

# ECX-2200/2100 Series

10th Gen Intel® Xeon®/Core™ i9/i7/i5/i3 Processor (Comet Lake)  
Workstation-grade Expandable Fanless Embedded System

VHub

- Workstation-grade Platform : 10-core 10th Gen Intel® Xeon®/Core™ i9/i7/i5/i3 Processor (CML-S) running with Intel® W480E chipset supports max 95W TDP CPU
- 2 DDR4 2933MHz Memory support up to 64GB, optional with ECC
- 9V to 50V wide range DC Power Input with 80V Surge Protection
- Fanless, -40°C to 75°C Operating Temperature
- 6 Independent GigE LAN with 4 X-coded M12 IEEE 802.3at PoE+
- PCIe x16 expansion supports up to 250W Power Budget
- Expansion : 1 PCI/PCIe, 1 M.2 Key B, 1 M.2 Key E, 2 Mini PCIe, optional SUMIT A, B
- Storage : 2 2.5" SSD Tray, 1 Micro SD Card, 1 M.2 Key M, 2 SATA III
- Display : VGA, DVI-D & 2 DisplayPort interfaces, up to 4K resolution
- 6-port USB 3.2 support up to 10Gbps data transfer
- 32 Isolated DIO, 4 COM RS-232/422/485
- 3 External Nano SIM Sockets for 5G/WiFi 6/4G/3G/LTE/GPRS/UMTS
- Supports Configurable Software Ignition Power Control and TPM 2.0
- Optimized user-friendly design for easier system maintenance
- Optional VHub One-Stop AIoT Solution Service supports OpenVINO based AI accelerator and advanced Edge AI applications

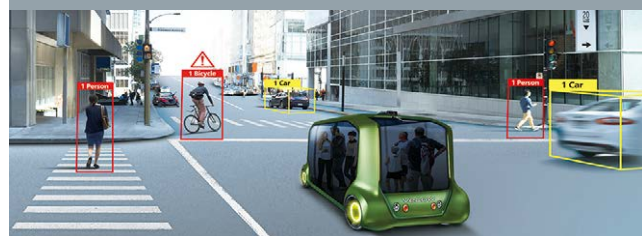
## Rolling Stock



## Smart Retail



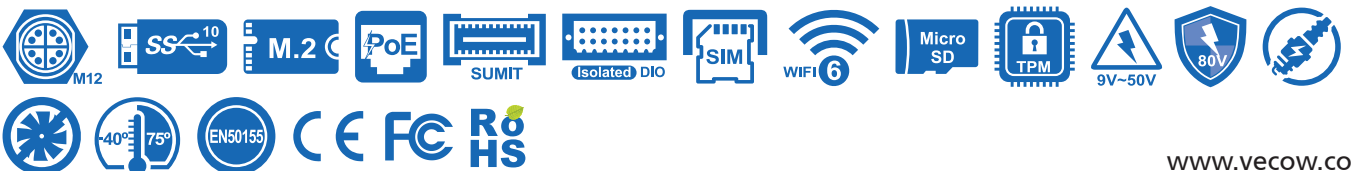
## Vehicle Computing



## AMR/AGV



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# Specifications

## System

Processor	10th Gen Intel® Xeon®/Core™ i9/i7/i5/i3 Processor (Comet Lake-S)
Chipset	Intel® W480E
BIOS	AMI
SIO	IT8786E
Memory	2 DDR4 2933MHz Memory, up to 64GB (ECC/Non-ECC)
OS	Windows 10, Linux

## I/O Interface

Serial	4 COM RS-232/422/485 (ESD 8kV)
USB	- 6 USB 3.2 (External) - 1 USB 2.0 (Internal)
Isolated DIO	<b>ECX-2200 Series</b> : 32 Isolated DIO : 16 DI, 16 DO <b>ECX-2100 Series</b> : 16 GPIO
LED	Power, HDD, PoE, Wireless
SIM Card	3 External Nano SIM Card Socket

## Expansion

Mini PCIe	2 Mini PCIe sockets for PCIe/USB/SIM Card/Optional mSATA
PCIe/PCI	1 PCI/PCIe x16 Slot, by signal request
M.2	- 1 M.2 Key B Socket (3042/3052) - 1 M.2 Key E Socket (2230)
SUMIT A, B	2 SUMIT Slot (Optional)

## Graphics

Graphics Processor	Intel® UHD Graphics 630
Interface	- 1 VGA : Up to 1920 x 1080 @60Hz - 1 DVI-D : Up to 1920 x 1080 @60Hz - 2 DisplayPort : Up to 4096 x 2304 @60Hz

## Storage

SATA	2 SATA III (6Gbps) support S/W RAID 0, 1
mSATA	2 SATA III (Mini PCIe Type, 6Gbps)
M.2	1 M.2 Key M Socket (2280, PCIe x4)
Storage Device	- 1 Micro SD Card, Push-in/Push-out Ejector - 2 Front-access 2.5"SSD/HDD Tray

## Audio

Audio Codec	Realtek ALC892, 5.1 Channel HD Audio
Audio Interface	1 Mic-in, 1 Line-out

## Ethernet

LAN 1	Intel® I219LM GigE LAN supports iAMT 14.0
LAN 2	Intel® I210 GigE LAN

## PoE (ECX-2200)

LAN 3 to LAN 6	GigE IEEE 802.3at (25.5W/48V) PoE+ by Intel® I350, X-Coded M12 Connector (ECX-2200MX)
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## Power

Power Input	9V to 50V, DC-in
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Ignition Control	16-mode Software Ignition Control
Remote Switch	3-pin Terminal Block
Surge Protection	Up to 80V/1ms Transient Power

## Others

TPM	Infineon SLB9665 supports TPM 2.0, LPC 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.

## Mechanical

Dimensions	260mm x 240mm x 79mm (10.24" x 9.45" x 3.11")
Weight	4.5 kg (9.92 lb)
Mounting	- Wallmount by mounting bracket - DIN Rail Mount (Optional) - 2U Rackmount (Optional)

## Environment

Operating Temp.	<b>35W TDP CPU</b> : -40°C to 75°C (-40°F to 167°F), Fanless <b>65W TDP CPU</b> : -40°C to 55°C (-40°F to 131°F), Fanless <b>80W &amp; 95W TDP CPU</b> : -40°C to 55°C (-40°F to 131°F), with Fan Sink
Storage Temp.	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% Humidity, non-condensing
Relative Humidity	95% @75°C
Shock	- IEC 60068-2-27 - SSD : 50G @ wallmount, Half-sine, 11ms
Vibration	- IEC 60068-2-64 - SSD : 5Grms, 5Hz to 500Hz, 3 Axis
EMC	CE, FCC, EN50155, EN50121-3-2

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# Order Information

Model	GigE LAN	PoE*	M12 PoE*	SSD Tray	PCIe x16	PCI	USB 3.2	COM	Nano SIM	Isolated DIO	GPIO	Fan Sink*
ECX-2210MX	6	-	4	2	1	-	-	-	-	-	-	-
ECX-2210MXF	6	-	4	2	1	-	-	-	-	-	-	Y
ECX-2201MX	6	-	4	2	-	1	-	-	-	-	-	-
ECX-2201MXF	6	-	4	2	-	1	-	-	-	32	-	Y
ECX-2210	6	4	-	2	1	-	-	-	-	-	-	-
ECX-2210F	6	4	-	2	1	-	6	4	3	-	-	Y
ECX-2201	6	4	-	2	-	1	-	-	-	-	-	-
ECX-2201F	6	4	-	2	-	1	-	-	-	-	-	Y
ECX-2110	2	-	-	2	1	-	-	-	-	-	-	-
ECX-2110F	2	-	-	2	1	-	-	-	-	-	16	Y
ECX-2101	2	-	-	2	-	1	-	-	-	-	-	-
ECX-2101F	2	-	-	2	-	1	-	-	-	-	-	Y

\* Fan Sinks are required for high TDP CPU systems (80W, 95W)

## CPU List

Series	CPU	GHz	TDP (W)	CPU	GHz	TDP (W)	ECC RAM
Intel® Xeon®	W-1290E	4.8	95	W-1290TE	4.5	35	Y
	W-1270E	4.8	80	W-1270TE	4.4	35	Y
	W-1250E	4.7	80	W-1250TE	3.8	35	Y
Intel® Core™	i9-10900E	4.7	65	i9-10900TE	4.5	35	N/A
	i7-10700E	4.5	65	i7-10700TE	4.4	35	N/A
	i5-10500E	4.2	65	i5-10500TE	3.7	35	N/A
	i3-10100E	3.8	65	i3-10100TE	3.6	35	Y

## Optional Software

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

## Accessories

DDR4 32G	Certified DDR4 32GB 3200MHz RAM
DDR4 16G	Certified DDR4 16GB 3200MHz RAM
DDR4 8G	Certified DDR4 8GB 3200MHz RAM
DDR4 4G	Certified DDR4 4GB 3200MHz RAM
PWA-160WB-WT	160W, 24V, 85V AC to 264V AC Power Adapter with 3-pin Terminal Block (7.62mm pitch), Wide Temperature -30°C to +70°C
PWA-280WB-WT	280W, 24V, 85V AC to 264V AC Power Adapter with 3-pin Terminal Block (7.62mm pitch), Wide Temperature -30°C to +70°C
PWS-480W-WT	480W, 24V, 90V AC to 305V AC Power Supply, Wide-Temp, IP65
VESA Mount	VESA Mounting Kit
DIN-RAIL	DIN Rail and VESA Mounting Kit
Rack Mount	2U Rackmount Kit
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
M.2 Storage Module	M.2 Key M/Key B PCIe Storage Module
5G Module	5G Module with Antenna
4G Module	4G/GPS Module with Antenna
WiFi & Bluetooth	WiFi & Bluetooth Module with Antenna

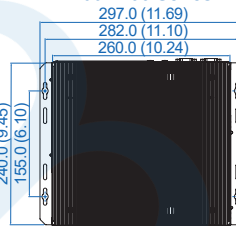
# Dimensions & Drawing

Unit : mm (inch)

## ECX-2200MX



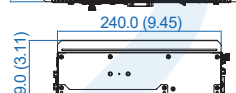
## ECX-2200/2100 Series



## ECX-2200



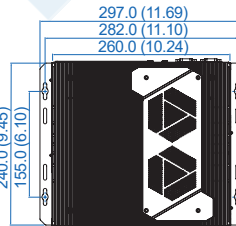
## ECX-2100



## ECX-2200MXF



## ECX-2200F/2100F Series



## ECX-2200F



## ECX-2100F

