>
</tr>
<tr>
<td>Avoid short circuit</td>
<td>Please avoid any liquid or metal touching the pads of components on PCBA during power on, otherwise it will cause short circuit and burn PCBA</td>
</tr>
</tbody>
</table>

### Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official website</td>
<td><a href="http://www.sipeed.com">www.sipeed.com</a></td>
</tr>
<tr>
<td>Github</td>
<td><a href="https://github.com/Sipeed">https://github.com/Sipeed</a></td>
</tr>
<tr>
<td>BBS</td>
<td><a href="http://bbs.sipeed.com">http://bbs.sipeed.com</a></td>
</tr>
<tr>
<td>Wiki</td>
<td>wiki.sipeed.com</td>
</tr>
<tr>
<td>Sipeed Model platform</td>
<td><a href="https://maixhub.com/">https://maixhub.com/</a></td>
</tr>
<tr>
<td>SDK /HDK Relevant information</td>
<td><a href="https://idl.sipeed.com/">https://idl.sipeed.com/</a></td>
</tr>
<tr>
<td>Bouffalolab document</td>
<td><a href="https://dev.bouffalolab.com/home/">https://dev.bouffalolab.com/home/</a></td>
</tr>
<tr>
<td>E-mail (Technical support and business cooperation)</td>
<td><a href="mailto:support@sipeed.com">support@sipeed.com</a></td>
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