

RP2040-PICO30

User Manual

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Introduction to RP2040-PICO30

RP2040-PICO30 is re-design of the popular Raspberry PI RP2040-PICO board with these improvements:

- all 30 RP2040 GPIOs are available to the user
- USB-C power supply connector which allow more current to be used by the board
- SY8089A 3.3V 2A (3A peak) DCDC power supply
- 2MB or 16MB Flash versions are possible
- RESET button is add
- Four layer board for better noise immunity and USB differential pair routing
- UEXT connector (pUEXT 1.0 mm step connector)
- Dimensions 21x51 mm

RP2040-PICO30 keep same layout and pinout as original RP2040-PICO.

The original RP2040-PICO exposes only 26 out of the 30 RP2040 GPIOs this sometimes is not good and RP2040-PICO30 solves this issue.



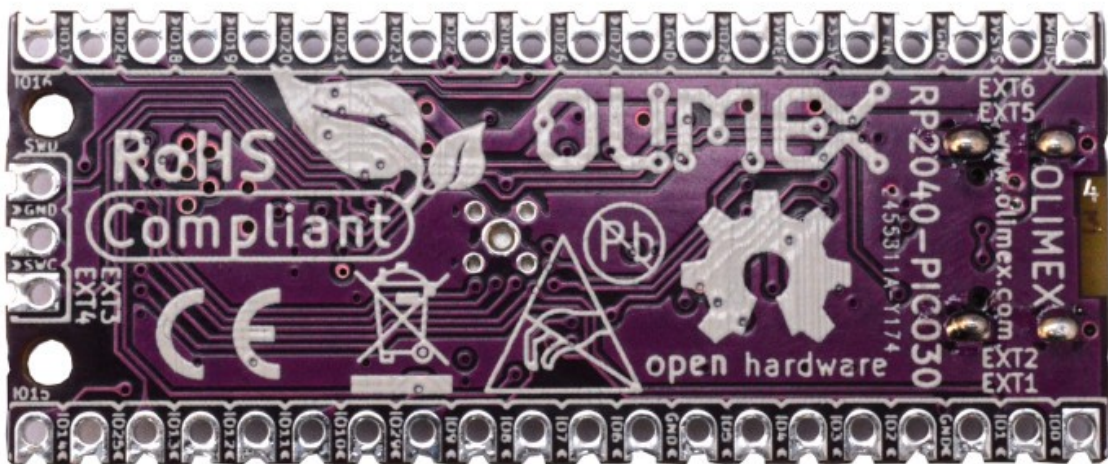
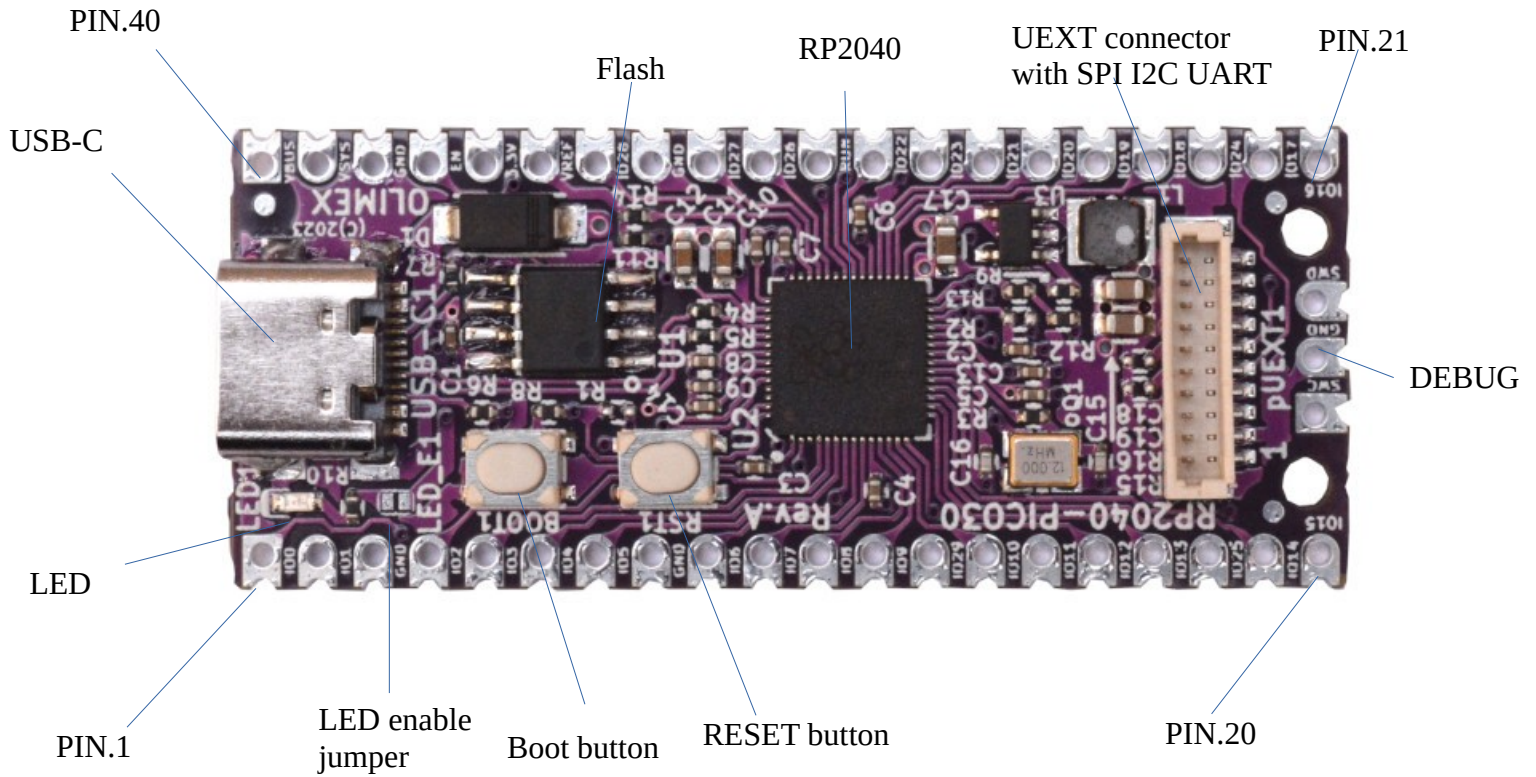
Important notice: RP2040-PICO30 keep same pinout as RP2040-PICO because in latter there are 8 GND connections. RP2040-PICO30 connects the four missing GPIOs: GPIO23, GPIO24, GPIO25, GPIO29 on GND pins PIN13, PIN18, PIN23, PIN28. When you use RP2040-PICO30 on RP2040-PICO board make sure these GPIOs are INPUTS!

Order codes for RP2040-PICO30 and accessories:

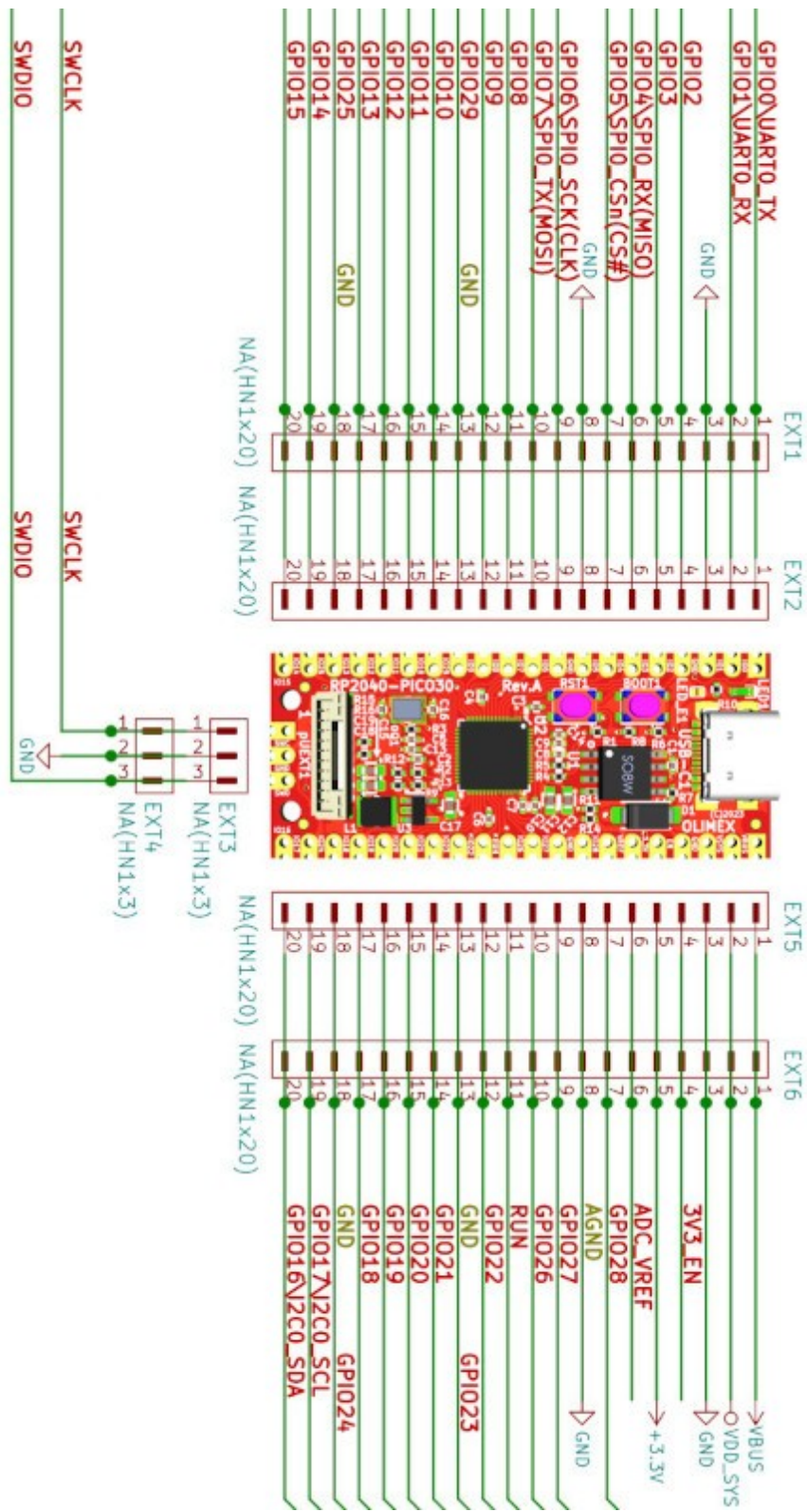
<u>RP2040-PICO30</u>	industrial grade RP2040-PICO board with 30 GPIOs exposed
<u>RP2040-PICO-30U</u>	RP2040-PICO30 with UEXT, LED, R10, R15, R16
<u>RP2040-PICO30-16</u>	RP2040-PICO30 with 16MB of Flash (max possible for RP2040)
<u>RP2040-PICO-30U-16</u>	RP2040-PICO30 with 16MB of Flash, UEXT, LED, R10, R15, R16

HARDWARE

RP2040-PICO30 layout:



RP2040-PICO30 GPIOs:



POWER SUPPLY:

VBUS +5V fro, USB-C output

VDD_SYS +5V may be output or input

if you want to use as input i.e. to feed power from external 5V to this line make sure board is not connected to USB!

when you use as output i.e. you feed external electronics from it up to 1A @ 5V

+3.3V output which can source up to 2A @ 3.3V

3V3_EN input, when pulled to GND stops the 3.3V DCDC convertor

GPIOs:

GPIO23 PIN.28 this GPIO is missing in the original RP2040-PICO and on this place there is GND so if you use RP2040-PICO30 in RP2040-PICO design make sure it's initialized as INPUT

GPIO24 PIN.23 this GPIO is missing in the original RP2040-PICO and on this place there is GND so if you use RP2040-PICO30 in RP2040-PICO design make sure it's initialized as INPUT

GPIO25 PIN.18 this GPIO is used for LED drive in the original RP2040-PICO and on this place there is GND so if you use RP2040-PICO30 in RP2040-PICO design make sure it's initialized as INPUT

GPIO29 PIN.13 this GPIO is missing in the original RP2040-PICO and on this place there is GND so if you use RP2040-PICO30 in RP2040-PICO design make sure it's initialized as INPUT

RP2040-PICO30 schematics:

[RP2040-PICO30](#) latest schematic on [GitHub](#)

UEXT connector:

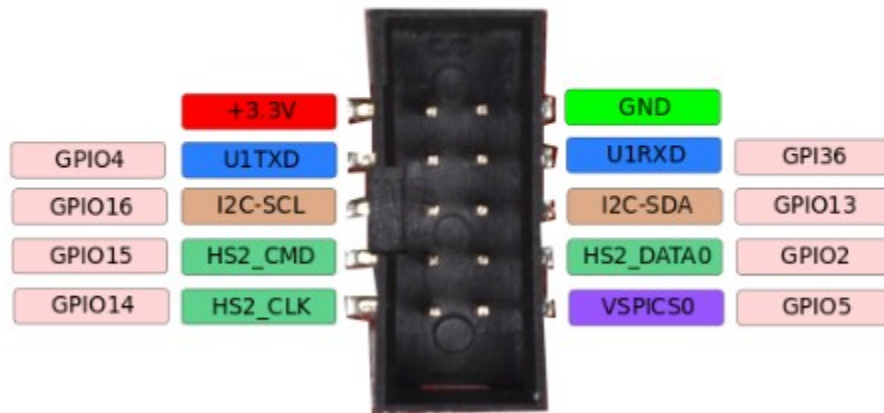
UEXT connector stands for Universal EXTension connector and contain +3.3V, GND, I2C, SPI, UART signals.

UEXT connector can be in different shapes.

The original UEXT connector is 0.1" 2.54mm step boxed plastic connector. All signals are with 3.3V levels.

UEXT connector

note it share same pins with EXT1 and EXT2

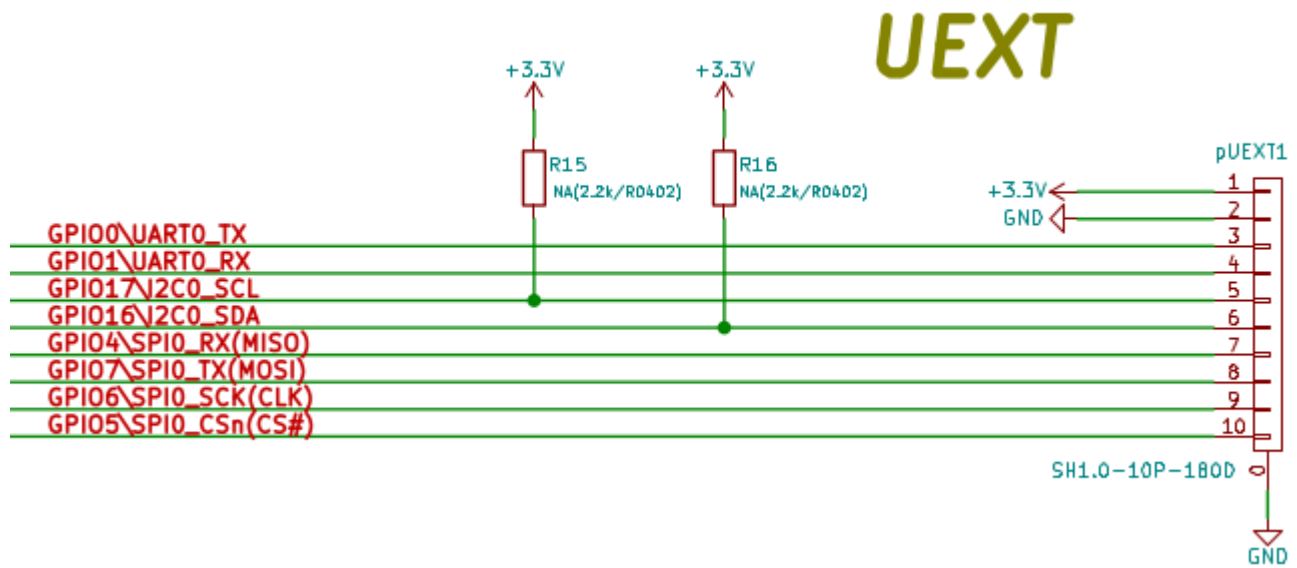


As the boards become smaller and smaller some smaller packages were introduced too beside the original UEXT connector

- mUEXT is 1.27 mm step boxed header connector which is with same layout as UEXT
- pUEXT is 1.0 mm single row connector (this is the connector used in RP2040-PICO30)

Olimex has developed number of [MODULES](#) with this connector. There are temperature, humidity, pressure, magnetic field, light sensors. Modules with LCDs, LED matrix, Relays, Bluetooth, Zigbee, WiFi, GSM, GPS, RFID, RTC, EKG, sensors and etc.

pUEXT signals:



SOFTWARE:

RP2040-PICO30 uses same software as RP2040-PICO

- Raspberry PI C-SDK
- MicroPython SDK

Revision History

Revision 1.0 May 2023