

**Mini-ITX SBC supports 6th Intel® Core™ Mobile CPU, HDMI 2.0,
M.2, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini,
HD Audio and RoHS**

KINO-DQM170

Quick Installation Guide

Version 1.0

Sep 3, 2016.

Package List

KINO-DQM170 package includes the following items:

- 1 x 1 x KINO-DQM170 motherboard
- 1 x I/O shielding
- 2 x SATA cable
- 1 x One Key Recovery CD
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)



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Specifications

- CPU:
 - 6th generation Intel® Core™ mobile processor
 - Intel® Core™ i7-6820EQ (3.5GHz, quad-core, 8M cache, TDP=45W)
 - Intel® Core™ i5-6440EQ (3.4GHz, quad-core, 6M cache, TDP=45W)
 - Intel® Core™ i3-6102E (1.90 GHz, dual core, 3M Cache, 25W)
 - Intel® Celeron® G3902E (1.60 GHz, dual core, 2M Cache, 25W)
- Chipset: Intel® QM170
- Memory:
 - Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs supported (system max. 32 GB)
- BIOS: UEFI BIOS
- Ethernet:
 - LAN1: Intel® I219LM with (Intel® AMT 11.0 support)
 - LAN2: Intel® I211 PCIe controller with NCSI support
- Graphic Engine:
 - Intel® HD Graphics Gen 9 support for DX11/12, OCL 2.x, OGL 4.3/4.4, ES 2.0
- Display Output:
 - Triple independent display
 - 2 x HDMI 1.4 (up to 4096x2160@24Hz)
 - 1 x HDMI 2.0 by MCDP2800-BB DP to HDMI/DVI converter (up to 4096x2160@60Hz)
 - 1 x 18/24-bit dual-channel LVDS by CH7511B DP to LVDS converter (up to 1920x1200@60Hz)
- External I/O Interfaces:
 - 4 x USB 3.0
 - 1 x RS-232
- Internal I/O Interfaces:

- 1 x KB/MS (1x 6 pin, P=2.00)
- 2 x RS-232/422/485 (1x9 pin, P=1.25)
- 3 x RS-232 (1x9 pin, P=1.25)
- 4 x SATA 6G/s with 5V SATA power connector
- 4 x USB 2.0 (2x4 pin, P=2.0)
- EC: IT8528E/FX
- Digital I/O: 1 x 8-bit digital I/O (2x5 pin)
- Audio:
 - Realtek ALC662 HD Audio codec supports 5.1-channel
 - 3 x Audio jacks (line-out, line-in, mic-in) on rear IO
 - 1 x Front audio (2x5 pin)
- Front Panel: 1 x Front panel connector (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- LAN LED: 2 x LAN LED (1x2 pin)
- SMBus: 1 x SMBus (1x4 pin)
- I²C: 1 x I²C (1x4 pin)
- Expansion:
 - 1 x Full-size PCIe Mini (support mSATA)
 - 1 x Half-size PCIe Mini
 - 1 x M.2 2230 (A key)
 - 1 x PCIe x16 slot
- Watchdog Timer:
 - Software programmable support 1~255 sec. system reset
- Chassis Intrusion: 1 x Chassis intrusion (1x2 pin)
- Power Supply: 12 DC input only
- Fan Connector:
 - 1 x CPU smart fan(1x4 pin)
 - 1 x System fan (1x4 pin)
- Cooler Module:
 - 19100-000219-00-RS for i7/i5(45W)
 - 19100-000203-00-RS for i3/Celeron(25W)
- Power Consumption:

12V@5.08A (Intel® Core™ i7-6820EQ, 3.5GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)

- Operation Temperature: -20°C ~ 60°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 170mm x 170mm
- Weight GW/NW: 900g / 450g

Ordering Information

- **KINO-DQM170-i7-R10:**
Mini-ITX SBC supports 6th Intel® Core™ i7-6820EQ processor(45W), HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
- **KINO-DQM170-i5-R10:**
Mini-ITX SBC supports 6th Intel® Core™ i5-6440EQ processor(45W), HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
- **KINO-DQM170-i3E-R10:**
Mini-ITX SBC supports 6th Intel® Core™ i3-6102E processor(25W), HDMI 2.0, SATA 6Gb/s, dual Intel®GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
- **KINO-DQM170-CE-R10:**
Mini-ITX SBC supports 6th Intel® Celeron® Processor G3902E(25W), HDMI 2.0, SATA 6Gb/s, dual Intel®GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
- **32000-023407-RS:** Dual port USB cable
- **32000-023800-RS:** PS/2 KB/MS cable
- **32000-062800-RS:** SATA cable
- **32000-070301-RS:** Dual port USB cable
- **32005-000900-100-RS:** RS-232/422/485 cable
- **32005-000900-200-RS:** RS-232/422/485 cable

Jumpers setting and connectors

LABEL	FUNCTION
J_CMOS1	Clear CMOS
J_ATX_AT1	AT/ATX Power Mode Setting
USB SW1 Power USB SW2 Power	USB Power Setting
J_FLASH1	Flash Descriptor Security Override
JP1	LVDS1 Voltage Selection
BL_MODE1	Backlight Mode Selection
F_PANEL1	External Switches and Indicators panel
HDMI2	HDMI 2.0 Connector
HDMI1, HDMI3	HDMI 1.4 Connectors
LVDS1	LVDS Connector
INV1	Panel Power Supply
USB1	External USB 3.0 Connector
LAN1	RJ45 LAN Connector
KB_MS1	6-pin header Keyboard/Mouse Connector
USB1~2	Internal USB Connector
COM1	External Serial Port Connector
COM2~4	Internal RS-232 Serial Port Connectors
COM5~6	Internal RS-232/422/485 Serial Port Connectors
AUDIO_CV1	Audio Line-In/Out MIC Connector
FRONT-PANEL1	Audio Source Connector
SPDIF1	SPDIF Connector
DIO1	Digital Input / Output Connector
SATA1~4	Serial ATA 3.0 Connector
MPCIE1	MINI-PCIE Card Connector(support mSATA)
MPCIE2	MINI-PCIE Card Connector
CPU_FAN1	CPU Fan Connector
SYS_FAN1	System Fan Connector
CPU12V1	+12V Power Connector

PWR1	Adapter connector
SMB1	SMBus Connector
I ² C1	I ² C Connector
LED_LAN1	LAN Link LED Connector
LED_LAN2	LAN Link LED Connector
CHASSIS1	Chassis Status Connector (Rev1.06)
SATA_PWR1/2	SATA Power CONNECTOR
M2	M.2 connector(A key)

J_CMOS1: Clear CMOS button

PIN NO.	DESCRIPTION
NC	Normal Operation (default)
Press button	Clear CMOS Setup

J_ATX_AT1 : AT/ATX Power Mode Setting

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

USB SW1, USB SW2: USB power setting

USB SW1/ USB SW2	DESCRIPTION
+5V DUAL (default)	+5V DUAL
+5V	+5V

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Chipset

Auto Power Button Status [Disabled(ATX)]

Restore AC Power Loss [Last State] -----

> PCI Express Configuration

> PCI Azalia Configuration

Power Saving Function(ERP) [Disabled]

PCIEX16 Power [1 x16 PCIE]

USB SW1 [+5V DUAL]

USB SW2 [+5V DUAL]

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J_FLASH1: Flash descriptor security override	
PIN NO.	DESCRIPTION
Short 1 - 2	Disabled (default)
Short 2 - 3	Enabled

JP1: LVDS1 Voltage Selection	
PIN NO.	DESCRIPTION
Short 1 - 2	+3.3 V LVDS (Default)
Short 2 - 3	+5 V LVDS

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

F_PANEL1 : External Switches and Indicators panel					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWR BTN	2	PWR_BTN+	7	PWR_LED+	PWR LED
	3	PWR_BTN-	8	PWR_LED-	
HDD LED	4	SATA_LED+	9	EXTRST+	RESET
	5	SATA_LED-	10	EXTRST-	

HDMI1~3: 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_HPDP
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#		

LVDS1: LVDS Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDS_DATA0	4	LVDS_DATA0#
5	LVDS_DATA1	6	LVDS_DATA1#
7	LVDS_DATA2	8	LVDS_DATA2#
9	LVDS_CLK1	10	LVDS_CLK1#
11	LVDS_DATA3	12	LVDS_DATA3#
13	GND	14	GND
15	LVDS_DATA4	16	LVDS_DATA4#
17	LVDS_DATA5	18	LVDS_DATA5#
19	LVDS_DATA6	20	LVDS_DATA6#
21	LVDS_CLK2	22	LVDS_CLK2#
23	LVDS_DATA7	24	LVDS_DATA7#
25	GND	26	GND
27	LVDS_VCC	28	LVDS_VCC
29	LVDS_VCC	30	LVDS_VCC

INV1: Panel Power Supply			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BRIGHTNESS	2	GND
3	+V12S_LCD_BKL	4	GND
5	ENABLE BP		

USB1: External USB 3.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

LAN1: RJ45 LAN Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

KB_MS1: 6-pin header Keyboard/Mouse Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	Mouse Data
3	Mouse Clock	4	Keyboard Data
5	Keyboard Clock	6	GND

USB1~2: Internal USB Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

COM1: External Serial Port Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND1	6	DSR1
7	RTS1	8	CTS1
9	RI1		

COM2/3/4: Internal RS-232 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND		

COM5/6: Internal RS-232/422/485 Serial Port Connectors			
Mode	RS232	RS422	RS485
PIN NO.	DESCRIPTION	DESCRIPTION	DESCRIPTION
1	DCD	TXD422#	TXD485#
2	DSR	TXD422+	TXD485+
3	RXD	RXD422+	N/A
4	RTS	RXD422#	N/A
5	TXD	N/A	N/A
6	CTS	N/A	N/A
7	DTR	N/A	N/A
8	RI	N/A	N/A
9	GND	GND	N/A

AUDIO_CV1: Audio Line-In/Out MIC Connector	
PIN NO.	DESCRIPTION
Line_In (Blue)	CD/DVD or other audio source input port
Line_Out (Green)	Connect this port to headphone or speaker
Microphone (Ping)	Connect this port to microphone

FRONT-PANEL1: Audio Source Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LMIC2-L	2	AUD_GND
3	LMIC2-R	4	PRESENCE#
5	LLINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LLINE2-L	10	LINE2-JD

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

DIO1: Digital Input / Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

SATA1~4: Serial ATA 3.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

MPCIE1: MINI-PCIE card connector(support mSATA)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	+3.3V
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	+3.3V
21	GND	22	PCIRST#
23	PERN(SATA_RX+)	24	3VDual
25	PERP(SATA_RX-)	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN(SATA_TX-)	32	SMBDATA
33	PETP(SATA_TX+)	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	SATA_DET_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	+3.3V

MPCIE2 : MINI-PCIE Card Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	+3.3V
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	+3.3V
21	GND	22	PCIRST#
23	PERN(SATA_RX+)	24	3VDual
25	PERP(SATA_RX-)	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN(SATA_TX-)	32	SMBDATA
33	PETP(SATA_TX+)	34	GND
35	GND	36	USB D-
37	N/C	38	USB D+
39	N/C	40	GND
41	N/C	42	N/C
43	SATA_DET_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	+3.3V

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

SYS_FAN1: System Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FANIO	2	+12V (PWM)
3	GND		

CPU12V1: +12V Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

PWR1: Adapter connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	12V	2	GND
3	12V	4	GND
5	GND		

SMB1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SMB_DATA
3	SMB_CLK	4	+5V

I²C1: I²C Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	I2C_DAT
3	I2C_CLK	4	+5V

LED_LAN1: LAN Link LED Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	LAN1_LED_LNK#_ACT

LED_LAN2: LAN Link LED Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	LAN2_LED_LNK#_ACT

CHASSIS1: Chassis Status Connector (Rev1.06)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3VSB	2	CHASSIS OPEN

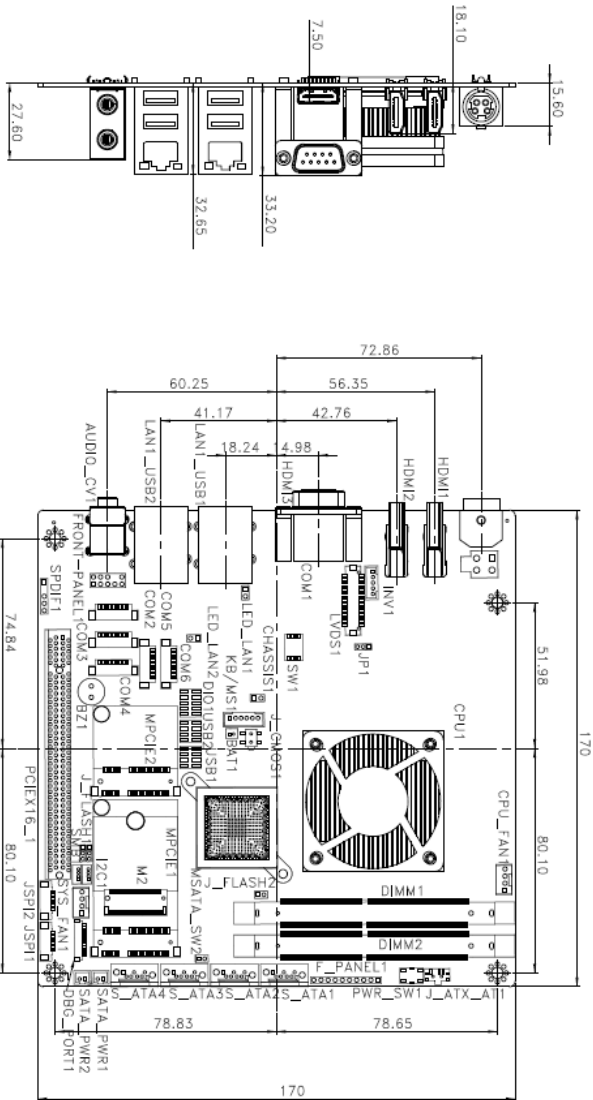
SATA_PWR1/2: SATA Power CONNECTOR			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	5V(support 1A)	2	GND

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	LVDS_VCC	28	LVDS_VCC
29	LVDS_VCC	30	LVDS_VCC

M2: M.2 connector(A key)			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	+3.3V
3	USB_D+	4	+3.3V
5	USB_D-	6	NC
7	GND	8	Connector Key
9	Connector Key	10	Connector Key
11	Connector Key	12	Connector Key
13	Connector Key	14	Connector Key
15	Connector Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND
25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PCIE_TXP11_M2	36	GND
37	PCIE_TXN11_M2	38	NC
39	GND	40	NC
41	PCIE_RXP11_M2	42	NC
43	PCIE_RXN11_M2	44	NC
45	GND	46	NC
47	CK_M2_100M_DP	48	NC
49	CK_M2_100M_DN	50	NC
51	GND	52	PLT_GATED_RST#
53	NC	54	+3.3V
55	NC	56	ACTIVE LOW
57	GND	58	NC
59	PCIE_TXP10_M2	60	NC

61	PCIE_TXN10_M2	62	NC
63	GND	64	NC
65	PCIE_RXP10_M2	66	NC
67	PCIE_RXN10_M2	68	NC
69	GND	70	NC
71	CK_M2_100M_D10P	72	+3.3V
73	CK_M2_100M_D10N	74	+3.3V
75	GND		

Board Layout: Jumper and Connector Locations



for i3/Celeron(25W)

(Unit: mm)