APPENDIX A

Intel Galileo I/O and Muxing

Table A-1 presents the I/O mappings for Intel Galileo. This table is the official port I/O mapping provided by Intel and also can be found accessing "https://communities.intel.com/docs/DOC-21920".

Table A-1. *Intel Galileo I/O Mappings*

	GPIO			PWM			
Pin	**Source**	**Pin**	**Linux**	**Linux**	**Int**	**Dir**	**Muxed with**
IO0	Cypr	GPORT4_BIT6_PWM2	50	N/A	-	BI	UART0_RXD
IO1	Cypr	GPORT4_BIT7_PWM0	51	N/A	-	BI	UART0_TXD
IO2	SoC (Cypr)	GPIO<6> (GPORT2_BIT0_PWM6_A3)	14 (32*)	-	0	BI	-
IO3	SoC (Cypr)	GPIO<7> (GPORT0_BIT2_PWM3)	15 (18*)	3	1	BI	(PWM)
IO4	Cypr	GPORT1_BIT4_PWM6	28		-	BI	-
IO5	Cypr	GPORT0_BIT1_PWM5	17	5	-	BI	(PWM)
IO6	Cypr	GPORT1_BIT0_PWM6	24	6	-	BI	(PWM)
IO7	Cypr	GPORT1_BIT3_PWM0	27		-	BI	-
IO8	Cypr	GPORT1_BIT2_PWM2	26		-	BI	-
IO9	Cypr	GPORT0_BIT3_PWM1	19	1	-	BI	(PWM)
IO10	Cypr	GPORT0_BIT0_PWM7	16	7	-	BI	(PWM) SPI1_SS_B
IO11	Cypr	GPORT1_BIT1_PWM4	25	4	-	BI	(PWM) SPI1_MOSI

IO12	Cypr	GPORT3_BIT2_PWM3	38	-	BI	SPI1_MISO
IO13	Cypr	GPORT3_BIT3_PWM1	39	-	BI	SPI1_SCK
IO14	Cypr	GPORT4_BIT0_PWM6	44	-	BI	AD7298:VIN0
IO15	Cypr	GPORT4_BIT1_PWM4	45	-	BI	AD7298:VIN1
IO16	Cypr	GPORT4_BIT2_PWM2	46	-	BI	AD7298:VIN2
IO17	Cypr	GPORT4_BIT3_PWM0	47	-	BI	AD7298:VIN3
IO18	Cypr	GPORT4_BIT4_PWM6	48	-	BI	AD7298:VIN4
IO19	Cypr	GPORT4_BIT5_PWM4	49	-	BI	AD7298:VIN5

Following are acronyms for Table A-1:

- **Cypr:** Crypress GPIO Expander
- **BI:** Bidirectional
- **I:** Input without pull-up off
- **Int:** Interruption pins
- **Dir**: Direction

Table A-2 presents the Mux Selectors for Intel Galileo.

Table A-2. *Intel Galileo Muxing*

Mux Selector					
0	1	Cypress GPIO pin	Linux GPIO ID	Dir	Initial Setup
UART0_RXD	IO0	GPORT3_BIT4_PWM7	40	O	U
UART0_TXD	IO1	GPORT3_BIT5_PWM5	41	O	U
SPI1_SS_B	IO10	GPORT3_BIT6_PWM3	42	O	U
SPI1_MOSI	IO11	GPORT3_BIT7_PWM1	43	O	U
SPI1_MISO	IO12	GPORT5_BIT2_PWM3	54	O	U
SPI1_SCK	IO13	GPORT5_BIT3_PWM1	55	O	U
AD7298:VIN0	IO14	GPORT3_BIT1_PWM5	37	O	LOW
AD7298:VIN1	IO15	GPORT3_BIT0_PWM7	36	O	LOW
AD7298:VIN2	IO16	GPORT0_BIT7_PWM1	23	O	LOW
AD7298:VIN3	IO17	GPORT0_BIT6_PWM3	22	O	LOW
AD7298:VIN4	IO18	GPORT0_BIT5_PWM5	21	O	LOW
AD7298:VIN5	IO19	GPORT0_BIT4_PWM7	20	O	LOW
IO2 via SoC GPIO<6>	IO2 via Cypress GPORT2_BIT0_PWM6	GPORT1_BIT7_PWM0	31	O	U
IO3 via SoC GPIO<7>	IO3 via Cypress GPORT0_BIT2_PWM3	GPORT1_BIT6_PWM2	30	O	U
I2C	(AD7298:VIN4 or IO18) and (AD7298:VIN5 or IO19)	GPORT1_BIT5_PWM4	29	O	HIGH

Following are acronyms for Table A-2:

- **O:** Output
- **Dir:** Direction
- **U:** Undefined

The following commands demonstrated some examples how to use the table using Linux terminal shell:

- Setting IO7 as GPIO output:

```
echo -n "27" > /sys/class/gpio/export
echo -n "out" > /sys/class/gpio/gpio27/direction
echo 0 > /sys/class/gpio/gpio27/value # will set OUTPUT as LOW
echo 1 > /sys/class/gpio/gpio27/value # will set OUTPUT as HIGH
```

- Setting IO7 as GPIO input:

```
echo -n "27" > /sys/class/gpio/export
echo -n "in" > /sys/class/gpio/gpio27/direction
cat /sys/class/gpio/gpio27/value
```