

# XO-4 PXA2128 Pin Assignments

## Multiplexed Interfaces

The CL4 Function is the proposed function for that pin in the OLPC XO-4 (CL4) laptop  
Alternate Functions are other functions that a pin might provide

Primary Name	Power	CL4 Signal	CL4 Function	#	Alternate Func.	#	Notes
USIM_CLK	3.3_N	CAM_RST	GPIO102	1		1	Camera Reset
USIM_IO	3.3_N	EC_EDL_DO	GPIO103	1		1	EC Debug I/F, Data Out
USIM_RSTn	3.3_N	DCON_LOAD	GPIO142	1		1	DCON Load signal
ND_ADDQ15	3.3_N	eMMC_D7	MMC3_DATA7	2		1	eMMC Interface
ND_ADDQ14	3.3_N	eMMC_D6	MMC3_DATA6	2		1	
ND_ADDQ13	3.3_N	eMMC_D5	MMC3_DATA5	2		1	
ND_ADDQ12	3.3_N	eMMC_D5	MMC3_DATA5	2		1	
ND_ADDQ11	3.3_N	eMMC_D1	MMC3_DATA1	2		1	
ND_ADDQ10	3.3_N	eMMC_D4	MMC3_DATA4	2		1	
ND_ADDQ9	3.3_N	eMMC_D0	MMC3_DATA0	2		1	
ND_ADDQ8	3.3_N	eMMC_D3	MMC3_DATA3	2		1	
ND_ADDQ7	3.3_N	EC_EDL_CS#	GPIO104	1		1	EC Debug I/F, Chip Select
ND_ADDQ6	3.3_N	EC_EDL_DI	GPIO105	1		1	EC Debug I/F, Data In
ND_ADDQ5	3.3_N	EC_EDL_CLK	GPIO106	1		1	EC Debug I/F, Clock
ND_ADDQ4	3.3_N	SOC_TPD_DAT	GPIO107	1		1	PS/2 Touchpad I/F
ND_ADDQ3	3.3_N	CAM_SCL	GPIO165	1		1	Camera Interface
ND_ADDQ2	3.3_N	CAM_SDA	GPIO166	1		1	Camera Interface
ND_ADDQ1	3.3_N	DCON_SDA	GPIO167	1		1	DCON Interface
ND_ADDQ0	3.3_N	DCON_SCL	GPIO168	1		1	DCON Interface
ND_CS0n	3.3_N	MIC_ACF#/DC	GPIO143	1	MMC5_DATA7	4	Mic ACF/DC input select
ND_CS1n	3.3_N	eMMC_RST#	GPIO144	1	MMC3_DATA6	4	eMMC Interface, Reset
SM_CS0n	3.3_N	eMMC_CMD	MMC3_CMD	2		1	eMMC Interface, Command
SM_CS1n	3.3_N	eMMC_CLK	MMC3_CLK	2		1	eMMC Interface, Clock
ND_WEN_SM_WEN	3.3_N	SD1_DATA2	MMC5_DATA2	4	GPIO147	1	Internal microSD
ND_Ren_SM_OEN	3.3_N	HUB_RESET#	GPIO148	1	MMC5_DATA5	4	USB Hub Reset
ND_CLE	3.3_N	SD1_DATA1	MMC5_DATA1	4	GPIO149	1	
ND_ALE_SM_ADV	3.3_N	EN_CAM_PWR	GPIO150	1	MMC5_DATA4	4	Camera Power Enable
SM_SCLK	3.3_N	SD1_DATA0	MMC5_DATA0	4	GPIO151	1	
ND_RDY0	3.3_N	SD1_DATA3	MMC5_DATA3	4	GPIO112	1	
SM_BELn	3.3_N	SD1_CLK	MMC5_CLK	4	GPIO152	1	
SM_BEHn	3.3_N	SD1_CMD	MMC5_CMD	4	GPIO153	1	
SM_INT	3.3_N	EC_IRQ#	GPIO154	1	MMC5_CMD	4	EC Interrupt input
EXT_DMA_REC0	3.3_N	EC_SPL_CMD	GPIO155	1		1	Host->EC CMD Flag
ND_RDY1	3.3_N	SOC_TPD_CLK	GPIO160	1	MMC3_CMD	3	PS/2 Touchpad I/F, Clock
SM_RDY	3.3_N	EC_SPL_ACK	GPIO113	1		1	EC->Host CMD Ack Flag
GPIO124	SD	TP83	GPIO124	0		0	NB: switched power!
GPIO125	SD	n.c.	GPIO125	0		0	NB: switched power!
GPIO131	SD	SD2_DATA3	MMC1_DATA3	1		1	External SD/MMC Slot
GPIO132	SD	SD2_DATA2	MMC1_DATA2	1		1	Data
GPIO133	SD	SD2_DATA1	MMC1_DATA1	1		1	
GPIO134	SD	SD2_DATA0	MMC1_DATA0	1		1	
GPIO135	SD	SD2_CLK	MMC1_CLK	1		1	Clock
GPIO136	SD	SD2_CMD	MMC1_CMD	1		1	Command
GPIO137	SD	n.c.	GPIO137	0		0	NB: switched power!
GPIO138	SD	n.c.	GPIO138	0		0	NB: switched power!
GPIO140	SD	n.c.	GPIO140	1		1	NB: switched power!
GPIO141	SD	SD2_WP#	MMC1_WP	1		1	External SD/MMC Write Protect

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Primary Name	Power	CL4 Signal	CL4 Function	F#	Alternate Func.	#	Notes
GPIO115	1.8_BB	n.c.	GPIO115	0		0	
GPIO116	1.8_BB	TP77	GPIO116	0		0	
GPIO117	1.8_BB	TOUCH_BSL_TXD	UART4_RXD	3		3	Touch Screen BSL I/F
GPIO118	1.8_BB	TOUCH_BSL_RXD	UART4_TXD	3		3	TTL RS-232
GPIO119	1.8_BB	SDI_CLK	SSP3_CLK	3		3	SPI Slave I/F from EC (used for EC commands/data)
GPIO120	1.8_BB	SDI_CS#	SSP3_FRM	3		3	
GPIO121	1.8_BB	SDI_MOSI	SSP3_RXD	3		3	
GPIO122	1.8_BB	SDI_MISO	SSP3_TXD_RXD	3		3	
GPIO123	1.8_PM	VID2	GPIO123	0	ONE_WIRE	2	Vcore voltage control
PRI_TDI	1.8_PM	PRI_TDI	PRI_TDI	0	PWM1	2	JTAG I/F
PRI_TMS	1.8_PM	PRI_TMS	PRI_TMS	0	PWM2	2	
PRI_TCK	1.8_PM	PRI_TCK	PRI_TCK	0	PWM3	2	
PRI_TDO	1.8_PM	PRI_TDO	PRI_TDO	0	PWM4	2	
PRI_TRST#	1.8_PM	PRI_TRST#	PRI_TRST#	0			
SLAVE_RESET_OUT	1.8_PM	SYS_RESET#	SLAVE_RESET_OUT	0			System Reset
G_CLK_REQ	1.8_PM	TP29	G_CLK_REQ	0			Clocks
GPIO114	1.8_PM	n.c.	G_CLK_OUT	1	32KHz_CLK_OUT	2	
VCCO_REQ	1.8_PM	R90/R91/TP90	VCCO_REQ	0	ONE_WIRE	2	
VCCO_OUT	1.8_PM	TP74	VCCO_OUT	0	32KHz_CLK_OUT	1	
GPIO0	1.8_G1	MEM_SZ0	GPIO0	0			System Configuration
GPIO1	1.8_G1	MEM_SZ1	GPIO1	0			Memory Size flag, Lsb (0 - 1GB, 1 - 2GB, 2/3 unused)
GPIO2	1.8_G1	BOOT_DEV_SEL	GPIO2	0			Memory Size flag, Msb
GPIO3	1.8_G1	SOC_SEL	GPIO3	0			Boot Device Select: 0-It. SD, 1-eMMC)
GPIO4	1.8_G1	HDMI_SCL	GPIO4	0			CPU Speed: 1 - 1GHz, 0 - 1.2GHz
GPIO5	1.8_G1	HDMI_DAT	GPIO5	0			HDMI DDI Port
GPIO6	1.8_G1	G_SENSOR_INT	GPIO6	0			I2C
GPIO7	1.8_G1	AUDIO_IRQ#	GPIO7	0			Accelerometer Interrupt
GPIO8	1.8_G1	AUDIO_RESET#	GPIO8	0			Audio Interrupt Input
GPIO9	1.8_G1	n.c.	GPIO9	0			Audio Codec Reset
GPIO10	1.8_G1	LED_STORAGE	GPIO10	0			Storage activity LED
GPIO11	1.8_G1	TP34	GPIO11	0			
GPIO12	1.8_G1	TOUCH_HD	GPIO12	0			Touchscreen Host Disable (ignored)
GPIO13	1.8_G1	HP_PLUG	GPIO13	0			Headphone Jack Sense
GPIO14	1.8_G1	HDMI_HP_DET	GPIO14	0			HDMI Hot-Plug Detct
GPIO15	1.8_G1	KEY_ROTATE	GPIO15	0	GPIO15		Rotate Button
GPIO16	1.8_G1	KEY_R_UP	KP_DKIN0	1	KP_DKIN0	1	Game Buttons
GPIO17	1.8_G1	KEY_R_RT	KP_DKIN1	1	KP_DKIN1	1	
GPIO18	1.8_G1	KEY_R_DN	KP_DKIN2	1	KP_DKIN2	1	
GPIO19	1.8_G1	KEY_R_LF	KP_DKIN3	1	KP_DKIN3	1	
GPIO20	1.8_G1	KEY_L_UP	KP_DKIN4	1	KP_DKIN4	1	Gamepad Buttons
GPIO21	1.8_G1	KEY_L_RT	KP_DKIN5	1	KP_DKIN5	1	
GPIO22	1.8_G1	KEY_L_DN	KP_DKIN6	1	KP_DKIN6	1	
GPIO23	1.8_G1	KEY_L_LF	KP_DKIN7	1	KP_DKIN7	1	
GPIO24	1.8_G1	I2S_SYSCLK	SSPA1_SYSCLK	5	VXCO_OUT	2	Audio Codec
GPIO25	1.8_G1	I2S_BITCLK	SSPA1_BITCLK	1	SSPA2_SCLK	3	(I2S Interface)
GPIO26	1.8_G1	I2S_SYNC	SSPA1_SYNC	1	SSPA2_SFRM	3	
GPIO27	1.8_G1	I2S_DATA_OUT	SSPA1_DATA_OUT	1	SSPA2_TXD_RXD	3	
GPIO28	1.8_G1	I2S_DATA_IN	SSPA1_DATA_IN	1	SSPA2_RXD	3	

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Primary Name	Power	CL4 Signal	CL4 Function	#	Alternate Func.	#	Aux. Serial Port	Notes
GPIO29	1.8_G1	UART1_RXD	UART1_RXD	1		1	AN23, C40rth, Marvell Debug & Boot	
GPIO30	1.8_G1	UART1_TXD	UART1_TXD	1		1	external SD card detect	
GPIO31	1.8_G1	SD2_CD#	GPIO31	0	UART1_CTS_N	1		
GPIO32	1.8_G1	n.c.	GPIO32	0	UART1_RTS_N	1		
GPIO33	1.8_G1	n.c.	GPIO33	0	I2S_BITCLK	2		
GPIO34	1.8_G1	EN_WLAN_PWR	GPIO34	0	I2S_SYNC	2	WLAN power enable	
GPIO35	1.8_G1	WLAN_PD#	GPIO35	0	WLAN_OUT	2	WLAN power down	
GPIO36	1.8_G1	WLAN_RESET#	GPIO36	0	I2S_DATA_IN	2	WLAN reset	
GPIO37	1.8_G1	SDDA_D3	MMMC2_DATA3	1	TVS12_SCL	3	WLAN Card	
GPIO38	1.8_G1	SDDA_D2	MMMC2_DATA2	1	TVS12_SDA	3	(SDIO Interface)	
GPIO39	1.8_G1	SDDA_D1	MMMC2_DATA1	1	TVS12_SCL	3		
GPIO40	1.8_G1	SDDA_D0	MMMC2_DATA0	1	TVS12_SDA	3		
GPIO41	1.8_G1	SDDA_CMD	MMMC2_CMD	1	TVS15_SCL	2		
GPIO42	1.8_G1	SDDA_CLK	MMMC2_CLK	1	TVS15_SDA	2		
GPIO43	1.8_G1	SPI_MISO	SSP1_RXD	3		0	OFW Boot ROM	
GPIO44	1.8_G1	SPI_MOSI	SSP1_TXD	3		0	(SPI Flash)	
GPIO45	1.8_G1	SPI_CLK	SSP1_CLK	3		0		
GPIO46	1.8_G1	SPI_CS#	SSP1_FRM	3		0		
GPIO47	1.8_G1	G_SENSOR_SCL	TVS16_SCL	3	GPIO47	0	Accelerometer	
GPIO48	1.8_G1	G_SENSOR_SDA	TVS16_SDA	3	GPIO48	0	(I2C Interface)	
GPIO49	1.8_G1	n.c.	GPIO49	0		0		
GPIO50	1.8_G1	n.c.	GPIO50	0		0	Boot ROM UART Rx/D	
GPIO51	1.8_G1	n.c.	GPIO51	0		0	Boot ROM UART Tx/D	
GPIO52	1.8_G1	n.c.	GPIO52	0		0		
GPIO53	1.8_G1	RTC_SCK	GPIO53	0	TVS12_SCL	2	External RTC Clock	
GPIO54	1.8_G1	RTC_SDA	GPIO54	0	TVS12_SDA	2	(I2C Interface)	
GPIO55	1.8_G1	n.c.	SSP2_CLK	1	GPIO55	0	Touch Interface	
GPIO56	1.8_G1	n.c.	SSP2_FRM	1	GPIO56	0	SPI Interface (unused)	
GPIO57	1.8_G1	n.c.	SSP2_RXD	1	GPIO57	0		
GPIO58	1.8_G1	n.c.	SSP2_TXD	1	GPIO58	0		
GPIO59	3.3_G2	PIXDATA7	CCIC1_IN7	4	MMMC3_DATA7	3	Camera Interface	
GPIO60	3.3_G2	PIXDATA6	CCIC1_IN6	4	MMMC3_DATA6	3	(CCIR656 plus syncs)	
GPIO61	3.3_G2	PIXDATA5	CCIC1_IN5	4	MMMC3_DATA5	3		
GPIO62	3.3_G2	PIXDATA4	CCIC1_IN4	4	MMMC3_DATA4	3		
GPIO63	3.3_G2	PIXDATA3	CCIC1_IN3	4				
GPIO64	3.3_G2	PIXDATA2	CCIC1_IN2	4				
GPIO65	3.3_G2	PIXDATA1	CCIC1_IN1	4				
GPIO66	3.3_G2	PIXDATA0	CCIC1_IN0	4				
GPIO67	3.3_G2	CAM_HSYNC	CCIC1_HSYNC	4				
GPIO68	3.3_G2	CAM_VSYNC	CCIC1_VSYNC	4				
GPIO69	3.3_G2	PIXMCLK	CCIC1_MCLK	4				
GPIO70	3.3_G2	PIXCLK	CCIC1_PCLK	4				
GPIO71	3.3_G2	SOC_KBD_CLK	GPIO71	1	PWM2	3	PS/2 Keyboard I/F	
GPIO72	3.3_G2	SOC_KBD_DAT	GPIO72	1	PWM4	3		
GPIO73	3.3_G2	SEC_TRG	GPIO73	1	VCCO_OUT	4	Security Trigger	
GPIO126	3.3_G2	DCON_IRG#	GPIO126	0	LCD_DD33	2	DCON Interrupt Input	
GPIO127	3.3_G2	UART2_RXD	UART2_RXD	1	LCD_DD26	2	Processor Serial Port	
GPIO128	3.3_G2	UART2_TXD	UART2_TXD	1	MMMC3_DATA7	3	(CN18 - OFW/Linux Console)	
GPIO129	3.3_G2	LID_SW#	GPIO129	0	MMMC3_DATA5	3	Lid switch input	
GPIO130	3.3_G2	EB_MODE#	GPIO130	0	LCD_DD29	2	EB mode switch input	
GPIO139	3.3_G2	TOUCH_TCK	GPIO139	0		0	Touch Screen Test Clock	

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Primary Name	Power	CL4 Signal	CL4 Function	F#	Alternate Func.	#	Notes
GPIO74	3.3_G3	FVSYNC	LCD_FCLK	1		1	Video Output (to DCON)
GPIO75	3.3_G3	FHSYNC	LCD_LCLK	1		1	VSync
GPIO76	3.3_G3	FDOTCLK	LCD_PCLK	1		1	Hsync
GPIO77	3.3_G3	FP_LDE	LCD_DENA	1		1	Pixel Clock
GPIO78	3.3_G3	FRDAT0	LCD_DD0	1		1	Pixel Data Enable
GPIO79	3.3_G3	FRDAT1	LCD_DD1	1		1	Red, LSB
GPIO80	3.3_G3	FRDAT2	LCD_DD2	1		1	Red
GPIO81	3.3_G3	FRDAT3	LCD_DD3	1		1	Red
GPIO82	3.3_G3	FRDAT4	LCD_DD4	1		1	Red
GPIO83	3.3_G3	FRDAT5	LCD_DD5	1		1	Red, MSB
GPIO84	3.3_G3	FGDAT1	LCD_DD6	1		1	Green, LSB
GPIO85	3.3_G3	FGDAT2	LCD_DD7	1		1	Green
GPIO86	3.3_G3	FGDAT3	LCD_DD8	1		1	Green
GPIO87	3.3_G3	FGDAT4	LCD_DD9	1		1	Green
GPIO88	3.3_G3	FGDAT5	LCD_DD10	1		1	Green
GPIO89	3.3_G3	FGDAT6	LCD_DD11	1		1	Green, MSB
GPIO90	3.3_G3	FBDAT0	LCD_DD12	1		1	Blue, LSB
GPIO91	3.3_G3	FBDAT1	LCD_DD13	1		1	Blue
GPIO92	3.3_G3	FBDAT2	LCD_DD14	1		1	Blue
GPIO93	3.3_G3	FBDAT3	LCD_DD15	1		1	Blue
GPIO94	3.3_G3	FBDAT4	LCD_DD16	1		1	Blue
GPIO95	3.3_G3	FBDAT5	LCD_DD17	1		1	Blue, MSB
GPIO96	3.3_G3	EXT_MIC_PLUG	GPIO96	0	SPI_DIN	3	Mic. Jack sense
GPIO97	3.3_G3	EN_eMMC_PWR#	GPIO97	0	SPI_DOUT	3	eMMC card power
GPIO98	3.3_G3	TOUCH_RST#	GPIO98	0	ONE_WIRE	4	Touch Screen Reset
GPIO99	3.3_G3	TOUCH_SCR_INT	GPIO99	0			Touch Screen Interrupt
GPIO100	3.3_G3	DCONSTAT0	GPIO100	0	SPI_DCLK	3	DCON Status input
GPIO101	3.3_G3	DCONSTAT1	GPIO101	0	SPI_CS0	3	DCON Status input

### Dedicated Interfaces

TWSI1_SCL	1.8_PM	AUDIO_SCL	TWSI1_SCL				Audio Codec
TWSI1_SDA	1.8_PM	AUDIO_SDA	TWSI1_SDA				(I2C Interface)
TWSI4_SCL	3.3_TW	TOUCH_SCR_SCL	TWSI4_SCL	0			Touch Screen
TWSI4_SDA	3.3_TW	TOUCH_SCR_SDA	TWSI4_SDA	0			(I2C Interface)
USB_P		USB_HUB_P					USB Hub I/F
USB_N		USB_HUB_N					
USB_ID		GND	USB_ID				USB Identity (0 - Host, 1 Slave)
USB3_RX_P		TP71					Unused USB3 signals
USB3_RX_N		TP65					
USB3_TX_P		TP73					
USB3_TX_N		TP72					
PMIC_INT	1.8_PM	R89					unused

All GPIOs are pulled high upon an external reset.