

IVX

1000



13th/12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Raptor Lake/Alder Lake)
In-Vehicle Computing Workstation



Advanced Driver Assistance System (ADAS)



- Workstation-grade Platform : 13th/12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Raptor Lake-S/Alder Lake-S) running with Intel® R680E PCH supports max 65W TDP CPU
- Optional supports outstanding AI computing productivity by advanced and compact NVIDIA® Quadro® MXM graphics
- 16V to 160V DC Power Input with 4kV DC Isolation, up to 500V Surge Protection, Software Ignition Power Control, optional UPS supported
- Fanless design for railway in-vehicle applications, fully compliant with EN50155 : 2017
- 8 Independent 2.5GigE LAN M12 X-coded
- Up to 6 front-access 7mm to 15mm height SSD/HDD Tray
- Supports Intel® vPro, TCC, Time-Sensitive Networking (TSN), and TPM 2.0

Public Security



Mobile Communication

intel partner
Gold IoT Solutions



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Specifications

System

Processor	- 24-core 13th Gen Intel® Core™ i9/i7/i5/i3 Processor (Raptor Lake-S) - 16-core 12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Alder Lake-S)
Chipset	Intel® R680E Chipset
BIOS	AMI
SIO	IT8786E
Memory	2 DDR5 4800MHz SO-DIMM, up to 64GB
OS	Windows 10, Linux

I/O Interface

Serial	4 Isolated COM RS-232/422/485
USB	- 4 USB 3.2 Gen2 - 1 A-coded M12 USB 2.0 with 2-port signal
Isolated DIO	16 Isolated DIO : 8 DI, 8 DO
LED	Power, HDD, PoE, Wireless
SIM Card	2 External SIM Card Sockets
RTC Battery	Front-access RTC Battery

Expansion

Mini PCIe	1 Mini PCIe sockets for PCIe/USB/SIM Card/Optional mSATA
M.2	- 1 M.2 Key B Socket (3052/2280, PCIe/USB 3, default/USB 2) - 1 M.2 Key E Socket (2230, PCIe/USB)
SUMIT	2 SUMIT Slot (Optional)

Graphics

Graphics Processor	- Intel® UHD Graphics 770 driven by Intel® X® Architecture - Independent MXM Graphics : By request
Interface	- 1 VGA : Up to 1920 x 1200 @60Hz - 2 HDMI : Up to 1920 x 1080 @60Hz - 2 DisplayPort : Up to 4096 x 2304 @60Hz (By requested MXM)

Storage

SATA	IVX-1000 : 2 SATA III (6Gbps) support software RAID 0, 1 IVX-1000 ICY : 6 SATA III (6Gbps) support software RAID 0, 1, 5, 10
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
M.2	1 M.2 Key M Socket (2280, PCIe x4)
Storage Device	IVX-1000 : 2 Front-access 2.5"SSD/HDD Tray IVX-1000 ICY : 6 Front-access 2.5"SSD/HDD Tray (15mm in height)

Audio

Audio Codec	Realtek® ALC888S-VD, 7.1 Channel HD Audio
Audio Interface	1 Mic-in, 1 Line-out

Ethernet

LAN 1	Intel® I219LM GigE LAN supports iAMT
LAN 2	Intel® I226 2.5GigE LAN supports TSN
LAN 3 to LAN 6	Intel® I226 2.5GigE LAN, X-Coded M12 Connector
LAN 7 to LAN 10	2.5GigE IEEE 802.3at (25.5W/48V) PoE+ by Intel® I226, X-Coded M12 Connector

Power

Power Input	DC 16V to 160V, Max. support 200W
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Ignition Control	16-mode Software Ignition Control
Remote Switch	3-pin Terminal Block
Isolation	4kV DC
Surge Protection	0.5kV DC 8/20us Surge
UPS (IVX-1000 ICY)	- Optional supports 3 stackable 18650 Li Batteries (2.5Ah) - Optional supports Super Cap

Others

TPM	Infineon SLB9670 supports TPM 2.0, SPI Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Mgmt.	Wake on LAN, PXE supported
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.

Environment

Operating Temperature	35W TDP CPU without GPU : -25°C to 75°C (-13°F to 167°F) 35W TDP CPU with <50W GPU : -25°C to 55°C (-13°F to 131°F) 65W TDP CPU without GPU : -25°C to 65°C (-13°F to 149°F) 65W TDP CPU with <50W GPU : -25°C to 45°C (-13°F to 113°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% Humidity, non-condensing
Relative Humidity	95% @55°C
Shock/Vibration	- IEC 61373 : 2010 - Railway Applications : Rolling Stock Equipment, Shock and Vibration Test
EMC	CE, FCC, EN50155, EN50121-3-2

Mechanical

Dimensions	IVX-1000 : 360mm x 228mm x 88mm (14.2" x 8.9" x 3.5") IVX-1000 ICY : 360mm x 228mm x 171mm (14.2" x 8.9" x 6.7")
Weight	IVX-1000 : 7.1 kg (15.65 lb) IVX-1000 ICY : 10.6 kg (23.43 lb)
Mounting	- Wallmount by mounting bracket - Rackmount (Optional)

Ordering Information

Model No.	GigE LAN	2.5G LAN	2.5G PoE+	Isolated COM	Isolated DIO	SSD Tray	UPS
IVX-1000	1	1 RJ45 8 M12	4 M12	4	16	2	NA
IVX-1000 ICY						6	Yes

CPU List

Series	CPU	Cores	GHz	TDP (W)	CPU	Cores	GHz	TDP (W)	ECC
Intel® Core™	i9-13900E	24	5.2	65	i9-12900E	16	5	65	Y
	i9-13900TE	24	5	35	i9-12900TE	16	4.8	35	
	i7-13700E	16	5.1	65	i7-12700E	12	4.8	65	
	i7-13700TE	16	4.8	35	i7-12700TE	12	4.7	35	
	i5-13500E	14	4.6	65	i5-12500E	6	4.5	65	
	i5-13500TE	14	4.5	35	i5-12500TE	6	4.3	35	
	i3-13100E	4	4.4	65	i3-12100E	4	4.2	65	
	i3-13100TE	4	4.1	35	i3-12100TE	4	4	35	

Optional Software

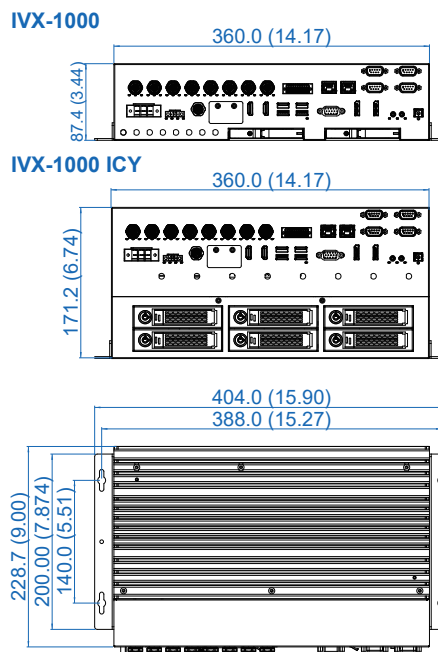
VHub AI Developer	AI Developer Kit
VHub ROS	AMR Developer Kit
VHub EtherCAT	I/O Control Platform

Accessories

DDR5 32G	Certified DDR5 32GB 4800MHz RAM
DDR5 16G	Certified DDR5 16GB 4800MHz RAM
DDR5 8G	Certified DDR5 8GB 4800MHz RAM
PWA-180WB	180W, 24V, 90V AC to 264V AC Power Adapter with 3-pin Terminal Block (7.62mm pitch)
PWA-330WB	330W, 24V, 90V AC to 264V AC Power Adapter with 3-pin Terminal Block (7.62mm pitch)
TMK2-20P-100	Terminal Block 20-pin to Terminal Block 20-pin Cable, 100cm
TMK2-20P-500	Terminal Block 20-pin to Terminal Block 20-pin Cable, 500cm
TMB-TMBK-20P	Terminal Board with One 20-pin Terminal Block Connector and DIN-Rail Mounting
Rackmount	2U/4U Rackmount Kit
M.2 Storage Module	M.2 Key M Storage Module
5G Module	5G Module with Antenna
4G Module	4G/GPS Module with Antenna
WiFi & Bluetooth	WiFi & Bluetooth Module with Antenna

Dimensions & Drawing

Unit : mm (inch)



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