

**Mini-ITX SBC with Socket G2 for Intel® mobile Core™ i7/i5/i3
CPU, VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0,
PCIe Mini, SATA 6Gb/s and Audio**

KINO-QM670

Quick Installation Guide

Version 2.0

Mar 27, 2014.

Package List

KINO-QM670 package includes the following items:

- 1 x KINO-QM670 single board computer
- 2 x SATA with power output cable (P/N: 32801-000100-100-RS)
- 1 x RS-232 cable (P/N: 19800-000300-100-RS)
- 1 x I/O shielding (P/N: 45014-0029C0-00-RS)
- 1 x Mini jumper pack
- 1 x One Key Recovery CD
- 1 x QIG (Quick Installation Guide)



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Specifications

- CPU: Socket G2 for Intel® Core™ i7/i5/i3 processor
- PCH: Intel® QM67
- Memory:
 - Two 204-pin 1333/1066 DDR3 dual-channel SO-DIMMs supported (system max. 8GB)
- BIOS: UEFI BIOS
- Ethernet:
 - Intel® 82583V PCIe controller
 - Intel® 82579 PHY with Intel® AMT 7.0 supported
- Graphic Engine:
 - Support for DX10.1 and OpenGL3.0
 - Full MPEG2, VC1, AVC Decode
- Display Output:
 - Dual display supported
 - 1 x VGA
 - 2 x HDMI
 - 1 x 18/24-bit dual-channel LVDS support
- Super IO: Fintek F81865
- Embedded Controller: ITE IT8518
- I/O Interface:
 - 2 x RS-232
 - 1 x RS-422/485
 - 6 x USB 2.0
 - 2 x USB 3.0
 - 2 x SATA 3Gb/s
 - 2 x SATA 6Gb/s with RAID 0/1/5/10 support
 - 2 x SATA power connector
 - 1 x 6-pin KB/MS
- Audio:
 - Realtek ALC892 HD Audio codec

- SMBUS: 1 x 4-pin (1x4) wafer
- TPM: 1 x 20-pin (2x10) header
- Expansion:
 - 1 x PCIe Mini card slot
 - 1 x PCIe x16 slot
- Watchdog Timer:
 - Software programmable support 1~255 sec. system reset
- Digital I/O: 8-bit digital I/O (4-bit input, 4-bit output)
- Infrared Interface: 1 x 5-pin (1x5) header
- FAN:
 - 1 x 4-pin CPU fan connector
 - 1 x 3-pin system fan connector
- Power supply:
 - Single voltage 12V DC input
 - 1 x External DIN 4-pin DC jack
 - 1 x Internal 4-pin (2x2) power connector
 - Support AT/ATX mode
- Power Consumption:
 - 12V@6.5A (2.1GHz Intel® Core™ i7-2710QE CPU with two 1333MHz 2GB DDR3 SO-DIMMs)
- Operation Temperature: -10°C ~ 60°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 170mm x 170mm
- Weight GW/NW: 900g / 450g

Ordering Information

- **KINO-QM670-R20:**
Mini-ITX SBC with Socket G2 for Intel® mobile Core i7/i5/i3 CPU, VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and audio
- **19800-003100-300-RS:** Dual USB cable
- **32000-023800-RS:** KB/MS Y cable
- **32205-003800-100-RS:** RS-422/485 cable
- **SACF-KIT01-R10:** SATA to CF converter board
- **CF-989A-RS-R12:** CPU cooler
- **TPM-IN01-R11:**
20-pin Infineon TPM module, software management tool, firmware V3.17

Jumpers setting and connectors

LABEL	FUNCTION
J_ATXCTL1	AT/ATX mode selection
J_CMOS1	Clear CMOS
J_FLASH1	Flash descriptor security override
J_VLVDS1	LCD voltage selection
J_PID1	LVDS panel resolution selection
ME_RTC1	ME RTC registers
J_MPC1	MPC switch control (Reserved)
BAT1	Battery connector
CPU_FAN1	CPU fan connector
PWR2	Power supply DC 12V power in
DIMM1, DIMM2	DDR3 SO-DIMM slots
DIO1	Digital I/O connector
CN6	EC debug connector
FRONT-PANEL1	Extend audio module connector
F_PANEL1	PWR & RST buttons and indicators
KB_MS1	PS/2 keyboard and mouse connector
LVDS1	LVDS panel connector
INVERTER1	LVDS panel voltage supply
CN2	PCIe mini card slot
COM2	Internal RS-232 serial port connectors
IR1	IrDA infrared interface connector
COM3	RS-422/485 serial port connector
S_ATA1, S_ATA2	SATA 6Gb/s drive connectors
S_ATA3, S_ATA4	SATA 3Gb/s drive connectors
CN1, CN3	SATA power connectors
CN5	SMBUS connector
SPDIF1	SPDIF connector
JSPI1	SPI Flash connector
JSPI2	SPI Flash connector (EC)
SYS_FAN1	System fan connector
TPM1	TPM connector

USB1,USB2	Internal USB 2.0 connectors
AUDIO_CV1	Audio connector
LAN1_USB1	Ethernet and USB 2.0 ports
LAN2_USB2	Ethernet and USB 3.0 ports
HDMI1, HDMI2	HDMI connectors
PWR1	Adapter DC 12V power in
CRT1	VGA 15-pin female connector
COM1	External RS-232 serial port connector

J_ATXCTL1: AT/ATX mode selection

PIN NO.	DESCRIPTION
Short 1 - 2	ATX Mode (default)
Short 2 - 3	AT Mode

J_CMOS1: Clear CMOS

PIN NO.	DESCRIPTION
Short 1 - 2 (default)	Keep CMOS Setup (Normal Operation)
Short 2 - 3	Clear CMOS Setup

J_FLASH1: Flash descriptor security override

PIN NO.	DESCRIPTION
Short 1 - 2	Disabled (default)
Short 2 - 3	Enabled

J_VLVD1: LCD voltage selection

PIN NO.	DESCRIPTION
Short 1 - 2	+3.3V LVDS (default)
Short 2 - 3	+5V LVDS

J_PID1: LVDS Panel Resolution Selection				
7-8	5-6	3-4	1-2	DESCRIPTION
Open	Open	Open	Open	640 X 480 (18bit)
Open	Open	Open	Short	800 X 480 (18bit)
Open	Open	Short	Open	800 X 600 (18bit)
Open	Open	Short	Short	1024 X 768 (18bit) (default)
Open	Short	Open	Open	1024 X 768 (24bit)
Open	Short	Open	Short	1280 X 1024 (48bit)
Open	Short	Short	Open	1600 X 1200 (48bit)
Open	Short	Short	Short	1280 X 768 (18bit)
Short	Open	Open	Open	1280 X 800 (18bit)
Short	Open	Open	Short	1366 X 768 (24bit)
Short	Open	Short	Open	1440 X 900 (48bit)
Short	Open	Short	Short	1600 X 900 (48bit)
Short	Short	Open	Open	1680 X 1050 (48bit)
Short	Short	Open	Short	1920 X 1080 (48bit)
Short	Short	Short	Open	1920 X 1200 (48bit)
Short	Short	Short	Short	LVDS disabled

ME_RTC1: ME RTC registers	
PIN NO.	DESCRIPTION
Short 1 - 2 (default)	Save ME RTC registers (Normal Operation)
Short 2 - 3	Clear ME RTC registers

J_MPC1: MPC switch control (Reserved)	
PIN NO.	DESCRIPTION
Short 1 - 2	MPC OFF (default)
Short 2 - 3	MPC ON

BAT1: Battery connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BAT (+3.3V)	2	GND

CPU_FAN1: CPU fan connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	Rotation Signal	4	PWM Control Signal

PWR2: Power supply DC 12V power in			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

DIO1: Digital I/O connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC (+5V)
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

CN6: EC debug connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PD0	4	NC
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND
11	EC_EPP_PD4	12	NC
13	EC_EPP_PD5	14	EC_EPP_BUSY
15	EC_EPP_PD6	16	EC_EPP_KSI5
17	EC_EPP_PD7	18	EC_EPP_KSI4

FRONT-PANEL1: Extend audio module connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LMIC2-L	2	ANALOG GND
3	LMIC2-R	4	PRESENCE#
5	LLINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LLINE2-L	10	LINE2-JD

F_PANEL1: PWR & RST buttons and indicators					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWR BTN	1	NC	6	PWR_LED+	PWR LED
	2	PWR_BTN+	7	PWR_LED+	
	3	PWR_BTN-	8	GND	
HDD LED	4	HDD_LED+	9	RESET+	RESET
	5	HDD_LED-	10	GND	

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

LVDS1: LVDS panel 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

INVERTER1: LVDS panel voltage supply			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCD_BKLTCTL	2	GND
3	+12V	4	GND
5	BACKLIGHT ENABLE		

CN2: 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	24	3VDual
25	PERP2	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN2	32	SMBDATA
33	PETP2	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5V
49	N/C	50	GND
51	N/C	52	VCC3

COM2: RS-232 serial port connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	-NDCD2	2	-NDSR2
3	NSIN2	4	-NRTS2
5	NSOUT2	6	-NCTS2
7	-NDTR2	8	-XRI2
9	GND	10	GND

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

IR1: IrDA infrared interface connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC (+5V)	2	NC
3	IR-RX	4	GND
5	IR-TX		

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

S_ATA3, S_ATA4: SATA 3Gb/s drive connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND		

CN1, CN3 SATA power connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	GND	4	+5V

CN5: SMBUS connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SMB_DATA
3	SMB_CLK	4	+V5S

SPDIF1: SPDIF connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V5S	2	NC
3	SPDIFOUT	4	GND
5	SPDIFIN		

JSPI1: SPI Flash connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC (+3.3V)	2	SPI_CS
3	SPI_SO_SW	4	N/C
5	GND	6	SPI_CLK_SW
7	SPI_SI_SW	8	N/C

JSPI2: SPI Flash connector (EC)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V3.3M_SPI_CON_EC	2	SPI_CS#0_CN_EC
3	SPI_SO_SW_EC	4	N/C
5	GND	6	SPI_CLK_SW_EC
7	SPI_SI_SW_EC	8	N/C

SYS_FAN1: System fan connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Rotation Signal	2	+12V
3	GND		

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#

USB1, USB2: Internal USB 2.0 connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC (+5V)	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC (+5V)

USB3: Internal USB 2.0 connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	-DATA8	4	+DATA9
5	+DATA8	6	-DATA9
7	GND	8	VCC

LAN1_USB1: Ethernet and USB 2.0 ports			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDIA3-	2	MDIA3+
3	MDIA2-	4	MDIA2+
5	MDIA1-	6	MDIA1+
7	MDIA0-	8	MDIA0+
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	DATA-
3	DATA+	4	GND

LAN2_USB2: Ethernet and USB 3.0 ports			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDIA3-	2	MDIA3+
3	MDIA2-	4	MDIA2+
5	MDIA1-	6	MDIA1+
7	MDIA0-	8	MDIA0+
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		

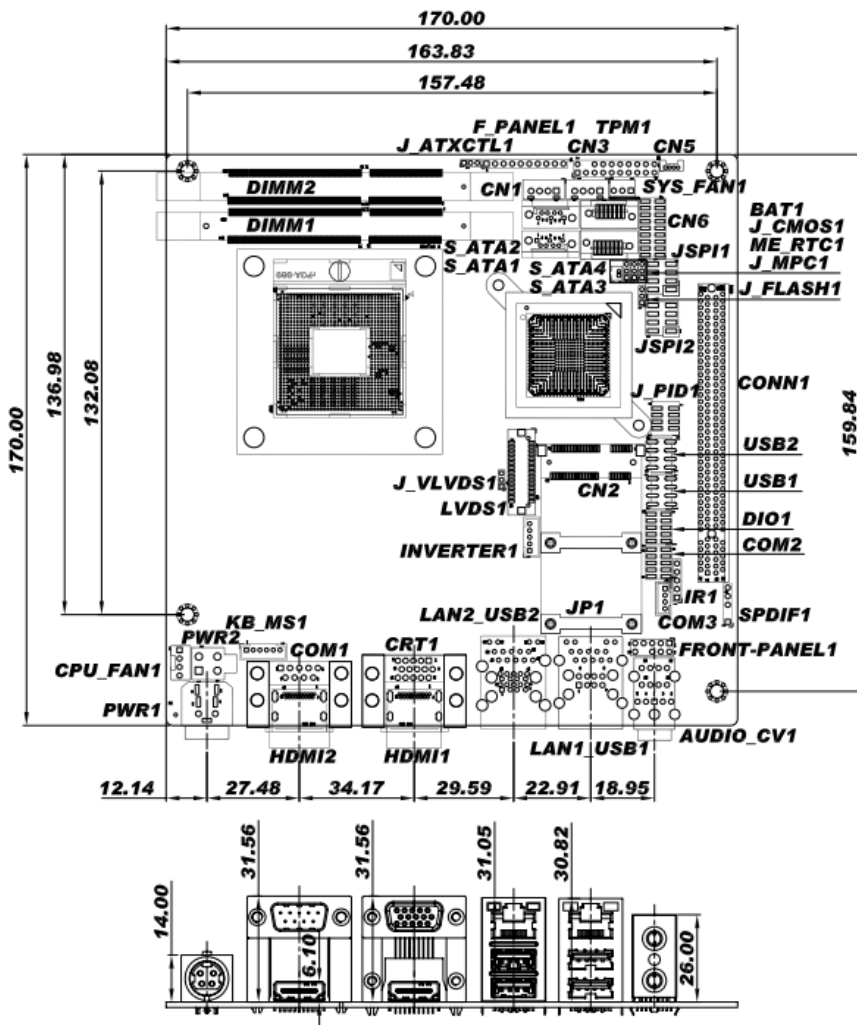
HDMI1, HDMI2: HDMI connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2+	2	GND
3	HDMI_DATA2#-	4	HDMI_DATA1+
5	GND	6	HDMI_DATA1#-
7	HDMI_DATA0+	8	GND
9	HDMI_DATA0#-	10	HDMI_CLK+
11	GND	12	HDMI_CLK#
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5VCC
19	HDMI_HPD	20	HDMI_GND
21	HDMI_GND	22	HDMI_GND
23	HDMI_GND		

PWR1: Adapter DC 12V power in			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	+12V	4	GND
5	GND		

COM1: External RS-232 serial port connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#		

CRT1: VGA 15-pin female connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	CRT_PLUG#
7	GND	8	GND
9	CRT_VCC	10	GND
11	NC	12	5VDDCDA
13	5HSYNC	14	5VSYNC
15	5DDCCLK		

Board Layout: Jumper and Connector Locations



(Unit: mm)