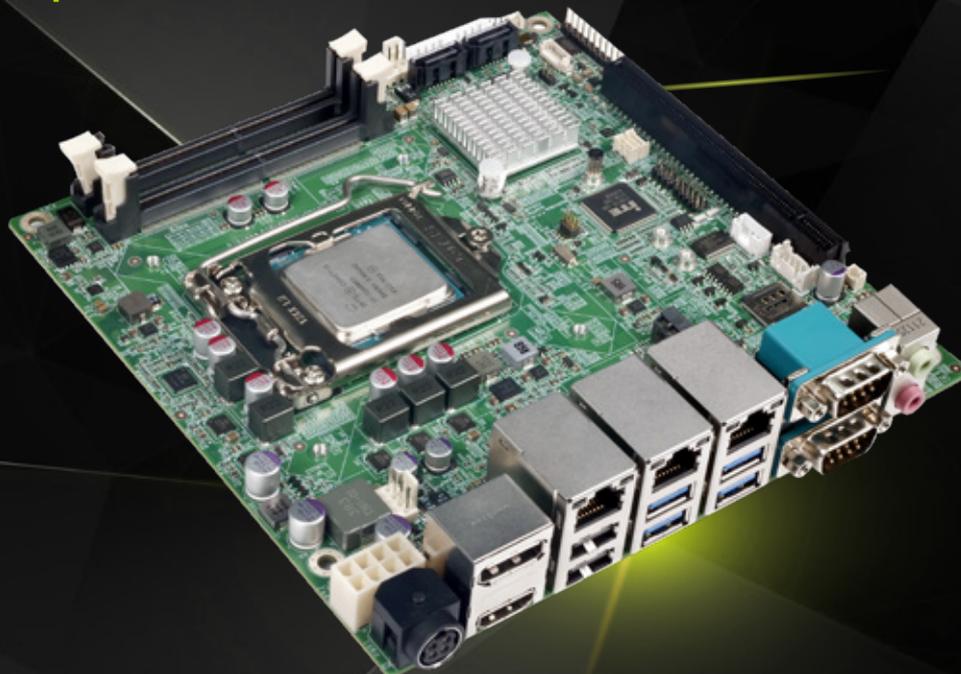# KINO-DH420

Industry mini-ITX support Intel® 10th Gen Core™ i9/i7/i5/i3 processor motherboard

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- Support HDMI and DP dual independent display output
- Support triple Intel® 2.5Gb Eethernet controller
- Support 1 x PCIe Gen3 x16, 1 x M.2 A key, 1 x M.2 B key expansion
- Support 4 x USB 2.0, 4 x USB 3.2 Gen1, transfer rate up to 5Gb/s
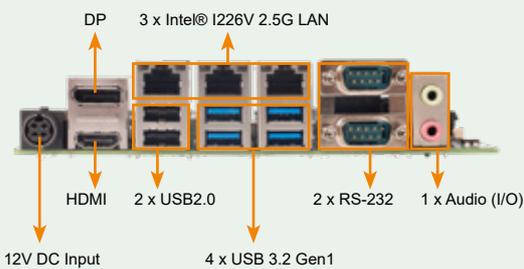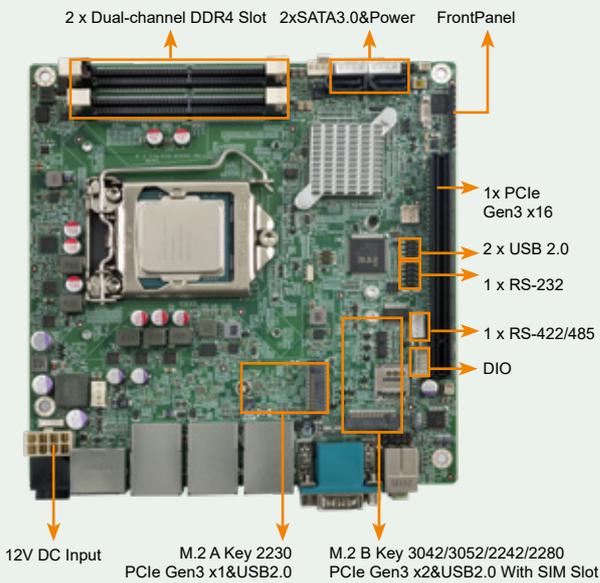- Support 3 x RS-232, 1 x RS-422/485, 2 x SATA 6Gb/s connector

**17*17 mini ITX form factor
With multiple expansion function**

iEi ®

KINO-DH420

Mini-ITX SBC supports LGA1200 Intel® 10th Generation Core™ i9/i7/i5/i3/ Pentium® and Celeron® CPU per Intel® H420E, DDR4, dual independent display, triple GbE LAN, M.2, SATA 6Gb/s, HD Audio and RoHS

2 x Dual-channel DDR4 Slot   2xSATA3.0&Power   FrontPanel

1x PCIe Gen3 x16

2 x USB 2.0

1 x RS-232

1 x RS-422/485

DIO

12V DC Input

M.2 A Key 2230
PCIe Gen3 x1&USB2.0

M.2 B Key 3042/3052/2242/2280
PCIe Gen3 x2&USB2.0 With SIM Slot

DP   3 x Intel® I226V 2.5G LAN

HDMI   2 x USB2.0   2 x RS-232   1 x Audio (I/O)

12V DC Input   4 x USB 3.2 Gen1

| DDR4 2933 | Dual Display | 2.5GbE LAN | USB 3.2 | SATA 6Gb/s |

Support Intel® 10th generation processor

Equipped with 10th Gen. Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processors, the KINO-DH420 features superior performance, and can handle multitasking efficiently.

Support Intel® I226V 2.5GbE Controller

Support triple RJ45 network interfaces based on Intel® I226V 2.5GbE network controller to achieve up to 2.5GbE network transmission rate.

Support Multiple Expansion Slot

Support 1 x PCIe Gen3 x16 slot that can install PCIe function expansion cards ,M.2 A key that can be used for WiFi module or Bluetooth module , and M.2 B key witn SIM card that can be used for 5G module and NVME storage expansion.
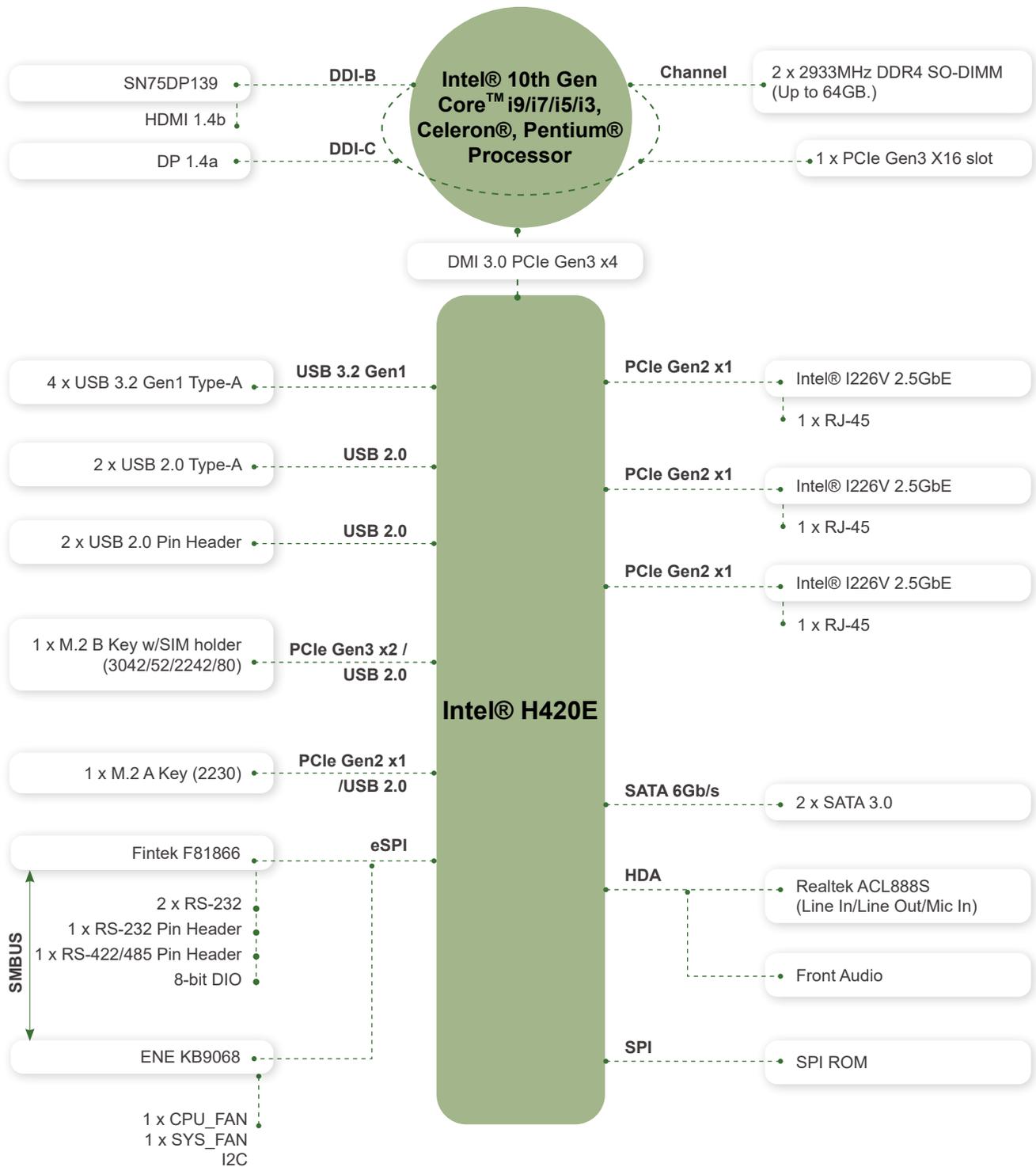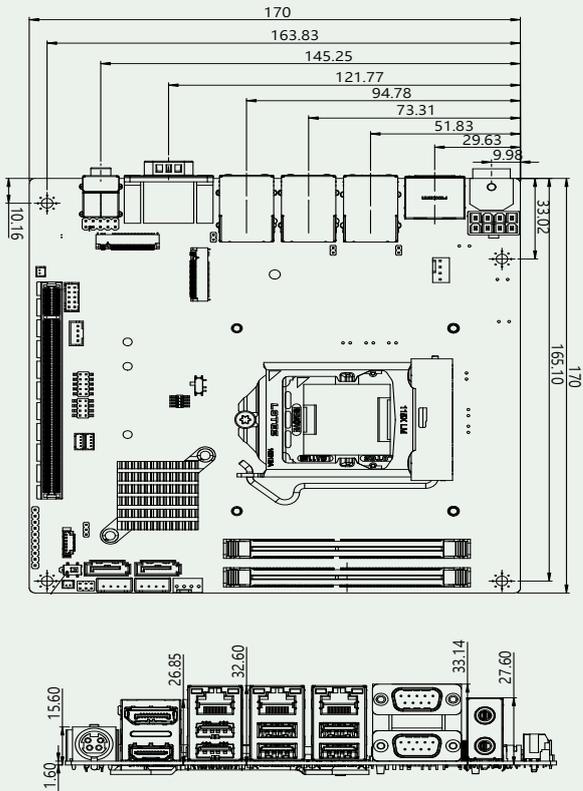
Support Dual Independent Display

Support dual independent display outputs: one DP (resolution up to 4096 x 2304 @60Hz) and one HDMI (resolution up to 4096 x 2160@30Hz).

intel partner
Titanium

Block Diagram

Intel® 10th Gen Core™ i9/i7/i5/i3, Celeron®, Pentium® Processor

SN75DP139 — DDI-B
HDMI 1.4b
DP 1.4a — DDI-C

Channel — 2 x 2933MHz DDR4 SO-DIMM (Up to 64GB.)

1 x PCIe Gen3 X16 slot

DMI 3.0 PCIe Gen3 x4

Intel® H420E

4 x USB 3.2 Gen1 Type-A — USB 3.2 Gen1

2 x USB 2.0 Type-A — USB 2.0

2 x USB 2.0 Pin Header — USB 2.0

1 x M.2 B Key w/SIM holder (3042/52/2242/80) — PCIe Gen3 x2 / USB 2.0

1 x M.2 A Key (2230) — PCIe Gen2 x1 /USB 2.0

Fintek F81866 — eSPI

2 x RS-232
1 x RS-232 Pin Header
1 x RS-422/485 Pin Header
8-bit DIO

SMBUS

ENE KB9068

1 x CPU_FAN
1 x SYS_FAN
I2C

PCIe Gen2 x1 — Intel® I226V 2.5GbE
1 x RJ-45

PCIe Gen2 x1 — Intel® I226V 2.5GbE
1 x RJ-45

PCIe Gen2 x1 — Intel® I226V 2.5GbE
1 x RJ-45

SATA 6Gb/s — 2 x SATA 3.0

HDA — Realtek ACL888S (Line In/Line Out/Mic In)

Front Audio

SPI — SPI ROM

Dimensions

Optional Accessories

19800-000300-100-RS

32205-003800-300-RS

32801-000703-500-RS

CF-115XA-R10

CF-1156C-R20

CF-1156D-R30

CF-115XE-R10

Specifications

Model	KINO-DH420
CPU	LGA1200 socket supports 10th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor
Chipset	Intel® H420E
BIOS	AMI UEFI BIOS
Memory	Two 260-pin 2933 MHz dual-channel DDR4 SO-DIMMs (system max. 64GB)
Graphics Engine	Intel® HD Graphics Gen9 Engines with 16 low-power execution units, supporting DX11.3/12,OpenGL 4.3/4.4/4.5 and OpenCL 1.2/2.0/2.1
Display Output	Dual independent display 1 x DP (up to 4096 x 2304 @60Hz) 1 x HDMI (up to 4096 x 2160@30Hz)
Ethernet	LAN1: Intel® I226V GbE controller LAN2: Intel® I226V GbE controller LAN3: Intel® I226V GbE controller
External I/O Interface	2 x RS-232 2 x USB 2.0 4 x USB 3.2 Gen 1(5Gb/s)
Internal I/O Interface	1 x RS-232 (2x5 pin, P=2.0) 1 x RS-422/485 (1x4 pin, P=2.0) 2 x SATA 6Gb/s (No RAID) 2 x USB 2.0 (2x4 pin, P=2.0)
I2C	1 x I²C (1x4 pin)
SMBus	1 x SMBus (1x4 pin)
Audio	Realtek ALC888S HD codec 2 x Audio Jack (Line-out, Mic-in) 1 x Front Audio (2x5 pin, P=2.54)
Front Panel	1 x Front Panel (1 x 10 pin, Power LED, HDD LED, Power Button, Reset Button)
LAN LED	3 x LAN LED (1x2 pin)
Expansion	1 x PCIe Gen3 x16 1 x M.2 A key (2230) (PCIe Gen 3 x1/USB 2.0) 1 x M.2 B key (3042/52/2242/80) w/ SIM holder (PCIe Gen 3 x2 /USB 2.0)
Digital I/O	1 x 8-bit digital I/O connector(2x5 pin)
TPM	Intel® PTT (TPM 2.0)
FAN connector	1 x CPU fan connector (1x4 pin) 1 x System fan connector (1x4 pin)
Chassis Open	1 x Chassis intrusion connector (1x2 pin)
Power supply	DC 12V input 1 x ATX power connector (2x4 pin) 1 x DIN 4-pin DC Jack Support AT/ATX mode ErP/EuP Compliant
Watchdog Timer	Software Programmable support 1~255 sec. System reset
Power Consumption	12V@12.408A (Intel® Core™ i9-10900E CPU with two 32 GB 2933 MHz DDR4 memory, EuP/ErP mode disabled)
Operating Temperature	0°C ~ 60°C
Storage Temperature	-30°C ~ 70°C
Operating Humidity	5% ~95%, non-condensing
Diemension	170mm x 170mm
Weight	GW: 900g / NW: 400g

Packing List

1 x KINO-DH420 single board computer	1 x SATA cable (PN: 32801-000100-300-RS)
1 x I/O Shielding (PN: 45014-0089C0-00-HF)	1 x QIG

Ordering Informaiton

KINO-DH420-R11	Mini-ITX SBC supports LGA1200 10th Generation Intel® Core™ i9/i7/i5/i3/ Pentium® /Celeron® CPU per Intel® H420E, DDR4, dual independent displays, triple GbE LAN, M.2, SATA 6Gb/s, HD Audio and RoHS

Optional Accessories

19800-000300-100-RS	RS-232 cable,BRACKET*1, 300mm, P=2.0
32205-003800-300-RS	RS-422/485 CABLE;2;200MM, P=2.0
32801-000703-500-RS	SATA CABLE;2;500MM
CF-115XA-R10	LGA1155/1156 cooler kit, 1U chassis compatible ,73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R30	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/1156 cooler kit, 95W