

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

tKINO-AL

Quick Installation Guide

Version 1.0

Jun 20, 2017.

Package List

tKINO-AL package includes the following items:

- 1 x tKINO-AL single board computer with Heatsink
- 1 x SATA with power cable kit (P/N: 32801-000100-300-RS)
- 1 x I/O Shielding
- 1 x QIG (Quick Installation Guide)
- 1 x Utility CD
- 1 x One key recovery CD



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Specifications

- SoC:
 - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
 - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
 - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
 - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
 - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
- BIOS: AMI UEFI BIOS
- Memory:
 - Two 204-pin 1867/1600MHz 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 , H.264, VP8, SVC, MVC
- Display Output:
 - Triple Independent Displays
 - 1 x eDP (up to 4096x2160 @ 60Hz)
 - 2 x DP++ (up to 4096x2160 @ 60Hz)
- Ethernet: 2 x PCIe GbE LAN Realtek RTL8111GN-CG
- Super I/O: Fintek F81866
- External I/O Interfaces:
 - 4 x USB 3.0
- Internal I/O Interfaces:
 - 2 x SATA 6G/s with 12/5V SATA power connector (No RAID)
 - 2 x USB 2.0 (2x4 pin, P=2.00)
 - 2 x RS-232/422/485 (2x5 pin, P=2.00)
 - 4 x RS-232 (2x5 pin, P=2.00)

- 1 x KB/MS (1x6 pin)
- SMBus: 1 x SMBus (1x4 pin)
- TPM: 1 x TPM connector (2x10 pin)
- Audio:
 - Realtek ALC269 HD codec
 - 1 x Audio Jacks (Line-out)
 - 1 x Analog audio (2x5 pin)
 - 1 x Speaker (1x4 pin)
- Front Panel:
 - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- LAN LED: 2 x LAN LED (1x2 pin)
- Expansion :
 - 1 x PCIe x1
 - 1 x Full/Half-size PCIe Mini slot (1 w/ reserved SIM holder)
 - 1 x M.2 (B Key) (2242)(SATA port1 + USB 2.0 signal)
 - 1 x Micro SD(Optional)
- Digital I/O: 1 x 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:
 - 12V only DC input as Default
 - 1 x Internal power connector (2x2 pin) (90°) (Co-lay 2 pin Terminal block)
 - 1 x External DC power Jackc (Ø5.5mm)
 - Support AT/ATX mode
 - ErP/EuP Compliant
- Watchdog Timer:
 - Software programmable supports 1~255 sec. system reset
- Operating Temperature: -20°C ~ 70°C
- Storage Temperature: -40°C ~ 85°C

- Operation Humidity: 5% ~ 95%, non-condensing
- Dimension: 170mm x 170mm
- Weight(GW/ NW): 1100g/ 700g

Ordering Information

- **tKINO-AL-N2-R10:**
Thin Mini-ITX SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **tKINO-AL-N1-R10:**
Thin Mini-ITX SBC supports Intel® 14nm dual-core Celeron® N3350 2.4GHz on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **tKINO-AL-E3-R10 *:**
Thin Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3950 2.0GHz on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **tKINO-AL-E2-R10 *:**
Thin Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3940 1.8GHz on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **tKINO-AL-E1-R10 *:**
Thin Mini-ITX SBC supports Intel® 14nm dual-core Atom™ E3930 1.8GHz on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
- **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 management tool, firmware v5.5

Jumpers setting and connectors

LABEL	FUNCTION
J_CMOS1	Clear CMOS Switch
SW_A/T1	ATX or AT Power Select Switch
ERP1	ERP Mode Select
J_SATA1	M.2 SATA (M2_1) or SATA2 Select
TXE_IV1	Flash Descriptor Override Select
F_PANEL1	Front panel connector
JLAN_LED1, JLAN_LED2	LAN1,LAN2 Active LED Pin header
HDA1	Front Panel Audio Connector
SPK1	Speaker Connector
TRRS1	Audio Jack Microphone/Headphone
TPM1	TPM Pin Header
BT1	RTC Battery connector
CPU_FAN1, SYS_FAN1	Fan Connector
SATA_PWR1, SATA_PWR2	SATA HDD Power Connector
J_SPI1	SPI1 Flash Connector
COM1-6	Serial port connectors
KB/MS1	PS/2 Keyboard & Mouse Connector
J_SMB1	SMBUS Connector
PWR1	DC 12V System Power Input Connector
PWR2	DC 12V System Power Input Connector
EDP1	e-DP Connector for e-DP Panel
USB4-5_1	USB 2.0 Connector
DIO1	Digital I/O Connector
DIMM1	204 PIN DDR3LSO-DIMM Channel A

DIMM2	204 PIN DDR3L SO-DIMM Channel B
SATA1, SATA2	Standard 7Pin SATA Connector
DP1, DP2	Standard DP++ Port 1 and Port 2
LAN1, LAN2	Standard RJ-45 With LED Connector
SD1	Standard Micro-SD Slot
MPCIE1	Standard Mini-PCIE Slot
PCIE1	Standard PCIE X 1 Slot
SIM1	Micro-SIM Card Slot
USB0-1_1, USB2-3_1	Standard Dual USB 3.0 Connector

J_CMOS1: Clear CMOS Switch	
PIN NO.	DESCRIPTION
Open	Normal Operation (Default)
Push	Clear CMOS Setup

SW_AT1: ATX or AT Power Select Switch	
PIN NO.	DESCRIPTION
Short A - B	ATX Mode (default)
Short B - C	AT Mode

ERP1 : ERP Mode Select	
PIN NO.	DESCRIPTION
Short 1 - 2	ERP Mode Disabled(Have Standby Power) (default)
Short 2 - 3	ERP Enabled(Can used BIOS Setup to Disabled ERP)

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

TXE_IV1: Flash Descriptor Override Select	
PIN NO.	DESCRIPTION
Short 1 - 2	No Override (Normal Operation) (default)
Short 2 - 3	Override

F_PANEL1: Front panel connector					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWR LED	1	PWR_LED+	2	SPKR+	SPKR
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWR BTN	7	PWR_SW+	8	SPKR-	RESET
	9	PWR_SW-	10	NC	
HDD LED	11	HDD_LED+	12	RESET_SW+	
	13	HDD_LED-	14	RESET_SW-	

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

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

SPK1: Speaker Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	L+	2	L-
3	R-	4	R+

TRRS1: Audio Jack Microphone/Headphone			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MIC	2	Right
3	Detect+	4	Detect-
5	Left-	6	GND

TPM1: TPM Pin Header			
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#

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

CPU_FAN1/SYS_FAN1: Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	12V
3	FAN_IN	4	FANCTL

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

J_SPI1: SPI1 Flash Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	4	Clock
2	CS#	5	MOSI
3	MISO	6	GND

COM1-6: COM1-2 is RS-232/RS-422/RS-485 & COM3-6 is RS-232 Only.			
PIN NO.	RS-232	RS-422	RS-485
1	DCD	TXD422-	TXD485-
3	RXD	TXD422+	TXD485+
5	TXD	RXD422+	
7	DTR	RXD422-	
9	GND	GND	GND
2	DSR		
4	RTS		
6	CTS		
8	RI		
10	GND	GND	GND

KB/MS1: PS/2 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: SMBUS Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SMB_CLK
3	SMB_DATA	4	+5V

PWR1: DC 12V System Power Input Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	GND		

PWR2: DC 12V System Power Input Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V		+12V

EDP1: e-DP Connector for e-DP Panel			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	21	LCD_VCC
2	H-GND	22	NC
3	LANE3_N	23	LCD_GND
4	LANE3_P	24	LCD_GND
5	H-GND	25	LCD_GND
6	LANE2_N	26	LCD_GND
7	LANE2_P	27	HPD
8	H-GND	28	BKLT_GND
9	LANE1_N	29	BKLT_GND
10	LANE1_P	30	BKLT_GND
11	H-GND	31	BKLT_GND
12	LANE0_N	32	BKLT_ENABLE
13	LANE0_P	33	BKLT_PWM_DIM
14	H-GND	34	NC
15	AUX_CH_P	35	NC
16	AUX_CH_N	36	BKLT_PWR
17	H-GND	37	BKLT_PWR
18	LCD_VCC	38	BKLT_PWR
19	LCD_VCC	39	BKLT_PWR
20	LCD_VCC	40	NC

USB4-5_1: USB 2.0 Connector			
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

