

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

KINO-QM670

Quick Installation Guide

Version 1.0

Nov. 18, 2011

Package Contents

KINO-QM670 package includes the following items:

- 1 x KINO-QM670 Single Board Computer
- 2 x SATA with 5V/12V power Output Cable kit
- 1 x RS-232 Cable with Bracket
- 1 x I/O Shielding
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)



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Specifications

- CPU: Socket G2 (rPGA988B) Intel® 32nm Core™ i7/ i5 i3/celeron processor
- System Chipset: Intel® QM67
- BIOS: UEFI BIOS
- System memory: 2 x 204-pins 1066/1333MHz DDR3 SDRAM SO-DIMM supported (System max. 8GB)
- Ethernet:
 - 1 x Intel® 82579LM PCIe GbE Controller (PCIe x1 Interface) with iAMT 7.0 supported by iEZman software UI
 - 1 x Intel® 82583V PCIe GbE Controller (PCIe x1 Interface)
- I/O Interface:
 - 2 x SATA 3b/s
 - 2 x SATA 6Gb/s with raid 0/1/5/10 support
 - 2 x SATA +12V & +5V Power output by 1x4pin wafer-header
 - 6 x USB 2.0 (2 on rear side, 4 by pin-header)
 - 2 x USB 3.0 (On rear side)
 - 2 x RS-232 (1 on rear side, 1 by pin-header)
 - 1 x RS-422/485 (by 1x 4-pin header)
 - 1 x PS/2 KB/MS (by 1x 6-pin wafer-header)
 - 1 x PS/2 KB/MS (by 1x 6-pin wafer-header)
- SMBus:
 - 1 x 4-pin wafer-header
- TPM:
 - 2 x 10-pin LPC pin header
- Expansion:
 - 1 x PCIe mini card slot
 - 1 x PCIe x16 slot
- Audio: Realtek ALC888 HD Audio codec
 - Line-out & MIC-in Audio Jack on rear side
 - Front Audio by 2x5pin pin-header
- Digital I/O: 8-bit digital I/O, 4-bit input/ 4-bit output by Super I/O Fintek F81865F

- Infrared Interface: 1 x 5-pin Infrared Interface by Super I/O Fintek F81865F
- Super I/O : Fintek F81865F
- Display Interface:
VGA integrated in the Intel® QM57 support Hot-Plug
18/24-bit dual-channel LVDS
Two HDMI by connector on rear side
- Watchdog timer:
Software programmable supports 1~255 sec. system reset by First Super I/O: Fintek F81865F
- Power Supply:
Single Voltage +12V DC Input, AT/ATX Mode support
1 x main Power Input 4-pin DC Jack on rear side
1 x internal 4-pin (2x2pin) +12V Main Power Input Connector
- Power Consumption:
12V@6.5A (Intel® Core i7-2710QE 2.1GHz with 2* 2GB 1333MHz DDR3 SO-DIMM DRAM)
- FAN: 1 x 4-pin CPU FAN Connector
1 x 3-pin System FAN Connector
- Operating Humidity: 5% ~ 95%, non-condensing
- Operating Temperature: 0 ~ 60°C(32 ~ 140°F)
- Dimension: 170 mm x 170 mm
- Weight: GW: 900g; NW: 450g

Ordering Information

KINO-QM670-R10:

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

19800-003100-100-RS: Dual ports USB cable with Bracket

32000-023800-RS: Keyboard/Mouse Y cable

SACF-KIT01-R10: SATA to CF Converter board

CF-989A-RS-R11: Copper CPU Cooler

TPM-IN01-R11: 20-pin Infineon TPM module, software management tool, firmware V3.17

Jumpers Setting

LABEL	FUNCTION
J_CMOS1	CMOS state setting
ME_RTC1	ME RTC registers
J_ATXCTL1	Select ATX or AT mode
J_VLVDS1	LCD Voltage Selector
J_PID1	LVDS Panel Resolution Selection
J_FLASH1	Flash Descriptor Security Override
J_MPC1	MPC Switch Control (Reserved)

J_CMOS1: Clear CMOS Setup

J_CMOS1	DESCRIPTION
Short 1-2 (default)	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

ME_RTC1: Enable iAMT

ME_RTC1	DESCRIPTION
Short 1-2 (default)	Save ME RTC registers (Normal Operation)
Short 2-3	Clear ME RTC registers

J_ATXCTL1: AT/ATX Power Mode Setting

J_ATXCTL1	DESCRIPTION
Short 1-2 (default)	ATX Power Mode
Short 2-3	AT Power Mode

J_VLVDS1: LVDS1 Voltage Selection

J_VLVDS1	DESCRIPTION
Short 1-2 (default)	+3.3V LVDS
Short 2-3	+5V LVDS

J_PID1: LVDS Panel Resolution type select				Panel Resolution
7-8	5-6	3-4	1-2	
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)
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

J_FLASH1: Flash Descriptor Security Override	
J_FLASH1	DESCRIPTION
1-2 (default)	Disabled-Default
2-3	Enabled

J_MPC1: MPC Switch Control (Reserved)	
J_MPC1	DESCRIPTION
1-2 (default)*	MPC OFF
Short 2-3	MPC ON

Table of Connectors

LABEL	FUNCTION
LAN1_USB1	RJ45 LAN and USB 3.0 Connector
LAN2_USB2	RJ45 LAN and USB 2.0 Connector
USB1,USB2	Internal USB 2.0 Connectors
KB_MS1	PS/2 MOUSE & KEYBOARD Connector
CRT1	VGA 15-pin Female Connector & External Serial Port DB-9 Connectors
COM1	External 1 Port Serial Port DB-9 Connectors
COM2~3	Internal 2 Serial Port DB-9 Connectors
FRONT-PANEL1	Extend Audio Module Connector
AUDIO_CV1	Audio Connector
SPDIF1	SPDIF Connector
S_ATA1~4	Serial ATA Connectors
CN1,CN3	Serial ATA Power Connectors
IR1	IrDA Infrared Interface Connector
CN2	PCI-E Mini Card
JSPI1~2	Flash SPI ROM
INVERTER1	LVDS Panel Voltage Supply
LVDS1	LVDS Panel Connector
SYS_FAN1	System Fan Connector
CPU_FAN1	CPU Fan Connector
DIO1	Digital I/O Connector
F_PANEL1	PWR & RST Buttons and Indicators
PWR1	ADAPTER DC12V POWER IN
PWR2	Power Supply DC12V Power IN
HDMI1,HDMI2	HDMI Connector
CN6	EC Debug port
TPM1	TPM Connector
CN5	SMBus CONNECTOR
BAT1	Battery connector

LAN1_USB1/ LAN2_USB2: RJ45 LAN pin define			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

LAN1_USB1: USB2.0 pin define	
PIN NO.	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GND

LAN2_USB2: USB3.0 pin define	
PIN NO.	DESCRIPTION
1	VBUS
2	D1-
3	D1+
4	GND1
5	STDA_SSRX1_N
6	STDA_SSRX1_P
7	GND_DRAIN
8	STDA_STX1_N
9	STDA_STX1_P

USB1, USB2: Internal 4 ports USB 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)

KB_MS1: 6-pin PS/2 Keyboard/Mouse Connector	
PIN NO.	DESCRIPTION
1	VCC (+5V)
2	Mouse Data
3	Mouse Clock
4	Keyboard Data
5	Keyboard Clock
6	GND

CRT1: D-sub 15-pin VGA 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		

COM1: External Serial Port D-sub Connector (RS-232)		
PIN NO.	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD#)
2	RECEIVE DATA	(RXD)
3	TRANSMIT DATA	(TXD)
4	DATA TERMINAL READY	(DTR#)
5	GND	(GND)
6	DATA SET READY	(DSR#)
7	REQUEST TO SEND	(RTS#)
8	CLEAR TO SEND	(CTS#)
9	RING INDICATOR	(RI#)

COM2 : Internal Serial Port Connectors (RS-232)			
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 : Internal Serial Port Connectors (RS-422/485)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RXD485#	2	RXD485+
3	RXD485-	4	RXD485#

FRONT-PANEL1 : Audio 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

AUDIO_CV1 : Audio Line-out & MIC-in Connector	
PIN NO.	DESCRIPTION
1	Line-out (Green)
2	MIC-in (Pink)

SPDIF1 : SPDIF Connector	
PIN NO.	DESCRIPTION
+V5S	+V5S
NC	NC
SPDIFOUT	SPDIFOUT
GND	GND
SPDIFIN	SPDIFIN

S_ATA1 ~ S_ATA4: Serial ATA Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	RX-
2	TX+	6	RX+
3.	TX-	7	GND
4.	GND	8	N/C

CN1, CN3 : Serial ATA Power Output Connectors	
PIN NO.	DESCRIPTION
1	+12V
2	GND
3	GND
4	+5V

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

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	USB-
37	N/C	38	USB+
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

JSPI1: Flash BIOS SPI ROM 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: Flash BIOS SPI ROM Connector			
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

INVERTER1: LVDS1 Panel Backlight +12V Power Source connector	
PIN NO.	DESCRIPTION
1	LCD_BKLTCTL
2	GND
3	+12V
4	GND
5	BACKLIGHT ENABLE

LVDS1: 24-bit dual-channel 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/VCC3	28	VCC/VCC3
29	VCC/VCC3	30	VCC/VCC3

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

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

DIO1 : Digital Input / Output 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

F_PANEL1 : Power button, Rest, HDD & Power LED Indicators Connector		
	PIN NO.	DESCRIPTION
	1	NC
PWRBTN	2	PWR_BTN+
	3	PWR_BTN-
HDD LED	4	HDD_LED+
	5	HDD_LED-
Power LED	6	PWR_LED+
	7	PWR_LED+
	8	GND
RESET	9	RESET+
	10	GND

PWR1: Adapter DC +12V Main Power Input connector	
CN7	DESCRIPTION
1	+12V
2	GND
3	+12V
4	GND
5	GND

PWR2: Power Supply DC +12V Main power in	
CN7	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

BAT1: +3V Battery Connector	
PIN NO.	DESCRIPTION
1	BAT (+3.3V)
2	GND

CN5 SMBusConnector	
PIN NO.	DESCRIPTION
1	GND
2	SMB_DATA
3	SMB_CLK
4	+V5S

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

CN6 : EC debug port			
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

TPM1 : TPM connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCLK	2	GND
3	LFRAME#	4	KEY
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#

Board Layout: Jumper and Connector Locations

