VTC 7280-7/-5

Fanless AI Powered Vehicle Computer
Powered by Intel® Core™ Ultra Processor (Series 1)

Main Features

- Powered by Intel® Core™ Ultra processor, up to 26 TOPS AI computing power
- Fanless, compact and rugged design
- 2 x 2.5GbE
- Expandable to 2 x WWAN and 2 x WLAN for enhanced mobile router performance
- Support 100/1000Base-T1 Automotive Ethernet (optional)
- 2 x 2.5" SSD, 1 x NVMe SSD (PCIe 4.0 x4) for data integrity
- DC 9V~36V input with ignition control & OCP/OVP
- Wide range operating temperature of -40°C~60°C
- MIL-STD military standard for anti-vibration/shock
- CE/FCC, UKCA, E-mark certified

Product Overview

The VTC 7280-x is a rugged fanless in-vehicle telematics computer. Powered by the Intel® Core™ Ultra processor with up to 26 TOPS AI computing power, it delivers 30% more CPU performance than its predecessor, making it ideal for many in-vehicle applications like fleet management, logistics/AMR, ITS, ANPR, construction, and public transportation security surveillance.

The VTC 7280-x is engineered for continuous 24/7 operation in challenging conditions. Its compact and durable build ensure reliable performance in confined spaces. It features diverse I/O, including two 2.5GbE RJ45 ports, multiple USB 3.2/2.0 ports, two isolated CAN FD, three serial ports, and two display ports. With 2.5" NVMe SSD support, four extension slots, wide range DC 9V to 36V power input and IGN control, it is a sophisticated AI-powered telemetric computer. As an edge AI computer, it also supports LTE/5G and Wi-Fi 5/6 modules for cloud SaaS to provide AIoT/AI training/inference services.

Designed for harsh environments, the VTC 7280-x operates within a -40°C to 60°C temperature range, meets MIL-STD-810H military standard for vibration and shock resistance, and is certified by CE/FCC Class A, UKCA, and E-mark (E13).

Specifications

CPU

- Intel® Core™ Ultra processors (Series 1)
  - Intel® Core™ Ultra 7 processor 155H
  - Intel® Core™ Ultra 5 processor 125H
- NPU
  - 2 x 2048 MACs computing performance
- Graphics
  - Intel® Arc™ graphics
  - Max resolution: 4096x2160@60Hz (HDMI®)
  - DirectX: 12.2, OpenGL: 4.6

Memory

- 2 x DDR5 5600 SO-DIMM, 8GB default, up to 32GB per DIMM

Storage

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

Expansion Slots

- 1 x Mini PCIe slot (PCIe 4.0, USB 2.0)
- 1 x Mini PCIe slot (PCIe 4.0, USB 2.0), BOM option for M.2 Key B (USB 3.2/2.0), supports nano-SIMs
- 1 x M.2 Key B 3042/3052 (USB 3.2/2.0), supports nano-SIMs for LTE/5G module
- 1 x M.2 Key E 2230 (PCIe 4.0 x2 & USB 2.0)

Display

- 1 x HDMI® 2.0a, up to 3840x2160@60Hz
- 1 x VGA, up to 1920x1200@60Hz

Security

- TPM 2.0
  - Infineon SLB 9672VU2.0 FW15.23

2.5GbE

- 2 x 2.5GbE RJ45 port
  - Support iAMT/WoL/PXE (LAN1)
  - 9Kbyte Jumbo frame
  - Support PTP (IEEE 1588)
  - Controller: Intel® I226-IT

Audio

- 1 x Line out, unbalanced stereo, left/right channel, audio Jack
- 1 x Mic in, stereo, audio Jack
- 1 x Line in, wafer reserved
- Codec: Realtek ALC888S-VD2-GR

DC Out

- DC 12V/3A, terminal block

USB

- 1 x USB 3.2 Gen 2
  - Host Type-A
  - 5V@900mA
  - Up to 10Gbit/s link speed & compliance with USB 2.0 (LS/FS/HS link speed)
- 3 x USB 2.0
  - Host Type-A
  - 5V@500mA each

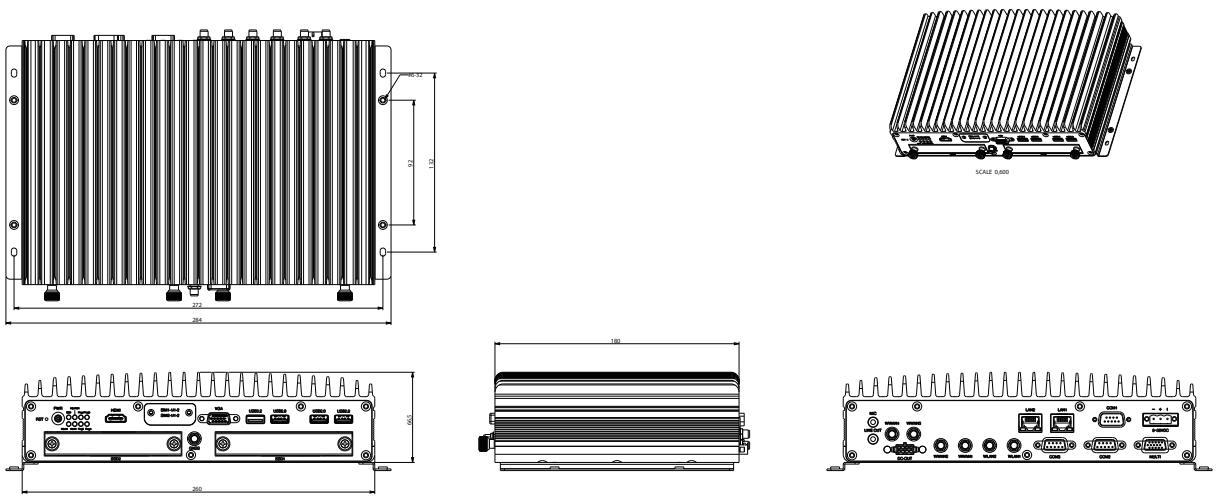
Serial Port

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

MEMS Sensor

- 3D accelerometer and 3D gyroscope, ST LSM6DSLTR

Dimension Drawing



DI/DO (isolation)
- 4-bit input
  - Source: DC 9V~36V (12V@0.6mA/24V@1.2mA)
  - 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~36V pull-high, sink current w/ 220mA for each bit, 500mA max (@25C)
- Source or external can be selected by DIP S/W (default: source type)

CAN bus
- 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)

GNSS
- u-blox NEO-M9N GNSS module (VIOB-GPS-07) for GPS/Gloness/QZSS/Galileo/Beidou
- Optional DR (Dead Reckoning) function, NEO-M9V (VIOB-GPS-DR07)

Power Supply
- Nominal voltage: DC 9V~36V
- Cranking voltage: DC 6V~9V (less than 20 sec)
- Reverse protection, OCP & UVP (shut down once exceeding 36.5V)
- Ignition on/off control & programmable on/off delay timer
- Optional for remote power on/off control

I/O ports, Front-Plate
- 1 x ATX power button, 1 x reset button
- 8 x LED Indicator
- 4 x nano-SIM slot (SIM1-1, SIM1-2, SIM2-1, SIM2-2)
- 1 x USB 3.2, Type-A
- 3 x USB 2.0, Type-A
- 1 x HDMI®, 1 x VGA
- 2 x Removable 2.5" SSD bay
- 1 x PR-SMA for GNSS

I/O ports, Rear-Plate
- 1 x COM port3 (DB9), supports RS-232
- 2 x COM port1/2 (DB9), supports RS-232/422/485
- 1 x Line out, 1 x Mic in
- 1 x Multi-port DB15 (4 x DI, 4 x DO, 2 x CAN FD)
- 2 x 2.5GbE RJ45 port
- 1 x Terminal block (DC out)
- 1 x 3-pin Phoenix connector for DC 9V~36V input
- 2 x PR-SMA for Wi-Fi ant., 4 x SMA for LTE/5G ant.

Internal Heater
- Activation threshold: less than -25°C
- Remote heater on/off signal, wafer reserved

Dimension & Weight
- Dimensions:
  - 260.0mm (W) x 180.0mm (D) x 66.5mm (H) (w/o mount bracket)
  - 280.0mm (W) x 180.0mm (D) x 72.5mm (H) (w/ mount bracket)
- Weight: 5.8kg

Environment
- Operating temperature: -40°C~60°C (fanless)
- Storage temperature: -40°C~85°C
- Relative humidity: 10%~95% (non-condensing)

Vibration & Shock
- Vibration in operating:
  - MIL-STD-810H, 514.8C Procedure 6, Category 4
  - IEC 60068-2-64: 2.0g@5~500Hz
- 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

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

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

Ordering Information

- **VTC7280-7 (P/N: 10V00728002X0)**
  Intel® Core™ Ultra 7 processor 155H, 5 x 2.5GbE PoE++, 1 x USB 3.2, 3 x USB 2.0, 3 x Serial, 2 x 2.5"SSD, 4DI/4DO, 2 x CAN FD, DC 9V~36V, IGN control

- **VTC7280-5 (P/N: 10V00728003X0)**
  Intel® Core™ Ultra 5 processor 125H, 5 x 2.5GbE PoE++, 1 x USB 3.2, 3 x USB 2.0, 3 x Serial, 2 x 2.5"SSD, 4DI/4DO, 2 x CAN FD, DC 9V~36V, IGN control