

Mini-ITX SBC supports 14nm 6th/7th Generation LGA1151 Intel® Core™ i7/i5/i3, Celeron® and Pentium® Processor, DDR4, Dual Independent Display, Dual GbE LAN, USB 3.0, SATA 6Gb/s, M.2, HD Audio and RoHS

KINO-DH110

Quick Installation Guide **Version 1.0**

November 02, 2018.

Package List

KINO-DH110 package includes the following items:

- 1 x KINO-DH110 single board computer
- 1 x I/O shielding
- 1 x SATA cable
- 1 x QIG



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Specifications

- CPU:
LGA1151 socket supports 6th/7th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor
- System Chipset: Intel® H110
- Memory:
Two 260-pin 2133MHz dual-channel DDR4 SDRAM unbuffered SO-DIMM slots support up to 32GB
- BIOS: UEFI BIOS
- Graphics Engine:
Intel® HD Graphics Gen 9 engines with 16 low-power execution units, support DX2015, OpenGL 5.X, OpenCL2.x, ES 2.0
- Display Output:
Dual independent display
1 x HDMI (up to 3840x2160@60Hz)
1 x DP++ (up to 3840x2160@60Hz)
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- Ethernet:
LAN1: Intel® I219LM PCIe controller
LAN2: Intel® I211 PCIe controller
- External I/O Interface:
4 x USB 3.0
1 x RS-232/422/485
- Internal I/O Interface:
1 x KB/MS (1x6 pin)
2 x RS-232 (2x5 pin, P=2.0)
2 x SATA 6Gb/s
4 x USB 2.0 (2x4 pin, P=2.0)
- SMBus: 1 x SMBus (1x4 pin)
- I²C: 1 x I²C (1x4 pin)

- Audio:
 - Realtek ALC662 HD codec
 - 2 x Audio jacks (line-out, mic-in) on rear IO
 - 1 x Front audio (2x5 pin)
- Front Panel:
 - 1 x Front panel (1x10 pin, power LED, HDD LED, power button, reset button)
- LEN LED: 2 x LAN LED (1x2 pin)
- Expansion:
 - 1 x Full-size PCIe Mini card slot (PCIe & USB)
 - 1 x M.2 B-key (SATA)
 - 1 x PCIe 2.0 x16 slot
- Watchdog Timer:
 - Software programmable support 1~255 sec. system reset
- Digital I/O: 8-bit digital I/O (2x5 pin)
- Fan Connector:
 - 1 x CPU smart fan (1x4 pin)
 - 1 x System smart fan (1x4 pin)
- Power supply:
 - 9V ~ 28V DC input
 - Support ATX/AT mode
 - 1 x External DC jack (4-pin DIN)
 - 1 x Internal power connector (2x2 pin)
- Power Consumption:
 - 12V@12.16A (3.4GHz Intel® Core i7-6700 with two 2133MHz 16GB DDR4 memory)
- Operation Temperature: -20°C ~ 60°C
- Storage Temperature: -30°C ~ 70°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 170mm x 170mm
- Weight (GW/NW): 900g / 400g
- CE/FCC compliant

All the drivers and One Key Recovery utility for the KINO-DH110 are available on IEI Resource Download Center. Type KINO-DH110 and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



Ordering Information

- **KINO-DH110-R10:**
Mini-ITX Motherboard supports 14nm LGA1151 Intel® 6th/7th Generation Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, dual independent displays, dual GbE LAN, M.2, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
- **32000-070301-RS:** Dual USB Cable
- **32200-000049-RS:** RS232 cable, 200mm
- **32205-003800-300-RS:** RS-422/485 cable, 200mm
- **CF-1156C-R20:**
LGA1155/1156 kit, 1U chassis compatible, 45W
- **CF-1156D-R20:**
LGA1155/1156 kit, 1U chassis compatible, 65W
- **CF-115XE-R10:**
High performance LGA1155/LGA1156 cooler kit, 95W
- **DP-DP-R10:**
DisplayPort to DP converter board (for IEI connector)
- **DP-DVI-R10:**
DisplayPort to DVI-D converter board (for IEI connector)
- **DP-HDMI-R10:**
DisplayPort to HDMI converter board (for IEI connector)

- **DP-LVDS-R10:**
DisplayPort to 24 bit dual channel LVDS converter board (for I/EI connector)
- **DP-VGA-R10:**
DisplayPort to VGA converter board (for I/EI connector)

Jumpers setting and connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX Power Mode Setting
J_CMOS1	Clear CMOS Button
USB SW1, USB SW2	USB Power Setting
J_FLASH1	Flash Descriptor Security Override
F_PANEL1	PWR & RST Buttons and Indicators
HDMI_DP1	Display Port /HDMI COMBO Connector
DP1	Internal Display Port Connector
LAN1_USB1	RJ-45 LAN and USB 3.0 Connector
LAN2_USB2	RJ-45 LAN and USB 3.0 Connector
KB_MS1	6 Pin-header Keyboard & Mouse Connector
USB1, USB2	Internal USB 2.0 Connectors
COM3, COM4	Internal RS-232 Serial Port Connectors
COM1	External RS-232/422/485 Serial Port Connector
AUDIO_CV1	HD Audio Connector
FRONT_PANEL1	Front Panel Audio Connector
SATA1, SATA2	SATA 6Gb/s Connectors
MPCIE1	PCIe Mini Card Connector
CPU_FAN1	CPU Fan Connector
SYS_FAN1	System Fan Connector
DIO1	Digital Input / Output Connector
PWR1	Power Connector (9 V–28 V, Power Adapter)
CN2	Power Supply DC12V Power IN
SMB1	SMBus Connector
I2C1	I ² C Connector (to EC)
LED_LAN1	LAN1 LINK LED Connector
LED_LAN2	LAN2 LINK LED Connector
CHASSIS1	Chassis Status Connector
M_2_SATA1	M.2 B-Key Slot for SATA Device
SATA_PWR1, SATA_PWR2	SATA Power Connectors

J_ATX_AT1: AT/ATX Power Mode Setting	
PIN NO.	DESCRIPTION
Short 1 - 2	ATX Mode (default)
Short 2 - 3	AT Mode

J_CMOS1: Clear CMOS Button	
PIN NO.	DESCRIPTION
NC (default)	Keep CMOS Setup (Normal Operation)
Press button	Clear CMOS Setup

USB SW1, USB SW2: USB Power Setting	
USB SW1	DESCRIPTION
+5V DUAL	5V DUAL (default)
+5V	+5V

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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]
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

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J_FLASH1: Flash Descriptor Security Override	
PIN NO.	DESCRIPTION
Short 1 - 2	Disabled (default)
Short 2 - 3	Enabled

F_PANEL1: PWR & RST Buttons and Indicators					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
	1	NC	6	PWRLED	PWR LED
PWR BTN	2	PWRBTSW#	7	PWRLED	
	3	GND	8	GND	
HDD LED	4	+V5S	9	RESET+	RESET
	5	HDD_LED-	10	GND	

HDMI_DP1: Display Port /HDMI COMBO Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LANE0P	21	TMDS_DATA2P
2	GND	22	GND
3	LANE0N	23	TMDS_DATA2N
4	LANE1P	24	TMDS_DATA1P
5	GND	25	GND
6	LANE1N	26	TMDS_DATA1N
7	LANE2P	27	TMDS_DATA0P
8	GND	28	GND
9	LANE2N	29	TMDS_DATA0N
10	LANE3P	30	TMDS_CLKP
11	GND	31	GND
12	LANE3N	32	TMDS_CLKN
13	CFG1	33	NC
14	CFG2	34	NC
14	AUXP	35	DDC_CLK
16	GND	36	DDC_SDA
17	AUXN	37	GND
18	DP_HPD	38	+5V
19	GND	39	HDMI_HPD
20	+3.3V		

DP1: Internal Display Port Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	11	AUXP
2	LANE1N	12	AUXN
3	LANE1P	13	GND
4	GND	14	LANE2P
5	LANE3N	15	LANE2N
6	LANE3P	16	GND
7	GND	17	LANE0P
8	AUX_CTRL_DET_D	18	LANE0N
9	GND	19	+3.3V
10	HPD		

LAN1_USB1: Ethernet and USB 3.0 connectors			
USB1: External USB 3.0 connectors			
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: RJ-45 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

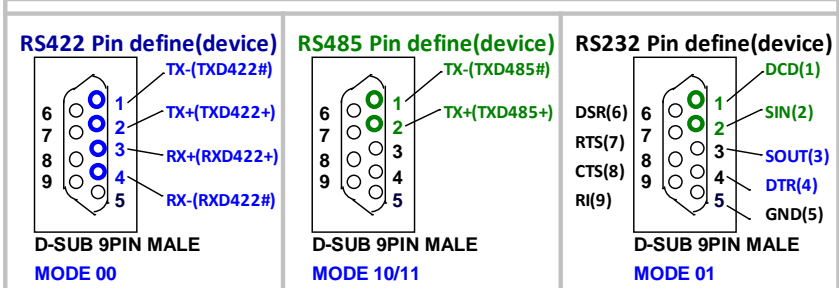
LAN2_USB2: Ethernet and USB 3.0 connectors			
USB2: External USB 3.0 connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
LAN2: RJ-45 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, USB2: Internal USB 2.0 Connectors			
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

COM3, COM4: 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	10	GND

COM1: External RS-232/422/485 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		



AUDIO_CV1 : Audio Line-In/Out MIC Connector	
PIN NO.	DESCRIPTION
Line_Out (Green)	Connect this port to headphone or speaker
Microphone (Pink)	Connect this port to microphone

FRONT_PANEL1: Front Panel Audio 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

SATA1, SATA2: SATA 6Gb/s Connectors			
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

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	GND	2	+12V
3	FANIO	4	PWM

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

M_PCIE1: PCIe Mini Card Connector			
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	PCIE_CLK#	12	N/C
13	PCIE_CLK	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	PCIRST#
23	PCIE_RXN	24	VCC3
25	PCIE_RXP	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TXN	32	SMBDATA
33	PCIE_TXP	34	GND
35	GND	36	USBD-
37	GND	38	USBD+
39	VCC3	40	GND
41	VCC3	42	N/C
43	GND	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

PWR1: Power Connector (9 V–28 V, Power Adapter)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	VCC	4	GND
5	GND		

CN2: Power Supply DC12V Power IN			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	VCC	4	VCC

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

I2C1: I²C Connector (to EC)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	PCH_GP38
3	PCH_GP39	4	+5V

LED_LAN1: LAN Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN1_LED_LNK#_ACT

LED_LAN2: LAN Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN2_LED_LNK#_ACT

CHASSIS1: Chassis Status Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3VSB	2	CHASSIS OPEN

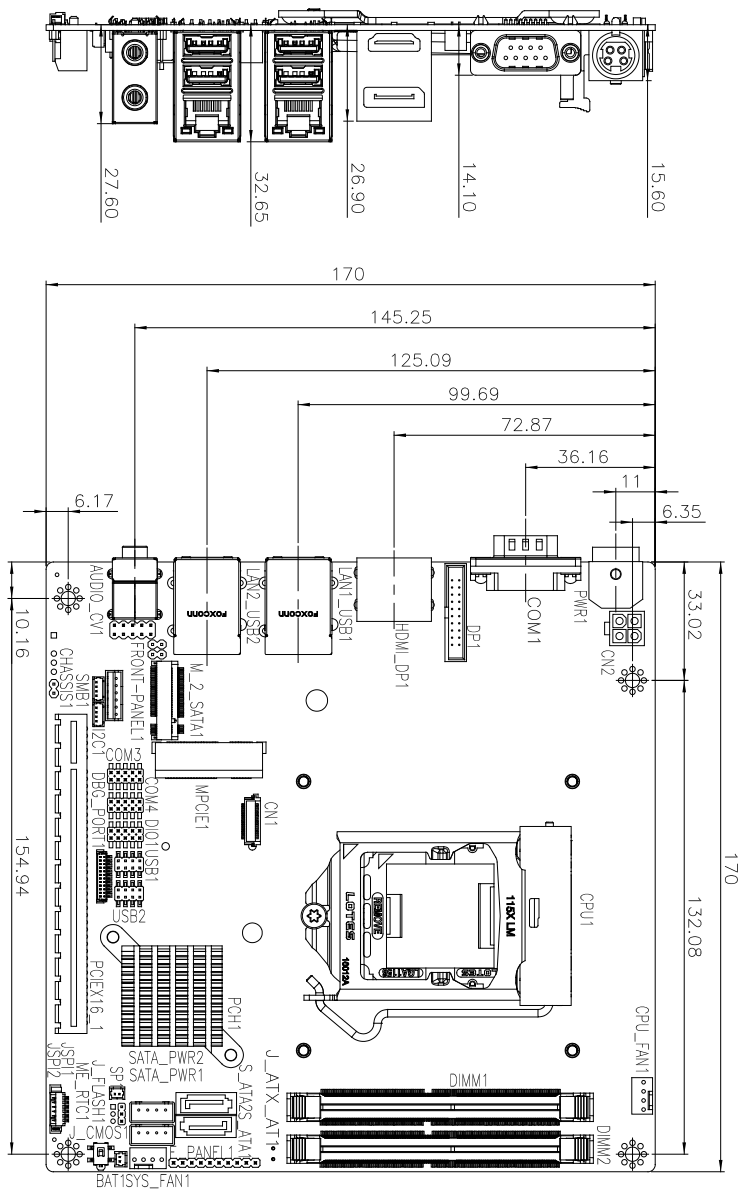
M_2_SATA1: M.2 B-Key Slot for SATA Device			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CFG3(GND)	2	3.3V
3	GND	4	3.3V
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	
13		14	
15		16	
17		18	
19		20	
21	CFG1(GND)	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	NC
39	GND	40	NC
41	SATA RXP	42	NC
43	SATA RXN	44	NC
45	GND	46	NC
47	SATA TXN	48	NC
49	SATA TXP	50	NC
51	GND	52	NC
53	CLKN	54	NC
55	CLKP	56	NC
57	GND	58	NC
59		60	
61		62	
63		64	

65		66	
67		68	NC
69	NC	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	CFG2(GND)		

CN1: EC Debug Port Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	11	EC_EPP_BUSY
2	EC_EPP_PD0	12	EC_EPP_KSI5
3	EC_EPP_PD1	13	EC_EPP_KSI4
4	EC_EPP_PD2	14	EC_EPP_AFD#
5	EC_EPP_PD3	15	NC
6	EC_EPP_PD4	16	EC_EPP_INIT#
7	EC_EPP_PD5	17	EC_EPP_SLIN#
8	EC_EPP_PD6	18	GND
9	EC_EPP_PD7	19	GND
10	NC	20	GND

SATA_PWR1, SATA_PWR2: SATA Power Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V12S	2	GND
3	GND	4	+V5S

Board Layout: Jumper and Connector Locations



(Unit: mm)