ATC 8120-C4F

Intel® Core™ Processor (Series 2) with AI Inference Accelerator
for Autonomous and Machine Vision





Main Features

- Powered by AI inference accelerator for in-vehicle applications
- Configurable for up to 600W discrete graphics card
- Built-in high performance Intel® Core™ Processor (Series 2)
- Support up to total 4 PCIe 5.0/4.0 x16/x8/x4 slots for expansion
- Ultra speed M.2 Key M NVMe & 4 x 2.5" SSD for data integrity
- RAID 0/1/5/10 configurable for data secure
- DC 9V~36V input with ignition control & OCP/UVP
- 4 x 2.5GbE PoE, up to PoE++ (IEEE 802.3bt) support
- Rich communication ports: 6 x USB 3.2, 2 x CAN FD, and 4 x UART
- Telemetric functionality with 2 x WWAN/5G NR, 1 x WLAN, and GNSS/DR/RTK support
- Military standard of MIL-STD-810H for anti-vibration/shock
- CE/FCC, UKCA, and E-mark certified

Specifications

Processor
- Intel® Core™ processor (Series 2)
  - Intel® Core™ 7/5/3 processor 251E/221E/201E, PBP up to 65W
  - Intel® Core™ Series 2 processor with P-cores, PBP up to 65W

Chipset
- Intel® R680E

Memory
- 2 x DDR5 SO-DIMM, ECC, up to 96GB, 48GB per DIMM

Storage
- 4 x 2.5" SATA 3.0 SSD (15mm height), removable
- 1 x M.2 Key M 2280 NVMe SSD (PCIe 4.0 x4)

Expansion Slot
- 1 x Full size Mini PCIe 3.0 x2 slot (USB 3.2, USB 2.0)
  - Option for M.2 Key B (2 x nano-SIM)
- 1 x M.2 Key E (PCIe 3.0 x1, USB 2.0)
  - Support Wi-Fi 5/6 module
- 2 x M.2 Key B 3042/3052 (USB 3.2, USB 2.0)
  - Support LTE/5G NR module
- 1 x PCIe 5.0 x16 3.5 slot-width
  - For discrete graphics card
- 2 x PCIe 4.0 x8 slot
- 1 x PCIe 4.0 x4 slot

Dedicated GPU (optional)
- Up to NVIDIA® GeForce RTX™ 5090, 600W

Sensor
- GNSS: u-blox NEO-M9N GNSS module for GPS/GLONASS/QZSS/Galileo/Beidou
- Optional modules with dead reckoning/RTK available
- MEMS: 3D accelerometer and 3D gyroscope, ST LSM6DSLTR

System Capabilities
- TPM 2.0: Infineon SLB 9672VU2.0 FW15.23

Display Interface
- 1 x VGA, up to 1920x1200@60Hz
- 2 x HDMI® 2.1, up to 4096x2304@60Hz

CAN bus (isolation)
- 2 x CAN FD, compatible with CAN 2.0A/2.0B
- Up to 5Mb/s in data transmit, 2.5KV isolated
- IEC 61000-4-2 Electrostatic Discharge (ESD): ± 6KV/8KV (contact/air)
- ISO 11898-1/11898-2
- ESD: ± 8KV/15KV (contact/air), 2.5KV isolated

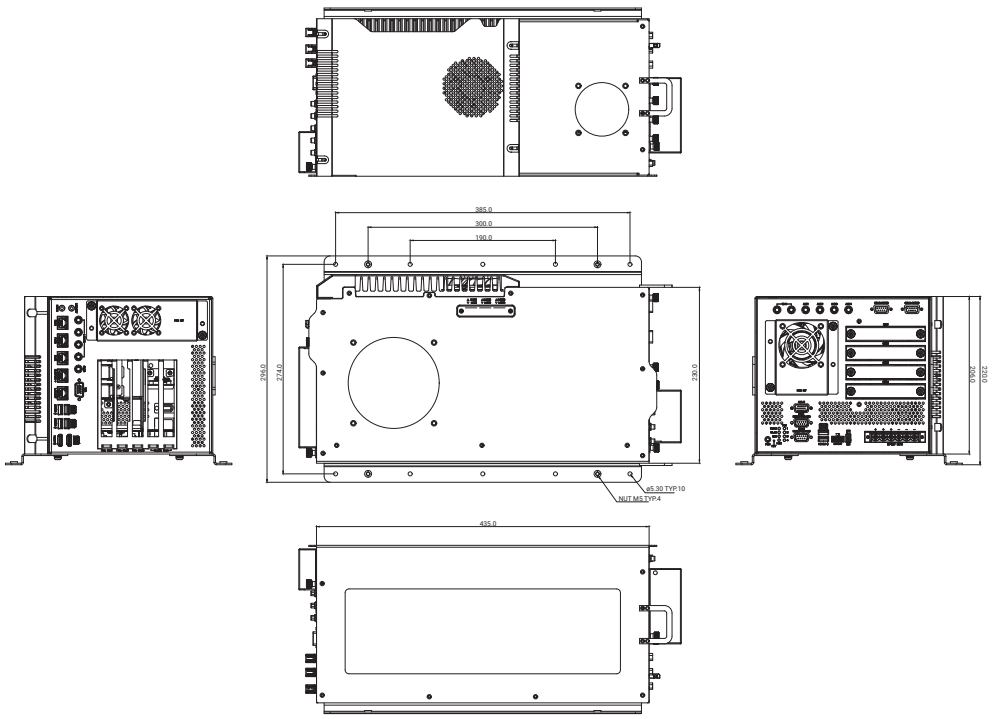
DI/DO (isolation)
- 4-Bit input
  - Source: DC 9V~36V (12V@1.1mA/24V@2.2mA)
  - External: DC 0V~33V pull-high, high-level, DC 3.3V-33V; low-level, DC 0V-2V
- 4-Bit output
  - Source: DC 9V~36V (nominal 35mA@24V):
  - External: DC 5V~27V pull-high, sink current w/ 220mA for each bit, 500mA max (@25C)
- Source or external can be selected by software (default: source type)

Serial Port
- 2 x COM port (DB9, COM1, COM2), supports full RS-232/422/485
- 2 x COM port (DB9, COM3, COM4), supports full RS-232
- RS-232 working voltage, ± 9V, baud rate up to 115.2kb/s
- 2-wire/4-wire RS-485 (Baud rate: 300~115.2Kbps)
- 1 x UART for RTK signal, wafer reserved

Power Management
- 9V~36V DC-in
- Setting 8-level power on/off delay time by software
- Reverse protection, OCP & UVP
- Ignition on/off control/programmable on/off delay timer
- Connector: 6-pin terminal block, a 2-pin conn. for IGN control

I/O Interface Front
- 1 x 6-pin terminal block for 9V~36V DC-IN
- 1 x 2-pin mini-fit for IGN control
- 1 x ATX power button
- 1 x Reset button
- 8 x LED indicator for power/storage/WLAN/WWAN/PoE
- 4 x 2.5" SSD tray
- 2 x USB 3.2 Gen 2, Type-A, 5V/900mA
  - Lock hole reserved
  - Up to 10Gbit/s link speed & compliance with USB 2.0 (LS/FS/HS link speed)
- 2 x COM port (DB9, COM1, COM2)
- 2 x COM port (DB9, COM3, COM4)
- 1 x MULTI-port (DB15, DI/DO + CAN FD)
- 1 x DC out, 12V/3A, terminal block
- 6 x SMA antenna hole
- 2 x USB 2.0, wafer reserved, 5V/500mA

Dimension Drawing



I/O Interface Rear
- 4 x USB 3.2 Gen 2, Type-A, 5V/900mA
  - Lock hole reserved
  - Up to 10Gbit/s link speed & compliance with USB 2.0 (LS/FS/HS link speed)
- 2 x HDMI®
- 1 x VGA (DB15), up to 1920x1200@60Hz
- 4 x 2.5GbE RJ45 PoE port (LAN1~LAN4, 80W power budget), 1 x 1GbE RJ45 port (LAN5)
  - IEEE 802.3af/at/bt (LAN1~LAN4, LAN1 supports IEEE 802.3bt)
  - 9K byte jumbo frame
  - Support PTP (IEEE 1588)
  - Controller/PHY: Intel® I226-I (LAN1~LAN4), Intel® I219-LM (LAN5)
  - Support vPro (iAMT) & WoL: LAN5
- 1 x PCIe x16 slot
- 2 x PCIe x8 slot
- 1 x PCIe x4 slot
- 1 x GNSS antenna
- 4 x SMA antenna hole
- 1 x Line out: unbalance stereo, left & right channel, audio jack
  - Audio codec: REALTEK ALC888S-VD2-GRALC888S
- 1 x Mic in, audio jack
- 1 x Line in, stereo, wafer reserved

I/O Interface Top
- 2 x nano-SIM slot, one additional in the option

Vibration & Shock
- Vibration in operating:
  - MIL-STD-810H, 514.8C Procedure 6, Category 4
  - IEC 60068-2-64: 2.0g@5Hz~500Hz
- Vibration in storage:
  - MIL-STD-810H, 514.8E Procedure 1, Category 24, 7.7g
- Shock:
  - MIL-STD-810H, 516.8 Procedure I, trucks and semi-trailers=40g
  - Crash hazard: Procedure V, ground equipment=75g

Mechanical
- Dimensions: 296mm (W) x 220mm (D) x 435mm (H) w/ mount bracket
- Weight: 8kg (bare bone)

Environment
- Operating temperature: -30°C~70°C (w/ 80W PoE, fan kit, w/o graphics card)
- Operating temperature: -30°C~55°C (w/ 80W PoE, fan kit, w/ 600W graphics card)
- Storage temperature: -40°C~85°C
- Relative humidity: 10%~95% (non-condensing)

Certifications
- CE approval, FCC Class A, UKCA, and E-mark certified

Operating System
- Windows 11
- Windows 10, 64-bit
- Windows 10 IoT, 64-bit
- Linux (Ubuntu 22.04, Linux 5.19)

Ordering Information

- **ATC 8120-C4F (P/N: 10AT0812000X0)**
  System bare-bone, fan-kit, Intel® Core™ 7/5/3 processor, 2 x DDR5 SO-DIMM, 4 x PoE, 1 x LAN, 6 x USB 3.2, 4 x serial, 4 x PCIe slot, DC 9V~36V

- **Options**

CPU			
Model Name	P-core + E-core	P-core/E-core Base Freq.	PBP
Core™ 9, 273PE	12 (12+0)	2.3GHz/N/A	65W
Core™ 9, 273PTE	12 (12+0)	1.4GHz/N/A	45W
Core™ 7, 251E	24 (8+16)	2.1GHz/1.6GHz	65W
Core™ 7, 251TE	24 (8+16)	1.4GHz/1.0GHz	45W
Core™ 5, 221E	14 (6+8)	2.7GHz/2.1GHz	65W
Core™ 5, 221TE	14 (6+8)	1.8GHz/1.3GHz	45W
Core™ 3, 201E	4 (4+0)	3.6GHz/N/A	65W
Core™ 3, 201TE	4 (4+0)	2.9GHz/N/A	45W
SO-DIMM DDR5 5600MHz			
8GB	16GB	32GB	48GB
Graphics card			
NVIDIA® GeForce RTX™ 50xx Series (~600W)		NVIDIA® Quadro RTX™ 5000/6000/ A6000 (300W)	
Others			
1500W power supply kit (P/N: 10AT0812001X0)			

We reserve the right to change specifications and product descriptions at any time without prior notice.