

TX Family Computer On Module

- Processor 1.4 GHz ARM® Cortex®-A55 based NXP i.MX 91
- RAM 512 MB LPDDR4 SDRAM (inline ECC)
- ROM 4 GB eMMC
- Power supply 3.3V to 5V
- Size 26 mm SO-DIMM
- Grade Industrial
- Temperature -25°C to 85°C

Key Features

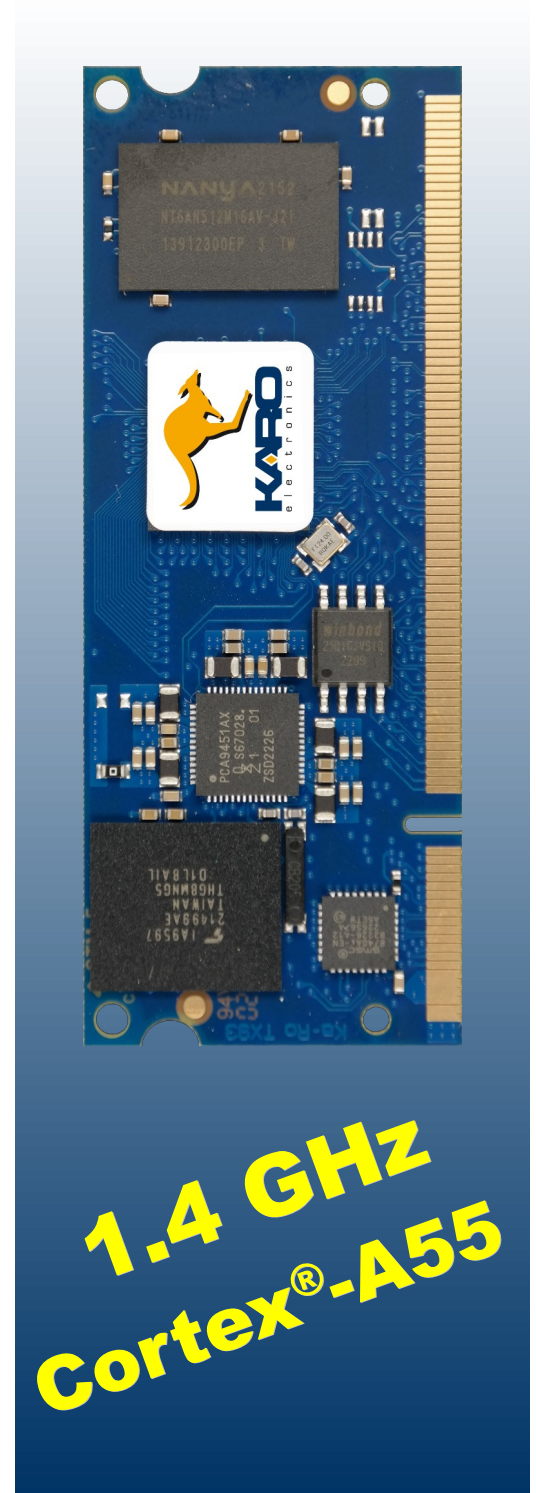
- ARM® Cortex®-A55, 1.4 GHz
- NXP's EdgeLock® secure enclave
- 24-bit RGB Display support

Connectivity

- Ethernet
 - 10/100 Ethernet with PHY
 - 10/100/1000 Ethernet RGMII/RMII
- 2x USB 2.0
- 8x UART, 7x I²C, 8x SPI, 2x CAN-FD, 1x eMMC/SD
- 3.3V I/O

OS Support

- Linux



i.MX 91

The i.MX 91 family delivers an optimized blend of security, features, and energy-efficient performance required for the next generation of Linux-based IoT and industrial applications. The i.MX 91 family enables developers to quickly create new Linux-based edge devices. As the entry point into the i.MX 9 series, the i.MX 91 family provides the extensibility and ease of programming that developers need for applications to evolve over time. Hardware and software commonality with the NXP i.MX 93 family provides additional platform options for scaling product lines that maximize re-use of development investments and decreases time to market.

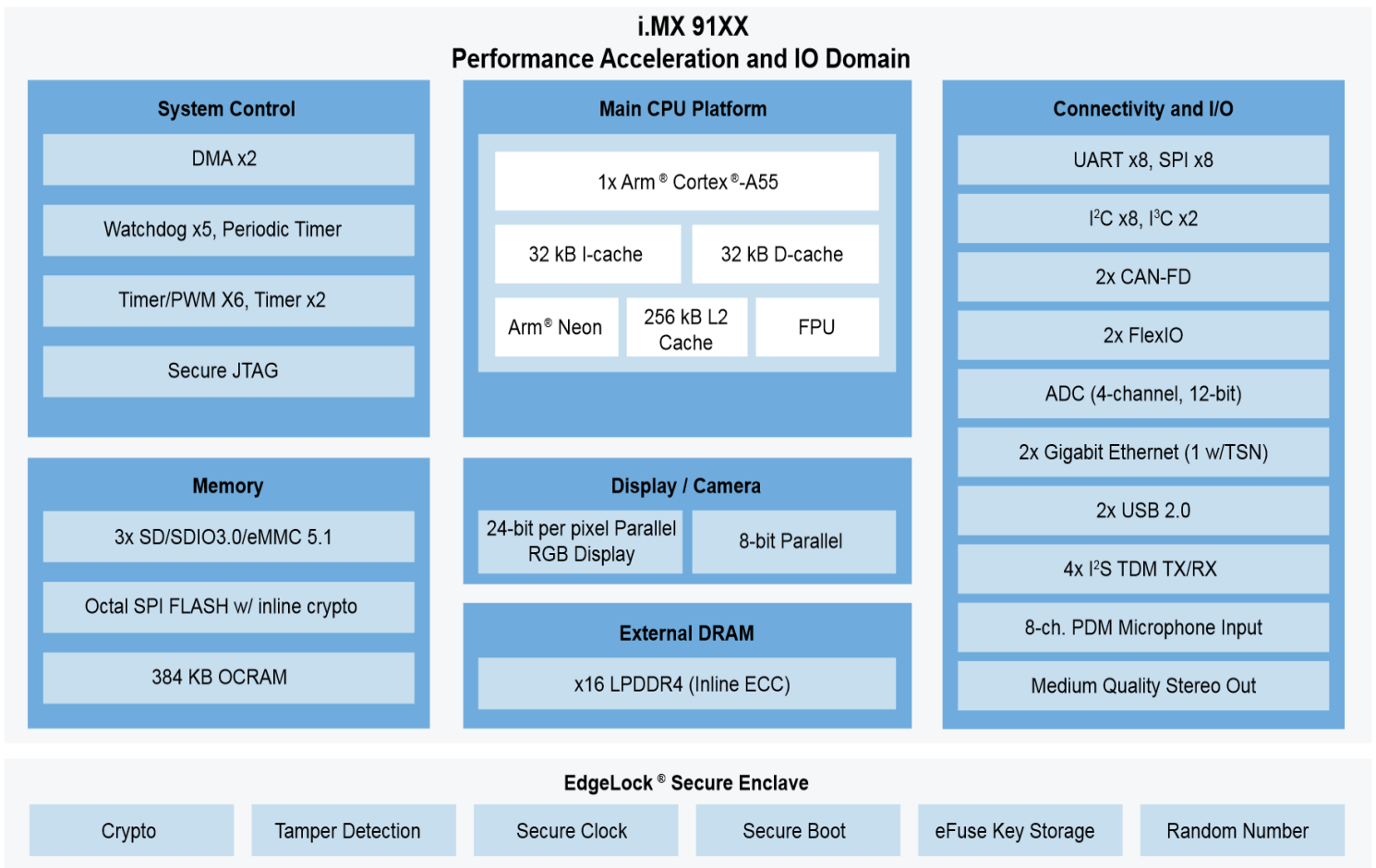
HIGH-PERFORMANCE COMPUTE

The i.MX 91 applications processors feature an Arm® Cortex®-A55 running at up to 1.4 GHz, 256 KB of L2 cache, and support for the Armv8.2 instruction set including virtualized host extensions, and two-level branch prediction, for optimal performance, security, and efficiency when running Linux and RTOS operating systems.

MACHINE LEARNING SUPPORT

The Arm Cortex-A55 processor core includes dual 64-bit Arm NEON floating-point units and supports the Armv8.2 instruction set with Arm DynamIQ technology, with dot product, half-precision float, cache stashing, and atomic operations for CPU-based machine learning applications.

i.MX 91 BLOCK DIAGRAM



TX Computer on Module

- NXP i.MX 91
- 512MB LPDDR4 SDRAM
- 4GB eMMC
- DIMM200-module (67,6mm x 26 mm x 4mm)

Standard TXCOM pinout:

Highly scalable design options allow a single platform to cover multiple products. Pin-compatible TX modules allow a single PCB as a platform for different features as product needs dictate.

- 4-wire UARTs (x3)
- I2C / PWM
- Serial Audio Interface
- 4-wire SD-Card/SDIO

High-Speed communication interfaces incl. onboard Ethernet PHY / on-chip USB PHY allows direct use of connectors/magnetics on the baseboard without the need for additional logic:

- 10/100 Mbps Ethernet
- USB 2.0 OTG (Host or Device)

Read more in our TX-Guide:

www.karo-electronics.com/tx-guide

PINOUT

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
POWER SUPPLY & RESET						
1-4	power	VIN				Module power supply input.
5-7, 9-12	power	VOUT				3.3V power supply output. Supplied by Buck 4
8	3V3	BOOTMODE				Boot mode select H: Boot from eMMC / L: Boot from UART/USB
13	Not connected					
14	3V3			Connected to PMIC IRQ_B		
15	3V3	#RESET_OUT	SD2_RESET_B	USDHC2_RESET_B, LPTMR2_ALT2 FLEXIO1_FLEXIO07, GPIO3_I007 CCMSRCGPCMIX_SYSTEM_RESET	GPIO3[07]	#RESET_OUT may be used to reset peripherals on the carrier board. This signal can be controlled by a GPIO function during runtime.
16	5V	#POR		Connected to PMIC_RST_B	10K-PU	PMIC reset input pin.
17	5V	#RESET_IN	POR_B	Connected to PMIC POR_B	10K-PU	
18	GND	GND				
Ethernet						
19	analog	ETN_TXN				Transmit Data Negative: 100Base-TX or 10Base-T differential transmit output to magnetics.
20	3V3	#ETN_LED2				Active low - output is driven active when the operating speed is 100Mbps. This LED will go inactive when the operating speed is 10Mbps or during line isolation.
21	analog	ETN_TXP				Transmit Data Positive: 100Base-TX or 10Base-T differential transmit output to magnetics.
22	power	ETN_3V3				+3.3V analog power supply output to magnetics
23	analog	ETN_RXN				Receive Data Negative: 100Base-TX or 10Base-T differential receive input from magnetics.
24	3V3	#ETN_LED1				Active low - output is driven active whenever the device detects a valid link, and blinks indicating activity.
25	analog	ETN_RXP				Receive Data Positive: 100Base-TX or 10Base-T differential receive input from magnetics.
26	GND	GND				
USB-HOST						
27	3V3	USBH_VBUSEN	SD3_DATA0	USDHC3_DATA0 FLEXSPI1_A_DATA00 FLEXIO1_FLEXIO22	GPIO3[22] 10K-PU	Active high VBUS supply enable. This pin can be used to enable a VBUS power supply switch.
28	3V3	#USBH_OC	SD3_DATA1	USDHC3_DATA1 FLEXSPI1_A_DATA01 FLEXIO1_FLEXIO23	GPIO3[23] 10K-PU	Active low over-current indicator input
29	analog	USBH_DM	USB2_D_N			D- pin of the USB cable
30	5V	USBH_VBUS	USB2_VBUS			USB supply voltage input
31	analog	USBH_DP	USB2_D_P			D+ pin of the USB cable
32	GND	GND				
USB-OTG						
33	3V3	USBOTG_ID	USB1_ID			USB PHY ID Detect, no muxing
34	3V3	USBOTG_VBUS EN	SD3_CLK	USDHC3_CLK FLEXSPI1_A_SCLK FLEXIO1_FLEXIO20	GPIO3[20] 10K-PU	Active high VBUS supply enable. This pin can be used to enable a VBUS power supply switch.
35	analog	USBOTG_DM	USB1_D_N			D- pin of the USB cable
36	3V3	#USBOTG_OC	SD3_CMD	USDHC3_CMD FLEXSPI1_A_SS0_B FLEXIO1_FLEXIO21	GPIO3[21] 10K-PU	Active low over-current indicator input connected to a GPIO.
37	analog	USBOTG_DP	USB1_D_P			D+ pin of the USB cable
38	5V	USBOTG_VBUS	USB1_VBUS			USB supply voltage input
39	GND	GND				

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
I2C						
40	3V3	I2C_DATA	GPIO_IO28	LPI2C3_SDA FLEXIO1_FLEXIO28	GPIO2[28]	I2C Data
41	3V3	I2C_CLK	GPIO_IO29	LPI2C3_SCL FLEXIO1_FLEXIO29	GPIO2[29]	I2C Clock
PWM						
42	3V3	PWM	I2C2_SCL	LPI2C2_SCL, I3C1_PUR LPUART2_DCB_B, I3C1_PUR_B TPM2_CH2 , SAI1_RX_SYNC	GPIO1[2]	PWM Output
13	Not connected					
CSPI – Configurable Serial Peripheral Interface						
44	3V3	CSPI_SS	SAI1_TXFS	SAI1_TX_SYNC SAI1_TX_DATA01, LPSPI1_PCS0 LPUART2_DTR_B, MQS1_LEFT	GPIO1[11]	Slave Select (Selectable polarity) signal
45	3V3	CSPI_SS	SD3_DATA3	USDHC3_DATA3 FLEXSPI1_A_DATA03 FLEXIO1_FLEXIO25	GPIO3[25]	Slave Select (Selectable polarity) signal
46	3V3	CSPI_MOSI	SAI1_RXD0	SAI1_RX_DATA00 SAI1_MCLK, LPSPI1_SOUT LPUART2_DSR_B, MQS1_RIGHT	GPIO1[14]	Master Out/Slave In signal
47	3V3	CSPI_MISO	SAI1_TXC	SAI1_TX_BCLK LPUART2_CTS_B, LPSPI1_SIN LPUART1_DSR_B, CAN1_RX	GPIO1[12]	Master In/Slave Out signal
48	3V3	CSPI_SCLK	SAI1_TXD0	SAI1_TX_DATA00 LPUART2_RTS_B, LPSPI1_SCK LPUART1_DTR_B, CAN1_TX	GPIO1[13]	Serial Clock signal
49	Not connected					
50	GND	GND				
1st SD – Secure Digital Interface						
51	3V3	SD1_CD	SD2_CD_B	USDHC2_CD_B ENET_QOS_1588_EVENT0_IN I3C2_SCL, FLEXIO1_FLEXIO00	GPIO3[0]	SD Card Detect
52	3V3	SD1_D[0]	SD2_DATA0	USDHC2_DATA0 ENET1_1588_EVENT0_OUT CAN2_TX, FLEXIO1_FLEXIO03 CCMSRCGPCMIX_OBSERVE2	GPIO3[3]	
53	3V3	SD1_D[1]	SD2_DATA1	USDHC2_DATA1 ENET1_1588_EVENT1_IN CAN2_RX, FLEXIO1_FLEXIO04 CCMSRCGPCMIX_WAIT	GPIO3[4]	
54	3V3	SD1_D[2]	SD2_DATA2	USDHC2_DATA2 ENET1_1588_EVENT1_OUT MQS2_RIGHT, FLEXIO1_FLEXIO05 CCMSRCGPCMIX_STOP	GPIO3[5]	
55	3V3	SD1_D[3]	SD2_DATA3	USDHC2_DATA3 LPTMR2_ALT1, MQS2_LEFT FLEXIO1_FLEXIO06 CCMSRCGPCMIX_EARLY_RESET	GPIO3[6]	
56	3V3	SD1_CMD	SD2_CMD	USDHC2_CMD ENET1_1588_EVENT0_IN I3C2_PUR, I3C2_PUR_B FLEXIO1_FLEXIO02 CCMSRCGPCMIX_OBSERVE1	GPIO3[2]	SD Command bidirectional signal
57	3V3	SD1_CLK	SD2_CLK	USDHC2_CLK ENET_QOS_1588_EVENT0_OUT I3C2_SDA, FLEXIO1_FLEXIO01 CCMSRCGPCMIX_OBSERVE0	GPIO3[1]	SD Output Clock.
58	GND	GND				
1st UART						
59	3V3	TXD	UART1_TXD	LPUART1_TX , S400_UART_TX LPSPI2_PCS0, TPM1_CH1	GPIO1[5]	1 st UART Transmit Data output signal
60	3V3	RXD	UART1_RXD	LPUART1_RX , S400_UART_RX LPSPI2_SIN, TPM1_CH0	GPIO1[4]	1 st UART Receive Data input signal
61	3V3	RTS/CTS IN	UART2_TXD	LPUART2_TX, LPUART1_RTS_B LPSPI2_SCK, TPM1_CH3	GPIO1[6]	1 st UART Request to Send no TX standard output signal
62	3V3	CTS/RTS OUT	UART2_RXD	LPUART2_RX, LPUART1_CTS_B LPSPI2_SOUT, TPM1_CH2 SAI1_MCLK	GPIO1[7]	1 st UART Clear to Send no TX standard input signal

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
2nd UART						
63	3V3	TXD	ENET2_TD0	ENET1_RGMII_TD0 LPUART4_TX , SAI2_RX_DATA03 FLEXIO2_FLEXIO19	GPIO4[19]	2 nd UART Transmit Data output signal
64	3V3	RXD	ENET2_RD0	ENET1_RGMII_RD0 LPUART4_RX , SAI2_TX_DATA02 FLEXIO2_FLEXIO24	GPIO4[24]	2 nd UART Receive Data input signal
65	3V3	RTS/CTS IN	ENET2_TD1	ENET1_RGMII_TD1 LPUART4_RTS_B , SAI2_RX_DATA02 FLEXIO2_FLEXIO18	GPIO4[18]	2 nd UART Request to Send no TX standard output signal
66	3V3	CTS/RTS OUT	ENET2_RD2	ENET1_RGMII_RD2 LPUART4_CTS_B , SAI2_MCLK MQS2_RIGHT, FLEXIO2_FLEXIO26	GPIO4[26]	2 nd UART Clear to Send no TX standard input signal
3rd UART						
67	3V3	TXD	DAP_TDO_TRACESWO	JTAG_MUX_TDO MQS2_RIGHT, CAN2_RX FLEXIO1_FLEXIO31, LPUART5_TX	GPIO3[31]	3 rd UART Transmit Data output signal
68	3V3	RXD	DAP_TDI	JTAG_MUX_TDI MQS2_LEFT, CAN2_TX FLEXIO2_FLEXIO30 LPUART5_RX	GPIO3[28]	3 rd UART Receive Data input signal
69	3V3	RTS/CTS IN	DAP_TMS_SWIDIO	JTAG_MUX_TMS FLEXIO2_FLEXIO31 LPUART5_RTS_B	GPIO3[29]	3 rd UART Request to Send no TX standard output signal
70	3V3	CTS/RTS OUT	DAP_TCLK_SWCLK	JTAG_MUX_TCK FLEXIO1_FLEXIO30 LPUART5_CTS_B	GPIO3[30]	3 rd UART Clear to Send no TX standard input signal
71	GND	GND				
Module Specific Signals						
72	3V3		SD1_DATA4	USDHC1_DATA4 FLEXSPI1_A_DATA04 FLEXIO1_FLEXIO14	GPIO3[14]	
73	3V3		SD1_DATA5	USDHC1_DATA5 FLEXSPI1_A_DATA05 USDHC1_RESET_B FLEXIO1_FLEXIO15	GPIO3[15]	
74	3V3		SD1_DATA6	USDHC1_DATA6 FLEXSPI1_A_DATA06 USDHC1_CD_B FLEXIO1_FLEXIO16	GPIO3[16]	
75	3V3		SD1_DATA7	USDHC1_DATA7 FLEXSPI1_A_DATA07 USDHC1_WP FLEXIO1_FLEXIO17	GPIO3[17]	
76	3V3	TXCAN	PDM_CLK	PDM_CLK, MQS1_LEFT LPTMR1_ALT1, CAN1_TX	GPIO1[8]	
77	3V3		CCM_CLKO1	CCMSRCGPCMIX_CLKO1 FLEXIO1_FLEXIO26	GPIO3[26]	
78	3V3		CCM_CLKO2	CCMSRCGPCMIX_CLKO2 FLEXIO1_FLEXIO27	GPIO3[27]	
79	3V3		CCM_CLKO3	CCMSRCGPCMIX_CLKO3 FLEXIO2_FLEXIO28	GPIO4[28]	
80	3V3		CCM_CLKO4	CCMSRCGPCMIX_CLKO4 FLEXIO2_FLEXIO29	GPIO4[29]	
81	3V3	RXCAN	PDM_BIT_STREAM0	PDM_BIT_STREAM0, MQS1_RIGHT LPSP11_PCS1, TPM1_EXTCLK LPTMR1_ALT2, CAN1_RX	GPIO1[9]	
82	GND	GND				
83						Not connected
84						Not connected
85						Not connected
86						Not connected
87						Not connected
88	GND	GND				

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
89						Not connected
90						Not connected
91						Not connected
92						Not connected
93						Not connected
94	GND	GND				
95						Not connected
96						Not connected
97						Not connected
98						Not connected
99						Not connected
100						Not connected
101						Not connected
102	GND	GND				
MISC						
103	3V3		ENET2_RXC	ENET1_RGMII_RXC, ENET1_RX_ER SAI2_TX_DATA01, FLEXIO2_FLEXIO23	GPIO4[23]	
104	3V3		ENET2_RX_CTL	ENET1_RGMII_RX_CTL LPUART4_DSR_B, SAI2_TX_DATA00 FLEXIO2_FLEXIO22	GPIO4[22]	
105	3V3		ENET2_TX_CTL	ENET1_RGMII_TX_CTL LPUART4_DTR_B, SAI2_TX_SYNC FLEXIO2_FLEXIO20	GPIO4[20]	
106	3V3		ENET2_RD1	ENET1_RGMII_RD1 SPDIF_IN, SAI2_TX_DATA03 FLEXIO2_FLEXIO25 of	GPIO4[25]	
107	3V3		ENET1_TD3	ENET_QOS_RGMII_TD3 CAN2_TX, HSIOMIX_OTG_ID2 FLEXIO2_FLEXIO02	GPIO4[2]	
108	3V3		ENET2_TD2	ENET1_RGMII_TD2 ENET1_TX_CLK, SAI2_RX_DATA01 FLEXIO2_FLEXIO17	GPIO4[17]	
109	3V3		ENET2_TD3	ENET1_RGMII_TD3 SAI2_RX_DATA00 FLEXIO2_FLEXIO16	GPIO4[16]	
110	3V3		ENET2_TXC	ENET1_RGMII_TXC ENET1_TX_ER, SAI2_TX_BCLK FLEXIO2_FLEXIO21	GPIO4[21]	
111	GND	GND				
112	3V3		SD3_DATA2	USDHC3_DATA2 FLEXSPI1_A_DATA02 FLEXIO1_FLEXIO24	GPIO3[24]	
113	3V3		ENET2_RD3	ENET1_RGMII_RD3 SPDIF_OUT, SPDIF_IN MQS2_LEFT, FLEXIO2_FLEXIO27	GPIO4[27]	
114	3V3		I2C2_SDA	LPI2C2_SDA, LPUART2_RIN_B TPM2_CH3, SAI1_RX_BCLK	GPIO1[3]	
115	3V3		SD1_STROBE	USDHC1_STROBE FLEXSPI1_A_DQS FLEXIO1_FLEXIO18	GPIO3[18]	
116	GND	GND				
Display						
117	3V3		GPIO_I004	TPM3_CH0, PDM_CLK MEDIAMIX_DISP_DATA00 LPSPI7_PCS0, LPUART6_TX LPI2C6_SDA, FLEXIO1_FLEXIO04	GPIO2[4]	
118	3V3		GPIO_I005	TPM4_CH0 PDM_BIT_STREAM00 MEDIAMIX_DISP_DATA01 LPSPI7_SIN, LPUART6_RX LPI2C6_SCL, FLEXIO1_FLEXIO05	GPIO2[5]	
119	3V3		GPIO_I006	TPM5_CH0 PDM_BIT_STREAM01 MEDIAMIX_DISP_DATA02 LPSPI7_SOUT, LPUART6_CTS_B LPI2C7_SDA, FLEXIO1_FLEXIO06	GPIO2[6]	

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
120	3V3		GPIO_IO07	LPSP13_PCS1 MEDIAMIX_CAM_DATA01 MEDIAMIX_DISP_DATA03 LPSP17_SCK, LPUART6_RTS_B LPI2C7_SCL, FLEXIO1_FLEXIO07	GPIO2[7]	
121	3V3		GPIO_IO08	LPSP13_PCS0 MEDIAMIX_CAM_DATA02 MEDIAMIX_DISP_DATA04 TPM6_CH0, LPUART7_TX LPI2C7_SDA, FLEXIO1_FLEXIO08	GPIO2[8]	
122	3V3		GPIO_IO09	LPSP13_SIN MEDIAMIX_CAM_DATA03 MEDIAMIX_DISP_DATA05 TPM3_EXTCLK, LPUART7_RX LPI2C7_SCL, FLEXIO1_FLEXIO09	GPIO2[9]	
123	3V3		GPIO_IO10	LPSP13_SOUT MEDIAMIX_CAM_DATA04 MEDIAMIX_DISP_DATA06 TPM4_EXTCLK, LPUART7_CTS_B LPI2C8_SDA, FLEXIO1_FLEXIO10	GPIO2[10]	
124	3V3		GPIO_IO11	LPSP13_SCK MEDIAMIX_CAM_DATA05 MEDIAMIX_DISP_DATA07 TPM5_EXTCLK, LPUART7_RTS_B LPI2C8_SCL, FLEXIO1_FLEXIO11	GPIO2[11]	
125	3V3		GPIO_IO12	TPM3_CH2 PDM_BIT_STREAM02 MEDIAMIX_DISP_DATA08 LPSP18_PCS0, LPUART8_TX LPI2C8_SDA, SAI3_RX_SYNC	GPIO2[12]	
126	3V3		GPIO_IO13	TPM4_CH2 PDM_BIT_STREAM03 MEDIAMIX_DISP_DATA09 LPSP18_SIN, LPUART8_RX LPI2C8_SCL, FLEXIO1_FLEXIO13	GPIO2[13]	
127	3V3		GPIO_IO14	LPUART3_TX MEDIAMIX_CAM_DATA06 MEDIAMIX_DISP_DATA10 LPSP18_SOUT, LPUART8_CTS_B LPUART4_TX, FLEXIO1_FLEXIO14	GPIO2[14]	
128	3V3		GPIO_IO15	LPUART3_RX MEDIAMIX_CAM_DATA07 MEDIAMIX_DISP_DATA11 LPSP18_SCK, LPUART8_RTS_B LPUART4_RX, FLEXIO1_FLEXIO15	GPIO2[15]	
129	GND	GND				
130	3V3		GPIO_IO16	GPIO2_IO16, SAI3_TX_BCLK PDM_BIT_STREAM02 MEDIAMIX_DISP_DATA12 LPUART3_CTS_B LPSP14_PCS2, LPUART4_CTS_B FLEXIO1_FLEXIO16	GPIO2[16]	
131	3V3		GPIO_IO17	SAI3_MCLK MEDIAMIX_CAM_DATA08 MEDIAMIX_DISP_DATA13 LPUART3_RTS_B, LPSP14_PCS1 LPUART4_RTS_B, FLEXIO1_FLEXIO17	GPIO2[17]	
132	3V3		GPIO_IO18	SAI3_RX_BCLK MEDIAMIX_CAM_DATA09 MEDIAMIX_DISP_DATA14 LPSP15_PCS0, LPSP14_PCS0 TPM5_CH2, FLEXIO1_FLEXIO18	GPIO2[18]	
133	3V3		GPIO_IO19	SAI3_RX_SYNC PDM_BIT_STREAM03 MEDIAMIX_DISP_DATA15 LPSP15_SIN, LPSP14_SIN TPM6_CH2, SAI3_TX_DATA00	GPIO2[19]	
134	3V3		GPIO_IO20	SAI3_RX_DATA00 PDM_BIT_STREAM00 MEDIAMIX_DISP_DATA16 LPSP15_SOUT, LPSP14_SOUT TPM3_CH1, FLEXIO1_FLEXIO20	GPIO2[20]	
135	3V3		GPIO_IO21	SAI3_TX_DATA00, PDM_CLK MEDIAMIX_DISP_DATA17 LPSP15_SCK, LPSP14_SCK TPM4_CH1, SAI3_RX_BCLK	GPIO2[21]	
136	3V3		GPIO_IO22	USDHC3_CLK, SPDIF_IN MEDIAMIX_DISP_DATA18 TPM5_CH1, TPM6_EXTCLK LPI2C5_SDA FLEXIO1_FLEXIO22	GPIO2[22]	
137	3V3		GPIO_IO23	USDHC3_CMD, SPDIF_OUT MEDIAMIX_DISP_DATA19	GPIO2[23]	

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
138	3V3		GPIO_IO24	TPM6_CH1, LPI2C5_SCL FLEXIO1_FLEXIO23 USDHC3_DATA0 MEDIAMIX_DISP_DATA20 TPM3_CH3, JTAG_MUX_TDO LPSP16_PCS1, FLEXIO1_FLEXIO24	GPIO2[24]	
139	3V3		GPIO_IO25	USDHC3_DATA1, CAN2_TX MEDIAMIX_DISP_DATA21 TPM4_CH3, JTAG_MUX_TCK LPSP17_PCS1, FLEXIO1_FLEXIO25	GPIO2[25]	
140	3V3		GPIO_IO26	USDHC3_DATA2 PDM_BIT_STREAM01 MEDIAMIX_DISP_DATA22 TPM5_CH3, JTAG_MUX_TDI LPSP18_PCS1, SAI3_TX_SYNC	GPIO2[26]	
141	3V3		GPIO_IO27	USDHC3_DATA3, CAN2_RX MEDIAMIX_DISP_DATA23 TPM6_CH3, JTAG_MUX_TMS LPSP15_PCS1, FLEXIO1_FLEXIO27	GPIO2[27]	
142	GND	GND				
143	3V3		GPIO_IO03	LPI2C4_SCL MEDIAMIX_CAM_HSYNC MEDIAMIX_DISP_HSYNC LPSP16_SCK, LPUART5_RTS_B LPI2C6_SCL, FLEXIO1_FLEXIO03	GPIO2[3]	
144	3V3		GPIO_IO02	LPI2C4_SDA MEDIAMIX_CAM_VSYNC MEDIAMIX_DISP_VSYNC LPSP16_SOUT, LPUART5_CTS_B LPI2C6_SDA, FLEXIO1_FLEXIO02	GPIO2[2]	
145	3V3		GPIO_IO01	LPI2C3_SCL MEDIAMIX_CAM_DATA00 MEDIAMIX_DISP_DE LPSP16_SIN, LPUART5_RX LPI2C5_SCL, FLEXIO1_FLEXIO01	GPIO2[1]	
146	3V3		GPIO_IO00	LPI2C3_SDA MEDIAMIX_CAM_CLK MEDIAMIX_DISP_CLK LPSP16_PCS0, LPUART5_TX LPI2C5_SDA, FLEXIO1_FLEXIO00	GPIO2[0]	
147	GND	GND				
Module Specific Signals						
148	3V3		ENET1_TXC	CCM_ENET_QOS_CLOCK_GENERATE_TX_CLK ENET_QOS_TX_ER FLEXIO2_FLEXIO07	GPIO4[7]	
149	3V3		PDM_BIT_STREAM1	PDM_BIT_STREAM01 NMI_GLUE_NMI, LPSP12_PCS1 TPM2_EXTCLK, LPTMR1_ALT3 CCMSRCGPCMIX_EXT_CLK1	GPIO1[10]	
150	3V3		ENET2_MDC	ENET1_MDC, LPUART4_DCB_B SAI2_RX_SYNC, FLEXIO2_FLEXIO14	GPIO4[14]	
151	3V3		ENET2_MDIO	ENET1_MDIO, LPUART4_RIN_B SAI2_RX_BCLK, FLEXIO2_FLEXIO15	GPIO4[15]	
152	3V3		SD2_VSELECT	USDHC2_VSELECT, USDHC2_WP LPTMR2_ALT3, FLEXIO1_FLEXIO19 CCMSRCGPCMIX_EXT_CLK1	GPIO3[19]	
153	3V3		WDOG_ANY	WDOG1_WDOG_ANY	GPIO1[15] 10K-PU	Connected to PMIC WDOG_B
154				Not connected		
155				Not connected		
156				Not connected		
157				Not connected		
158	1V8 analog		CLKIN1		10K-PD	
159	1V8 analog		CLKIN2		10K-PD	
160	GND	GND				
161	1V8 analog		ADCIN0			
162	1V8 analog		ADCIN1			
163	1V8 analog		ADCIN2			
164	1V8		ADCIN3			

PIN	Type	TX Standard	i.MX91 Pad Name	Alternate functions	GPIO	Description (refer to i.MX 91 manuals for details)
	analog					
165						Not connected
MIPI CSI						
166	MIPI		MIPI_CSI1_CLK_N			
167	MIPI		MIPI_CSI1_DATA1_N			
168	MIPI		MIPI_CSI1_CLK_P			
169	MIPI		MIPI_CSI1_DATA1_P			
170	MIPI		MIPI_CSI1_DATA0_N			
171	GND					
172	MIPI		MIPI_CSI1_DATA0_P			
173	1V8		TAMPER0			
174	1V8		TAMPER1			
175						Not connected
176						Not connected
177						Not connected
178						Not connected
179						Not connected
180						Not connected
181						Not connected
182						Not connected
183	GND					
184						Not connected
185						Not connected
186						Not connected
187						Not connected
188						Not connected
189						Not connected
190						Not connected
191						Not connected
192						Not connected
193						Not connected
194						Not connected
195						Not connected
196						Not connected
197						Not connected
198						Not connected
199						Not connected
200	GND					

Onboard peripherals wiring

USED FOR		i.MX 91 Pad Name	Alternate functions	GPIO	Description
		Refer to i.MX 91 manuals for details!			
eMMC	CMD	SD1_CMD	USDHC1_CMD	GPIO3[9]	
	CLK	SD1_CLK	USDHC1_CLK	GPIO3[8]	
	DAT0	SD1_DATA0	USDHC1_DATA0	GPIO3[10]	
	DAT1	SD1_DATA1	USDHC1_DATA1	GPIO3[11]	
	DAT2	SD1_DATA2	USDHC1_DATA2	GPIO3[12]	
	DAT3	SD1_DATA3	USDHC1_DATA3	GPIO3[13]	
PMIC	SDA	I2C1_SDA	I2C1_SDA	GPIO1[1]	10K-PU
	SCL	I2C1_SCL	I2C1_SCL	GPIO1[0]	1K-PU
	PMIC_ON_REQ	PMIC_ON_REQ			
	PMIC_STBY_REQ	PMIC_STBY_REQ			
	CLK_32K_OUT	RTC_XTALI			
ETHERNET LAN8710 RMII	MDC	ENET1_MDC	ENET_QOS_MDC	GPIO4[0]	
	MDIO	ENET1_MDIO	ENET_QOS_MDIO	GPIO4[1]	1K-PU
	RXD0	ENET1_RD0	ENET_QOS_RGMII_RD0	GPIO4[10]	
	RXD1	ENET1_RD1	ENET_QOS_RGMII_RD1	GPIO4[11]	
	RXER	ENET1_RXC	ENET_QOS_RX_ER	GPIO4[9]	
	TXEN	ENET1_TX_CTL	ENET_QOS_RGMII_TX_CTL	GPIO4[6]	
	TXD0	ENET1_TD0	ENET_QOS_RGMII_TD0	GPIO4[5]	
	TXD1	ENET1_TD1	ENET_QOS_RGMII_TD1	GPIO4[4]	
	COL/CRS_DV	ENET1_RX_CTL	ENET_QOS_RGMII_RX_CTL	GPIO4[8]	10K-PU
	nRST	ENET1_RD3		GPIO4[13]	10K-PU
	nINT	ENET1_RD2		GPIO4[12]	10K-PU
	XTAL1/CLKIN	ENET1_TD2	CCM_ENET_QOS_CLOCK_GENERATE_REF_CLK	GPIO4[3]	