# Single Board Computer

***Industrial Motherboard***

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**KINO-DAL**

***Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.1 Gen 1 (5Gb/s), PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS***

MicroSD (optional)

2 x DDR3L SO-DIMM

Front Panel TPM LVDS KB/MS

**Triple Independent Displays**

USB 2.0

USB 2.0 B Key M.2

RS-232

Full/Half size

**VGA**

**HDMI**

**LVDS**

PCIe Mini card slot

Dual LAN VGA

PCIe x1

MicroSIM (optional) Front Audio

# *Specifications*

SoC

DIO

2 x SATA 6Gb/s

12V

power input

USB 3.1 Gen 1 HDMI COM 1/2 Line-out/ Mic

DDR3L

Intel® Atom® x7-E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)

KINO-DAL-2019-V10

Intel® Atom® x5-E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W) Intel® Atom® x5-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

UEFI BIOS

Memory

Two 204-pin 1866/1600MHz Dual-channel DDR3L SO-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 display

1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz) 1 x VGA (up to 1920x1200@60Hz)

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

Ethernet: 2 x PCIe GbE LAN Intel® i211 AT controller External I/O Interface

4 x USB 3.1 Gen 1 (5Gb/s)

2 x RS-232/422/485

Internal I/O Interface

1 x eMMC 5.0 (optional, up to 32G) 1 x KB/MS (1x6 pin)

1. x MicroSD card slot (optional) 4 x RS-232 (2x5 pin, P=2.0) 1 x USB 2.0 (180° Type-A) 4 x USB 2.0 (2x4 pin, P=2.0)
2. x SATA 6Gb/s with 12/5V SATA power connector SMBus: 1 x SMBus (1x4 pin)

I²C: 1 x I²C (1x4 pin) TPM: 1 x TPM (2x10 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 (2x7 pin, power LED, HDD LED, speaker, power button, reset button) LAN LED: 2 x LAN LED (1x2 pin)

Expansion

1 x PCIe x1 card slot

1 x Full/Half-size PCIe Mini card slot

1 x M.2 B key (2242/2260/2280, USB 2.0 & colay SATA2)

Digital I/O: 8-bit digital I/O (2x5 pin) Fan Connector

1 x CPU smart fan (1x4 pin)

1 x System smart fan (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 Power Consumption

12V@3.64A (Intel® Pentium® N4200 CPU with two 8GB 1600MHz DDR3L memory)

Operating Temperature: -20°C ~ 70°C / -40°C ~ 85°C (KINO-DAL-ExW2) Storage Temperature: -40°C ~ 85°C

Operating Humidity: 5% ~ 95%, non-condensing Dimensions: 170mm x 170mm

Weight: GW: 1100g / NW: 700g CE/FCC compliant

***USB***

Fanless Jumper-less M.2/NGFF USB 3.1 SATA 6Gb/s PCIe GbE

# *Features*

* Mini-ITX SBC supports Intel® 14nm Atom®, Pentium® or Celeron® on-board SoC

supports dual-channel DDR3L SO-DIMMs

* Triple independent display support
* Optional wide range 9V~30V DC input design
* Full size PCIe Mini slot for 3G/LTE expansion
* COM, USB 3.1 Gen 1 (5Gb/s), SATA 6Gb/s, M.2, eMMC 5.0 and audio support
* IEI one key recovery solution allows you to create rapid OS backup and recovery

# *Packing List*

|  |  |
| --- | --- |
| 1 x KINO-DAL single board computer with heatsink | 1 x I/O Shielding |
| 1 x SATA with power cable kit | 1 x QIG |

***Ordering Information***

|  |  |
| --- | --- |
| Part No. | Description |
| 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 3.1 Gen 1 (5Gb/s), 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 3.1 Gen 1 (5Gb/s), PCIe Mini, M.2, SATA 6Gb/s, COM,Audio and RoHS |
| KINO-DAL-J2-R10 | Mini-ITX SBC supports Intel® 14nm quad-core Celeron® J3455 2.3GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.1 Gen 1 (5Gb/s), 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 3.1 Gen 1 (5Gb/s), 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 3.1 Gen 1 (5Gb/s), 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 1.8GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.1 Gen 1 (5Gb/s), 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 |
| 32205-002700-200-RS | RS-232 cable, 200mm, P=2.0 |
| TPM-IN02-R20 | 20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5 |

\*\*By order production, MOQ: 100