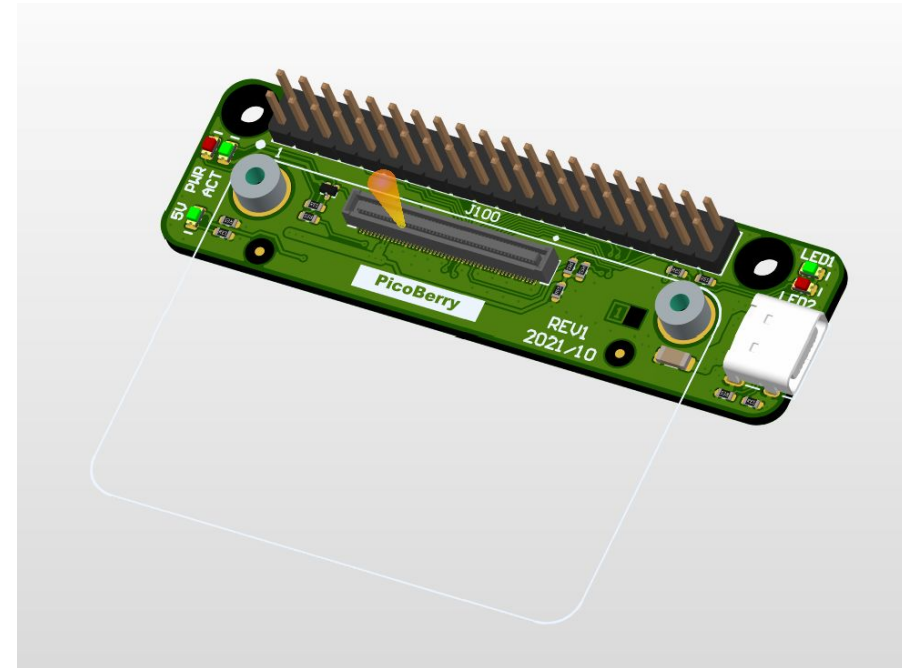


# PicoBerry (GPIO extension board for CM4)

TOP VIEW

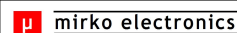
PCB Project: PicoBerry  
Version: 1.0  
Revision: -  
Project State: Released (2021-11-01)  
Variant: [No Variations]  
Print date: 12.01.2022



Page	Index
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01	Cover page
02	Top schematic
03	CM4 module
04	Power supply
05	PCB marking and mechanics

1031 Top\_SchDoc

PCB  
PCB BARE BOARD

	Mirko Electronics Smoka Wawelskiego 1 30-535 Kraków, Poland	Size A3
Title PicoBerry	Version 1.0	Revision
Project: PicoBerry (GPIO extension board for CM4)	RefDes: -	-
Variant: [No Variations]	Sheet: 1 / 5	-
Designer: M. Folejewski	Printed: 12.01.2022	
File Name: 1011 Cover_page.SchDoc		

1

2

3

4

A

A

B

B

C

C

D

D

[04] CM4\_PART1.SchDoc

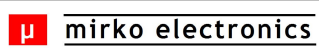


[15] PWR.SchDoc



[16] PCB\_Mech.SchDoc



		Mirko Electronics Smoka Wawelskiego 1 30-535 Kraków, Poland	Size <b>A4</b>
Title <b>Top schematic</b>			Version <b>1.0</b>
Project:	PicoBerry (GPIO extension board for CM4)		Revision -
Variant:	No Variations	RefDes:	1-99
Designer:	M. Folejewski	Sheet:	2 / 5
File Name:	[03] TOP.SchDoc	Printed:	12.01.2022

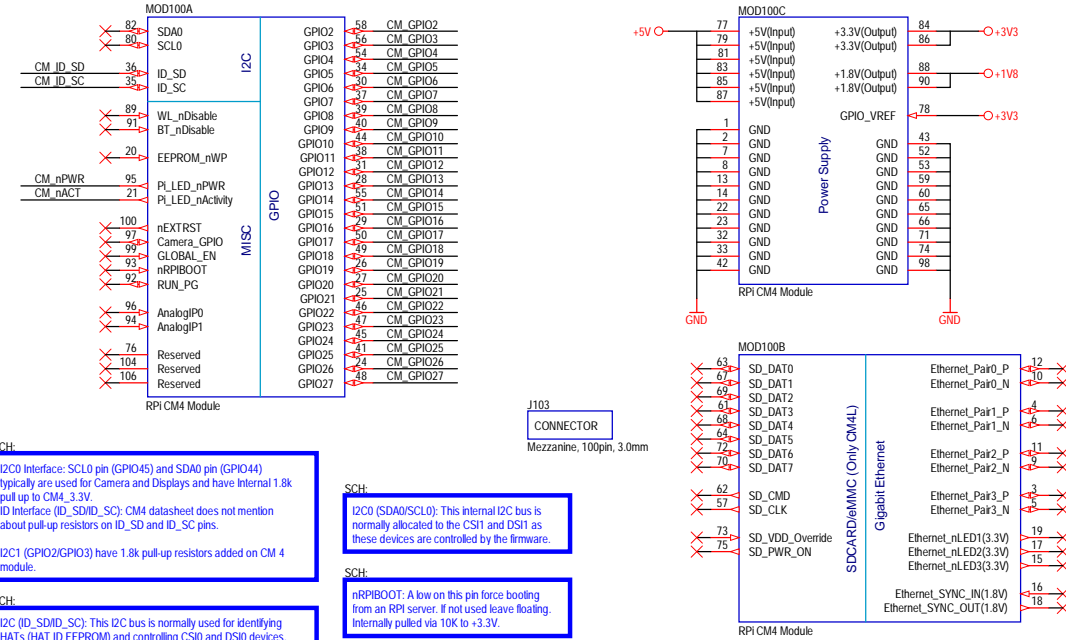
1

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3

4

# CM4 MODULE (PART #1)



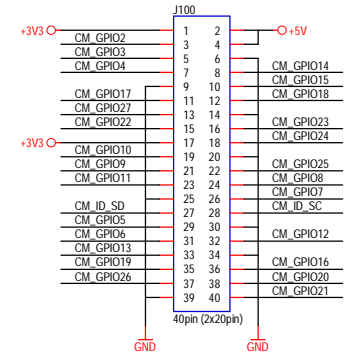
**SCH:**  
I2C0 Interface: SCL0 pin (GPIO45) and SDA0 pin (GPIO44) typically are used for Camera and Displays and have internal 1.8k pull up to CM4\_3.3V.  
ID Interface (ID\_SD/ID\_SC): CM4 datasheet does not mention about pull-up resistors on ID\_SD and ID\_SC pins.  
I2C1 (GPIO2/GPIO3) have 1.8k pull-up resistors added on CM 4 module.  
**SCH:**  
I2C (ID\_SD/ID\_SC): This I2C bus is normally used for identifying HATS (HAT ID EEPROM) and controlling CS10 and DS10 devices.  
At boot time this I2C interface will be interrogated to look for an EEPROM that identifies the attached board and allows automatic setup of the GPIOs (and optionally, Linux drivers).  
**DO NOT USE** these pins for anything other than attaching an I2C ID EEPROM. Leave unconnected if ID EEPROM not required.

**SCH:**  
I2C0 (SDA0/SCL0): This internal I2C bus is normally allocated to the CS11 and DS11 as these devices are controlled by the firmware.  
**SCH:**  
nRPIBOOT: A low on this pin force booting from an RPI server. If not used leave floating. Internally pulled via 10k to +3.3V.  
**SCH:**  
EEPROM\_nWP pin: Leaving floating NB internally pulled up to CM4\_3.3V via 100k (VIL <0.8V) but can be grounded to prevent writing to the on board EEPROM which stores the bootcode.

**SCH:**  
1.8V and 3.3V Outputs +/-2.5%. Power Output max 300mA per pin for a total of 600mA. This will be powered down during power off or GLOBAL\_EN being set low.

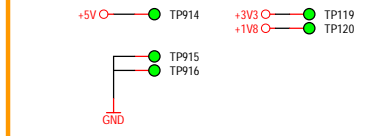
**SCH:**  
GLOBAL\_EN: Drive low to power off CM4. Internally pulled up with a 100k to +5V.

# 40-PIN GPIO HEADER

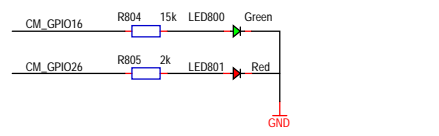


Used GPIOs:  
GPIO16 - STATUS1 LED (Green)  
GPIO26 - STATUS2 LED (Red)

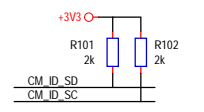
# TESTPOINTS (DEBUG)



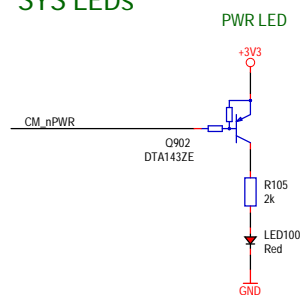
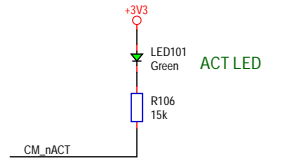
# USER LEDs



# ID I2C



# SYS LEDs

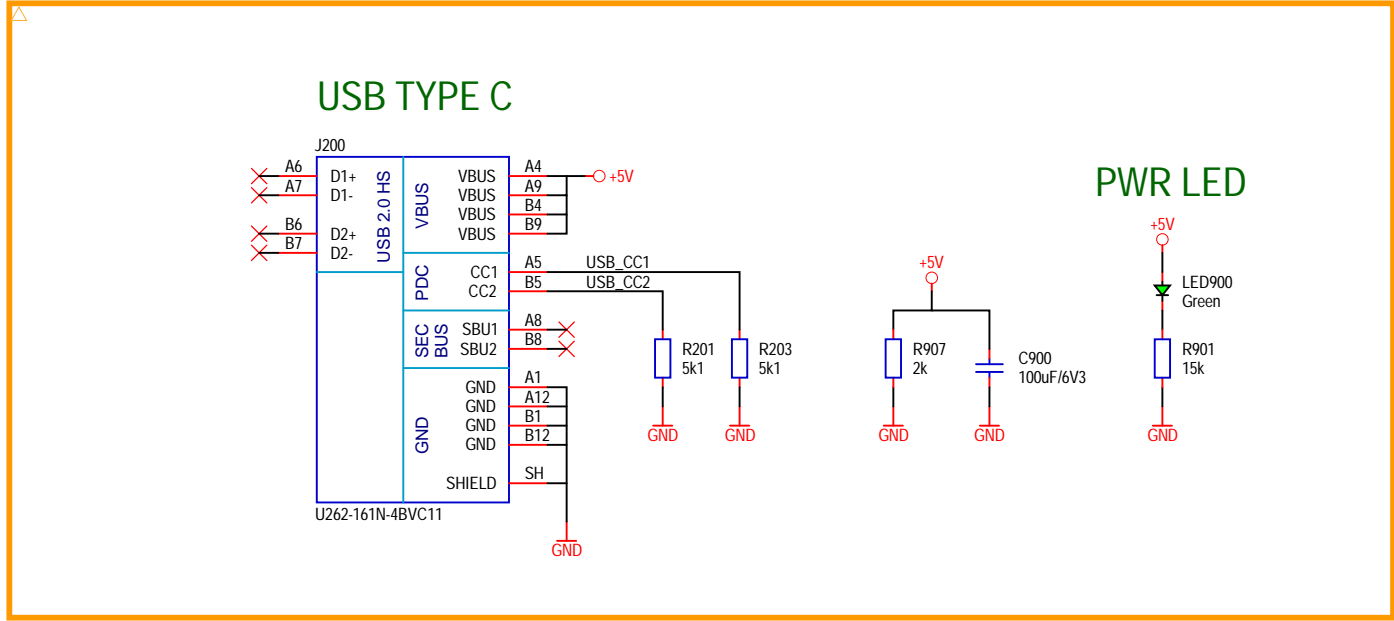


**SCH:**  
Extra load on the 3V3 power rail to fix the HDMI issue with 5V LED.

**SCH:**  
Pi\_nLED\_PWR: this pin needs to be buffered to drive an LED.

Raspberry Pi Pinout	
3v3 Power	1
GPIO 2 (i2c1 SDA)	3
GPIO 3 (i2c1 SCL)	5
GPIO 4 (GPIOLK0)	7
Ground	9
GPIO 17	11
GPIO 22	13
GPIO 27	15
3v3 Power	17
GPIO 10 (SPI0 MOSI)	19
GPIO 9 (SPI0 MISO)	21
GPIO 11 (SPI0 SCLK)	23
Ground	25
GPIO 0 (EEPROM SDA)	27
GPIO 5	29
GPIO 6	31
GPIO 13 (PWM1)	33
GPIO 19 (PCM FS)	35
GPIO 26	37
Ground	39
5v Power	2
5v Power	4
Ground	6
GPIO 14 (UART TX)	8
GPIO 15 (UART RX)	10
GPIO 18 (PCM CLK)	12
Ground	14
GPIO 23	16
GPIO 24	18
Ground	20
GPIO 25	22
GPIO 8 (SPI0 CE0)	24
GPIO 7 (SPI0 CE1)	26
GPIO 1 (EEPROM SCL)	28
Ground	30
GPIO 12 (PWM0)	32
Ground	34
GPIO 16	36
GPIO 20 (PCM DIN)	38
GPIO 21 (PCM DOUT)	40

<b>mirko electronics</b>		Mirko Electronics Smoka Wawelskiego 1 30-535 Kraków, Poland	Size <b>A3</b>
Title <b>Compute Module 4 (CM4)</b>		Version <b>1.0</b>	Revision
Project: PicoBerry (GPIO extension board for CM4)	Variant: [No Variations]	RelDes: 100-199	Sheet: 3 / 5
Designer: M. Folejewski	File Name: 1041CM4_PART1.SchDoc	Printed: 12.01.2022	

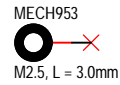
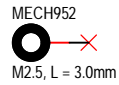


		Mirko Electronics Smoka Wawelskiego 1 30-535 Kraków, Poland	Size <b>A4</b>
Title <b>+5V power supply</b>		Version <b>1.0</b>	
Project:	PicoBerry (GPIO extension board for CM4)		Revision
Variant:	No Variations	RefDes:	900-949
Designer:	M. Folejewski	Sheet:	4 / 5
File Name:	[15] PWR.SchDoc	Printed:	12.01.2022

## PCB MOUNTING HOLES



## M2.5 STEEL SPACERS

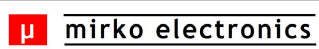


### BOM:

SMT Steel Spacer with internal Thread M2.5, L = 3.0mm:  
Use Würth Elektronik, MPN = 977 403 015 1.

## PCB MARKING



		Mirko Electronics Smoka Wawelskiego 1 30-535 Kraków, Poland	Size <b>A4</b>
Title <b>PCB marking &amp; mechanical parts</b>		Version <b>1.0</b>	
Project: PicoBerry (GPIO extension board for CM4)		Revision -	
Variant: [No Variations]	RefDes: 950-999		
Designer: M. Folejewski	Sheet: 5 / 5		
File Name: [16] PCB_Mech.SchDoc	Printed: 12.01.2022		