

Mini-ITX SBC with Socket G2 for Intel® 22nm Mobile CPU,
DVI-I/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA
6Gb/s and Audio

KINO-QM770

Quick Installation Guide

Version 1.0

Dec.14, 2015

Package Contents

KINO-QM770 package includes the following items:

- 1 x KINO-QM770 Single Board Computer
- 2 x SATA with power output cable
- 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 for Intel® 3rd generation 22nm mobile processor
- System Chipset: Intel® QM77
- BIOS: UEFI BIOS
- System memory: 2 x 204-pins 1066/1333/1600 MHz DDR3 SDRAM SO-DIMM supported (system max. 16GB)
- Ethernet:
 - 1 x Intel® 82579 PHY (PCIe x1 interface) with Intel® AMT 8.0 supported by iEZman software UI
 - 1 x Intel® 82583V PCIe GbE Controller (PCIe x1 interface)
- I/O Interface:
 - 2 x SATA 3Gb/s
 - 2 x SATA 6Gb/s with RAID 0/1/5/10 support
 - 2 x SATA +12V and +5V power output by 4-pin (1x4) wafer-header
 - 4 x USB 2.0 (by pin-header)
 - 4 x USB 3.0 (rear side)
 - 2 x RS-232 (1 on rear side, 1 by pin-header)
 - 1 x RS-422/485 (by 4-pin (1x4) header)
 - 1 x PS/2 KB/MS (by 6-pin (1x6) wafer-header)
- SMBus:
 - 1 x 4-pin wafer-header
- TPM:
 - 1 x 20-pin (2x10) LPC pin header
- Expansion:
 - 1 x PCIe Mini card slot
 - 1 x PCIe x16 slot
- Audio: Realtek ALC662 HD Audio codec
 - Line-out & MIC-in audio jack on rear side
 - Front Audio by 10-pin (2x5) header
- Digital I/O: 8-bit digital I/O, 4-bit input/ 4-bit output by Super I/O Fintek F81866
- Super I/O : Fintek F81866
- Display Interface:

DVI-I (VGA+DVI) integrated in the Intel® QM77

18/24-bit dual-channel LVDS

Two HDMI by connector on rear side

- Watchdog Timer:
Software programmable supports 1~255 sec. system reset
- Power Supply:
Single Voltage +12V DC Input, AT/ATX Mode support
1 x External 4-pin DIN main power input DC jack on rear side
1 x Internal 4-pin (2x2) +12V main power input connector
- Power Consumption:
12V@6.08A (2.3GHz Intel® Core™ i7-3610QE with two 1333 MHz
4GB DDR3 memory running 3DMark06 burn in)
- Fan: 1 x 4-pin CPU fan connector
1 x 3-pin system fan connector
- Operating Humidity: 5% ~ 95%, non-condensing
- Operating Temperature: -10 ~ 60°C (14 ~ 140°F)
- Dimensions: 170 mm x 170 mm
- Weight: GW: 900g; NW: 450g

Ordering Information

KINO-QM770-R10:

Mini-ITX SBC with Socket G2 for Intel® 22nm mobile CPU, DVI-I/dual HDMI/LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio

19800-003100-200-RS: Dual ports USB cable with Bracket

32000-023800-RS: Keyboard/Mouse Y cable

32205-003800-100-RS: RS-422/485 cable with bracket

SACF-KIT01-R10: SATA to CF Converter board

CF-989A-RS-R12: CPU cooler for mobile socket-G (PGA988) up to 55W processor, copper, 60 x 60 x 27.6mm, RoHS

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

33Z00-000031-RS: DVI-I to VGA adapter connector

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
JP1	Display Selection
J_PCIE1 & 2	PCIe Channel Mode Selection(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
OFF	640 X 480 (18bit)
1-2	800 X 480 (18bit)
3-4	1024 X 768 (18bit)
1-2 & 3-4 (Default)	1024 X 768 (24bit)
5-6	1280 X 800 (24bit)
1-2 & 5-6	1280 X 1024 (48bit)
3-4 & 5-6	1366 X 768 (24bit)
1-2 & 3-4 & 5-6	1440 X 900 (48bit)
7-8	1400 X 1050 (48bit)
1-2 & 7-8	1600 X 900 (48bit)
3-4 & 7-8	1600 X 1200 (48bit)
1-2 & 3-4 & 7-8	1680 X 1050 (48bit)
5-6 & 7-8	1920 X 1080 (48bit)
1-2 & 5-6 & 7-8	1920 X 1200 (48bit)
3-4 & 5-6 & 7-8	2048 X 1536 (48bit)
1-2 & 3-4 & 5-6 & 7-8	LVDS disabled

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

JP1: Display Mode Selection	
JP1	DESCRIPTION
1-2 (default)	DVI
2-3	CRT

J_PCIE1 & 2: PCIE Channel Mode Selection (Reserved)		
J_PCIE1	J_PCIE2	DESCRIPTION
Open	Open	x16 (default)
Open	Short	Reserved
Short	Open	x8, x8
Short	Short	x8, x4, x4

Table of Connectors

LABEL	FUNCTION
LAN_USB	RJ45 LAN and USB 3.0 Connector
USB1,USB2	Internal USB 2.0 Connectors
KB_MS1	PS/2 MOUSE & KEYBOARD Connector
VIDEO1	DVI Connector
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,CN2	Serial ATA Power Connectors
IR1	IrDA Infrared Interface Connector
CN5	PCI-E Mini Card
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
TPM1	TPM Connector
CN3	SMBus CONNECTOR
BAT1	Battery connector
JSPI1	Flash SPI ROM
JSPI2	EC Flash SPI ROM
CN4	EC Debug port

LAN1_USB1/LAN2_USB2: RJ-45 LAN pin define			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MD0+	5	MD2+
2	MD0-	6	MD2-
3	MD1+	7	MD3+
4	MD1-	8	MD3-

LAN1_USB1/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

VIDEO1: DVI-I(Dual Link)+CRT			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C1	BR	V10	Data 1+
C2	BG	V11	GND
C3	BB	V12	N/C
C4	HS	V13	N/C
C5	GND	V14	+5V Power
C5-1	NC	V15	Hot Plug Detect
V1	Data 2-	V16	HPDET
V2	Data 2+	V17	Data 0-
V3	GND	V18	Data 0+
V4	N/C	V19	GND
V5	N/C	V20	N/C
V6	DDC Clock	V21	N/C
V7	DDC Data	V22	N/C
V8	VS	V23	DVI_Clock +
V9	Data 1-	V24	DVI_Clock -

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	TXD485+	4	TXD485#

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
1	+V5S
2	NC
3	SPDIFOUT
4	GND
5	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, CN2 : 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

CN5: 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	CLKREQ#	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	GND	38	USB+
39	VCC3	40	GND
41	VCC3	42	N/C
43	GND	44	N/C
45	CL_CLK	46	N/C
47	CL_DATA	48	1.5V
49	CL_RST#	50	GND
51	N/C	52	VCC3

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

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#		

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#

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

CN3: SMBus Connector	
PIN NO.	DESCRIPTION
1	GND
2	SMB_DATA
3	SMB_CLK
4	+V5S

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

CN4 : 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

Board Layout: Jumper and Connector Locations

