µEirb 1.1
Main Reference

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Contents

Chapter 1

Introduction

Temporary document, may be updated soon.

If mistakes, lacks or suggestions, please, submit to yannick.bornat@enseirb-matmeca.fr.

Chapter 2

GPIO description

2.1 LEDs

2.1.1 Main operation

Nucleo-64	GPIO	mode	Function	Conflicts
CN10-04	C-06	out	LED 0	
CN10-19	C-07	out	LED 1	Arduino header (D9)
CN10-02	C-08	out	LED 2	
CN10-01	C-09	out	LED 3	
CN07-03	C-12	out	Color-L	
CN07-04	D-02	out	Color-H	

LED color depends on the Color-L / Color-H outputs. When color choice is not controlled, pull-up resistors select the Red color by default.

2.1.2 Color selection

Color-L	Color-h	visible color
0	0	White
1	0	Blue
0	1	Green
1	1	Red (default)

2.2 Buttons and Switches

Concerning buttons and switches. Connections are multiplexed to save I/Os. The SELECT output (B-05) makes it possible to choose between buttons and switches. When SELECT is not initialized, a pull-down resistor defaults to buttons.

Reference			SELECT value		Conflicts
Nucleo-64	GPIO	mode			
CN10-29	B-05	out	0	1	Arduino header (D4)
CN07-38	C-00	in	Btn up	Switch 0	Arduino header (A5) Analog IN 10 (All ADCs)
CN07-36	C-01	in	Btn right	Switch 1	Arduino header (A4) Analog In 11 (All ADCs)
CN07-35	C-02	in	Btn down	Switch 2	
CN07-37	C-03	in	Btn left	Switch 3	

2.3   PMOD0 - SPI / GPIO-B (J1)

This Pmod connector is dedicated to SPI devices through the SPI-2 peripheral. It is also designed to be fully available through GPIO-B.

Reference				Function	Conflicts
J1	PMOD0	Nucleo-64	GPIO		
1	0	CN10-16	B-12	SPI2-SSn	
2	1	CN10-26	B-15	SPI2-MOSI	
3	2	CN10-28	B-14	SPI2-MISO	
4	3	CN10-30	B-13	SPI2-SCK	
5				Gnd	
6				Vcc 3.3	
7	4	CN10-24	B-01	-	Analog In 9 (ADC 1, 2)
8	5	CN10-22	B-02	-	
9	6	CN10-21	B-07	-	
10	7	CN10-31	B-03	-	Arduino header (D3)
11				Gnd	
12				Vcc 3.3	

2.4   PMOD1 - SPI / GPIO-A (J2)

This Pmod connector is dedicated to SPI devices through the SPI-1 peripheral. It is also designed to be fully available through GPIO-A.

Reference				Function	Conflicts
J2	PMOD1	Nucleo-64	GPIO		
1	0	CN07-32	A-04	SPI1-SSn	Arduino header (SPI-SSn) Analog In 4 (ADC 1, 2)
2	1	CN10-15	A-07	SPI1-MOSI	Arduino header (SPI-MOSI) Analog In 4 (ADC 1, 2)
3	2	CN10-13	A-06	SPI1-MISO	Arduino header (SPI-MISO) Analog In 4 (ADC 1, 2)
4	3	CN10-11	A-05	SPI1-SCK	Arduino header (SPI-SCK) LD2 on Nucleo-64 Analog In 4 (ADC 1, 2)
5				Gnd	
6				Vcc 3.3	
7	4	CN07-13	A-13	-	
8	5	CN07-15	A-14	-	
9	6	CN10-14	A-11	-	Pmod-4 (USART1-CTS)
10	7	CN10-12	A-12	-	Pmod-4 (USART1-RTS)
11				Gnd	
12				Vcc 3.3	

2.5   PMOD2 - UART (J3)

This Pmod connector is dedicated to UART devices through the UART-4 peripheral.

Reference				Function	Conflicts
J3	PMOD2	Nucleo-64	GPIO		
1	0	CN07-34	B-00	UART4-CTS	Arduino header (A3) Analog In 8 (ADC 1, 2)
2	1	CN07-28	A-00	UART4-TX	Arduino header (A0) Analog In 0 (All ADCs)
3	2	CN07-30	A-01	UART4-RX	Arduino header (A1) Analog In 1 (All ADCs)
4	3	CN07-17	A-15	UART4-RTS	
5				Gnd	
6				Vcc 3.3	
7	4	CN10-34	C-04	-	Analog In 14 (ADC 1, 2)
8	5	CN10-06	C-05	-	Analog In 15 (ADC 1, 2)
9	6	CN07-01	C-10	-	
10	7	CN07-02	C-11	-	
11				Gnd	
12				Vcc 3.3	

2.6 PMOD3 - I2C - Half height (J4)

Reference				Function	Conflicts
J4	PMOD3	Nucleo-64	GPIO		
1	0	CN10-23	A-08	I2C3-SCL	
2	1	CN10-27	B-04	I2C3-SDA	
3	2	CN10-03	B-08	I2C1-SCL	Arduino header (SCL) Proximity sensor J7 (Proxim-Trigg) J6 I2C header (SCL-1)
4	3	CN10-05	B-09	I2C1-SDA	Arduino header (SDA) Proximity sensor J7 (Proxim-Echo) J6 I2C header (SDA-1)
5				Gnd	
6				Vcc 3.3	

2.7 PMOD4 - UART - Half height (J5)

Reference				Function	Conflicts
J5	PMOD4	Nucleo-64	GPIO		
1	0	CN10-14	A-11	USART1-CTS	Pmod-1 (I/O - GP6)
2	1	CN10-21	A-09	USART1-TX	
3	2	CN10-33	A-10	USART1-RX	Arduino header (D2) IR Header (J8)
4	3	CN10-12	A-12	USART1-CTS	Pmod-1 (I/O - GP7)
5				Gnd	
6				Vcc 3.3	

2.8 Male I2C header (J6)

	Nucleo-64	GPIO	Function	Conflicts
1	CN10-21	A-09	I2C-Alert	
2	CN10-03	B-08	I2C1-SCL	Shared with Arduino header (SCL) Shared with Proximity sensor J7 (Proxim-Trigg) Shared with PMOD3 (I2C1-SCL)
3	CN10-05	B-09	I2C1-SDA	Shared with Arduino header (SDA) Shared with Proximity sensor J7 (Proxim-Echo) Shared with PMOD3 (I2C1-SDA)
4			Gnd	
5			Vcc 3.3	

2.9   Proximity sensor Header (J7)

Reference			Function	Conflicts
J7	Nucleo-64	GPIO		
1			Vcc 3.3	
2	CN10-03	B-08	Proxim-Trigg	Arduino header (SCL) PMOD3 (I2C1-SCL) J6 I2C header (SCL-1)
3	CN10-05	B-09	Proxim-Echo	Arduino header (SDA) PMOD3 (I2C1-SDA) J6 I2C header (SDA-1)
4			Gnd	

2.9.1   Timer connections

The following table shows the available timer connections.

Function	TMR-2	TMR-4	TMR-10	TMR-11
Trigger	CHAN-1	CHAN-3	CHAN-1	-
Echo	CHAN-2	CHAN-4	-	CHAN-1

2.10   IR Header (J8)

Reference			Function	Conflicts
J7	Nucleo-64	GPIO		
1	CN10-33	A-10	GPIO	Arduino header (D2) PMOD4 - UART1-Rx
2			Vcc 3.3	
3			Gnd	

Available functions for the receiver :

- GPIO A-10

- Timer 1 / Channel 3

- UART1-RX

2.11   I2C Temp sensor

The temperature sensor is an LM75B (TI ? NXP ?). Its address bits are set to 000. So the device address is ...

Reference			Function	Conflicts
pin	Nucleo-64	GPIO		
SDA	CN10-05	B-09	I2C1-SDA	Arduino header (SDA) Proximity sensor J7 (Proxim-Echo) J6 I2C header (SDA-1)
SCL	CN10-03	B-08	I2C1-SCL	Arduino header (SCL) Proximity sensor J7 (Proxim-Trigg) J6 I2C header (SCL-1)
O.S.	CN10-21	A-09	I2C-Alert	
A0	Hardwired to gnd			
A1	Hardwired to gnd			
A2	Hardwired to gnd			

Chapter 3

To Do

3.1 Documentation

- Add References to tables / add legends
- Add Arduino shield compatibility
- Add Pmod reference

3.2 Reference functions

So far, no reference functions to use the board or Pmods...

3.3 Hardware updates

3.3.1 From previous versions

From μEirb 1.0

- Fixed : inversion on J7 data lines
- Fixed : Pmod3 and Pmod4 pinout inversion
- Fixed : Temp sensor I²C line inversion
- Stand-off placement updated to improve stability
- Minor routing changes

3.3.2 For future versions

- Add switches or resistor footprints to choose the temperature sensor I²C address.