Mini-ITX SBC with Intel® 22nm 4th Generation Mobile CPU, VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0,PICe x16 ,Mini PCIe , SATA 6Gb/s ,mSATA and Audio

KINO-DQM871
Quick Installation Guide

Version 1.00

Aug. 26, 2013

Package Contents

KINO-DQM871 package includes the following items:

- 1 x KINO-DQM871-R10 Motherboard
- 2 x SATA with power output cable (P/N: 32801-000100-100-RS)
- 1 x Dual RS-232 cable with bracket (P/N: 19800-000112-RS)
- 1 x I/O shielding
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)

Specifications

- CPU: BGA 1364 type for Intel® 22nm 4th Generation processor
- System Chipset: Intel® QM87
- BIOS: UEFI BIOS
- System memory: Two 204-pin 1066/1333/1600 MHz DDR3 dual-channel SO-DIMMs (Support up to 16GB)
- Ethernet:

  1 x Intel® I211 PCIe GbE LAN controller (PCIe x1 interface) with Intel® AMT 8.0 supported by iEZman software UI

  1 x Intel® I217LM PHY (PCIe x1 interface)
- I/O Interface:

  2 x SATA 3Gb/s and 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

  10 x USB 2.0 (2 x rear side and 8 via pin-header)

  4 x USB 3.0 (2 x rear side and 2 via pin-header)

  5 x RS-232 (1 on rear side, 4 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 Full size PCIe Mini card slot (co-lay with mSATA)

  1 x Half size PCIe Mini card slot

  1 x PCIe x16 slot
- Audio: Realtek ALC662 HD Audio codec

  Line-out / in & 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:
  VGA integrated in the Intel® QM87
  Dual-channel 18/24-bit LVDS
  2 x HDMI by connector on rear side
  iDP (iEi display port)
- 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@5.06A (2.4GHz Intel® Core™ i7-4700EQ with two 1066 MHz 2GB DDR3 memory)
- Fan: 1 x 4-pin CPU fan connector
  1 x 4-pin system fan connector
- Operating Humidity: 5% ~ 95%, non-condensing
- Operating Temperature: 0 ~ 60°C(32 ~ 140°F)
- Dimensions: 170 mm x 170 mm
- Weight: GW: 900g; NW: 450g

Ordering Information

KINO-DQM871-I7/I5/I5E/I3/I3E/C/CE-R10:
Mini-ITX SBC with Intel® 4th Generation mobile CPU, HDMI / VGA / LVDS / DP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-003100-200-RS: Dual ports USB cable with Bracket
32000-023800-RS: Keyboard/Mouse Y cable
TPM-IN01-R11: 20-pin Infineon TPM module, software management tool, fi rmware V3.17
19800-004300-100-RS: RS-232/422/485 cable with bracket
DP-LVDS-R10: DisplayPort to dual channel 24 bit LVDS converter board (For iEi iDP connector)
DP-HDMI-R10: DisplayPort to HDMI converter board (For iEi iDP connector)
DP-DVI-R10: DisplayPort to DVI converter board (For iEi iDP connector)
DP-VGA-R10: DisplayPort to VGA converter board (For iEi iDP connector)

Jumpers setting table

LABEL	FUNCTION
J_CMOS1	CMOS state setting
J_ATXCTL1	Select ATX or AT mode
JLCD_PWR1	LCD Voltage Selector
J_PID1	LVDS Panel Resolution Selection
SW1	LVDS Panel Resolution Selection

J_CMOS1: Clear CMOS Setup	
J_CMOS1	**DESCRIPTION**
	Push Clear CMOS

J_ATXCTL1: AT/ATX Power Mode Setting	
J_SPI	**DESCRIPTION**
Short 1-2 (default)	**ATX Power Mode**
Short 2-3	AT Power Mode

JLCD_PWR1: SET The Panel Voltage	
J_VLVDS1	**DESCRIPTION**
Short 1-2 (default)	**+3.3V LVDS**
Short 3-4	**Set The Voltage Level Of Panel To +5V**
Short 5-6	**Set The Voltage Level Of Panel To +12V**

J_PID1: LVDS Panel Resolution type select	Panel Resolution
• **SW1 : LVDS Panel Resolution Selection** **(ON=0 , OFF=1) (S=Single , D=Dual)**	
SW1	**DESCRIPTION**
4-3-2-1	
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**

Table of Connectors

LABEL	FUNCTION
PWR1 & PWR2	ADAPTER & Power Supply DC12V Power IN
HDMI1,HDMI2	HDMI Connector
COM1/VGA1	DB9 COM PORT and DB15 VGA Connector
LAN_USB1	RJ45 LAN and USB 3.0 Connector
LAN_USB2	RJ45 LAN and USB 2.0 Connector
AUDIO1	Internal Audio Module Connector
MINI-PCIE1	PCI-E Mini Card
M-SATA1	PCI-E Mini Card And M-SATA Card
INV1	LVDS Panel Voltage Supply
LVDS1	LVDS Panel Connector
DP1	DP Port
SYS_FAN1	Fan Connector
CPU_FAN1	Fan Connector
F_PANEL1	PWR & RST Buttons and Indicators
TPM1	TPM Connector
CN1	Internal USB 3.0 Connectors
USB1,USB2,USB3	Internal USB 2.0 Connectors
KB_MS1	PS/2 MOUSE & KEYBOARD Connector
S_ATA1, S_ATA2	Serial ATA Gen3 Connectors
S_ATA3, S_ATA4	Serial ATA Gen2 Connectors
SATA_PWR1, SATA_PWR2	Serial ATA Power Connectors
DIO1	Digital Input / Output Connector
COM2~COM5	Internal 2X5 COM PORT
COM6	Internal 1X4 RS422/RS485
BAT1	Battery connector
SPI1	Flash SPI ROM
JSPI1	EC Flash SPI ROM
LPT_DB1	EC Debug port
SMB1	SMBUS connector
LAN_ACT_LED1	LAN Active LED
PWR_SW1	Internal Power Button
DIMM1/DIMM2	SO-DIMM connector

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

HDM1,HDMI2 : HDMI connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	HDMI_DATA2+	11	GND
2	GND	12	HDMI_CLK#
3	HDMI_DATA2#-	13	N/C
4	HDMI_DATA1+	14	N/C
5	GND	15	HDMI_SCL
6	HDMI_DATA1#-	16	HDMI_SDA
7	HDMI_DATA0+	17	GND
8	GND	18	+5VCC
9	HDMI_DATA0#-	19	HDMI_HPD
10	HDMI_CLK+		

COM1: External Serial Port DB9 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#)

VGA1: CRT Female connector			
PIN	**DESCRIPTION**	**PIN**	**DESCRIPTION**
1	RED	9	5V
2	GREEN	10	GROUND
3	BLUE	11	NC
4	NC	12	DDCDAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCCLK
8	GND		

LAN_USB1 : RJ-45 LAN pin define			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MDIA3+	5	MDIA1+
2	MDIA3-	6	MDIA2+
3	MDIA2-	7	MDIA0-
4	MDIA1-	8	MDIA0+

LAN_USB1: USB3.0 pin define			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VBUS	6	STDA_SSRX1_P
2	D1-	7	GND_DRAIN
3	D1+	8	STDA_STX1_N
4	GND	9	STDA_STX1_P
5	STDA_SSRX1_N		

LAN_USB2 : RJ-45 LAN pin define			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MDIA3+	5	MDIA1+
2	MDIA3-	6	MDIA2+
3	MDIA2-	7	MDIA0-
4	MDIA1-	8	MDIA0+

LAN_USB2 : USB2.0 pin define	
PIN NO.	**DESCRIPTION**
1	VBUS
2	D1-
3	D1+
4	GND

AUDIO1 : Audio Line-in, Line-out & MIC-in Connector	
PIN NO.	**DESCRIPTION**
1	Line-in (Blue)
2	Line-out (Green)
3	MIC-in (Pink)

MINI-PCIE1 & M-SATA1: PCIe Mini and mSATA 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	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

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

DP1: Display Port			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+5V	11	AUX_P2
2	DPB_OB_LANE1_N	12	AUX_N2
3	DPB_OB_LANE1_P	13	GND
4	GND	14	DPB_OB_LANE2_P
5	DPB_OB_LANE3_N	15	DPB_OB_LANE2_N
6	DPB_OB_LANE3_P	16	GND
7	GND	17	DPB_OB_LANE0_P
8	DP2_CFG1	18	DPB_OB_LANE0_N
9	GND	19	+3.3V
10	TMDS_B_HPD#	20	N/C

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

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

F_PANEL1 : Power button, Rest, HDD & Power LED Indicators Connector					
	PIN	**DESCRIPTION**	**PIN**	**DESCRIPTION**	
PWR_LED	1	PWR_LED+	2	BEEP_PWR	BUZZER
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWRBTN	7	PWR_BTN-	8	PC_BEEP	
	9	GND	10	NC	RESET
HDD_LED	11	HDD_LED+	12	EXTRST-	
	13	HDD_LED-	14	GND+	

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#

CN1:USB3.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	11	USB2_DP2
2	USB3_RXDN5_C	12	USB2_DN2
3	USB3_RXDP5_C	13	GND
4	GND	14	USB3_TXDP4_C
5	USB3_TXDN5_C	15	USB3_TXDN4_C
6	USB3_TXDP5_C	16	GND
7	GND	17	USB3_RXDP4_C
8	USB2_DN3	18	USB3_RXDN4_C
9	USB2_DP3	19	+5V
10	N/C	20	N/C

USB1, USB2,USB3: Internal USB2.0 Connector x 3			
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

S_ATA1~S_ATA4 : Serial ATA Connectors **S_ATA 1 & S_ATA2 : Gen 3** **S_ATA 3 & S_ATA4 : Gen 2**			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

SATA_PWR1 & SATA_PWR2 : Serial ATA Power Connectors	
PIN NO.	**DESCRIPTION**
1	+12V
2	GND
3	GND
4	+5V

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

COM2 ~COM5: Internal 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

COM6: Wafer 4pin 2.0mm connector	
PIN NO.	**DESCRIPTION**
1	RXD485- (422RX-)
2	RXD485+ (422RX+)
3	TXD485+ (422TX+/485D+)
4	TXD485- (422TX-/485D-)

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

SPI1 & JSPI1 : Flash BIOS SPI ROM Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	SPI_VCC (+3.3V)	2	SPI_CS_CN
3	SPI_SO_SW	4	SPI_CLK_SW
5	SPI_SI_SW	6	GND

LPT_DB1 : EC debug port			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KSI0	2	KSO0
3	KSO1	4	KSO2
5	KSO3	6	KSO4
7	KSO5	8	KSO6
9	KSO7	10	KSO8
11	KSO9	12	KSO10
13	KSO12	14	KSI1
15	KSO11	16	KSI2
17	KSI3	18	GND
19	GND	20	GND

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

PWR_SW1: Power on button	
PWR_SW1	**DESCRIPTION**
	Push Power on

Board Layout: Jumper and Connector Locations