

IVX

1000



Intel® Core™ i9/i7/i5/i3 Processor (14th Gen)
In-Vehicle Computing Workstation



Advanced Driver Assistance System (ADAS)



- Workstation-grade Platform : Intel® Core™ i9/i7/i5/i3 Processor (14th gen, codename : RPL-S Refresh/RPL-S/ADL-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



OpenVINO™



Vecow

Specifications

System

Processor	- 24-core Intel® Core™ i9/i7/i5/i3 Processor (14th gen, Raptor Lake-S Refresh) - 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 5200MHz SO-DIMM, up to 96GB
OS	Windows 11, 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 770/730 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 PoE+ by Intel I226, X-Coded M12 Connector (up to 25.5W/48V each port, total power be supported depends on system config.)

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 (2.5A/h) - 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 (with air flow)	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

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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						2	NA
IVX-1000 ICY	1	1 RJ45 8 M12	4 M12	4	16	6	Yes

CPU List

Series	CPU	Cores	GHz	TDP (W)	CPU	Cores	GHz	TDP (W)	ECC
Intel® Core™ (14th Gen)*	i9-14900	24	5.8	65	i9-14900T	24	5.5	35	Y
	i7-14700	20	5.4		i7-14700T	20	5.2		
	i5-14500	14	5		i5-14500T	14	4.8		
	i3-14100	4	4.7		i3-14100T	4	4.4		
Intel® Core™ (13th Gen)	i9-13900E	24	5.2	65	i9-13900TE	24	5	35	Y
	i7-13700E	16	5.1		i7-13700TE	16	4.8		
	i5-13500E	14	4.6		i5-13500TE	14	4.5		
	i3-13100E	4	4.4		i3-13100TE	4	4.1		
Intel® Core™ (12th Gen)	i9-12900E	16	5	65	i9-12900TE	16	4.8	35	Y
	i7-12700E	12	4.8		i7-12700TE	12	4.7		
	i5-12500E	6	4.5		i5-12500TE	6	4.3		
	i3-12100E	4	4.2		i3-12100TE	4	4		

* 14th Gen support PC Client use condition only.

Optional Software

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

Accessories

DDR5 48G	Certified DDR5 48GB 5600MHz RAM
DDR5 32G	Certified DDR5 32GB 4800/5600MHz RAM
DDR5 24G	Certified DDR5 24GB 5600MHz RAM
DDR5 16G	Certified DDR5 16GB 4800/5600MHz RAM
DDR5 8G	Certified DDR5 8GB 4800/5600MHz 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 Rockmount 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)

