Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS

KINO-DAL

Quick Installation Guide

Version 1.0

May 04, 2018.

Package List

KINO-DAL package includes the following items:

- 1 x KINO-DAL single board computer with Heatsink
- 1 x SATA with power cable kit (P/N: 32801-000201-100-RS)
- 1 x I/O Shielding
- 1 x QIG (Quick Installation Guide)

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Specifications

- SoC:

  Intel® Atom® x7-E3950 on-board SoC (2.0GHz, quad-core)

  Intel® Atom® x5-E3940 on-board SoC (1.8GHz, quad-core)

  Intel® Atom® x5-E3930 on-board SoC (1.8GHz, dual-core)

  Intel® Pentium® N4200 on-board SoC (2.5GHz, quad-core)

  Intel® Celeron® N3350 on-board SoC (2.3GHz, dual-core)
- BIOS: AMI UEFI BIOS
- Memory:

  Two 204-pin 1866/1600MHz Dual-channel DDR3L DIMMs support up to 8GB
- Graphics Engine:

  Intel® HD Graphics Gen9 Low Power; 18 Execution Units

  4K Codec Decode & Encode for HEVC 4 , H.264, VP8, SVC, MVC
- Display Output:

  Triple Independent Displays

  1 x LVDS: 18/24-bit dual-channel LVDS by CH7511B DP to LVDS converter (up to 1920x1200@60Hz)

  1 x VGA: by CH7517 DP to VGA converter(up to 1920x1200@60Hz)

  1 x HDMI (up to 3840x2160 @ 30Hz)
- Ethernet:

  2 x PCIe GbE LAN Intel i211 AT /i210 AT/ i210 IT Controller
- Super I/O: Fintek F81866
- Embedded Controller: iWDD IT8528E
- External I/O Interface:

  4 x USB 3.0

  2 x RS-232/422/485
- Internal I/O Interface:

  2 x SATA 6G/s with 12/5V SATA power connector (No RAID)

  4 x USB 2.0 (2x4 pin, P=2.00)

1 x USB 2.0 (180° Type-A)
4 x RS-232 (2x5 pin, P=2.00)
1 x KB/MS (1x6 pin)

- SMBus: 1 x SMBus (1x4 pin)
- I^2C: 1 x I^2C (1x4 pin)
- TPM: 1 x TPM (2x10 pin)
- Audio:
  Realtek ALC662 HD codec
  2 x Audio Jacks (Co-lay 3 Jacks type) (Mic-in, Line-out)
  1 x Analog audio (2x5 pin)
- Front Panel:
  1 x Front Panel (2 x 7 pin)
- LAN LED: 2 x LAN LED (1x2 pin)
- Expansion :
  1 x PCIe x1
  1 x Full/Half-size PCIe Mini slot (1 w/ SIM holder (Optional))
  1 x M.2 (B Key) (2242)(SATA port1 + USB 2.0 signal)
  1 x Micro SD(Optional)
- eMMC: 8GB eMMC 5.0 suppport (optional)
- Digital I/O: 1 x 8-bit digital I/O (2x5 pin)
- Fan Connector:
  1 x CPU fan connector (1x4 pin)
  1 x System fan connector (1x3 pin)
- Power supply:
  12V only DC input as Default/ 9V~30V DC input (Optional)
  1 x Internal power connector (2x2 pin)
  1 x External DC power Jackc (Ø5.5mm)
  Support AT/ATX mode
- Watchdog Timer:
  Software programmable supports 1~255 sec. system reset
- Operating Temperature: -20°C ~ 60°C / -40°C ~ 85°C

- Storage Temperature: -40°C ~ 85°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimension: 170mm x 170mm
- Weight: GW:1100g / NW:700g

All the drivers and One Key Recovery utility for the KINO-DAL are available on IEI Resource Download Center. Type KINO-DAL 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-DAL-N2-R10:**
  Mini-ITX SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **KINO-DAL-N1-R10:**
  Mini-ITX SBC supports Intel® 14nm dual-core Celeron® N3350 2.3GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **KINO-DAL-E3W2-R10:**
  Mini-ITX SBC supports Intel® 14nm quad-core Atom® x7-E3950 2.0GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
- **KINO-DAL-E2W2-R10:**

Mini-ITX SBC supports Intel® 14nm quad-core Atom® x5-E3940 1.8GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C

- **KINO-DAL-E1W2-R10:**
  Mini-ITX SBC supports Intel® 14nm dual-core Atom® x5-E3930 2.0GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
- **32000-070301-RS:** Dual-port USB cable, 210mm, P=2.0
- **32000-023800-RS:** PS/2 KB/MS cable, 135mm, P=2.0
- **32205-002700-100-RS:** RS-232 cable, 200mm, P=2.0
- **TPM-IN01-R11:**
  20-pin Infineon TPM module, software management tool, firmware V3.17
- **TPM-IN02-R11:**
  20-pin Infineon TPM2.0 module, software mangement tool, firmware v5.5

Jumpers setting and connectors

LABEL	FUNCTION
J_CMOS1	Clear CMOS Setup
SW_A/T1	ATX or AT Power Select
J_SATA1	M.2 SATA(M2_1) or SATA2 Select
J_PW1	LCD Power Select
F_PANEL1	F_PANEL Pin Header 2.54mm Pitch
HDA1	Front Panel Audio Connector
SW1	LCD Panel Type Select
TPM1	LPC Interface for Port 80h Debug Tool
CPU_FAN1	CPU Fan Connector
SYS_FAN1	System Fan Connector
SATA_PWR1/SATA_PWR2	SATA HDD Power Connector
J_SPI1/J_EC1	J_SPI1 Connector for System BIOS. J_EC1 Connector for EC ROM.
COM1/2	Internal RS-232/RS-422/RS-485 Serial Port Connectors
COM3-6	Internal RS-232 Serial Port Connectors
KB/MS1	PS2 Keyboard & Mouse Connector
J_SMB1/JI2C1	SMBus / I2C Connector
LVDS1	LVDS Connector for LVDS LCD Panel
INV11	LCD Inverter Connector
PWR1/PWR2	DC 12V System Power Input Connector
J_KB/MS1	PS2 Keyboard and Mouse Connector
USB1/USB2	Internal USB 2.0 Connectors (Pitch 2.0 mm)
DIO1	Digital I/O Connector
BT1	RTC Battery connector
JLAN_LED1/JLAN_LED2	LAN1,LAN2 Active LED Pin header 2.0mm Pitch
SBY_LED1	Yellow Green color to indicator standby +3.3V
PWR_LED1	Blue color to indicator system +5V
PWR_SW1	Power ON/OFF Switch
DIMM1	204-pin DDR3 SO-DIMM Channel A

DIMM2	204-pin DDR3 SO-DIMM Channel B
SATA1/SATA2	Standard 7Pin SATA Connector
VGA1	Standard DB15 VGA Connector
HDMI1	Standard HDMI Connector
LAN1_USB01_1/LAN2_USB23_1	Standard RJ-45 and Dual USB 3.0 With LED Connector
SD1	Standard Micro-SD Slot (Optional)
MPCIE1	Standard Mini-PCIE Slot
PCIE1	Standard PCIE *1 X Slot
SIM1	Micro-SIM Card Slot (Optional)
J_CS1	Chassis open Connector. pitch 2.0mm pinheader

J_CMOS1: Clear CMOS Setup	
PIN NO.	**DESCRIPTION**
Non-press	Normal Operation (default)
Press	Clear CMOS Setup

SW_A/T1: ATX or AT Power Select	
PIN NO.	**DESCRIPTION**
Short A-B	ATX Power Mode (default)
Short B-C	AT Power Mode

J_SATA1: M.2 SATA(M2_1) or SATA2 Select	
PIN NO.	**DESCRIPTION**
Short A-B	Auto Detect M.2 or SATA2 (default)
Short B-C	M.2 SATA Enable(SATA2 Disable)

J_PW1: LCD Power Select	
PIN NO.	**DESCRIPTION**
Short 1-2	+3.3V (default)
Short 2-3	+5V

F_PANEL1: F_PANEL Pin Header 2.54mm Pitch			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	PWR_LED+	2	SPKR+
3	NC	4	NC
5	PWR_LED-	6	NC
7	PWR_SW+	8	SPKR-
9	PWR_SW-	10	NC
11	HDD_LED+	12	RESET_SW+
13	HDD_LED-	14	RESET_SW-

SW1: LCD Panel Type Select * ON=0, OFF=1	
4-3-2-1	**DESCRIPTION**
0000	800x600 18bit
0001	1024x768 18bit
0010	1024x768 24bit
0011	1280x768 18bit
0100	1280x800 18bit
0101	1280x960 18bit
0110	1280x1024 24bit
0111	1366x768 18bit
1000	1366x768 24bit
1001	1440x960 24bit
1010	1400x1050 24bit
1011	1600x900 24bit
1100	1680x1050 24bit
1101	1600x1200 24bit
1110	1920x1080 24bit
1111	1920x1200 24bit

HDA1: Front Panel Audio Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MIC2-L	2	GND
3	MIC2-R	4	Pre-Sense#
5	LINE2-R	6	MIC2-JD
7	GND	8	Key
9	LINE2-L	10	LINE2-JD

TPM1: LPC Interface for Port 80h Debug Tool			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	Clock	2	GND
3	LFRAME#	4	Serial IRQ
5	LPC Reset	6	LAD2-
7	LAD3	8	LAD0
9	+3.3V	10	LPC Reset
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	LDRQ#

CPU_FAN1: CPU Fan Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	12V
3	FAN_IN	4	FANCTL

SYS_FAN1: System Fan Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	FAN_IN	2	12V
3	GND		

SATA_PWR1/SATA_PWR2: SATA HDD Power Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+12V	2	GND
3	GND	4	+5V

J_SPI1/J_EC1: J_SPI1 Connector for System BIOS. J_EC1 Connector for EC ROM.			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+3.3V	4	Clock
2	CS#	5	MOSI
3	MISO	6	GND

COM1/2 : Internal RS-232/RS-422/RS-485 Serial Port Connectors			
Mode	**RS-232**	**RS-422**	**RS-485**
PIN NO.	**DESCRIPTION**	**DESCRIPTION**	**DESCRIPTION**
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	
4	DTR	RXD422-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

COM3-6: 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

KB/MS1: PS2 Keyboard & Mouse Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+5V	4	KB_DATA
2	MS_DATA	5	KB_CLK
3	MS_CLK	6	GND

J_SMB1/JI2C1: SMBus / I^2C Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	Clock
3	Data	4	+5V

LVDS1: LVDS Connector for LVDS LCD Panel			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	A_DATA0-	4	A_DATA1-
5	A_DATA0+	6	A_DATA1+
7	GND	8	GND
9	A_DATA2-	10	Clock1-
11	A_DATA2+	12	Clcok1+
13	GND	14	GND
15	A_DATA3-	16	A_DATA4-
17	A_DATA3+	18	A_DATA4+
19	GND	20	GND
21	A_DATA5-	22	A_DATA6-
23	A_DATA5+	24	A_DATA6+
25	GND	26	GND
27	Clock2-	28	A_DATA7-
29	Clcok2+	30	A_DATA7+
31	GND	32	GND
33	LVDS Detect(GND)*	34	GND
35	LCD VCC	36	LCD VCC
37	LCD VCC	38	LCD VCC
39	LCD VCC	40	LCD VCC

*:LVDS Detect- This pin cable must connect to GND.

INV11: LCD Inverter Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	LCD Adj	2	GND
3	+12V	4	GND
5	Backlight Enable		

PWR1: DC 12V System Power Input Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+12V	2	GND
3	GND		
PS:Apollo Lake-I serial M/B Support DC Input 9V to 30V			

PWR2: DC 12V System Power Input Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+12V	2	GND
PS:Apollo Lake-I serial M/B Support DC Input 9V to 30V			

J_KB/MS1: *PS2 Keyboard and Mouse Connector*			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC	4	Keyboard DATA
2	Mouse DATA	5	Keyboard Clock
3	Mouse Clcok	6	GND

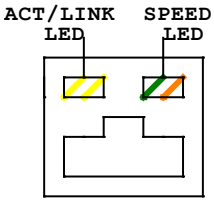
USB1 & USB2: Internal USB 2.0 Connectors (Pitch 2.0 mm)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	+5V	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	+5V

DIO1: Digital I/O Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	+5V
3	D_OUT3	4	D_OUT2
5	D_OUT1	6	D_OUT0
7	D_IN3	8	D_IN2
9	D_IN1	10	D_IN0

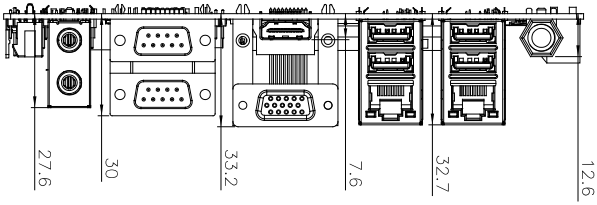
BT1: RTC Battery connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RTC Battery+	2	RTC Battery-

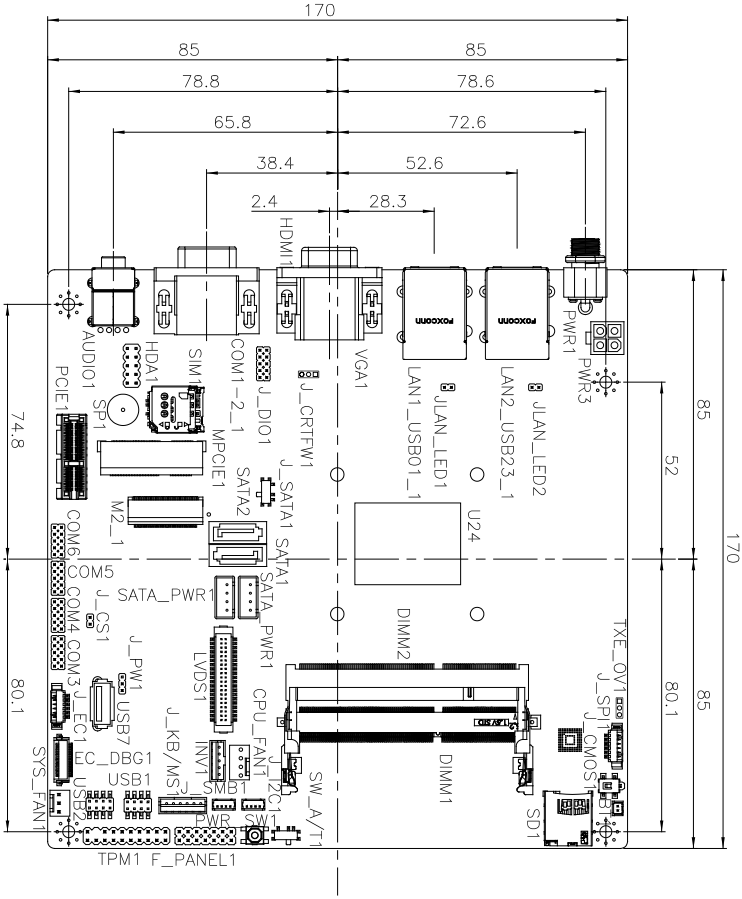
JLAN_LED1/JLAN_LED2: LAN1,LAN2 Active LED Pin header 2.0mm Pitch			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	LED+	2	LED-

LAN1/LAN2 LED:			
ACT / LINK LED		**SPEED LED**	
Status	**DESCRIPTION**	**Status**	**DESCRIPTION**
OFF	No Link	OFF	10 Mbps connection
YELLOW	Link	GREEN	100 Mbps connection
BLINKING	Data activity	ORANGE	1 Gbps connection



Board Layout: Jumper and Connector Locations





(Unit: mm)