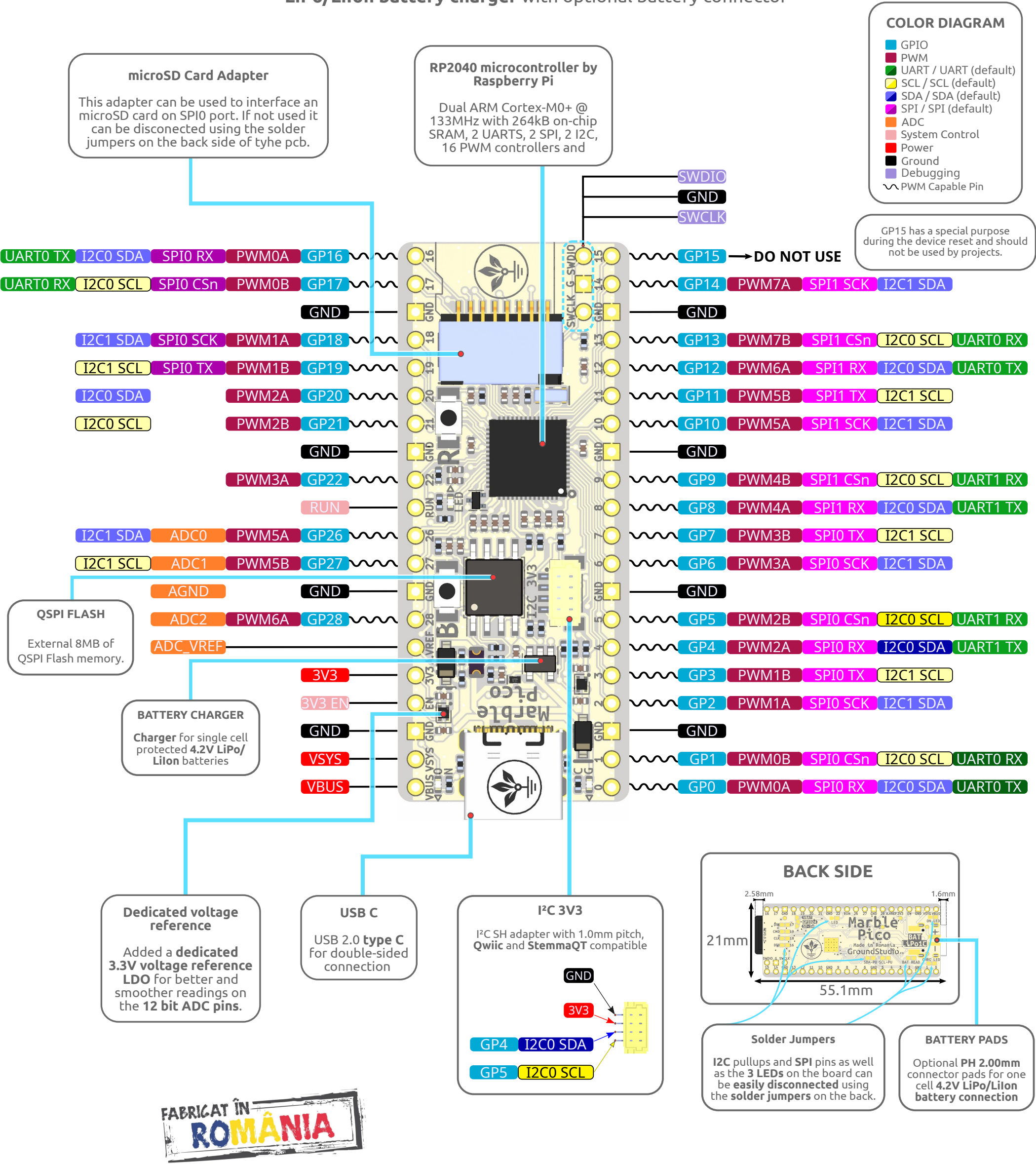# GroundStudio Marble Pico

RP2040 based development board with **25 GPIO, 16 controllable PWM channels, three 12-bit ADC with dedicated ADC voltage reference, 8MB external SPI Flash** memory, **I²C 3V3 adapter**, **microSD card adapter**, **1 cell LiPo/LiIon battery charger** with optional battery connector

COLOR DIAGRAM

- GPIO
- PWM
- UART / UART (default)
- SCL / SCL (default)
- SDA / SDA (default)
- SPI / SPI (default)
- ADC
- System Control
- Power
- Ground
- Debugging
- PWM Capable Pin

microSD Card Adapter

This adapter can be used to interface an microSD card on SPI0 port. If not used it can be disconected using the solder jumpers on the back side of tyhe pcb.

RP2040 microcontroller by Raspberry Pi

Dual ARM Cortex-M0+ @ 133MHz with 264kB on-chip SRAM, 2 UARTS, 2 SPI, 2 I2C, 16 PWM controllers and

GP15 has a special purpose during the device reset and should not be used by projects.

SWDIO
GND
SWCLK

UART0 TX	I2C0 SDA	SPI0 RX	PWM0A	GP16	16
UART0 RX	I2C0 SCL	SPI0 CSn	PWM0B	GP17	17
			GND		
I2C1 SDA	SPI0 SCK	PWM1A	GP18	18
I2C1 SCL	SPI0 TX	PWM1B	GP19	19
I2C0 SDA		PWM2A	GP20	20
I2C0 SCL		PWM2B	GP21	21
		GND		
	PWM3A	GP22	22
	RUN		
I2C1 SDA	ADC0	PWM5A	GP26	26
I2C1 SCL	ADC1	PWM5B	GP27	27
AGND		GND		
ADC2	PWM6A	GP28	28
ADC_VREF		VREF	
3V3			
3V3 EN		EN	
GND			
VSYS		VSYS	
VBUS		VBUS	

GP15 → **DO NOT USE**

GP14	PWM7A	SPI1 SCK	I2C1 SDA	14
	GND			
GP13	PWM7B	SPI1 CSn	I2C0 SCL	UART0 RX	13
GP12	PWM6A	SPI1 RX	I2C0 SDA	UART0 TX	12
GP11	PWM5B	SPI1 TX	I2C1 SCL	11
GP10	PWM5A	SPI1 SCK	I2C1 SDA	10
	GND			
GP9	PWM4B	SPI1 CSn	I2C0 SCL	UART1 RX	9
GP8	PWM4A	SPI1 RX	I2C0 SDA	UART1 TX	8
GP7	PWM3B	SPI0 TX	I2C1 SCL	7
GP6	PWM3A	SPI0 SCK	I2C1 SDA	6
	GND			
GP5	PWM2B	SPI0 CSn	I2C0 SCL	UART1 RX	5
GP4	PWM2A	SPI0 RX	I2C0 SDA	UART1 TX	4
GP3	PWM1B	SPI0 TX	I2C1 SCL	3
GP2	PWM1A	SPI0 SCK	I2C1 SDA	2
	GND			
GP1	PWM0B	SPI0 CSn	I2C0 SCL	UART0 RX	1
GP0	PWM0A	SPI0 RX	I2C0 SDA	UART0 TX	0

QSPI FLASH

External 8MB of QSPI Flash memory.

BATTERY CHARGER

Charger for single cell protected **4.2V LiPo/LiIon** batteries

Dedicated voltage reference

Added a **dedicated 3.3V voltage reference LDO** for better and smoother readings on the **12 bit ADC pins**.

USB C

USB 2.0 **type C** for double-sided connection

I²C 3V3

I²C SH adapter with 1.0mm pitch, **Qwiic** and **StemmaQT** compatible

GND
3V3
GP4 — I2C0 SDA
GP5 — I2C0 SCL

BACK SIDE

2.58mm
1.6mm
21mm
55.1mm

Marble Pico
Made in Romania
GroundStudio.ro

Solder Jumpers

I2C pullups and **SPI pins** as well as the **3 LEDs** on the board can be **easily disconnected** using the **solder jumpers** on the back.

BATTERY PADS

Optional **PH 2.00mm** connector pads for one cell **4.2V LiPo/LiIon** battery connection

FABRICAT ÎN ROMÂNIA

GroundStudio.ro

Board: "GroundStudio Marble Pico" RLJDMV_GS REV0.0.3

Credits: "Raspberry Pi Pico" by Raspberry Pi

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Pinout REV: 1