EPIC SBC supports 22nm 4th Gen. Intel® Core™ i7/i5/i3 and Celeron® mobile processors with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, HD Audio and RoHS

NANO-QM871-i1

Quick Installation Guide

Version 1.1

August 6, 2020

Package List

NANO-QM871-i1 package includes the following items:

- 1 x NANO-QM871-i1 single board computer
- 1 x Power cable
- 2 x RS-232 cable
- 2 x SATA with power cable kit
- 1 x Audio cable
- 1 x CPU cooler
- 1 x Mini Jumper Pack (2.0mm pitch)
- 1 x QIG (Quick Installation Guide)

Specifications

- CPU: 22nm 4th Gen. Intel® Core™ i7/i5/i3 and Celeron® mobile processors
- PCH: Intel® QM87
- Memory:

  One 204-pin 1600/1333 MHz DDR3/DDR3L SO-DIMM supported (system max. 8GB)
- BIOS: UEFI BIOS
- Graphics Engine:

  Gen 7.5 Intel® HD Graphics with DirectX 11.1, OpenGL 3.2, OpenCL 1.2 support
- Display Output:

  1 x VGA

  1 x 18/24-bit dual channel LVDS (3200x2000@60)

  Dual HDMI via v1.4a compliant (3200x2000@60)
- Ethernet:

  Intel® I217 PHY with Intel® AMT 9.0 support

  Intel® I210 PCIe GbE controller
- Super IO: Fintek F81866
- Embedded Controller: IT8528
- Digital I/O: 8-bit digital I/O (4-bit input / 4-bit output)
- Audio:

  Realtek ALC662 HD codec
- I/O Interface:

  2 x RS-232

  1 x RS-422/485

  1 x 6-pin wafer for PS/2 KB/MS

  2 x USB 2.0 (by pin header)

  2 x USB 2.0 (on rear I/O)

  2 x USB 3.2 Gen 1 (on rear I/O)

  2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1, 5, 10)

- TPM: 1 x 20-pin (2x10) header
- Front Panel:
  1 x Front Panel
  (Power LED, HDD LED, Speaker, Power Button, Reset Button)
- LAN LED: 1 x 4-pin (2x2) header for LAN1 LED, LAN2 LED
- IPMI: Support IPMI 2.0 via iRIS-1010
- Expansion:
  1 x PCIe Mini card slot
- Watchdog Timer:
  Software programmable, supports 1~255 sec. system reset
- Fan:
  1 x 4-pin CPU fan connector
  1 x 4-pin system fan connector
- Power Supply: 12V only, AT/ATX support
- Operating Temperature: -20°C ~ 60°C
- Storage Temperature: -20°C ~ 85°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 115 mm x 165 mm
- Weight (GW/NW): 850g / 350g

Ordering Information

- **NANO-QM871-i1-i7-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ i7-4700EQ mobile processor (47W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS

- **NANO-QM871-i1-i5-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ i5-4400E mobile processor (37W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS

- **NANO-QM871-i1-i5E-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ i5-4402E mobile processor (25W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS

- **NANO-QM871-i1-i3-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ i3-4100E mobile processor (37W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS

- **NANO-QM871-i1-i3E-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ i3-4102E mobile processor (25W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS

- **NANO-QM871-i1-C-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ 2000E mobile processor (37W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS
- **NANO-QM871-i1-CE-R11:**
  EPIC SBC supports 22nm 4th generation Intel® Core™ 2002E mobile processor (25W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.2 Gen 1, PCIe Mini, PCIe/104, SATA 6Gb/s, Audio, iRIS-1010 and RoHS
- **32001-008600-200-RS:** Dual port USB cable
- **32205-003800-300-RS:** RS-422/485 cable, 200mm
- **32006-001100-201-RS:** PS/2 KB/MS Y-cable with bracket, 135mm
- **TPM-IN01-R20:** 20-pin Infineon TPM module, software management tool, firmware V4.4
- **iRIS-1010-R10:**
  IPMI 2.0 adapter card with mini BMC by mini PCIe card socket type

All the drivers and utilities for the NANO-QM871-i1 are available on IEI Resource Download Center. Type NANO-QM871-i1 and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

https://download.ieiworld.com

Jumper Settings and Connectors

LABEL	FUNCTION
J_ATXCTL1	AT/ATX mode select switch
J_CMOS1	Clear CMOS button
JP1	LCD voltage selection
SW1	LVDS panel resolution selection
AUDIO1	Audio source connector
BAT1	Battery connector
CHASSIS1	Chassis intrusion connector
CPU_FAN1	CPU fan connector
DIMM1	DDR3 SO-DIMM slot
DIO1	Digital I/O connector
IPMI1	IPMI iRIS-1010 module slot
LEDCN1	IPMI activation LED
KB_MS1	Keyboard and mouse connector
LAN_ACT_LED1	LAN activation LED connector
LVDS1	LVDS connector
INV1	LVDS backlight connector
M-SATA1	PCIe Mini card slot
PCIE-104	PCIe/104 slot
PWR1	Power supply DC12V power in
F_PANEL1	Power LED and HDD LED connector
COM1, COM2	RS-232 serial port connectors
COM3	RS-422/485 serial port connector
S_ATA1, S_ATA2	SATA 6Gb/s connectors
SATA_PWR1, SATA_PWR2	SATA power connectors
SMB1	SMBus connector
SPI1	SPI Flash connector
CN1	SPI Flash connector (EC)
SYS_FAN1	System fan connector
TPM1	TPM connector
USB1	Internal USB 2.0 connectors
LAN1, LAN2	Ethernet connectors
HDMI1, HDMI2	HDMI connectors

USB_CON2	USB 2.0 connectors
USB_CON1	USB 3.2 Gen 1 (5Gb/s) connectors
VGA1	VGA connector

J_ATXCTL1: AT/ATX mode select switch	
PIN NO.	**DESCRIPTION**
Short 1 - 2	ATX Mode (default)
Short 2 - 3	AT Mode

J_CMOS1: Clear CMOS button	
PIN NO.	**DESCRIPTION**
Push	Clear CMOS

SW1: LVDS panel resolution selection * ON=0, OFF=1; Single=S, Dual=D	
4-3-2-1	**DESCRIPTION**
0000	800x600 18bit S (default)
0001	1024x768 18bit S
0010	1024x768 24bit S
0011	1280x768 18bit S
0100	1280x800 18bit S
0101	1280x960 18bit S
0110	1280x1024 24bit D
0111	1366x768 18bit S
1000	1366x768 24bit S
1001	1440x960 24bit D
1010	1400x1050 24bit D
1011	1600x900 24bit D
1100	1680x1050 24bit D
1101	1600x1200 24bit D
1110	1920x1080 24bit D
1111	1920x1200 24bit D

JP1: LCD voltage selection	
PIN NO.	**DESCRIPTION**
Short 1 - 2	+3.3 V (Default)
Short 2 - 3	+5 V

AUDIO1: Audio source connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	SPK_OUT-R	2	LINE_IN-R
3	GND	4	GND
5	SPK_OUT-L	6	LINE_IN-L
7	GND	8	GND
9	MIC-R	10	MIC-L

BAT1: Battery connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VBATT	2	GND

CHASSIS1: Chassis intrusion connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+V3.3A_EC	2	CHASSIE_EC

CPU_FAN1: CPU fan connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	+V12S
3	Rotation Signal	4	PWM Control Signal

DIO1: Digital I/O connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	+5V
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

LEDCN1: IPMI activation LED			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	IPMI_LED+	2	IPMI_LED-

KB_MS1: Keyboard and mouse connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC5_KBMS	2	MSDATA
3	MSCLK	4	KBDATA
5	KBCLK	6	KBGND

INV1: LVDS backlight connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	BRIGHTNESS	2	GND
3	+V12S_LCD_BKL	4	GND
5	ENABKL		

LVDS1: LVDS connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	A_Y3	12	A_Y3#
13	GND	14	GND
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	B_Y3	24	B_Y3#
25	GND	26	GND
27	VCC	28	VCC
29	VCC	30	VCC

M-SATA1: PCIe Mini card slot			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	CLK-	12	N/C
13	CLK+	14	N/C
15	GND	16	N/C
17	PCIRST#	18	GND
19	N/C	20	VCC3
21	GND	22	PCIRST#
23	PERN2(SATA_RX4+)	24	3VDual
25	PERP2(SATA_RX4-)	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN2(SATA_TX4-)	32	SMBDATA
33	PETP2(SATA_TX4+)	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	SATA_DET4_R_N	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5V
49	N/C	50	GND
51	MSATA_SEL#	52	VCC3

LAN_ACT_LED1: LAN activation LED connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	LAN1_LINK_ACT-	2	V_3P3_LAN
3	LAN2_LINK_ACT-	4	+3.3A

PCIE-104: PCIe/104 slot				
PIN NO.	**DESCRIPTION**		**DESCRIPTION**	**PIN NO.**
1	USB_OC#	+5 Volts	PE_RST#	2
3	3.3V		3.3V	4
5	USB_1p		USB_0p	6
7	USB_1n		USB_0n	8
9	GND		GND	10
11	PEx1_1Tp		PEx1_0Tp	12
13	PEx1_1Tn		PEx1_0Tn	14
15	GND		GND	16
17	PEx1_2Tp		PEx1_3Tp	18
19	PEx1_2Tn		PEx1_3Tn	20
21	GND		GND	22
23	PEx1_1Rp		PEx1_0Rp	24
25	PEx1_1Rn		PEx1_0Rn	26
27	GND		GND	28
29	PEx1_2Rp		PEx1_3Rp	30
31	PEx1_2Rn		PEx1_3Rn	32
33	GND		GND	34
35	PEx1_1Clkp		PEx1_0Clkp	36
37	PEx1_1Clkn		PEx1_0Clkn	38
39	+5V_SB		+5V_SB	40
41	PEx1_2Clkp		PEx1_3Clkp	42
43	PEx1_2Clkn		PEx1_3Clkn	44
45	DIR		PWRGOOD	46
47	SMB_DAT		PEx_x4_Clkp	48
49	SMB_CLK		PEx_x4_Clkn	50
51	SMB_ALERT		PSON#	52

53	STK0 / WAKE#	+5 Volts	STK1 / PEG_ENA#	54
55	GND		GND	56
57	PEx4_1T(0)p		PEx4_0T(0)p	58
59	PEx4_1T(0)n		PEx4_0T(0)n	60
61	GND		GND	62
63	PEx4_1T(1)p		PEx4_0T(1)p	64
65	PEx4_1T(1)n		PEx4_0T(1)n	66
67	GND		GND	68
69	PEx4_1T(2)p		PEx4_0T(2)p	70
71	PEx4_1T(2)n		PEx4_0T(2)n	72
73	GND		GND	74
75	PEx4_1T(3)p		PEx4_0T(3)p	76
77	PEx4_1T(3)n		PEx4_0T(3)n	78
79	GND		GND	80
81	SATA_T1p		SATA_T0p	82
83	SATA_T1n		SATA_T0n	84
85	GND		GND	86
87	SSTX1p		SSTX0p	88
89	SSTX1n		SSTX0n	90
91	GND		GND	92
93	Reserved		Reserved	94
95	Reserved		Reserved	96
97	GND		GND	98
99	SATA_DET#1		SATA_DET#0	100
101	SATA_PWREN#1		SATA_PWREN#0	102
103	GND		GND	104

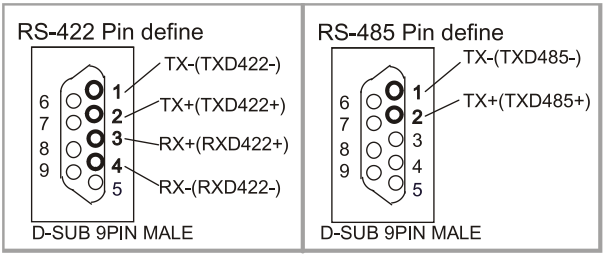
105	STK2 / SDVO_DAT	+12 Volts	LPC_CLK	106
107	GND		GND	108
109	PEx4_1R(0)p		PEx4_0R(0)p	110
111	PEx4_1R(0)n		PEx4_0R(0)n	112
113	GND		GND	114
115	PEx4_1R(1)p		PEx4_0R(1)p	116
117	PEx4_1R(1)n		PEx4_0R(1)n	118
119	GND		GND	120
121	PEx4_1R(2)p		PEx4_0R(2)p	122
123	PEx4_1R(2)n		PEx4_0R(2)n	124
125	GND		GND	126
127	PEx4_1R(3)p		PEx4_0R(3)p	128
129	PEx4_1R(3)n		PEx4_0R(3)n	130
131	GND		GND	132
133	SATA_R1p		SATA_R0p	134
135	SATA_R1n		SATA_R0n	136
137	GND		GND	138
139	SSRX1p		SSRX0p	140
141	SSRX1n		SSRX0n	142
143	GND		GND	144
145	LPC_AD0		LPC_DRQ#	146
147	LPC_AD1		LPC_SERIRQ#	148
149	GND		GND	150
151	LPC_AD2		LPC_FRAME#	152
153	LPC_AD3		LPC_Battery	154
155	GND		GND	156

PWR1: Power supply DC12V power in			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	+12V	4	+12V

F_PANEL1: Front panel connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	PWR_LED+	2	PWRBTN_SW#
3	PWR_LED-	4	GND-
5	NC	6	NC
7	HDD_LED+	8	EXTRST-
9	HDD_LED-	10	GND

COM1, COM2: RS-232 serial port connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	-NDCD	2	-NDSR
3	NSIN	4	-NRTS
5	NSOUT	6	-NCTS
7	-NDTR	8	-XRI
9	GND	10	GND

COM3: RS-422/485 serial port connector			
PIN	**DESCRIPTION**	**PIN**	**DESCRIPTION**
1	RXD485-	2	RXD485+
3	TXD485+	4	TXD485-



S_ATA1, S_ATA2: SATA 6Gb/s connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND		

SATA_PWR1, SATA_PWR2: SATA power connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+V5S	2	GND

SMB1: SMBus connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	SMB_DATA
3	SMB_CLK	4	+V5S

SPI1: SPI Flash connector			
y	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+V3.3M_SPI_CON	2	SPI_CS#0_CN
3	SPI_SO_SW	4	SPI_CLK_SW
5	SPI_SI_SW	6	GND

CN1: SPI Flash connector (EC)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	SMCLK1_EC	2	SMDAT1_EC

SYS_FAN1: System fan connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	+V12S
3	Rotation Signal	4	PWM Control Signal

USB1: Internal USB 2.0 connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC	2	GND
3	-DATA	4	+DATA
5	+DATA	6	-DATA
7	GND	8	VCC

TPM1: TPM connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	LCLK	2	GND
3	LFRAME#	4	NC
5	LRERST#	6	+5V
7	LAD3	8	LAD2
9	+3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	GLKRUN#
19	LPCPD#	20	LDRQ#

LAN1, LAN2: Ethernet connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MDIA3-	2	MDIA3+
3	MDIA2-	4	MDIA2+
5	MDIA1-	6	MDIA1+
7	MDIA0-	8	MDIA0+

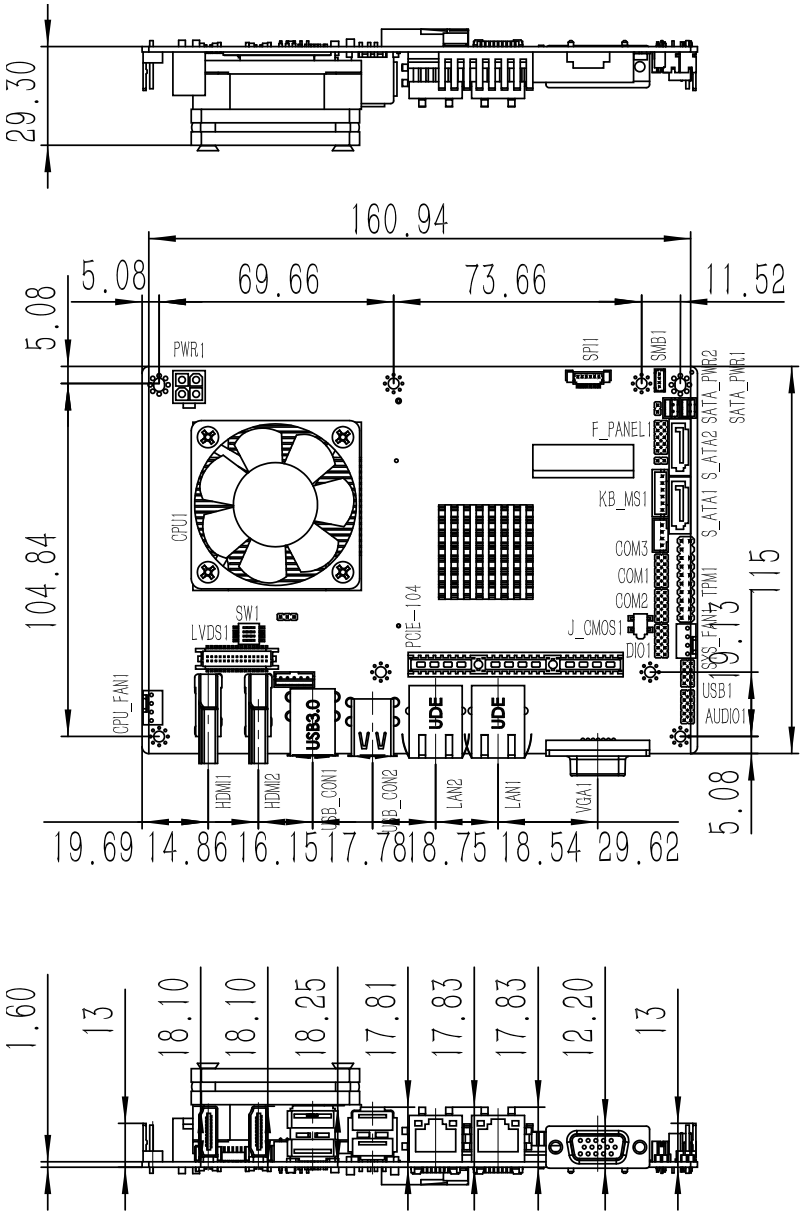
HDMI1, HDMI2: HDMI connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	HDMI_DATA2+	2	GND
3	HDMI_DATA2#-	4	HDMI_DATA1+
5	GND	6	HDMI_DATA1#-
7	HDMI_DATA0+	8	GND
9	HDMI_DATA0#-	10	HDMI_CLK+
11	GND	12	HDMI_CLK#
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5VCC
19	HDMI_HPD		

USB_CON2: USB 2.0 connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VBUS	2	D-
3	D+	4	GND

USB_CON1: USB 3.2 Gen 1 (5Gb/s) connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VBUS	2	D-
3	D+	4	GND
5	STDA_SSRX_N	6	STDA_SSRX_P
7	GND_DRAIN	8	STDA_STX_N
9	STDA_STX_P		

VGA1: VGA connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	5V	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Board Layout: Jumper and Connector Locations



(Unit: mm)