Raspberry Pi

간편하게 사용하는

라즈베리파이 입문

2025 APS
김영빈

모빌리티 표례식을 위한 라즈베리파이 입문

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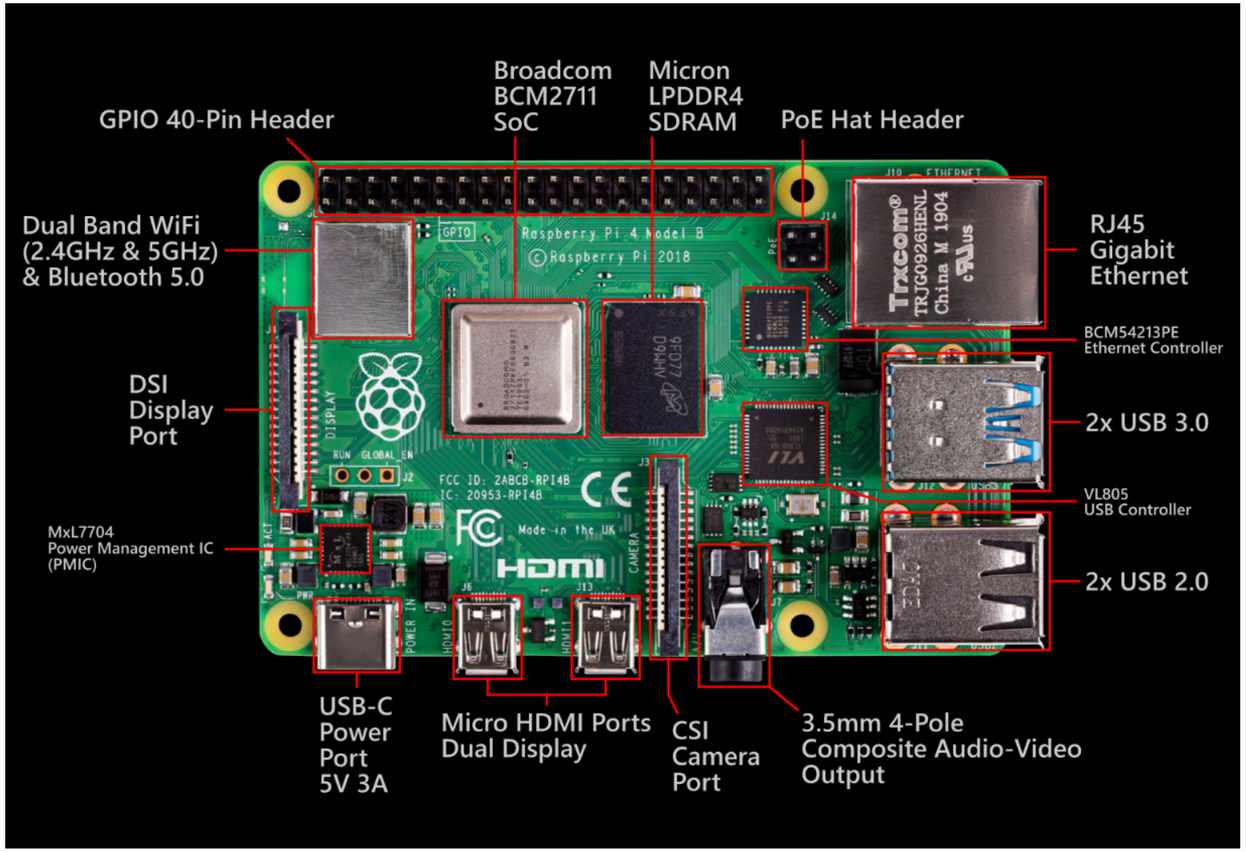
라즈베리파이4

영국의 Raspberry Pi Foundation에서
교육용 프로젝트의 일환으로 개발된 저가형 SBC

cpu	ARM Cortex-A72 / 4 Core
ram	1, 2, 4, 8 GB
storage	최대 2 TB
용도	• 교육, 취미 프로젝트, 홈 서버 구축 • 스마트 홈 자동화, 로봇 제어
USB	USB 3.0 2포트, USB 2.0 2포트



SBC (Single Board Computer)

SBC란?

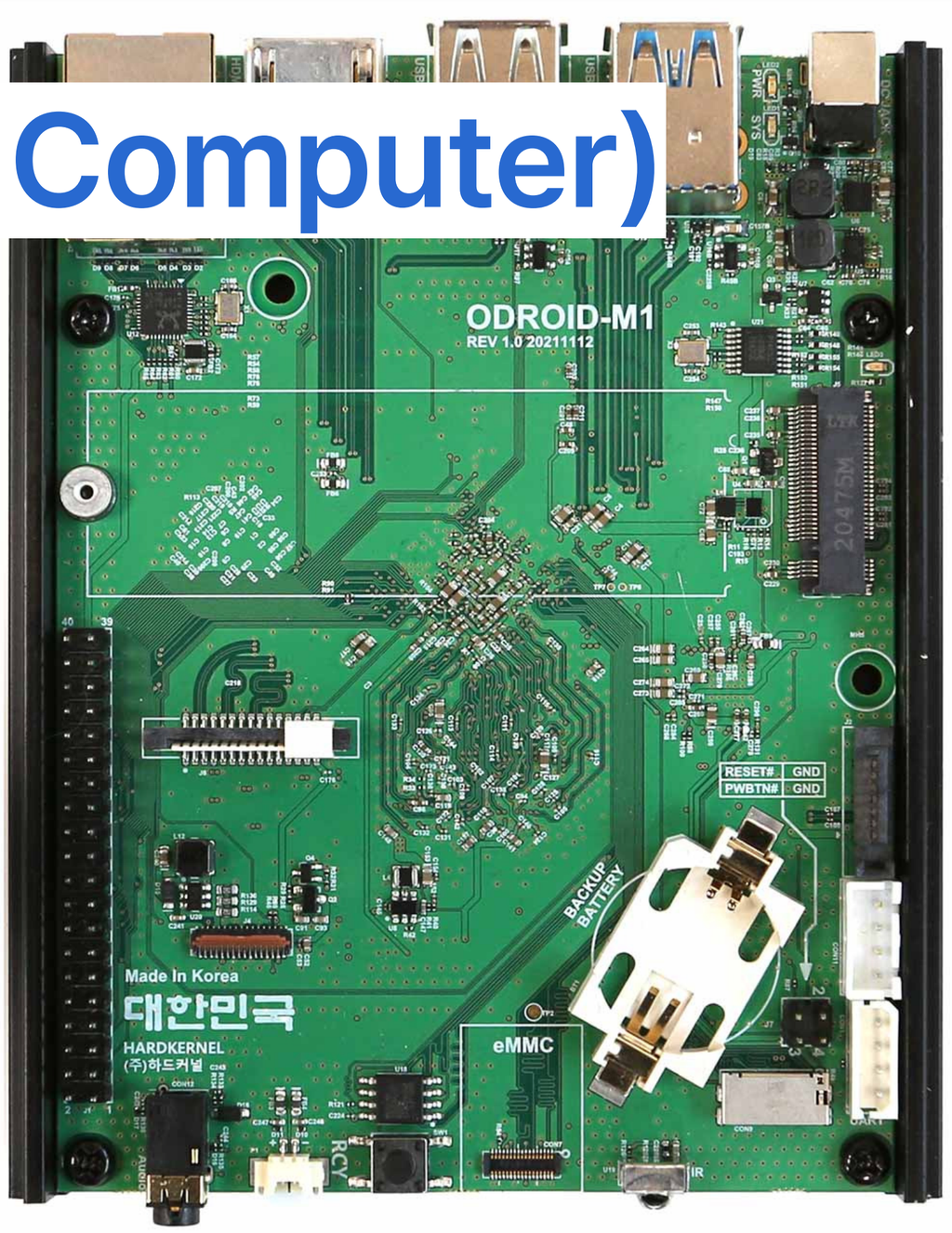
단일 PCB에 컴퓨터의 모든 기능을 통합한
완전한 컴퓨터 시스템
소형, 저전력, 고신뢰성

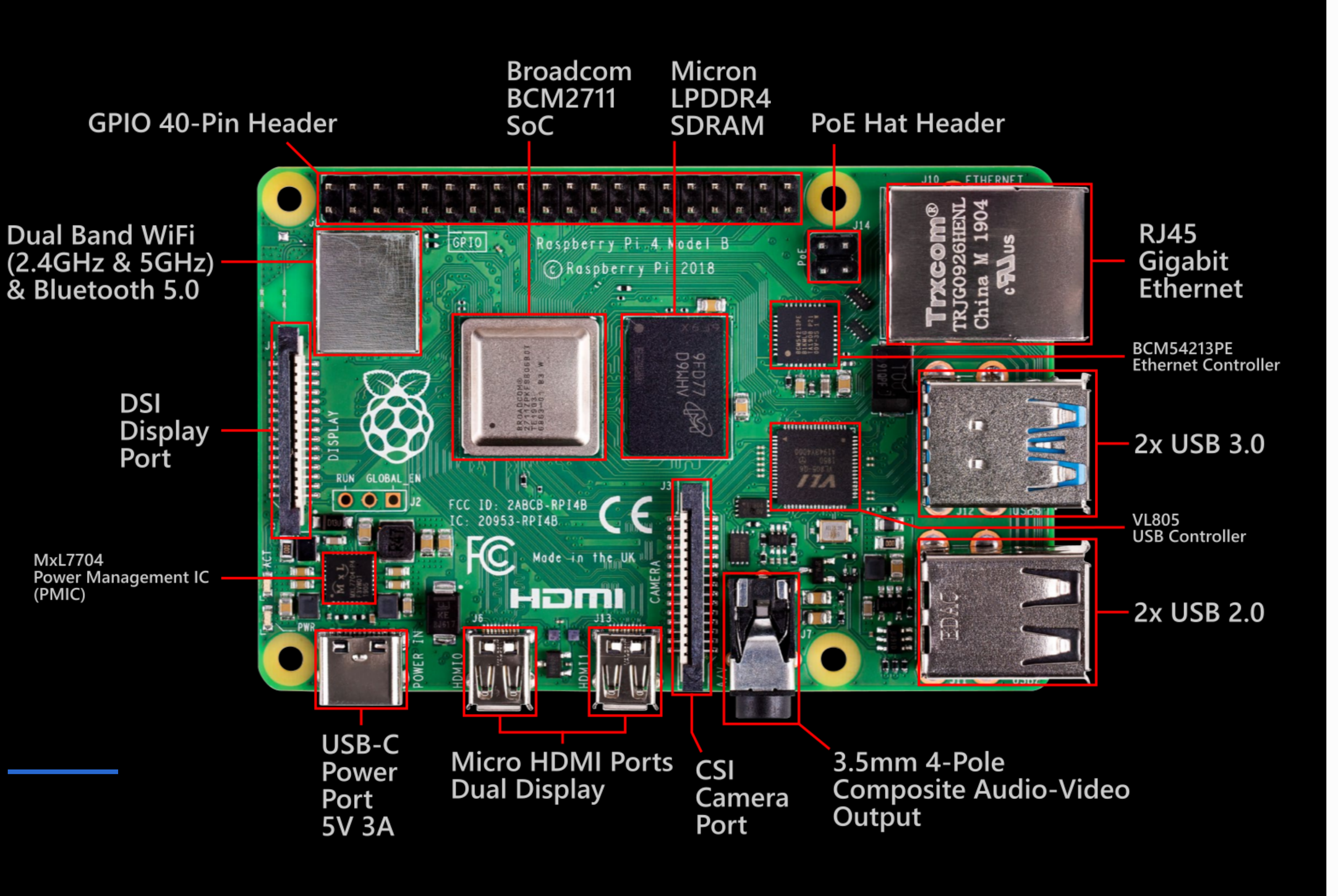
주요 용도

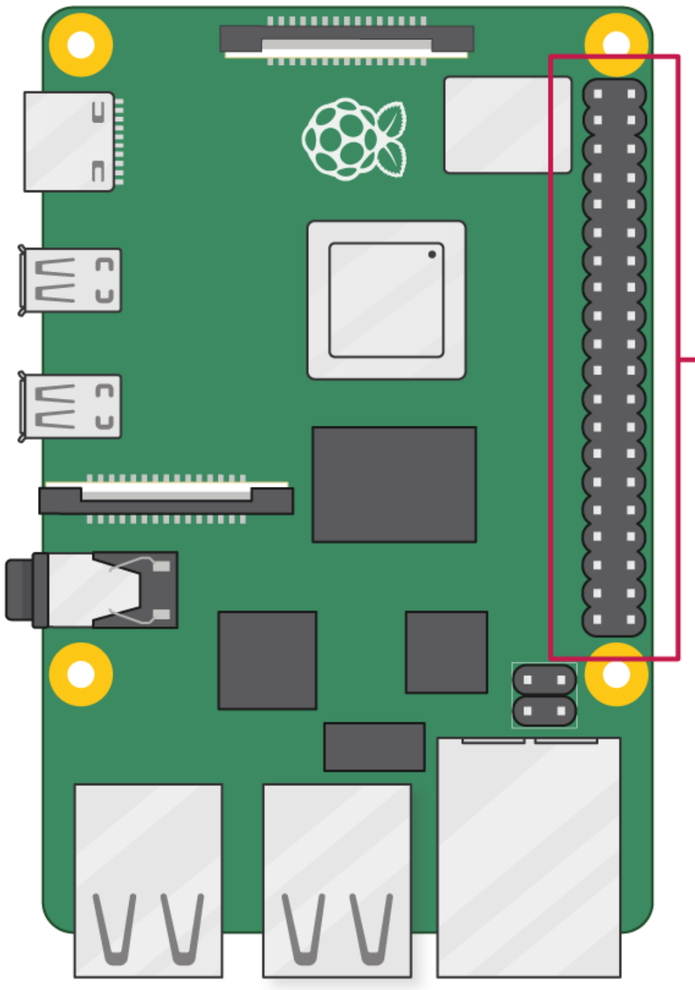
IoT 디바이스 및 스마트 홈 제어
산업 자동화 및 기계 제어
키오스크, ATM, 슬롯머신
미디어 센터 및 서버

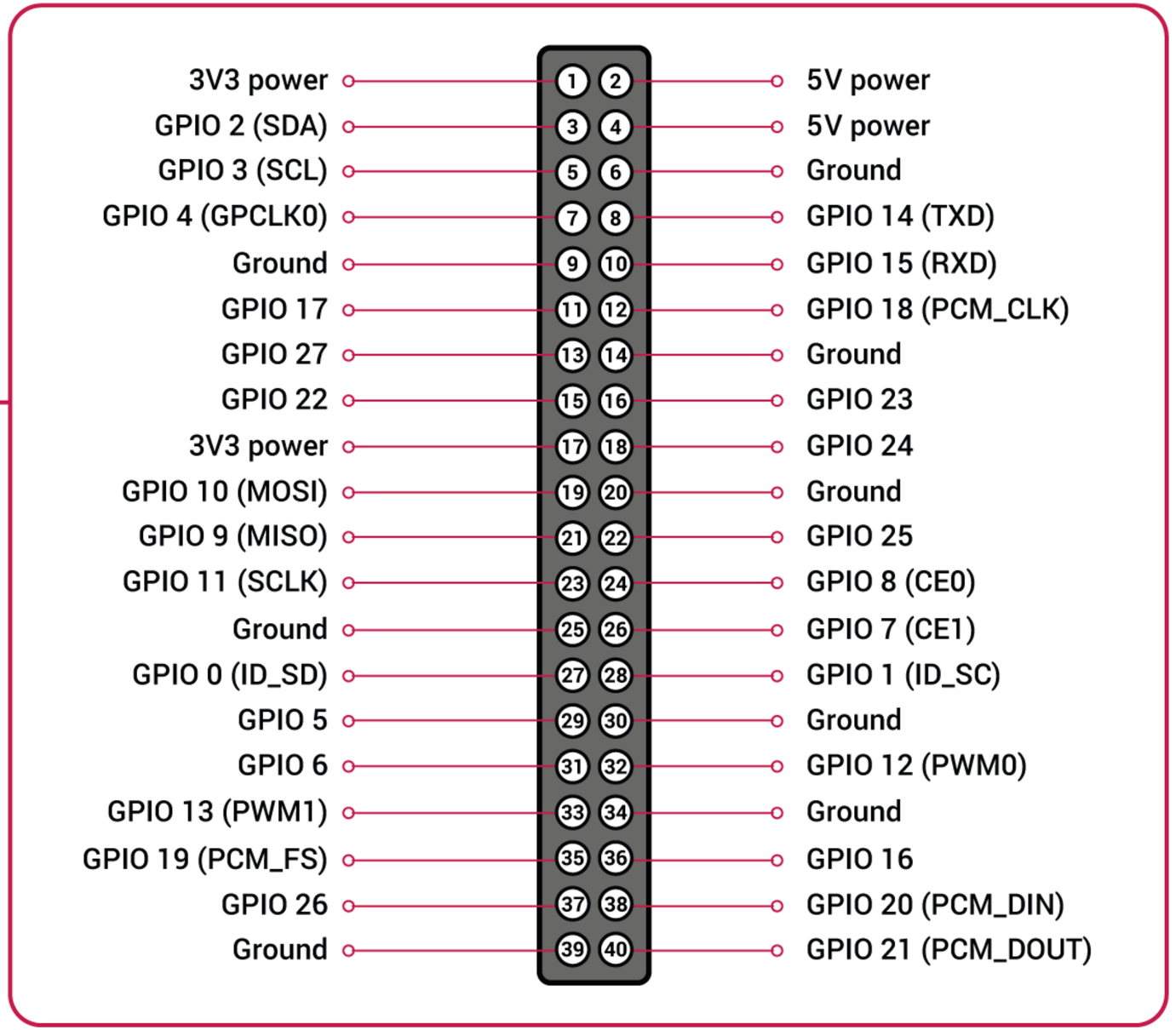
RPI 외의 SBC

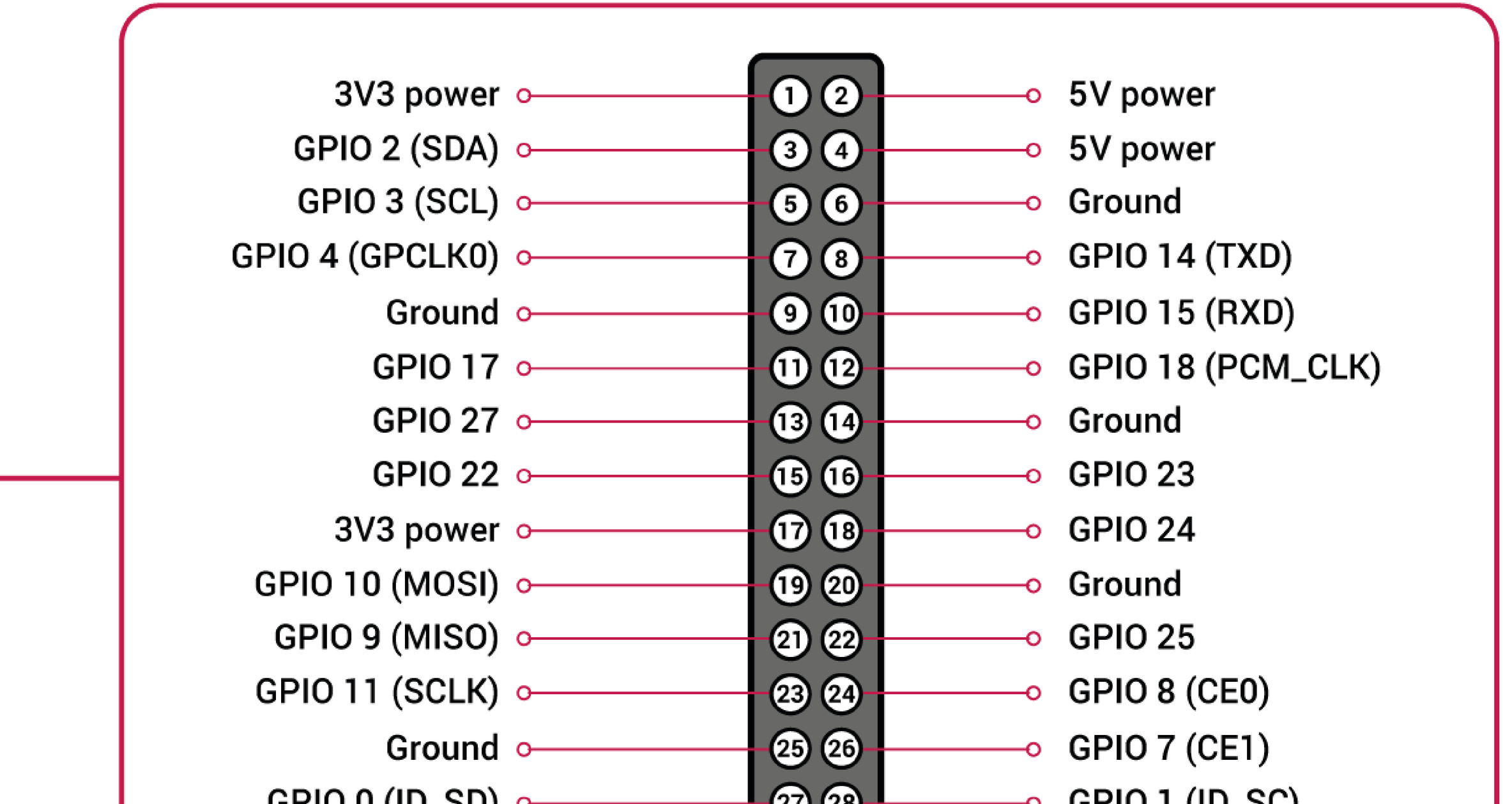
NVIDIA Jetson, ODROID, ROCK Pi,
LattePanda, Orange Pi 등등




GPIO 40-Pin Header
Broadcom BCM2711 SoC
Micron LPDDR4 SDRAM
PoE Hat Header
Dual Band WiFi (2.4GHz & 5GHz) & Bluetooth 5.0
RJ45 Gigabit Ethernet
BCM54213PE Ethernet Controller
DSI Display Port
2x USB 3.0
VL805 USB Controller
MxL7704 Power Management IC (PMIC)
2x USB 2.0
USB-C Power Port 5V 3A
Micro HDMI Ports Dual Display
CSI Camera Port
3.5mm 4-Pole Composite Audio-Video Output
Raspberry Pi 4 Model B
© Raspberry Pi 2018
FCC ID: 2ABCB-RPI4B
IC: 20953-RPI4B
Made in the UK
Trxcom®
TRJG0926HENL
China M 1904




3V3 power
GPIO 2 (SDA)
GPIO 3 (SCL)
GPIO 4 (GPCLK0)
Ground
GPIO 17
GPIO 27
GPIO 22
3V3 power
GPIO 10 (MOSI)
GPIO 9 (MISO)
GPIO 11 (SCLK)
Ground
GPIO 0 (ID_SD)
GPIO 5
GPIO 6
GPIO 13 (PWM1)
GPIO 19 (PCM_FS)
GPIO 26
Ground
1 2
3 4
5 6
7 8
9 10
11 12
13 14
15 16
17 18
19 20
21 22
23 24
25 26
27 28
29 30
31 32
33 34
35 36
37 38
39 40
5V power
5V power
Ground
GPIO 14 (TXD)
GPIO 15 (RXD)
GPIO 18 (PCM_CLK)
Ground
GPIO 23
GPIO 24
Ground
GPIO 25
GPIO 8 (CE0)
GPIO 7 (CE1)
GPIO 1 (ID_SC)
Ground
GPIO 12 (PWM0)
Ground
GPIO 16
GPIO 20 (PCM_DIN)
GPIO 21 (PCM_DOUT)


3V3 power
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5V power
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3
4
5V power
GPIO 3 (SCL)
5
6
Ground
GPIO 4 (GPCLK0)
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8
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Ground
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Ground
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16
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3V3 power
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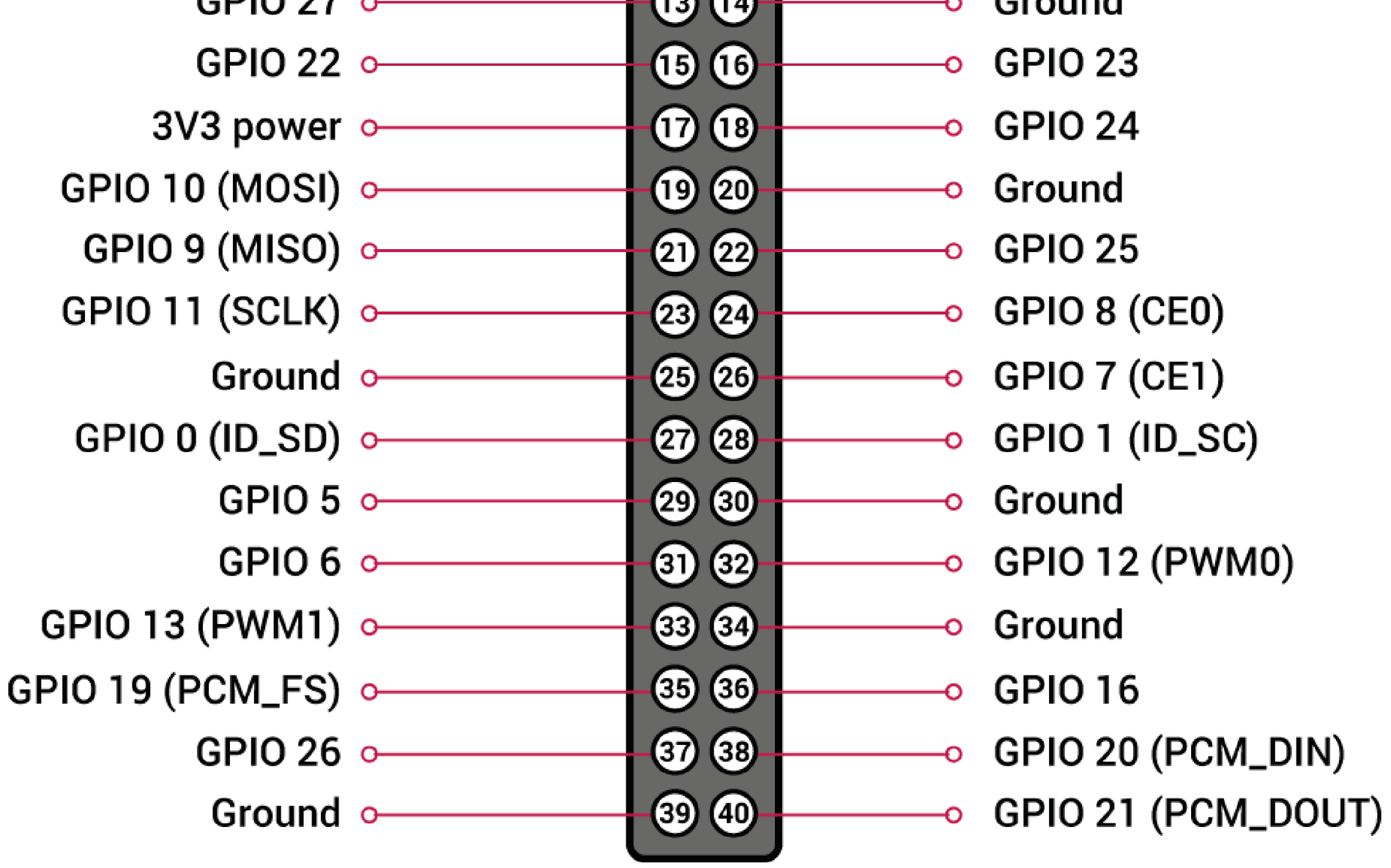
18
GPIO 24
GPIO 10 (MOSI)
19
20
Ground
GPIO 9 (MISO)
21
22
GPIO 25
GPIO 11 (SCLK)
23
24
GPIO 8 (CE0)
Ground
25
26
GPIO 7 (CE1)


GPIO 27
Ground
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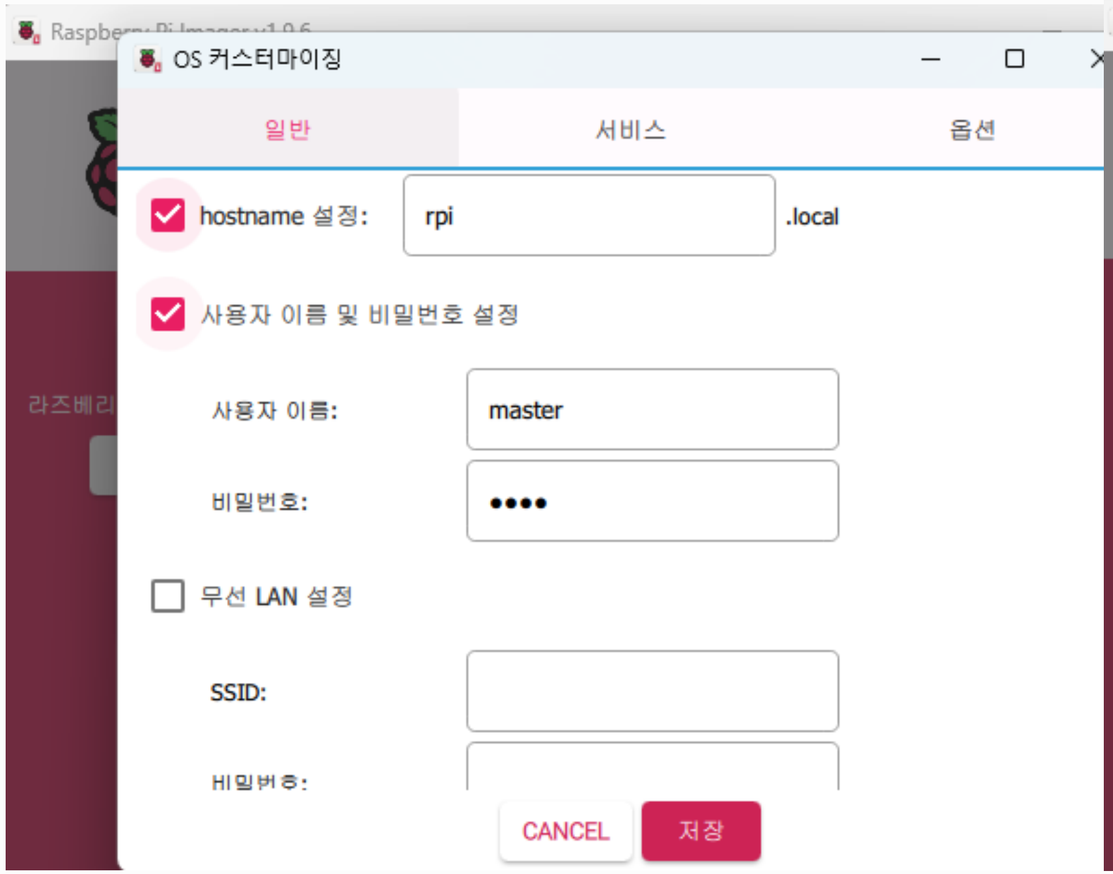
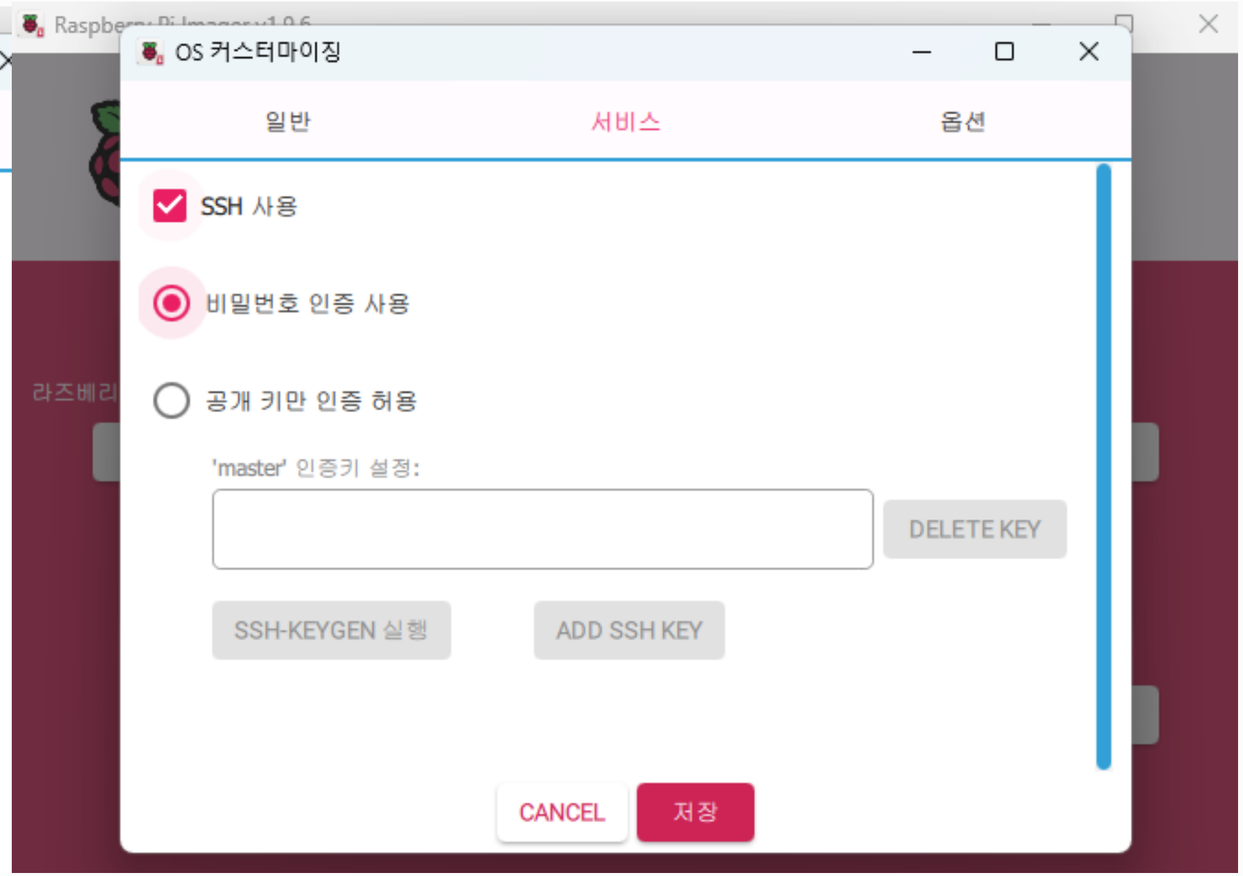
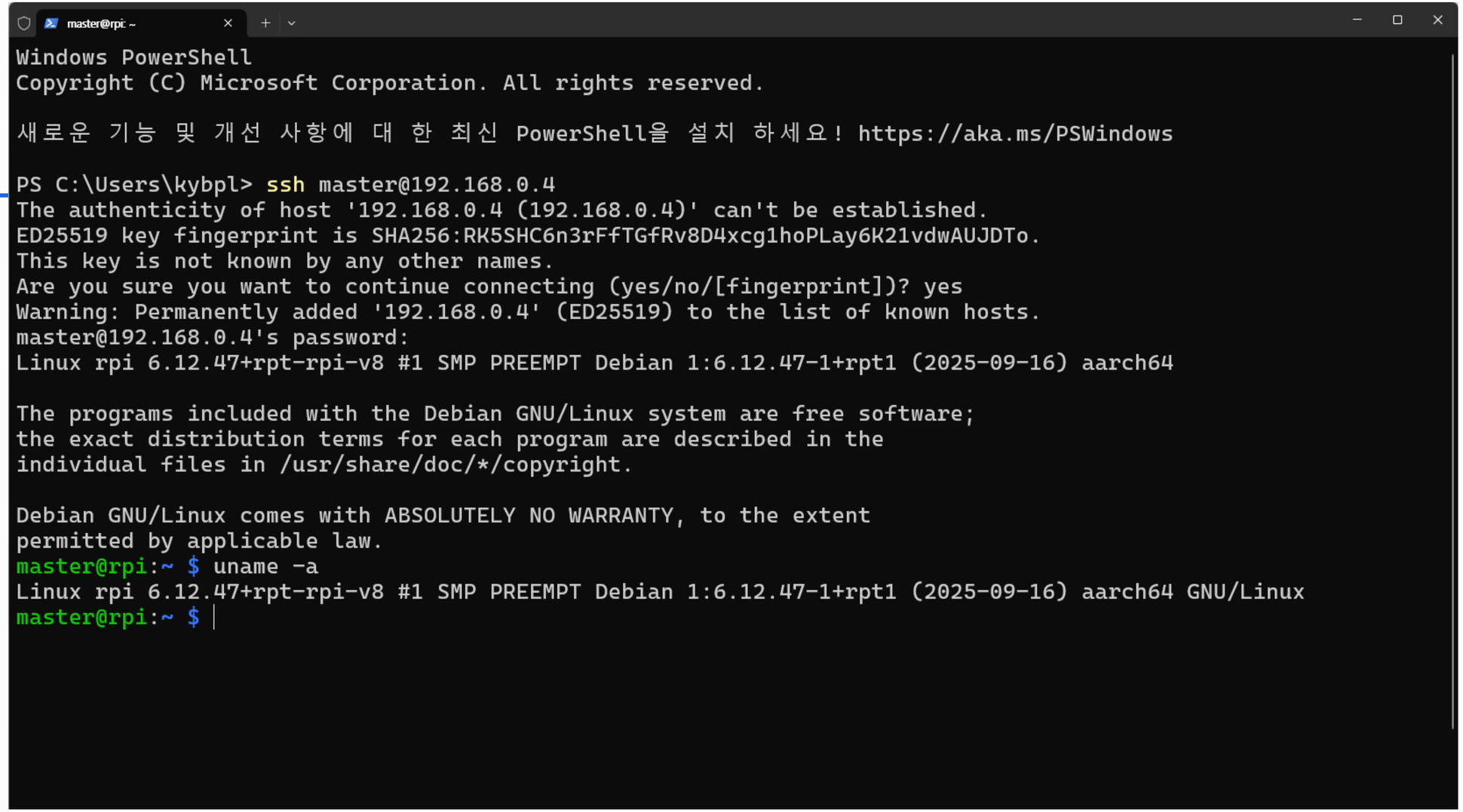
환경설정


OS 커스터마이징
일반
서비스
옵션
hostname 설정:
rpi
.local
사용자 이름 및 비밀번호 설정
사용자 이름:
master
비밀번호:
무선 LAN 설정
SSID:
CANCEL
저장


OS 커스터마이징
일반
서비스
옵션
SSH 사용
비밀번호 인증 사용
공개 키만 인증 허용
'master' 인증키 설정:
DELETE KEY
SSH-KEYGEN 실행
ADD SSH KEY
CANCEL
저장

환경설정


master@rpi: ~
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
새로운 기능 및 개선 사항에 대 한 최신 PowerShell을 설치 하세요! https://aka.ms/PSWindows
PS C:\Users\kybpl> ssh master@192.168.0.4
The authenticity of host '192.168.0.4 (192.168.0.4)' can't be established.
ED25519 key fingerprint is SHA256:RK5SHC6n3rFfTGfRv8D4xcg1hoPLay6K21vdwAUJDTo.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.0.4' (ED25519) to the list of known hosts.
master@192.168.0.4's password:
Linux rpi 6.12.47+rpt-rpi-v8 #1 SMP PREEMPT Debian 1:6.12.47-1+rpt1 (2025-09-16) aarch64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
master@rpi:~ $ uname -a
Linux rpi 6.12.47+rpt-rpi-v8 #1 SMP PREEMPT Debian 1:6.12.47-1+rpt1 (2025-09-16) aarch64 GNU/Linux
master@rpi:~ $

GPIO로 하드웨어 제어하기

```
mkdir my_dht_project
cd my_dht_project
python3 -m venv .venv
source .venv/bin/activate
pip install adafruit-circuitpython-dht
pip install RPi.GPIO
```

Python으로 센서 데이터 다루기

```
import adafruit_dht
import board

dht = adafruit_dht.DHT11(board.D2)

print(f"temperature: {dht.temperature}\nhumidity: {dht.humidity}")
```