

Think Big,  
Think IoT



# 2020 Mobile Computing Solutions Product Selection Guide

# New Product Highlights

## Industrial AI Edge Computer

**AI Application**

Police Car   Autonomous Driving   Parking Lot Management   Video Surveillance   Traffic Monitoring   Track Detection   Automation   Smart Factory   Smart Retail

**Products**

	ATC Series	aROK/nROK Series	VTC/MVS Series
AI Accelerator Engine	M.2/mini-PCIe	MXM	TX2/Xavier NX
Customers' Softwares	Software A	Software B	Software C
	Software D	Software E	

**NEXCOM's Solutions**

Google Coral	NVIDIA	Intel Movidius
M.2/mini-PCIe	PCIe/TX2/Xavier NX/MXM	mini-PCIe/MXM/PCIe
VTC 6222-GCloT*	ATC 8110	ATC 8010-7B
nROK 6222-GCloT*   nROK 7252-GCloT*	ATC 8010-7A   ATC 8010-7DF	nROK 6222-IMIoT*   VTC 6222-IMIoT*
MVS 2623-GCloT*   VTC 7251-GCloT*	aROK 5510   ATC 3210/3220	nROK 7252-IMIoT*   VTC 7251-IMIoT*

\*: For further information, please contact sales

## Communications Hub and Passenger Information System

- More than 3 x LTE modules, with 2 x SIM slot for each modem, 2 x WLAN for Wi-Fi broadcast, and GPS for data/video transmission and location tracking
- Reserved special M.2 designed to support 5G module so that you can attain quicker transmission speeds with low latency
- 24", 27", 32" Passenger Information Panel PC with full HD, wide ranger power input 12 to 36V DC for train station, airports and Bus
- Rugged-design with shock and vibration protection, E Mark computer platform for WWAN/WLAN/GPS modulation installation



### New Models

#### VTC 6221

Vehicle Computer with Intel Atom® E3950



#### VTC 7251

Vehicle Computer with Intel® Core™ 8th Gen. CPU



#### nROK 6221

Railway Computer with Intel Atom® E3950



#### VPC 2400

Passenger Information System with Intel Atom® E3930



## Onboard Video Surveillance Platform

- Support high resolution PoE camera for recording both driver cabs and passenger areas
- Hot-swap and RAID protection storage to store video feed from cameras
- Rugged-design with shock and vibration protection, E Mark, EN50155 computer platform for VMS software installation
- Protection against temporary voltage dips to avoid system fault
- More than 3 x LTE (or 5G) module with 2 x SIM slot for each modem, 10GbE network, and GPS for data/video transmission and location tracking



### New Models

#### VTC 6222

Fanless 4-CH PoE Vehicle Computer



#### VTC 7251-7C4

Vehicle Computer with Intel® Core™ 8th Gen. CPU with 4-CH PoE



#### nROK 6222

Railway Computer with Intel Atom® E3950 with 4-CH PoE



#### nROK 7252-C8S

Railway Computer with 8-CH PoE Intel® 9/8th Gen. Core™ or Xeon®



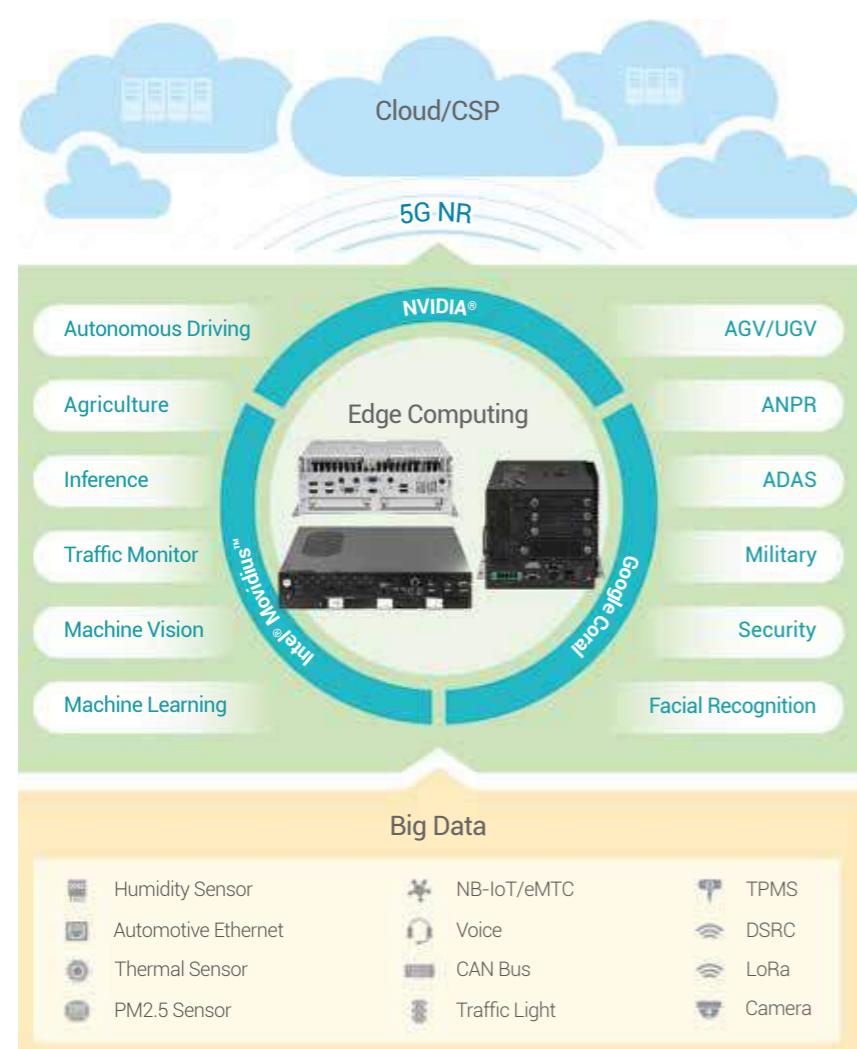
# Our Core Competency -

Building Foundation for Interconnected IoV and Value-Added Innovation



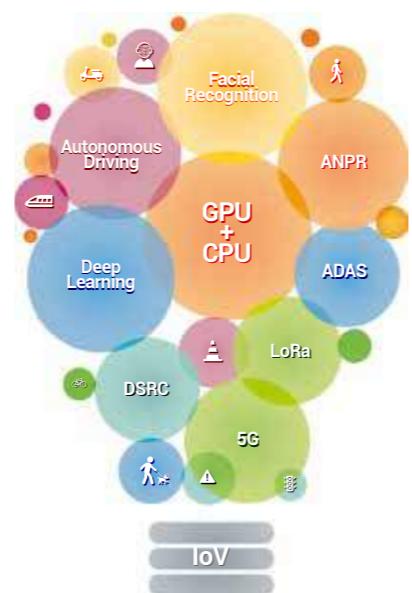
## Ahead of AI + Mobile Edge Computing in the 5G Era

- Specialize in NVIDIA®, Intel® Movidius and Google Coral
- Support partners to drive deeper customer engagement in AI + mobile edge computing applications
- Provide edge processing and AI capabilities to software partners/developers to create innovation and new business models
- Improve the efficiency of collecting rich data and the precise measurement capability for optimal local decision making



## Keep Up with the Trends and Introduce New Technologies

- Close relationship with key silicon players
- Familiar with ARM/X86 platform and Linux/Windows/Android OS
- Specialize in GPU technology and develop MXM, PCIe, SoM, mini PCIe and M.2 module with GPU
- DSRC, 4G LTE/5G NR, NB-IoT and LoRa wireless communication technologies
- Automotive Ethernet, a new vehicle internal network
- Solid programming skill, good understanding on S/W and H/W integration



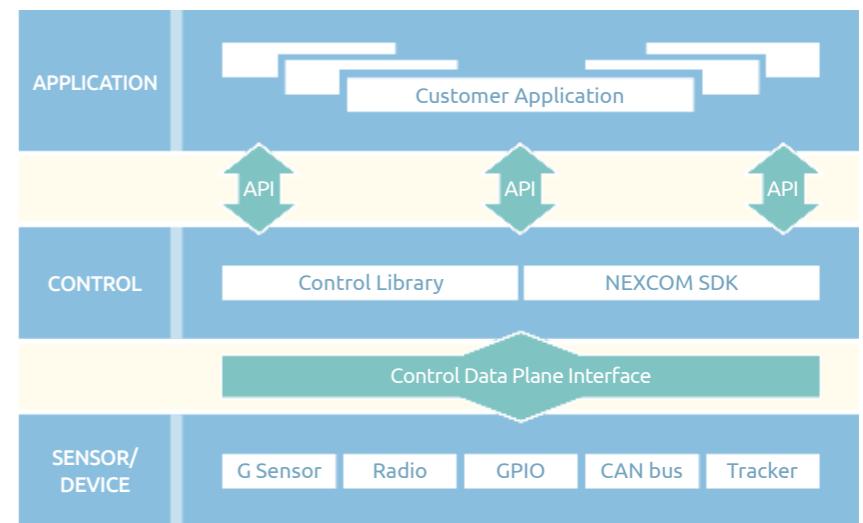
New technologies spring up to build a concrete foundation for interconnected IoV and value-added innovation

## Solid Technical Capability to Bring Benefits to Customers

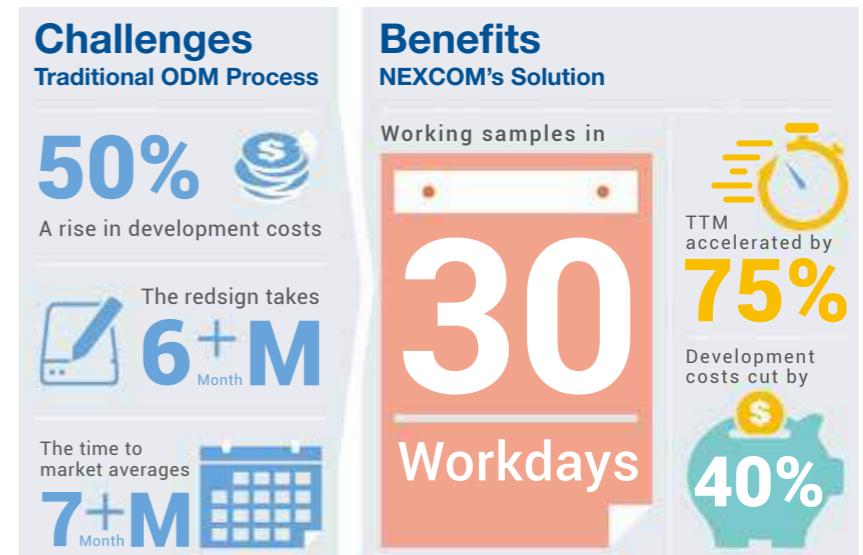
- Over 20 years of experience in designing rugged devices and over 10 years in designing vehicle/railway computers
- Long distance high-quality video content delivery
- Low cost and easy maintenance with single cable (video/USB/audio/power) design
- Fanless design and IP67 protection for extreme environmental conditions
- IK08 impact resistance on external mechanics
- Profound expertise and extensive hand-on experience in CAN/SAE J1939/SAE J1708
- Familiar with CISPR25 standard
- Smart in-vehicle UPS design for uninterrupted operation

## Software Development Support

- Rich experience in supporting Linux, Android and Windows OS
- SDK supports for Linux, Android and Windows OS
- Provide utility and sample code for API usage and programming guide for user to customize their software



## Quick OEM/ODM Customized Service



# Internet of Vehicles (IoV) -

Creating a Fully - Encompassing Car Ecosystem Through  
IoV Innovation



## NEXCOM's Product Line

- Industrial AI Edge Computer
- Vehicle Telematics Computer
- Vehicle Mount Computer
- Modular Vehicle Computer System
- Advanced Telematics Computer
- Vehicle Mount Display
- Railway Computer
- In-Vehicle Networking



# Autonomous Driving -

## Deep Learning Makes the Autonomous Car Perceptive and Practical

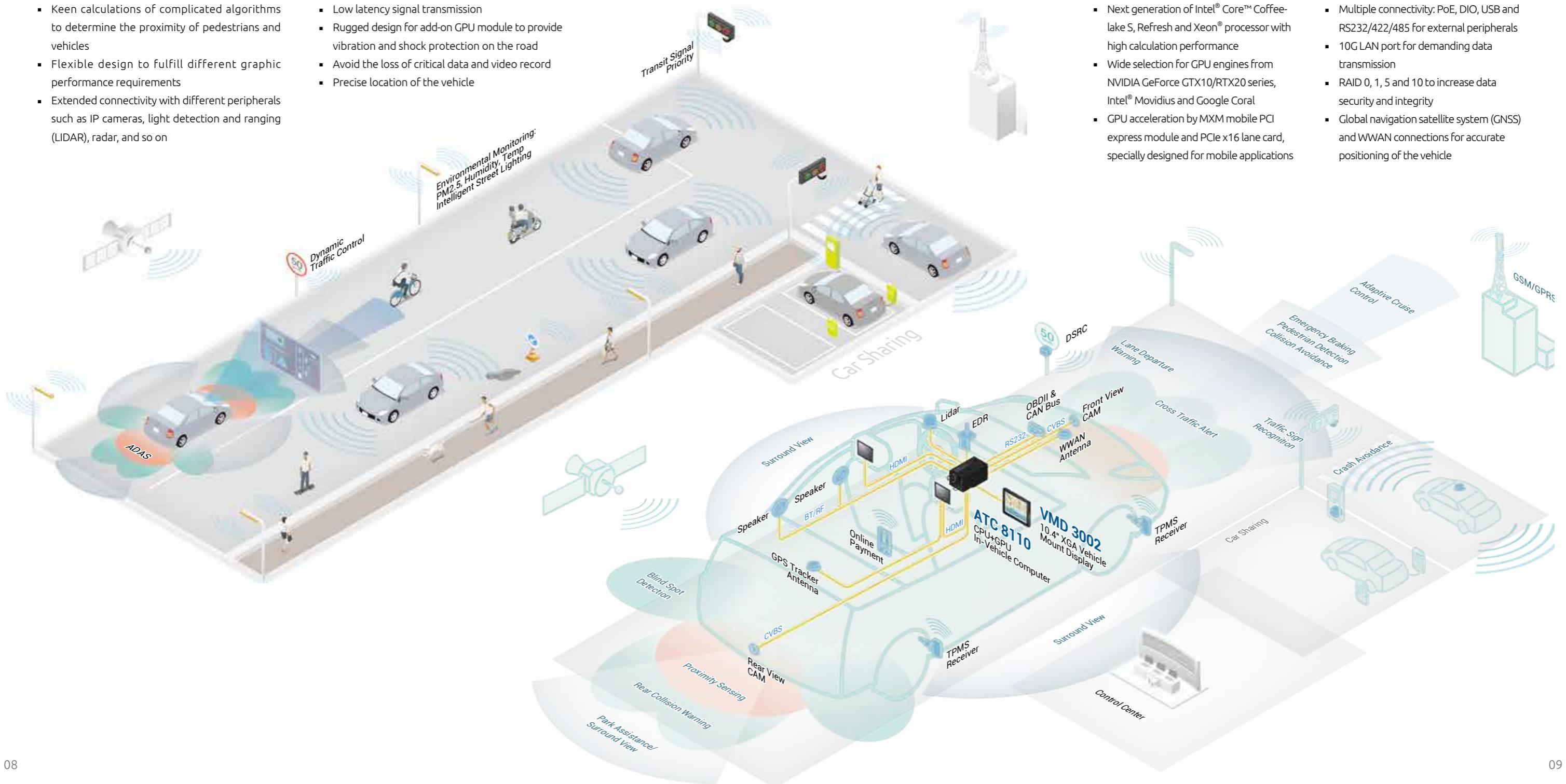


Model	VTC 7250-7C8	VTC 7251-7C4	ATC 8010	ATC 8110
CPU	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Coffee Lake S/Refresh (LGA1151)
AI Expansion	mPCIe slot (x1 lane)	mPCIe slot (x1 lane)	MXM slot (x16 lane)	PCIe slot (x16 lane)
Expansion	1 x M.2, 3 x mPCIe	M.2, mPCIe	1x M.2, 3 x mPCIe	2 x M.2, 2 x mPCIe
PoE	8	4	8	4/8 option
AI Accelerator	Movidius/Coral	Movidius/Coral	NVIDIA/Movidius	NVIDIA/Movidius



## Key Requirements

- Keen calculations of complicated algorithms to determine the proximity of pedestrians and vehicles
- Rugged design for add-on GPU module to provide vibration and shock protection on the road
- Avoid the loss of critical data and video record
- Precise location of the vehicle
- Extended connectivity with different peripherals such as IP cameras, light detection and ranging (LiDAR), radar, and so on



## NEXCOM's Solutions

- Next generation of Intel® Core™ Coffee-lake S, Refresh and Xeon® processor with high calculation performance
- Wide selection for GPU engines from NVIDIA GeForce GTX10/RTX20 series, Intel® Movidius and Google Coral
- GPU acceleration by MXM mobile PCI express module and PCIe x16 lane card, specially designed for mobile applications
- Multiple connectivity: PoE, DIO, USB and RS232/422/485 for external peripherals
- 10G LAN port for demanding data transmission
- RAID 0, 1, 5 and 10 to increase data security and integrity
- Global navigation satellite system (GNSS) and WWAN connections for accurate positioning of the vehicle

# Smart Public Transit -

Smart Bus Ride to a Safe, Green, Fun and Comfortable Tomorrow

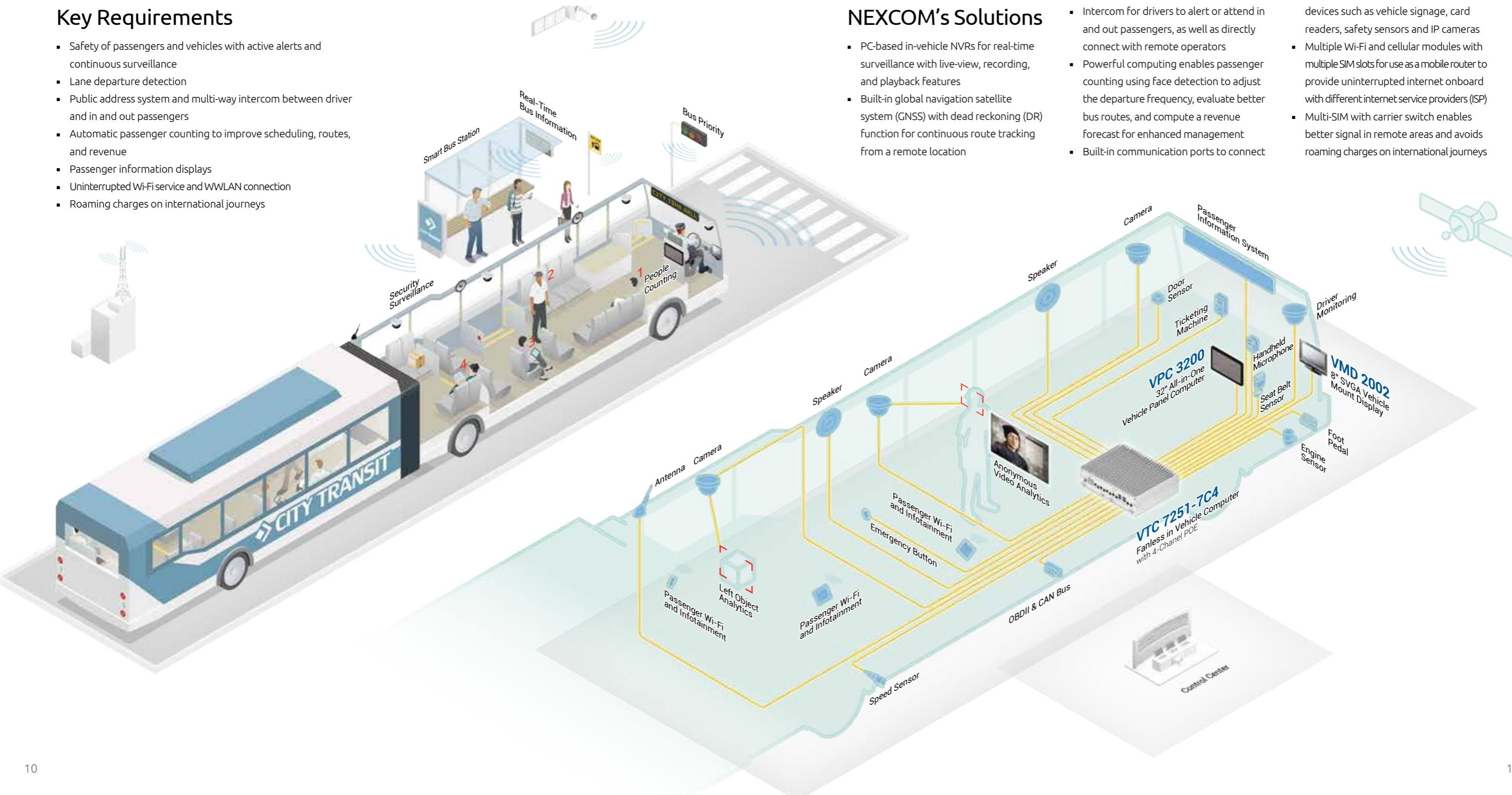


Model	VTC1021-C2K	VTC6220	VTC6221	VTC7251-7C4
CPU	Intel Atom® Apollo Lake (E3940)	Intel Atom® Apollo Lake (E3950)	Intel Atom® Apollo Lake (E3950)	Intel® Core™ i7-8700T
Communication	1x WWAN, 2x WLAN	2x WWAN, 2x WLAN	3x WWAN, 2x WLAN	3x WWAN, 2x WLAN
PoE	2	2 (BOM option)	0	4
Harsh Environment	-40°C~70°C/ Anti-vibration	-40°C~70°C/ Anti-vibration	-40°C~70°C/ Anti-vibration	-30°C~60°C/ Anti-vibration



## Key Requirements

- Safety of passengers and vehicles with active alerts and continuous surveillance
- Lane departure detection
- Public address system and multi-way intercom between driver and in and out passengers
- Automatic passenger counting to improve scheduling, routes, and revenue
- Passenger information displays
- Uninterrupted Wi-Fi service and WWLAN connection
- Roaming charges on international journeys



## NEXCOM's Solutions

- PC-based in-vehicle NVRs for real-time surveillance with live-view, recording, and playback features
- Built-in global navigation satellite system (GNSS) with dead reckoning (DR) function for continuous route tracking from a remote location
- Intercom for drivers to alert or attend in and out passengers, as well as directly connect with remote operators
- Powerful computing enables passenger counting using face detection to adjust the departure frequency, evaluate better bus routes, and compute a revenue forecast for enhanced management
- Built-in communication ports to connect devices such as vehicle signage, card readers, safety sensors and IP cameras
- Multiple Wi-Fi and cellular modules with multiple SIM slots for use as a mobile router to provide uninterrupted internet onboard with different internet service providers (ISP)
- Multi-SIM with carrier switch enables better signal in remote areas and avoids roaming charges on international journeys

# Smart Public Transit on Railways -

Railway Telematics for Transport Security, Efficiency and Passenger Satisfaction

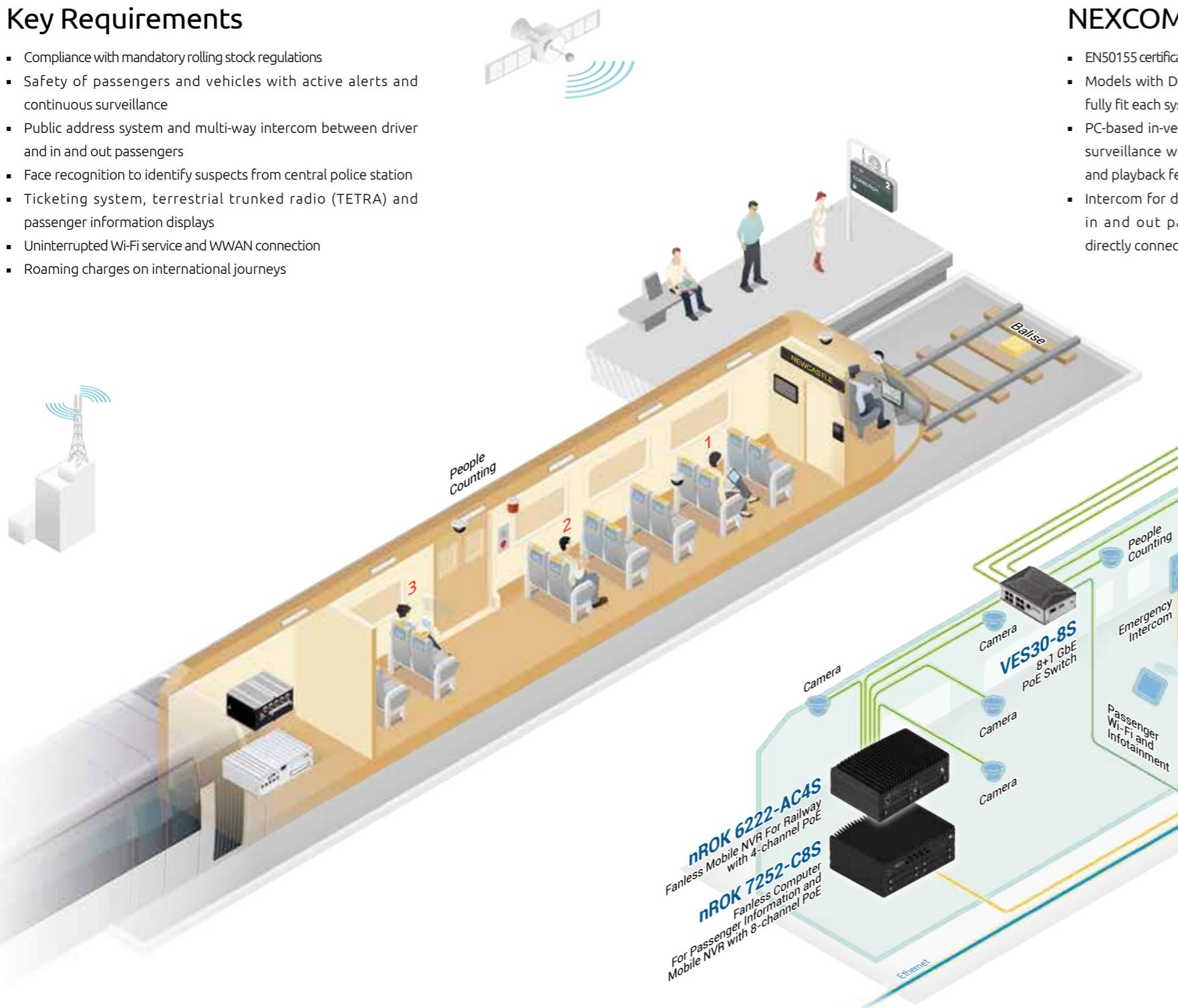


Model	nROK 6221	nROK 6222-AC4S	aROK 5510	nROK 7252-WI2-C8S
CPU	Intel Atom® Apollo Lake (E3950)	Intel Atom® Apollo Lake (E3950)	Intel® Coffee Lake S/Refresh	Intel® Coffee lake S/Refresh
PoE	N/A	4	4 (optional)	8
Storage	1 x 2.5" SSD (15mm)	2 x 2.5" SSD (15mm)	6 x 2.5" SSD (9mm)	4 x 2.5" SSD (15mm)
Communication	3 x WWAN, 2 x WLAN	1 x WWAN, 2 x WLAN	4 x WWAN, 2 x WLAN	3 x WWAN, 2 x WLAN
Power Input	24/36VDC, w/o isolation. 24/110VDC, w/ isolation (optional)	24/36VDC, w/o isolation. 24/110VDC, w/ isolation (optional)	24/110VDC, w/ isolation	16~160VDC, w/ power isolation



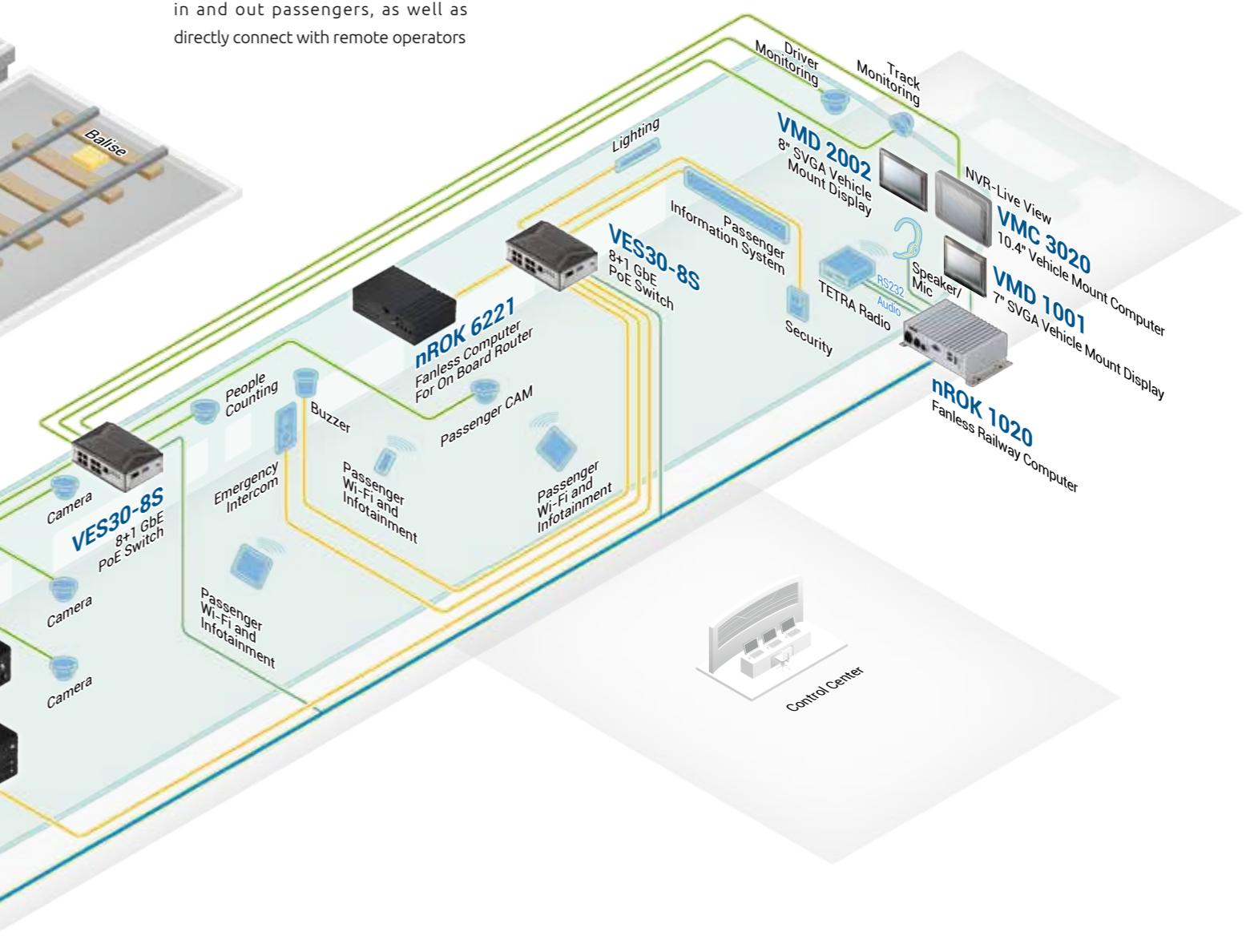
## Key Requirements

- Compliance with mandatory rolling stock regulations
- Safety of passengers and vehicles with active alerts and continuous surveillance
- Public address system and multi-way intercom between driver and in and out passengers
- Face recognition to identify suspects from central police station
- Ticketing system, terrestrial trunked radio (TETRA) and passenger information displays
- Uninterrupted Wi-Fi service and WWAN connection
- Roaming charges on international journeys



## NEXCOM's Solutions

- EN50155 certification for railway applications
- Models with DC-DC power isolation to fully fit each system requirement
- PC-based in-vehicle NVRs for real-time surveillance with live-view, recording, and playback features
- Intercom for drivers to alert or attend in and out passengers, as well as directly connect with remote operators
- Mobile router supporting different internet service providers (ISP) with multiple Wi-Fi and cellular networks to provide uninterrupted internet onboard
- Better signal in remote areas and no roaming charges on international journeys with multi-SIM design and carrier switch



# Public Works -

Playing the Key Role of Enriching the Community & Enhancing the Quality of Life

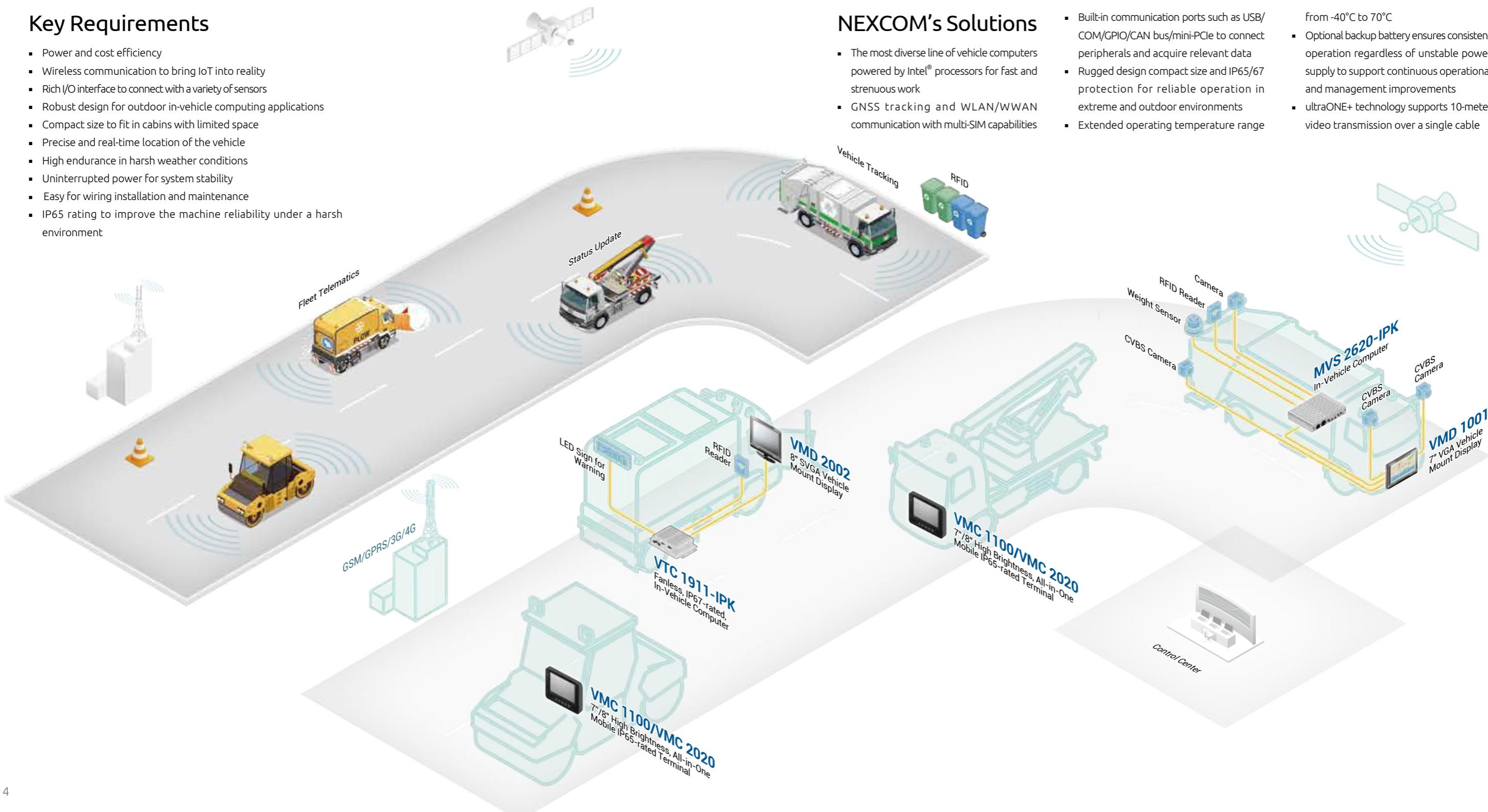


Model	VMC 1100	VMC 2020	VTC 1911-IPK	MVS 2620-IPK
CPU	Intel Atom® Bay Trail (E3825)	Intel Atom® Apollo Lake (E3950)	Intel Atom® Bay Trail (E3815)	Intel Atom® Apollo Lake (E3950)
IP-rated	IP54 (Front)	IP65	IP67	IP65
Communication	1 x WWAN, 1 x WLAN	1 x WWAN, 1 x WLAN	1 x WWAN, 1 x WLAN	2 x WWAN, 1 x WLAN
Serial/CAN Bus	2/1	3/1	3/1	5/1
Harsh Environment	-20°C~60°C/ Anti-vibration	-30°C~60°C/ Anti-vibration	-40°C~70°C/ Anti-vibration	-40°C~70°C/ Anti-vibration



## Key Requirements

- Power and cost efficiency
- Wireless communication to bring IoT into reality
- Rich I/O interface to connect with a variety of sensors
- Robust design for outdoor in-vehicle computing applications
- Compact size to fit in cabins with limited space
- Precise and real-time location of the vehicle
- High endurance in harsh weather conditions
- Uninterrupted power for system stability
- Easy for wiring installation and maintenance
- IP65 rating to improve the machine reliability under a harsh environment



# First Response Vehicles -

## Leak-Free Crime Recognition and Trusted Emergency Service All Day Long



Model	VTC7251-7C4	VTC 6222-C4S	ATC8010	ATC8110
CPU	Intel® Core™ i7-8700T	Intel Atom® Apollo Lake (E3950)	Intel® Core™ i7-8700T	Intel® Coffee Lake S/Refresh (LGA1151)
AI Expansion	mPCIe slot (x1 lane)	mPCIe (x1 lane)	MXM slot (x16 lane)	PCIe slot (x16 lane)
Communication	3 x WWAN, 2 x WLAN	1 x WWAN, 2 x WLAN	2 x WWAN, 2 x WLAN	2 x WWAN, 1 x WLAN
PoE	4	4	8	4/8 (option)
AI Accelerator	Movidius/ Coral	Movidius/ Coral	NVIDIA/ Movidius	NVIDIA/ Movidius

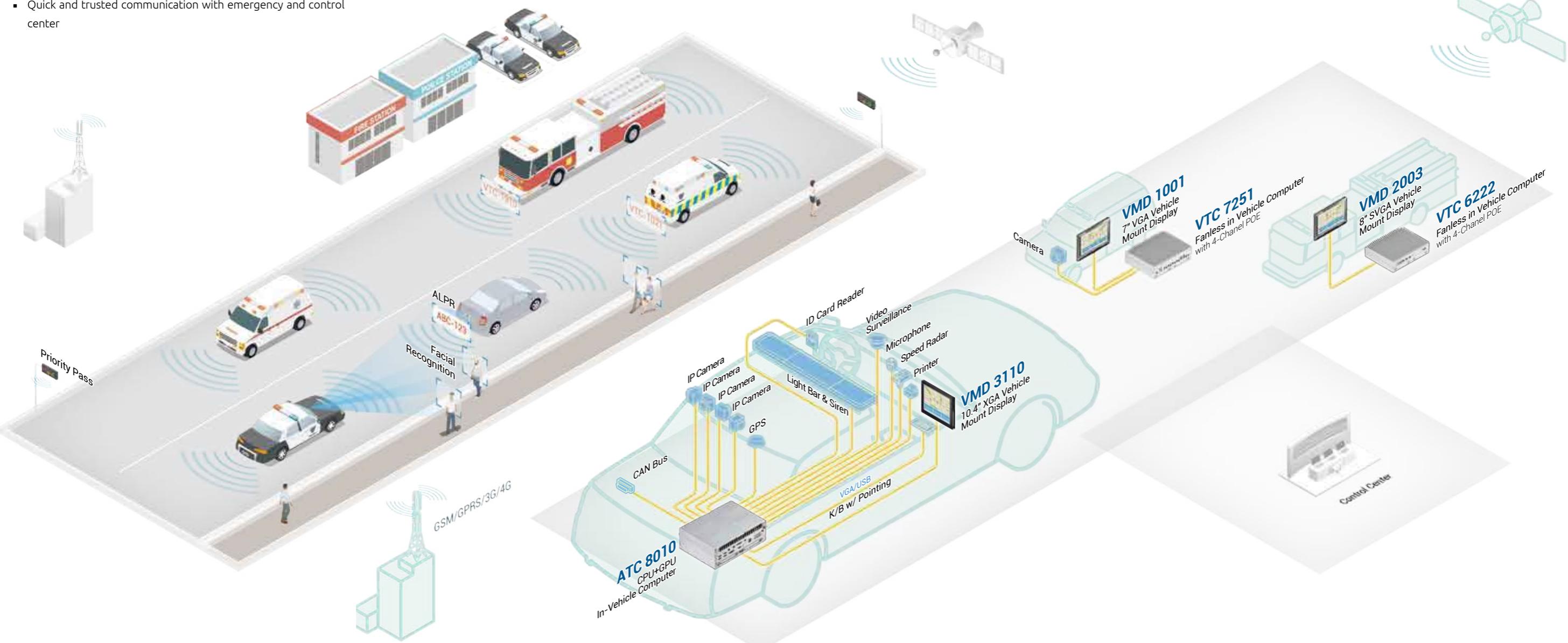


### Key Requirements

- Ability to aggregate video feeds from multiple IP cameras
- High graphic performance for sophisticated image processing (facial recognition, ANPR)
- Real-time surveillance on multiple video displays
- Easy system installation to fit in vehicles with limited space
- Real-time vehicle status monitoring
- Prompt emergency-mission dispatching with the most optimal route for the destination
- Quick and trusted communication with emergency and control center
- Uninterrupted power supply to systems
- Display and system integration for large trucks with simplified cabling
- All-in-one PoE design to lower total cost of ownership (TCO) and facilitate maintenance
- High-speed storage is possible for high-speed multi-CAM

### NEXCOM's Solutions

- 360-degree view from up to 8 IP cameras over PoE ports
- Fast automatic license plate recognition (ALPR) and face detection powered by Intel® Coffee-lake S, Refresh, Xeon®/i7 high performance processor and NVIDIA GeForce® RTX2080Ti/GTX 1050Ti/1080 graphics card
- ultraONE+ technology to solve the cabling issue and video signal degradation in harsh vehicle operating environments over a single cable
- CAN bus 2.0B to read the vehicle status accurately and quickly
- Vehicle mount computer to show the job assignments and route map
- Support multiple telecom carriers (3G and
- LTE) to guarantee the communication and data transmission between the vehicle and control center
- Backup battery ensures uninterrupted system operation
- Supporting IEEE 802.3 af/at PoE for IP cameras and other PD devices



# Port Management & Warehouse -

Around-The-Clock Reliable Delivery,  
Your Trust is Our Commitment

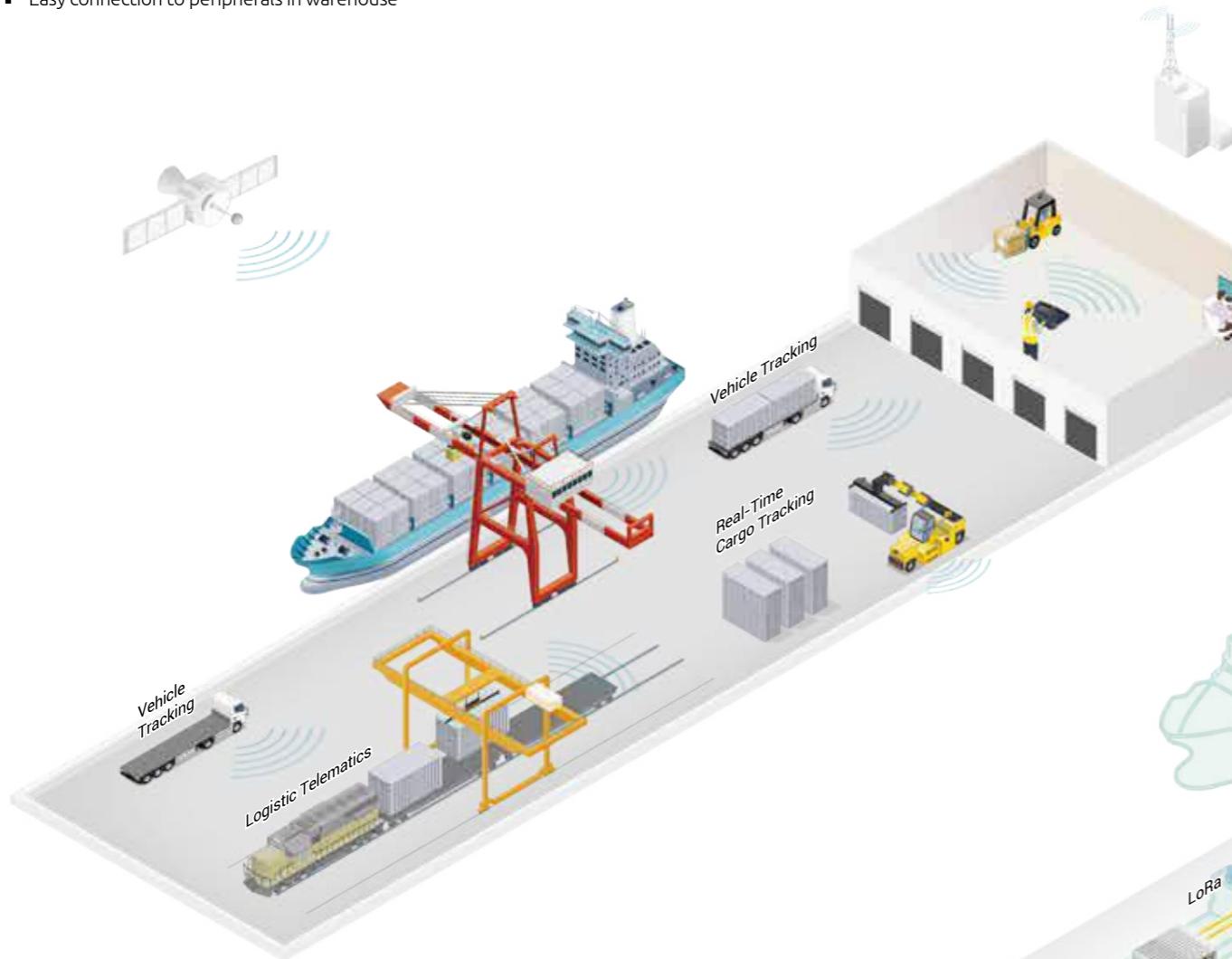


Model	VMC 1100	VMC 2020	VMC 3020	VMC 4020
CPU	Intel Atom® Bay Trail (E3825)	Intel Atom® Apollo Lake (E3950)	Intel Atom® Apollo Lake (E3930)	Intel Atom® Apollo Lake (E3950)
LCD size	7" TFT LCD	8" TFT LCD	10.4" TFT LCD	12.1" TFT LCD
Brightness	400 nits	1000 nits	1200 nits	1200 nits
Touch Screen	4-wire resistive	PCAP/ 5-wire resistive (BOM optional)	5-wire resistive	5-wire resistive



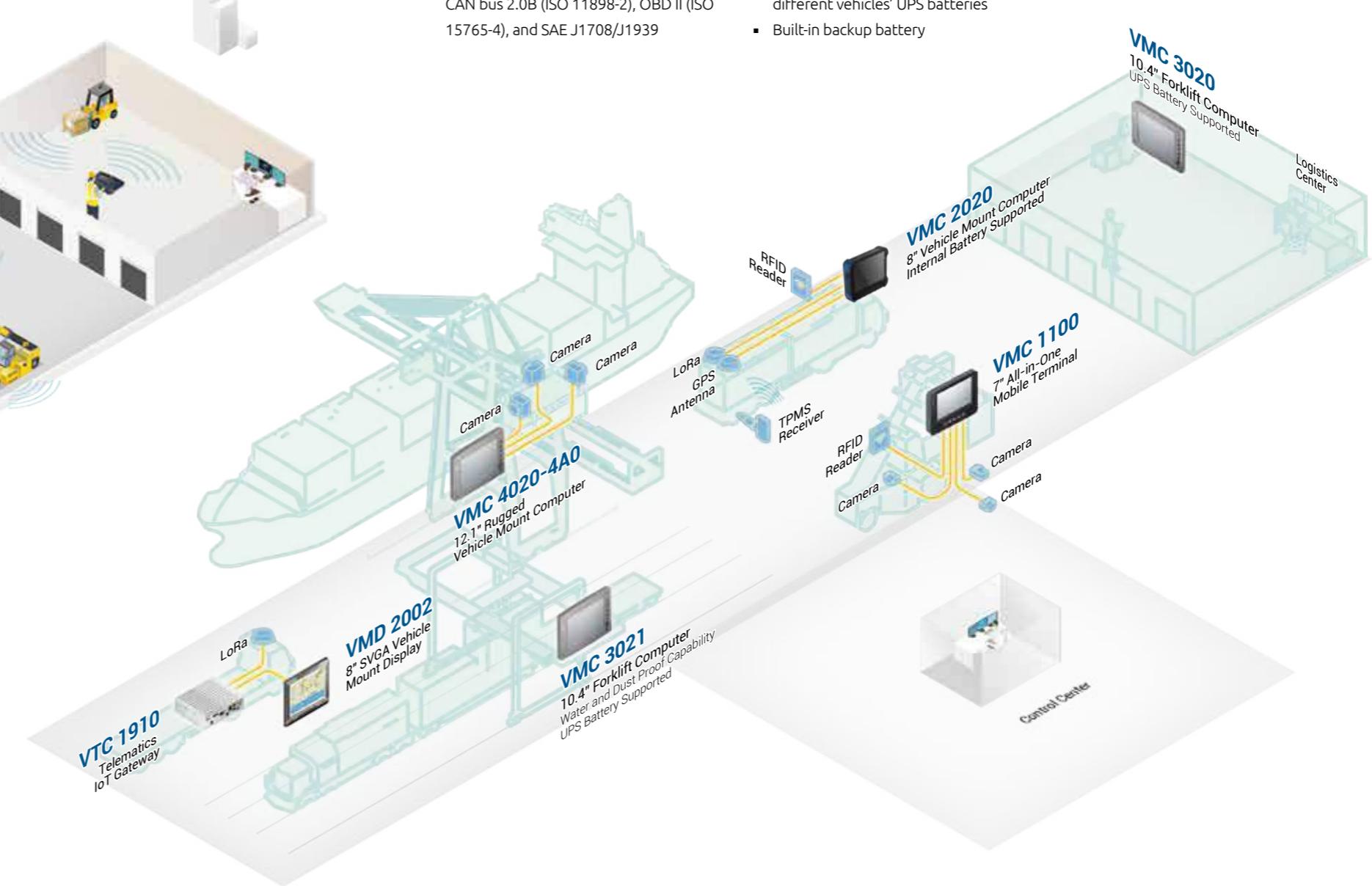
## Key Requirements

- Sunlight readable display
- Precise and real-time location of the vehicle
- Real-time vehicle status monitoring
- Reliable operation in extreme weather conditions
- Diverse OS support
- Easy connection to peripherals in warehouse
- Compact size to fit in space-limited cabins in gantry cranes and forklifts of all sizes
- Non-stop working operation regardless vehicle's battery level
- Proximity sensing to ensure safe operation
- Uninterrupted power supply for stable system performance



## NEXCOM's Solutions

- High-brightness LCD touchscreen panel with low reflection
- Global navigation satellite system (GPS/Glonass/Galileo/BeiDou) and WWAN connections for accurate positioning of the vehicle
- Check the vehicle status accurately and interface with vehicles subsystems with CAN bus 2.0B (ISO 11898-2), OBD II (ISO 15765-4), and SAE J1708/J1939
- Aluminum die casting housing and touch-heater to alleviate the huge fluctuation of temperature and humidity
- Powerful USB and COM for connected peripherals
- Complete product line to meet customer various requests
- Wide-range power input (9V~60V) to fit different vehicles' UPS batteries
- Built-in backup battery
- Optional backup battery ensures that data critical to operational and management improvements is stored and streamed to the cloud despite unstable power supply
- Built-in communication ports such as USB/COM/DIO to connect analog or IP cameras and other peripherals



# Fleet Management -

Improving Driver Safety, Save Energy,  
and Increase Overall Fleet Efficiency

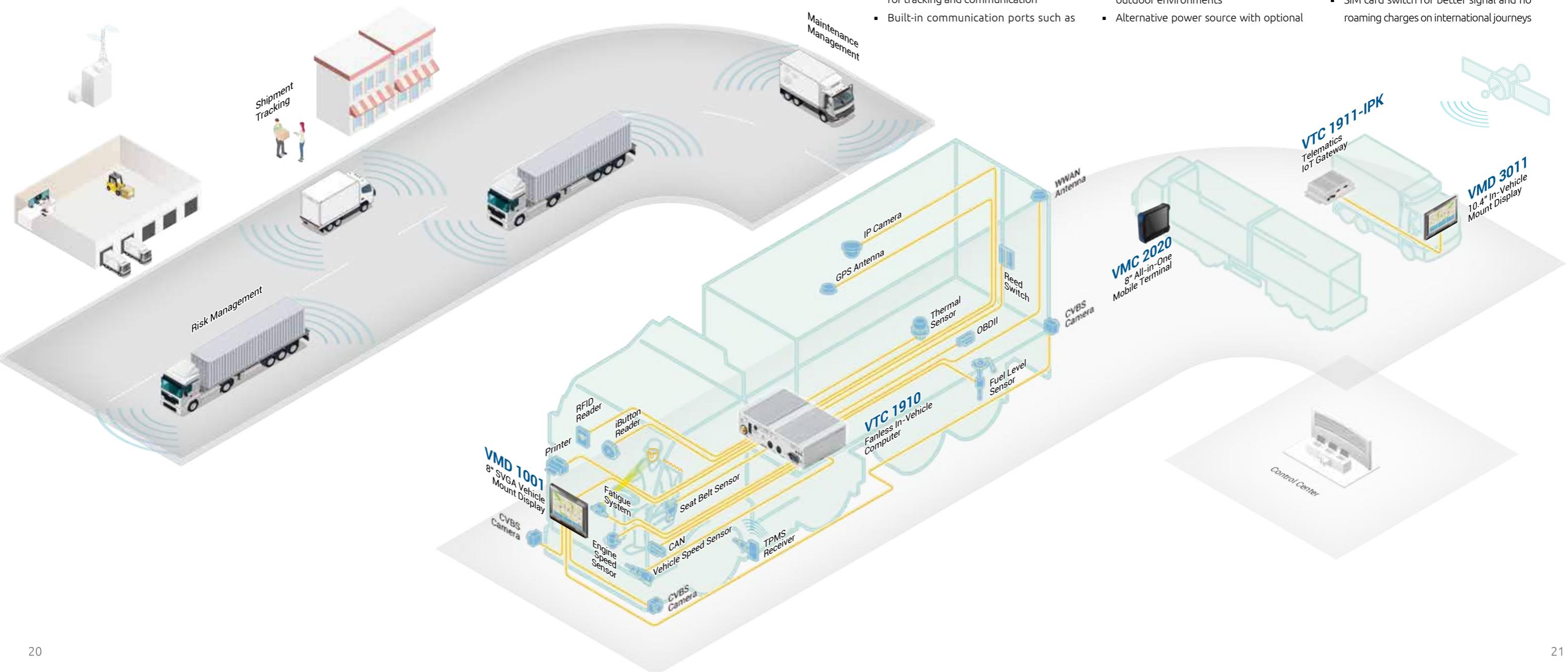


Model	VTC 1910	VTC 1911-IPK	VMC 1100	VMC 2020
CPU	Intel Atom® Bay Trail (E3815)	Intel Atom® Bay Trail (E3815)	Intel Atom® Bay Trail (E3825)	Intel Atom® Apollo Lake (E3950)
LCD panel	N/A	N/A	7" TFT LCD	8" TFT LCD
IP rated	N/A	IP67	Front (IP54)	IP65
CANbus	1/2 (BOM optional)	1/2 (BOM optional)	1/2 (BOM optional)	1



## Key Requirements

- Power and cost effective
- Real-time vehicle status monitoring
- Plan routes more correctly and real-time location of the vehicle
- Rich I/O interface to connect with a variety of sensors
- Suitable for harsh environments
- Uninterrupted power supply for stable system operation
- 360-degree situational awareness to enhance driving safety
- Roaming charges on international journeys



## NEXCOM's Solutions

- Powered by Intel® processors for fast and strenuous work
- VGA/HDMI/ultraONE+ various display support
- GPS and WLAN/WWAN module support for tracking and communication
- Built-in communication ports such as USB/ COM/GPIO/CAN bus/mini-Pcie to connect peripherals and acquire vehicle data
- Rugged design and IP65 protection for reliable operation in extreme and outdoor environments
- Alternative power source with optional backup battery to ensure uninterrupted data storage and transmission regardless of unstable vehicle power
- Powerful CVBS design for blind spot monitoring and collision avoidance
- SIM card switch for better signal and no roaming charges on international journeys

# Raw Material Management -

Born Tough to Increase Efficiency and Productivity

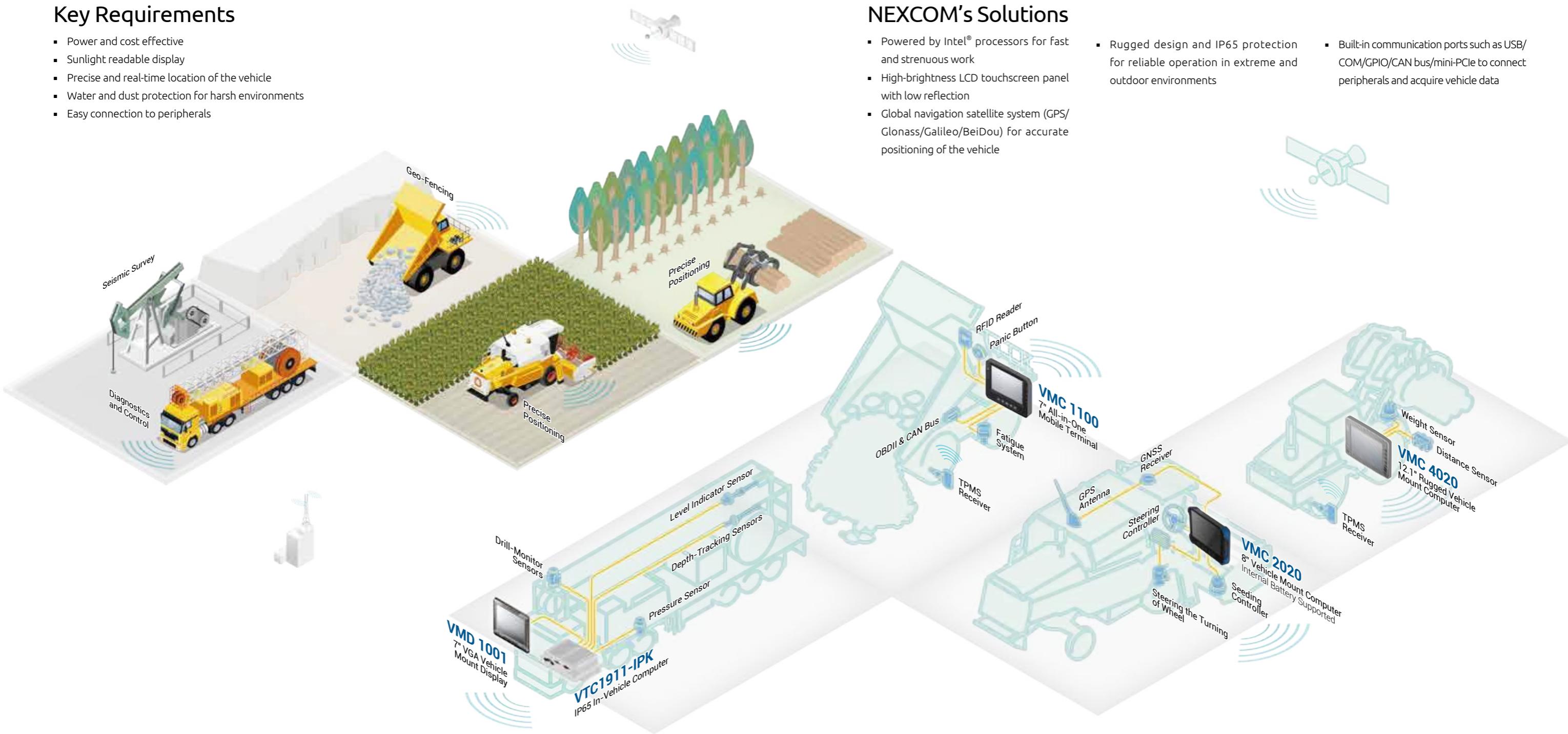


Model	VMC 1100	VMC 2020	VMC 3020	VMC 4020
CPU	Intel Atom® Bay Trail (E3825)	Intel Atom® Apollo Lake (E3950)	Intel Atom® Apollo Lake (E3930)	Intel Atom® Apollo Lake (E3950)
LCD size	7" TFT LCD	8" TFT LCD	10.4" TFT LCD	12.1" TFT LCD
Brightness	400 nits	1000 nits	1200 nits	1200 nits
Touch Screen	4-wire resistive	PCAP/ 5-wire resistive (BOM optional)	5-wire resistive	5-wire resistive



## Key Requirements

- Power and cost effective
- Sunlight readable display
- Precise and real-time location of the vehicle
- Water and dust protection for harsh environments
- Easy connection to peripherals



## NEXCOM's Solutions

- Powered by Intel® processors for fast and strenuous work
- High-brightness LCD touchscreen panel with low reflection
- Global navigation satellite system (GPS/Glonass/Galileo/BeiDou) for accurate positioning of the vehicle
- Rugged design and IP65 protection for reliable operation in extreme and outdoor environments
- Built-in communication ports such as USB/COM/GPIO/CAN bus/mini PCIe to connect peripherals and acquire vehicle data

# Video Surveillance -

To See, to Analyze, to Real-Time React  
for Mobile Security

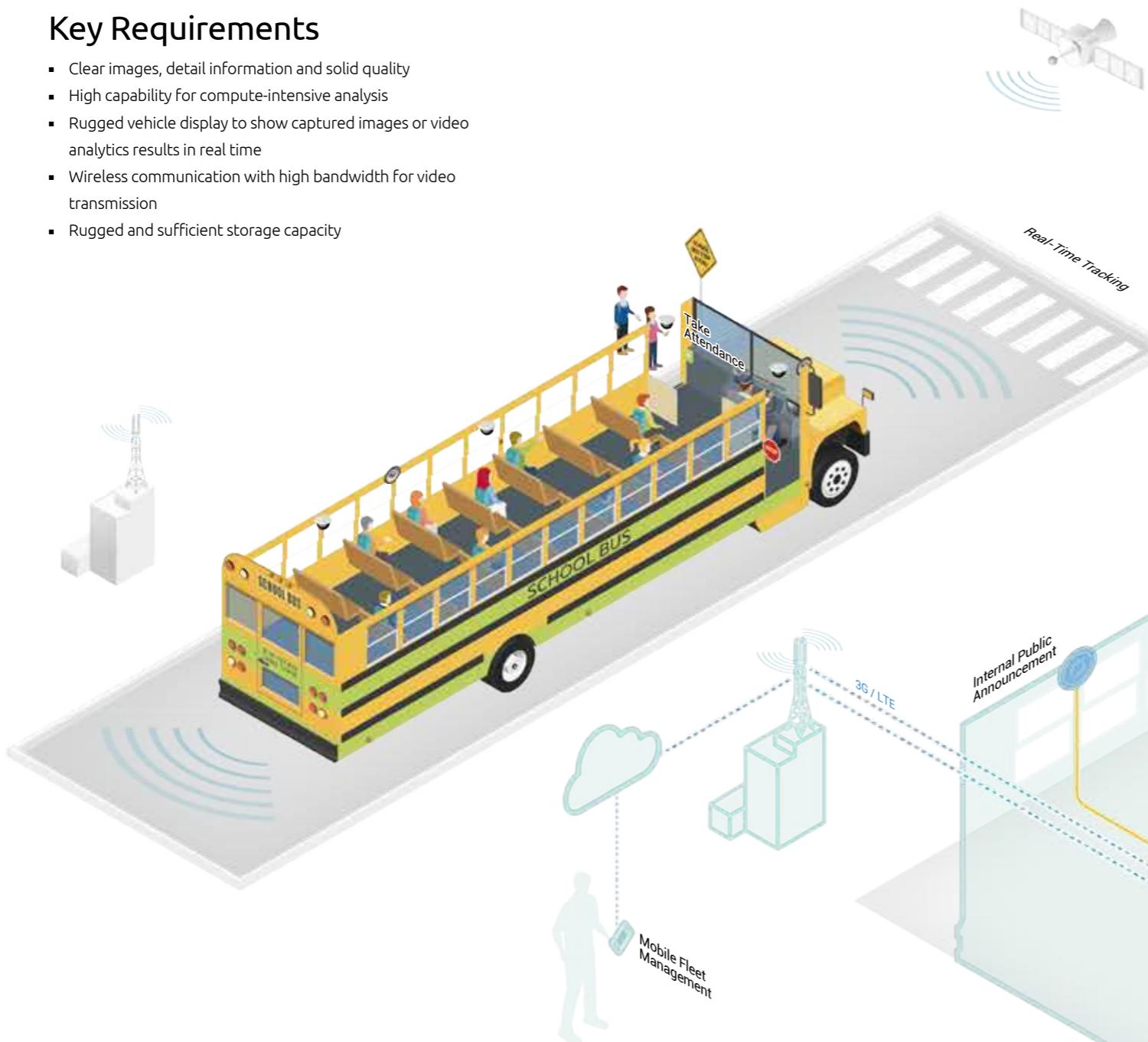


Model	VTC6222-C4S	VTC7250-7C8	VTC7251-7C4	MVS5603-7C6SMK
CPU	Intel Atom® Apollo Lake (E3950)	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Intel® Core™ i7-6600U
Storage	2 x 2.5" SSD (15mm) 1 x SD 1 x USBDOM	2 x 2.5" SSD (15mm) 2 x mSATA	2 x 2.5" SSD (15mm) 2 x mSATA	2 x 2.5" SSD (9.5mm) 1 x CFast
PoE	4	8	4	6 (M12)
WWAN	3/4 (BOM optional)	2	3/4 (BOM optional)	3



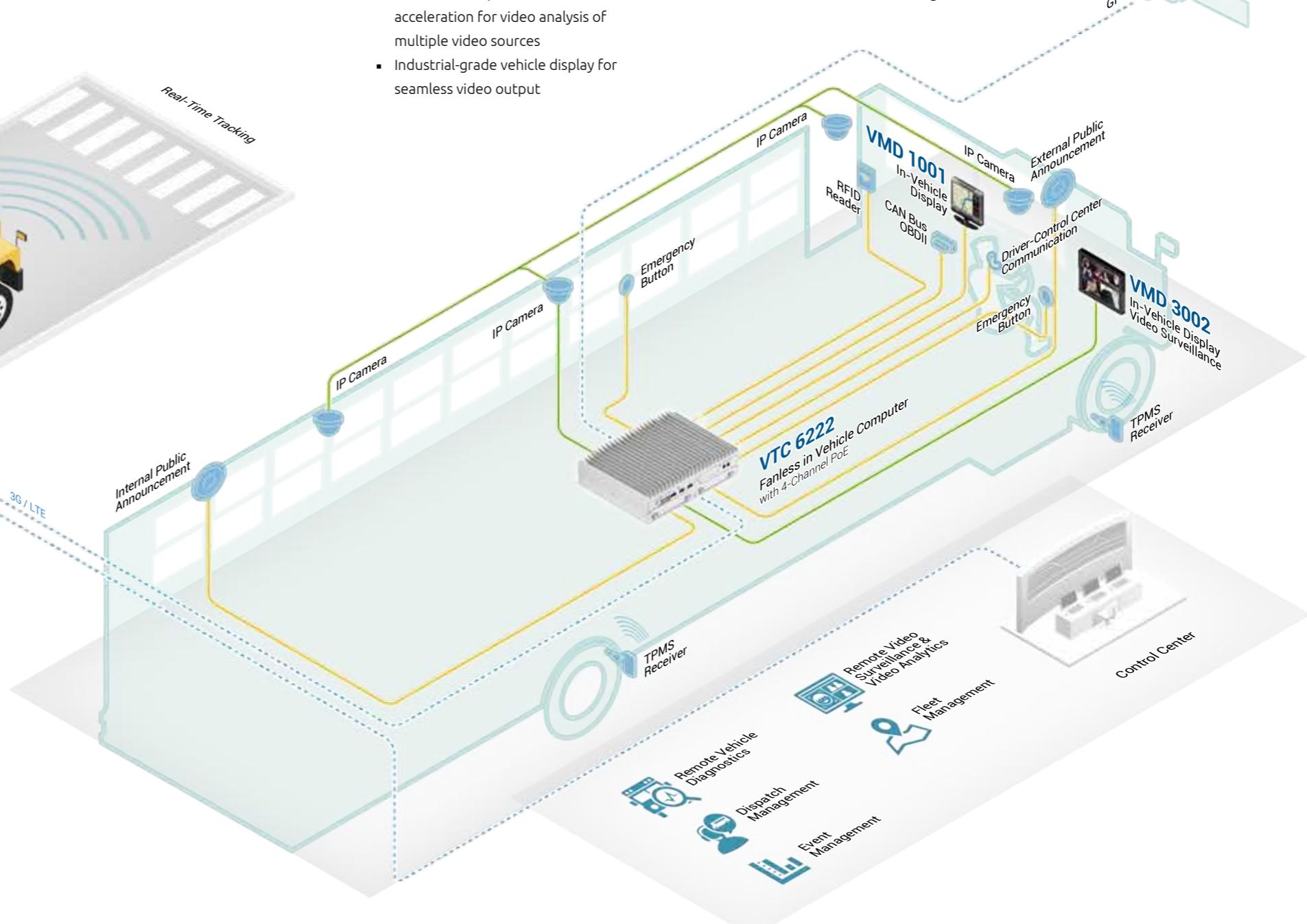
## Key Requirements

- Clear images, detail information and solid quality
- High capability for compute-intensive analysis
- Rugged vehicle display to show captured images or video analytics results in real time
- Wireless communication with high bandwidth for video transmission
- Rugged and sufficient storage capacity



## NEXCOM's Solutions

- Connections to high resolution IP cameras with PoE to capture clear images
- In-vehicle computer with GPU acceleration for video analysis of multiple video sources
- Industrial-grade vehicle display for seamless video output
- Support multiple WWAN networks with multiple SIMs for reliable video transmission and remote monitoring



# Product Selection Guide

## VTC/MVS/ATC System

CPU	COM				CAN Bus		Video Output				M.2	mini-Pcie	IP67	IP65	Model	
Intel Atom®	RS232	RS485	RS232/422/485	RS422/485	CAN 2.0B	OBD	DP	VGA	ultraONE+	LVDS	HDMI	Quantity	Quantity			
	2 x Tx/Rx	1			1	*		V				2				VTC 1910-S
	2 x Tx/Rx	1			1	*		V		O	O	2	V			VTC 1911-IPK
	2 x Full			1	1	*	V	V				4				VTC 1010
	2 x Full, 1x Tx/Rx			1	*		V		O	V		2				VTC 1011-C2K
	2 x Full, 1x Tx/Rx			1	*		V	V		V		2				VTC 1011-C2VK
	5 x Tx/Rx	2			1	*		V		V		2				VTC 1020
	5 x Tx/Rx	2			1	*		V	V	V	V	2				VTC 1020-PA
	1 x Full, 1x Tx/Rx			1	1	*		V		V		3				VTC 1021
	2 x Full			1	1	*	V	V				4				VTC 6210-BK
	2 x Full			1	1	*	V	V				4				VTC 6210-VR4
	2 x Full			1	1	*		V	O	O	V	1+1 (option)	3+1 (option)			VTC 6220-BK
	1 x Full, 1x Tx/Rx	1			1	*		2		V		2	3			VTC 6221
	1 x Full, 1x Tx/Rx			1	1	*		V				2	1 (option)	3		VTC 6222-C4S
	2 x Full	1		1	*		V			V		3				MVS 2623-C8SK
	2 x Full	1		1	*		V			V		1	4			MVS 2623-C6SMK
	2 x Full, 1x Tx/Rx	2			1 (Isolation)	*		V				4		V		MVS 2620-IPK
Intel® Core™	2 x Full	1		1	*	V	V		V			4				VTC 7230
	2 x Full	1		1	*	V	V		V			4				VTC 7240
	2 x Full	1		1 (Isolation)	*		V	V		V	1+1 (option)	3				VTC 7250-7C8
	2 x Full	1		1 (Isolation)	*		V			V	1+2 (option)	4				VTC 7251
	2 x Full	1		1 (Isolation)	*		V			V	1+2 (option)	4				VTC 7251-7C4
	2 x Full	1		1	*		V			V		3				MVS 5603-xC8SU
	2 x Full	1		1	*		V			V	1	4				MVS 5603-xC6SMK
	2 x Full	1		1	*		V			V		3				MVS 5600-xBK
	2 x Full, 1x Tx/Rx	2			1 (Isolation)	*		V				4		V		MVS 5600-xIPK
	2 x Full	2			1 (Isolation)	*		V	V		V	1+1 (option)	3			ATC 8010
	N/A	4			1 (Isolation)	*		V			V	1	2			ATC 8110/8110-F

O: Optional

## Railway Computer

Power Input (M12)		# of PoE	Ethernet		CPU		Audio	USB	Model
24V	DC	Isolation	10/100/1000 (M12)	10G (SFP+)	10/100/1000 (M12)	Intel Atom®	Intel® Core™	(M12)	(M12)
	With Isolation	4***	4***	2***	2		V		aROK 5510
					2	V			nROK 6221
		4			2	V			nROK 6221-IP
					1	V		V	nROK 6222-AC4S**
	None	4			1	V		V	nROK 1020-A
					2	V		V	VTC 6210-RA
					2	V		V	nROK 6221
					2	V		V	nROK 6221-IP
		8			1	V		V	nROK 6222-AC4S
					2		V		nROK 7252
					2		V		nROK 7252-C8S
					2	V		V	VTC 6210-RA*
36V	36V	None			2	V		V	nROK 6221
					2	V		V	VTC 6210-IP
					2	V		V	nROK 6222-AC4S
					1	V		V	nROK 7252
	110V	With Isolation			2	V		V	nROK 7252-C8S
					2	V		V	aROK 5510
					2	V		V	VTC 6210-RF
					2	V		V	nROK 6221
16~160V	16~160V	With Isolation			2	V		V	nROK 6221-IP
					1	V		V	nROK 6222-AC4S**
					2	V		V	nROK 7252-WI2-C8S
					2	V		V	VTC 6210-IP
					2	V		V	nROK 6221
					2	V		V	VTC 6210-PR1

\*: Compliant

\*\*: Optional attachable power isolation kit

\*\*\*: Optional module available

## Vehicle Mount Computer

LCD Size	CPU		Touch Screen		COM				IP Protection			Model
7"	Arm®	V		V		1 x Full			1	V		VMC 110/111
		V	V		1 x Full, S	S			V			VMC 1100
8"		V		V		1 x Full, 1 x Tx/Rx			1			VTC 2020-PC1
		V	V			1 x Full, 1 x Tx/Rx			1			VMC 2020-PR1
10.4"		V	V			2 x Full, 1 x Tx/Rx				V		VMC 3020
		V	V						2			VMC3021-4A1
12.1"		V	V						2			VMC 4020-4A1
		V	V						2	V		VMC 4020-4A0

S: Selectable

## Vehicle Mount Display

LCD Size	Video Input				Touch Screen		Brightness				Touch Interface	Model
	VGA	LVDS	CVBS	ultraONE+	Resistive Touch	PCAP	400 cd/m <sup>2</sup> (Typ.)	500 cd/m <sup>2</sup> (Typ.)	1000 cd/m <sup>2</sup> (Typ.)	1200 cd/m <sup>2</sup> (Typ.)	USB	
7"	V				V		V				V	VMD 1000
	V				V		V				V	VMD 1001
8"	V				V	V	V				V	VMD 2000
	V				V	V	V				V	VMD 2002
10.4"	V	4	V	V			V				V	VMD 2003
	V	4	V	V			V				V	VMD 3002
		4	V	V			V				V	VMD 3110

## PoE Port

# of PoE	Power Output			Ethernet					Storage			Model	
	30W	60W	120W	1	2	3	Intel® Atom®	Intel® Core™	2	3	4	6	
1	O			V			V		V				VMC 3021-4A1
	O			V			V		V				VMC 4020-4A1
	O			V			V		V				VMC 4020-4A0
2	V						V		V				VTC 1011
	V			V			V		V				VTC 1021-C2K
	O				V	V	V		V				VTC 6220
4	V	V					V						VES 30-4S
	O			V			V						aROK 5510
	V	V			V		V		V				nROK 6222-AC4S
	V	V			V		V		V				VTC 6222-C4S
	V	V			V		V		V				VTC 7251-7C4
6	V			V			V		V				MVS 5603-xC6SMK
	V			V			V		V				MVS 2623-C6MK
	V			V			V		V				nROK 7252-C8S
	V	V					V						VES 30-8S
	V			V			V		V				MVS 2623-C8SK
	V			V			V		V				MVS 5603-xC8SU
	V	V					V		V				VTC 7250-7C8
	V	V					V		V				ATC 8010
	V	V		V			V		V				ATC 8110*/8110-F*
	V			V			V		V				nROK 7252-C8S
	V			V			V		V				nROK 7252-WI2-C8S

O: Optional

\*: Optional with GE64/74 card pre-installed

## Vehicle Panel Computer

LCD Size	CPU	COM	USB	LAN	Video Output	IP Protection	Model
	Intel® Atom®	RS232/422/485		10/100/1000 Ethernet	HDMI	Front Panel IP54	
23.8"	V	1	4	2	V	V	VPC 2401
27"	V	1	4	2	V	V	VPC 2701
31.5"	V	1	4	2	V	V	VPC 3201

## Product Selection Tables

### Vehicle Panel Computer

Model	NEW	NEW	NEW
	VPC 2400	VPC 2700	VPC 3200
CPU	Intel Atom® E3930	Intel Atom® E3930	Intel Atom® E3930
Chipset	N/A	N/A	N/A
Memory	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB
Storage	1 x M.2 (2242) Key B 32GB (default), 1 x 2.5" SSD	1 x M.2 (2242) Key B 32GB (default), 1 x 2.5" SSD	1 x M.2 (2242) Key B 32GB (default), 1 x 2.5" SSD
LCD Size	23.8" TFT LCD	27" TFT LCD	31.5" TFT LCD
Resolution	1920 x 1080	1920 x 1080	1920 x 1080
Brightness (Typ.)	250cd/m <sup>2</sup>	300cd/m <sup>2</sup>	500cd/m <sup>2</sup>
Contrast Ratio	1000:1	1200:1	3000:1
View Angle	V: 178 H: 178	V: 178 H: 178	V: 178 H: 178
Video Input	HDMI	HDMI	HDMI
Audio	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out
Ethernet	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000
USB	4 x USB 3.0	4 x USB 3.0	4 x USB 3.0
COM	1 x RS232/RS422/RS485	1 x RS232/RS422/RS485	1 x RS232/RS422/RS485
Power Input	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V
Ignition Control	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting
Power Management	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software
Ingress Protection	Front panel IP54	Front panel IP54	Front panel IP54
Certification	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13
OS	Win 10, Yocto 4.14	Win 10, Yocto 4.14	Win 10, Yocto 4.14
Mounting	VESA 100 x 200/200 x 200	VESA 200 x 200/200 x 400	VESA 200 x 200/200 x 400
Dimensions (mm)	580 x 354 x 55	672 x 410 x 67	761 x 455 x 67
weight (kgw)	10	14	18.5
Operating Temperature	0°C to 50°C	0°C to 50°C	0°C to 50°C

### Vehicle Network Switch

Model	Image	Image
	VES30-4S	VES30-8S
Architecture	Unmanaged GbE switch	Unmanaged GbE switch
PoE	4 x 10/100/1000 base-T	8 x 10/100/1000 base-T
Ethernet	1 x Intel® 10/100/1000 base-T	1 x Intel® 10/100/1000 base-T
Standard Compliance	IEEE 802.3af PSE, total 60W	IEEE 802.3af PSE, total 120W
LED	1 x power indicator 8 x PoE indicator 1 x Low voltage protection indicator	1 x Power indicator 8 x PoE indicator 1 x Low voltage protection indicator
Dimensions (mm)	167 x 51.49 x 139.6	167 x 51.49 x 139.6
Ignition Control	Yes	Yes
Power Management	Low voltage protection & power on/off delay time	Low voltage protection & power on/off delay time
Power Input	DC 9V to 36V	DC 9V to 36V
Certification	CE, FCC Class B, E13	CE, FCC Class B, E13
Operating Temperature	-30°C to 70°C	-30°C to 70°C

## Industrial AI Edge Telematics Computer

Model	ATC 8010-7A	ATC 8010-7B	ATC 8010-7DF	ATC 8110	ATC 8110-F	MVS 2623-GCIoT	aROK 5510	aROK 8110	ATC 3210/3220	ATC 8111
	NEW	NEW	NEW	NEW	NEW	NEW	NEW	Coming soon	Coming soon	Coming soon
CPU	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Intel® Coffee Lake S/refresh Core™/Xeon®	Intel® Coffee Lake S/refresh Core™/Xeon®	Intel Atom® x7-E3950, 4c, 2.0GHz N/A	Intel® Coffee Lake S/refresh Core™/Xeon®	Intel® Coffee Lake S/refresh Core™/Xeon®	NVIDIA Tegra X2/Tegra X2 (4GB)	Intel® Coffee Lake S/refresh Core™/Xeon®
Chipset	Intel® Q370	Intel® Q370	Intel® Q370	Intel® C246	Intel® C246	Fanless	Intel® C246	Fanless	N/A	Intel® C246
Fan/Fanless	Fanless	Fanless	Fan (fan-kit pre-installed)	Fanless	Fan (fan-kit pre-installed)		Fan (fan-kit pre-installed)	Fanless	Fanless	Fan
Memory	2 x DDR4 2400 SO-DIMM, 4GB + 4GB (default) up to 32GB + 32GB	2 x DDR4 2400 SO-DIMM, 4GB + 4GB (default) up to 32GB + 32GB	2 x DDR4 2400 SO-DIMM, 4GB + 4GB (default) up to 32GB + 32GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	1 x DDR3L 1600 SO-DIMM, 4GB (default) up to 8GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	8GB/4GB 128-bit LPDDR4, 1600MHz	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	
Storage	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	3 x 2.5" SATA 3.0 SSD/HDD (removable, 15mm) or 2 x 2.5" SATA 3.0 SSD/HDD + 1 x 2.5" U.2	3 x 2.5" SATA 3.0 SSD/HDD (removable, 15mm) or 2 x 2.5" SATA 3.0 SSD/HDD + 1 x 2.5" U.2	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	6 x 2.5" SATA 3.0 SSD (removable, 9.5mm)	3 x 2.5" SATA 3.0 SSD/HDD (removable, 15mm) or 2 x 2.5" SATA 3.0 SSD/HDD + 1 x 2.5" U.2	32GB/16GB eMMC	4 x 2.5" SATA 3.0 SSD (removable, 15mm)
Second Storage	2 x mSATA (option)	2 x mSATA (option)	2 x mSATA (option)	1 x CFast (external accessible)	1 x CFast (external accessible)	N/A	1 x mSATA, 1 x M.2 key M	1 x CFast (removable)	1 x removable SD3.0 card	1 x CFast (external accessible)
GPU/VPU/TPU Coprocessor	NVIDIA GeForce® GTX 1050Ti MXM Module	Intel Movidius MXM Module	NVIDIA GTX 1080 MXM Module	Intel® UHD Graphics 630, option for one PCIe 3.0 x16 lane NVIDIA Graphics card	Intel® UHD Graphics 630, option for one PCIe 3.0 x16 lane NVIDIA Graphics card	Google Edge TPU	Intel® UHD Graphics 630, option for one PCIe 3.0 x16 lane NVIDIA Graphics card (75W)	Intel® UHD Graphics 630, option for one PCIe 3.0 x16 lane NVIDIA Graphics card	NVIDIA Pascal 256-core integrated GPU	Intel® UHD Graphics 630, option for two PCIe 3.0 x16 lane NVIDIA Graphics card
Video Out	1 x VGA, 5 x HDMI, 1 x ultraONE+	1 x VGA, 1 x ultraONE+	1 x VGA, 5 x HDMI, 1 x ultraONE+	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI	1 x HDMI	1 x VGA, 1 x HDMI
Audio	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	2 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out	1 x Mic-in, 1 x Line-out	Reserved (BOM option)	1 x Mic-in, 1 x Line-out
Ethernet	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000 (M12). 2 x 10Gb SFP+ card (optional)	2 x Intel® 10/100/1000 (M12)	N/A	2 x Intel® 10/100/1000
PoE	8 x Independent Intel® 10/100/1000 (w/ 802.3at/af). Total 60W	8 x Independent Intel® 10/100/1000 (w/ 802.3at/af). Total 60W	8 x Independent Intel® 10/100/1000 (w/ 802.3at/af). Total 60W	Up to 2 x GE64/74 card (option), each card with 4 x Intel® GbE (w/ 802.3at/af). Total 60W+60W	Up to 2 x GE64/74 card (option), each card with 4 x Intel® GbE (w/ 802.3at/af). Total 60W+60W	8 x GbE in switching (802.3af). Total 60W	4 x GbE independent (802.3at/af). Total 60W (optional)	Up to 2 x GE64/74 card (option), each card with 4 x Intel® GbE (w/ 802.3at/af). Total 60W+60W	2 x Independent Intel® 10/100/1000 (w/ 802.3af). Total 15W	Up to 2x GE64/74 card (option), each card with 4 x Intel® GbE (w/ 802.3at/af). Total 60W+60W
USB	6 x USB 3.1 (Gen2)	6 x USB 3.1 (Gen2)	6 x USB 3.1 (Gen2)	5 x USB 3.1 + 1 x USB 2.0	5 x USB 3.1 + 1 x USB 2.0	2 x USB 3.0, 1 x USB 2.0	1 x M12 with 2 x USB 2.0 signal, 4 x USB 3.1	5 x USB 3.1 + 1 x USB 2.0	2 x USB 3.0, 1 x USB 2.0, 1 x OTG	5 x USB 3.1 + 1 x USB 2.0
COM	2 x RS232, 1 x RS232/422/485	2 x RS232, 1 x RS232/422/485	2 x RS232, 1 x RS232/422/485	4 x RS232/422/485	4 x RS232/422/485	2 x RS232, 1 x RS232/422/485	2 x Full RS-232 (w/ isolation), 2 x Full RS232/422/485 (w/ isolation)	4 x RS232/422/485	2 x RS232/422/485	4 x RS232/422/485
GPIO	4 x DI, 4 x DO	4 x DI, 4 x DO	4 x DI, 4 x DO	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	8 x Programmable GPIO MCU: 2 x DI, 2 x DO, 1 x Speed frequency	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)
CAN/OBD	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	CAN Bus 2.0B onboard (w/ isolation)	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)	2 x Isolated CAN Bus 2.0B onboard	1 x Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module 12V (2A)
DC Output						Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
Optional Communication	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
mini-Pcie Socket	1 x (USB 2.0), BOM optional M.2 Key B (USB 2.0 + USB 3.0). 1 x (USB 2.0 + PCIe3.0/SATA 3.0 ((BIOS selection)). 1 x (USB 2.0 + PCIe 3.0/SATA 3.0 (auto detection))	1 x (USB 2.0), BOM optional M.2 Key B (USB 2.0 + USB 3.0). 1 x (USB 2.0 + PCIe3.0/SATA 3.0 ((BIOS selection)). 1 x (USB 2.0 + PCIe 3.0/SATA 3.0 (auto detection))	BOM optional M.2 Key B (USB 2.0 + USB 3.0). 1 x (USB 2.0 + PCIe3.0/SATA 3.0 ((BIOS selection)). 1 x (USB 2.0 + PCIe 3.0/SATA 3.0 (auto detection))	1 x (USB 2.0), BOM optional M.2 Key B (USB 2.0 + USB 3.0). 1 x (USB 2.0 + PCIe3.0/SATA 3.0 ((BIOS selection)). 1 x (USB 2.0 + PCIe 3.0/SATA 3.0 (auto detection))	1 x (USB 2.0), BOM optional M.2 Key B (USB 2.0 + USB 3.0). 1 x (USB 2.0 + PCIe3.0/SATA 3.0 ((BIOS selection)). 1 x (USB 2.0 + PCIe 3.0/SATA 3.0 (auto detection))	1 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	1 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	1 x (PCIe 2.0 + USB 2.0)	1 x (PCIe 2.0 + USB 2.0).
M.2	1 x M.2 key B (USB 2.0, USB 3.1), up to 2 (BOM option)	1 x M.2 key B (USB 2.0, USB 3.1), up to 2 (BOM option)	1 x M.2 key B (USB 2.0, USB 3.1), up to 2 (BOM option)	1 x M.2 key B (USB 2.0, USB 3.1), up to 2 (BOM option)	1 x M.2 key B (USB 2.0, USB 3.1), up to 2 (BOM option)	N/A	3 x M.2, Key B (USB 2.0 + USB 3.0), up to 4	1 x M.2 Key B (3042/3052). 2 x M.2 Key M (PCIe 3.0 x2 + USB 2.0) on GE74 PoE card	1 x M.2 Key B (USB 3.0), 1 x M.2 Key B (SATA 3.0)	1 x M.2 Key B (USB 3.0). 2 x M.2 Key M (PCIe 3.0 x2 + USB 2.0) on GE74 PoE card
SIM Socket WWAN	3 (eSIM, BOM optional) 2	3 (eSIM, BOM optional) 2	3 (eSIM, BOM optional) 2	4 (eSIM, BOM optional) 2	4 (eSIM, optional) 2	8 (10, eSIM, BOM optional) 4 (5, BOM optional)	4 (eSIM optional) 2	2	1	4 (eSIM option) 2
Expansion PCIe Slot	N/A	N/A	N/A	1 x PCIe x16, 1 x PCIe x4 + proprietary, 1 x PCIe x4	1 x PCIe x16, 1 x PCIe x4 + proprietary, 1 x PCIe x4	N/A	PCIe x16	1 x PCIe x16, 1 x PCIe x4 + proprietary, 1 x PCIe x8	N/A	2 x PCIe x16, 1 x PCIe x4 + proprietary, 1 x PCIe x8
GPS	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (BOM option) (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)
Power Input	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 24/110V (w/ isolation) Yes, w/ 8 level delay time setting	DC 24V (w/o isolation) Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting	DC 9V to 36V Yes, w/ 8 level delay time setting
Ignition Control										
Power Management	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software Internal (option)	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A	Low voltage protection & configuration via software N/A
Back-up Battery										
Certification	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, E13	CE, FCC Class A, E13
OS	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Debian Linux and other variants	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)
Dimensions (mm)	260 x 259.7 x 90.1	260 x 259.7 x 90.1	260 x 259.7 x 99	Fanless: 191.2 x 176 x 350		260 x 196 x 79.6	482 x 400 x 88	Fanless: 191.2 x 176 x 350	145 x 100 x 55	230 x 216 x 350
Operating Temperature	-30°C to 60°C	-30°C to 60°C	-30°C to 50°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C (w/o internal back up battery)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-30°C to 70°C	-30°C to 60°C

## Vehicle Telematics Computer

Model																																				
	VTC 1910-S	VTC 1911-IPK	VTC 1011-C2K	VTC 1011-C2VK	VTC 1020	VTC 1020-PA	VTC 1010	VTC 1021-BK	VTC 1021-C2K																											
CPU	Intel Atom® E3815	Intel Atom® E3815	Intel Atom® E3825	Intel Atom® E3825	Intel Atom® x5-E3930	Intel Atom® x5-E3930	Intel Atom® E3827	Intel Atom® x5-E3940	Intel Atom® x5-E3940																											
Chipset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A																											
Memory	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB																											
Storage	1 x SATA 2.0 mSATA	1 x SATA 2.0 mSATA	1 x 2.5" SATA 3.0 SSD (9.5mm)	1 x 2.5" SATA 3.0 SSD (9.5mm)	1 x 2.5" SATA 3.0 SSD (9.5mm)	1 x 2.5" SATA 3.0 SSD (9.5mm)	1 x 2.5" SATA 2.0 SSD (9.5mm)	1 x 2.5" SATA 3.0 SSD (9.5mm)	1 x 2.5" SATA 3.0 SSD (9.5mm)																											
Second Storage	1 x SATA DOM	1 x 2.5" SSD (9.5mm) or 1 x SATA DOM	1 x mSATA	1 x mSATA	1 x mSATA	1 x mSATA	1 x SD (external accessible)	1 x mSATA	1 x mSATA																											
Video Out	VGA	VGA. Optional HDMI	VGA, HDMI	VGA, HDMI or ultraONE+	VGA, HDMI	VGA, HDMI or LVDS	VGA, DP	VGA, HDMI	VGA, HDMI																											
Audio	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 3 x Line-out (selectable)	2 x Mic-in, 2 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out																											
Ethernet	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000 (exclusion with PoE)	2 x Intel® 10/100/1000 (exclusion with PoE)	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000																											
PoE	N/A	N/A	2 x (802.3af/at). Total 30W	2 x (802.3af/at). Total 30W	N/A	N/A	N/A	N/A	2 x (802.3af/at). Total 60W																											
USB	1 x USB 3.0, 1 x USB 2.0	1 x USB 2.0	2 x USB 2.0	2 x USB 2.0	2 x USB 3.0	2 x USB 3.0	1 x USB 3.0, 2 x USB 2.0	1 x USB 3.0, 2 x USB 2.0	1 x USB 3.0, 2 x USB 2.0																											
COM	2 x RS232, 1 x RS485	2 x RS232, 1 x RS485	2 x RS232, 1 x RS232 (Tx/Rx) or RS422/485	2 x RS232, 1 x RS232 (Tx/Rx) or RS422/485	5 x RS232 (Tx/Rx), 2 x RS485	5 x RS232 (Tx/Rx), 2 x RS485	2 x RS232, 1 x RS422/485	1 x RS232 (full), 1 x RS232 (Tx/Rx), 1 x RS422/485	1 x RS232 (full), 1 x RS232 (Tx/Rx), 1 x RS422/485																											
GPIO	3 x In, 3 x Out	3 x In, 3 x Out	4 x In, 4 x Out	4 x In, 4 x Out	5 x Programmable GPIO	5 x Programmable GPIO	6 x Programmable GPIO	3 x In, 3 x Out	3 x In, 3 x Out																											
CAN/OBD	CAN Bus 2.0B onboard. BOM option OBD SAE J1939	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module																											
DC Output	N/A	N/A	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (1A)	12V (2A)	12V (2A)																											
SMBus	N/A	N/A	1	1	1	1	N/A	1	1																											
Optional Communication	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN																											
mini-PCIe Socket	1 x (PCIe + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe+USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	2 x (PCIe + USB 2.0). 1 x (PCIe or mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).	1 x (PCIe + USB 2.0 + mSATA (auto detection)). 1 x (USB 2.0).																											
M.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A																											
SIM Socket	2	2	2	2	1	1	2	2	2																											
WWAN	1	1	1	1	1	1	2	1	1																											
GPS	Onboard u-blox NEO-M8N	Onboard u-blox NEO-M8N	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	Onboard u-blox NEO-M8N	Onboard u-blox NEO-M8N																											
Power Input	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V																											
Ignition Control	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting																											
Power Management	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software																											
Back Up Battery	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Internal (optional)	N/A																											
Ingress Protection	N/A	IP67	N/A	N/A	N/A	N/A	N/A	N/A	N/A																											
Certification	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class B, E13	CE, FCC Class A, E13	CE, FCC Class A, E13																											
OS	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)																											
Dimensions (mm)	130 x 120 x 35	185 x 167 x 56.5	185 x 150.9 x 45	185 x 150.9 x 45	185 x 120 x 45	185 x 120 x 50	180 x 180 x 50	180 x 180 x 50	180 x 180 x 50																											
Operating Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C (LAN mode) -40°C to 60°C (PoE mode)	-40°C to 70°C (LAN mode) -40°C to 60°C (PoE mode)	-40°C to 70°C	-40°C to 70°C	-30°C to 70°C	-40°C to 70°C	-40°C to 70°C																											

## Vehicle Telematics Computer

Model	VTC 6210 Series					VTC 7200 Series				
	VTC 6210-BK	VTC 6210-VR4	VTC 6220-BK	VTC 6221	VTC 6222-C4S	VTC 7230	VTC 7240	VTC 7250-7C8	VTC 7251	VTC 7251-7C4
CPU	Intel Atom® E3845	Intel Atom® E3845	Intel Atom® x7-E3950	Intel Atom® x7-E3950	Intel Atom® x7-E3950	Intel® Core™ i3-5010U	Intel® Core™ i7-5650U	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T	Intel® Core™ i7-8700T
Chipset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Intel® Q370	Intel® Q370	Intel® Q370
Memory	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	2GB DDR3L 1333 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	2 x DDR3L 1333/1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1333/1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR4 2666 SO-DIMM, 4GB+4GB (default) up to 32GB + 32GB	2 x DDR4 2666 SO-DIMM, 4GB+4GB (default) up to 32GB + 32GB	2 x DDR4 2666 SO-DIMM, 4GB+4GB (default) up to 32GB + 32GB
Storage	1 x 2.5" SATA 2.0 SSD/HDD (removable, 9.5mm)	1 x 2.5" SATA 2.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)	2 x 2.5" SATA 3.0 SSD (removable, 15mm)
Second Storage	1 x CFast (external accessible)	1 x CFast (external accessible)	N/A	1 x CFast (external accessible), BOM optional 1 x mSATA	1 x SD (external accessible), 1 x Internal USB DOM	1 x CFast (external accessible)	1 x CFast (external accessible)	2 x mSATA 3.0 (BIOS selection)	2 x mSATA 3.0 (BIOS selection)	2 x mSATA 3.0 (BIOS selection)
Video Out	VGA, DP	DP, VGA, 4 x (Video-in + Audio-in)	HDMI, VGA, LVDS (optional), ultraONE+ (optional)	2 x VGA, HDMI	VGA, 2 x HDMI	VGA, DP, LVDS (internal)	VGA, DP, LVDS (internal)	VGA, HDMI, ultraONE+	VGA, HDMI	VGA, HDMI
Audio	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out
Ethernet	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	3 x Intel® 10/100/1000 (2 x LAN exclusion with PoE)	2 x Intel® 10/100/1000, (3 BOM optional)	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	1 x Intel® 10/100/1000
PoE	N/A	N/A	2 x (802.3af/at). Total 30W (BOM option)	N/A	4 x (802.3af/at). Total 60W	N/A	N/A	8 x Independent Intel® 10/100/1000 (w/ 802.3at/at). Total 60W	N/A	4 x Independent Intel® 10/100/1000 (w/ 802.3at/at). Total 60W
USB	1 x USB 3.0, 2 x USB 2.0	1 x USB 3.0, 2 x USB 2.0	2 x USB 3.0, 1 x USB 2.0	3 x USB 2.0, 1 x USB 3.0	1 x USB 3.0, 2 x USB 2.0	2 x USB 3.0, 2 x USB 2.0	2 x USB 3.0, 2 x USB 2.0	6 x USB 3.1 (Gen2)	6 x USB 3.1 (Gen2)	6 x USB 3.1 (Gen2)
COM	2 x RS232, 1 x RS422/485	2 x RS232, 1 x RS422/485	2 x RS232, 1 x RS422/485	1 x RS232 full, 1 x RS232 TX/RX, 1 x RS485	1 x RS232 full, 1 x RS232 TX/RX, 1 x RS422/485	2 x RS232, 1 x RS232/422/485	2 x RS232, 1 x RS232/422/485	2 x RS232, 1 x RS232/422/485	3 x RS232, 1 x RS232/422/485	3 x RS232, 1 x RS232/422/485
GPIO	8 x Programmable PC GPIO 2 x MCU-DI, 2 x MCU-DO	8 x Programmable PC GPIO 2 x MCU-DI, 2 x MCU-DO	4 x In, 4 x Out	4 x In, 4 x Out	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x In, 4 x Out	4 x In, 4 x Out	4 x In, 4 x Out	4 x In, 4 x Out	4 x In, 4 x Out
CAN/OBD	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B on board. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B on board. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B on board. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B on board. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B on board. Optional OBD SAE J1939/J1708 module
DC Output	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)
SMBus	1	1	1	N/A	N/A	1	1	N/A	N/A	N/A
Optional Communication	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
mini-Pcie Socket	2 x (PCIe + USB 2.0), 2 x (USB 2.0)	2 x (PCIe + USB 2.0), 2 x (USB 2.0)	2 x (PCIe + USB 2.0), 1 x (USB 2.0, M.2 BOM option)	2 x (PCIe + USB 2.0), 1 x (USB 2.0)	2 x (PCIe + USB 2.0), 1 x (USB 2.0, M.2 BOM option)	3 x (PCIe+USB 2.0). 1 x (USB 2.0)	3 x (PCIe+USB 2.0). 1 x (USB 2.0)	2 x (USB 2.0+PCIe 3.0/ SATA 3.0 (BIOS selection)). 1 x (USB 2.0, M.2 key B BOM option)	2 x (USB 2.0+PCIe 3.0/ SATA 3.0 (BIOS selection)). 2 x (USB 2.0, M.2 BOM option)	2 x (USB 2.0+PCIe 3.0/ SATA 3.0 (BIOS selection)). 2 x (USB 2.0, M.2 BOM option)
M.2	N/A	N/A	1 x M.2 key B (USB 2.0 + USB 3.0)	1 x M.2, B Key (USB 2.0 + USB 3.0).	1 x M.2 Key B (USB 2.0 + USB 3.0 (BOM optional))	N/A	N/A	1 x M.2 key B (USB 2.0 + USB 3.1), up to 2 (BOM option)	1 x M.2 key B, 3042/3052 (USB 2.0 + USB 3.1 + PCIe3.0), up to 3 (BOM option)	1 x M.2 key B, 3042/3052 (USB 2.0 + USB 3.1 + PCIe3.0), up to 3 (BOM option)
SIM Socket	3	3	4	6 (8, eSIM BOM option)	2 (eSIM BOM option)	3	3	3 (eSIM BOM option)	6 (8, eSIM BOM option)	6 (8, eSIM BOM option)
WWAN	2	2	2	3 (4, BOM option)	1	2	2	2	3 (4, BOM option)	3 (4, BOM option)
GPS	VIOB-GPS-02 module (u-blox NEO-M8N)	u-blox NEO-M8N onboard	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)			
Power Input	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 48V	DC 9V to 48V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V
Ignition Control	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting			
Power Management	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software			
Back Up Battery	N/A	N/A	Internal (optional)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ingress Protection	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Certification	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13
OS	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)	Win 10, Linux (kernel 4.x)
Dimensions (mm)	260 x 176 x 50	260 x 176 x 50	260 x 196 x 50	260 x 196 x 50	260 x 196 x 66.5	260 x 206 x 79.5	260 x 206 x 79.5	260 x 256 x 90.1	260 x 256 x 78	260 x 256 x 78
Operating Temperature	-30°C to 70°C	-30°C to 70°C	-40°C to 70°C (w/o internal backup battery)	-40°C to 70°C	-40°C to 70°C	-30°C to 55°C	-30°C to 55°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C

## Railway Computer

Model	nROK 1020-A	VTC 6210-R	nROK 6221	nROK 6221-IP	nROK 6222-AC4S	nROK 7252	nROK 7252-C8S	nROK 7252-WI2-C8S
CPU	Intel Atom® x5-E3930	Intel Atom® E3845	Intel Atom® x7-E3950	Intel Atom® x7-E3950	Intel Atom® x7-E3950	Intel® Coffee Lake S/ Refresh Core™/Xeon®	Intel® Coffee Lake S/ Refresh Core™/Xeon®	Intel® Coffee Lake S/ Refresh Core™/Xeon®
Chipset	N/A	N/A	N/A	N/A	N/A	Intel® C246	Intel® C246	Intel® C246
Memory	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	2GB DDR3 1333 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	4GB DDR3L 1866 SO-DIMM (default) up to 8GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB	2 x DDR4 2400/2666 SO-DIMM, up to 32GB+32GB
Storage	1 x 2.5" SATA 3.0 SSD (removable, 9.5mm)	1 x 2.5" SATA 2.0 SSD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD (removable, 15mm)	1 x 2.5" SATA 3.0 SSD (removable, 15mm)	1 x SD (external accessible), 1 x internal USB DOM	2 x mSATA (occupied mini-PCIe slot) 1 x removable SD 3.0	2 x mSATA (occupied mini-PCIe slot) 1 x removable SD 3.0	2 x mSATA (occupied mini-PCIe slot) 1 x removable SD 3.0
Second Storage	1 x mSATA (occupied mini-PCIe slot)	1 x CFast (external accessible)	1 x CFast (external accessible), BOM optional 1 x mSATA	1 x CFast (external accessible), BOM optional 1 x mSATA	1 x SD (external accessible), 1 x internal USB DOM	VGA, 2 x HDMI	VGA, 2 x HDMI	VGA, 2 x HDMI
Video Out	VGA, HDMI	VGA, DP	2 x VGA, HDMI	2 x VGA	VGA, 2 x HDMI	VGA, 2 x HDMI	VGA, 2 x HDMI	VGA, 2 x HDMI
Audio	1 x Mic-in, 1 x Line-out (M12)	2 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out (DB9)	1 x Mic-in, 1 x Line-out (M8)	1 x Mic-in, 1 x Line-out (M8)	1 x Mic-in, 2 x Line-out (DB9)	1 x Mic-in, 2 x Line-out (DB9)	1 x Mic-in, 2 x Line-out (DB9)
Ethernet	1 x Intel® 10/100/1000 (M12)	2 x Intel® 10/100/1000 (M12)	2 x Intel® 10/100/1000 (M12), BOM optional	2 x Intel® 10/100/1000 (M12), BOM optional	1 x Intel® 10/100/1000 (M12)	2 x Intel® 10/100/1000 (M12)	2 x Intel® 10/100/1000 (M12)	2 x Intel® 10/100/1000 (M12)
PoE	N/A	N/A	N/A	N/A	4 x M12 (802.3af/at). Total 60W	N/A	8 x M12 (802.3af/at). Total 60W	8 x M12 (802.3af/at). Total 60W
USB	2 x USB 3.0	2 x USB 2.0 (M12), 1 x USB 3.0	3 x USB 2.0, 1 x USB 3.0	2 x USB 2.0, 1 x USB 3.0	2 x USB 2.0, 1 x USB 3.0	1 x M12 with 2 x USB 2.0 signal, 4 x USB 3.1	1 x M12 with 2 x USB 2.0 signal, 4 x USB 3.1	1 x M12 with 2 x USB 2.0 signal, 4 x USB 3.1
COM	5 x RS232 (Tx/Rx), 2 x RS485	2 x RS232 (w/ isolation), 1 x RS422/485 (w/ isolation)	1 x RS232 Full (w/ isolation), 1 x RS232 TX/RX (w/ isolation), 1 x RS485 (w/ isolation)	1 x RS232 Full (w/ isolation), 1 x RS232 TX/RX (w/ isolation), 1 x RS485 (w/ isolation)	1 x RS232 Full (w/ isolation), 1 x RS232 TX/RX (w/ isolation), 1 x RS485 (w/ isolation)	2 x Full RS-232 (w/ isolation), 1 x Full RS232/422/485 (w/ isolation)	2 x Full RS-232 (w/ isolation), 1 x Full RS232/422/485 (w/ isolation)	2 x Full RS-232 (w/ isolation), 1 x Full RS232/422/485 (w/ isolation)
GPIO	5 x Programmable GPIO	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 3 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)	4 x DI (w/ isolation) 4 x DO (w/ isolation)
CAN	CAN Bus 2.0B onboard	CAN Bus 2.0B onboard	CAN Bus 2.0B onboard (w/ isolation)	CAN Bus 2.0B onboard (w/ isolation)	CAN Bus 2.0B onboard (w/ isolation)	CAN Bus 2.0B onboard (w/ isolation)	CAN Bus 2.0B onboard (w/ isolation)	CAN Bus 2.0B onboard (w/ isolation)
DC Output	12V (2A)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SMBus	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Optional Communication	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/WWAN/Bluetooth	Wi-Fi/WWAN/Bluetooth	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
mini-PCIe Socket	1 x (PCIe 2.0/SATA 3.0 (auto detection) + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	1 x (PCIe 2.0 + USB 2.0). 1 x (PCIe 2.0 + USB 2.0), BOM optional 1 x (USB 2.0)	1 x (PCIe 2.0 + USB 2.0). 1 x (PCIe 2.0 + USB 2.0), BOM optional 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0), BOM optional M.2 Key B	1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0). 1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0), BOM optional M.2 Key B.	1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0). 1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0), BOM optional M.2 Key B.	1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0). 1 x (PCIe 3.0/SATA 3.0 (BIOS selection) + USB 2.0), BOM optional M.2 Key B.
M.2 Socket	N/A	N/A	1 x M.2, B Key (USB 2.0 + USB 3.0). 1 x M.2, Key B 3042/3052 (USB 2.0 + USB 3.0 + PCIe 2.0 (BOM optional))	1 x M.2, B Key (USB 2.0 + USB 3.0). 1 x M.2, Key B 3042/3052 (USB 2.0 + USB 3.0 + PCIe 2.0 (BOM optional))	BOM optional 1 x M.2, Key B (USB 2.0 + USB 3.0)	2 x M.2, Key B 3042/3052 (USB 2.0 + USB 3.0 + PCIe 3.0 (BOM optional)), up to 4	2 x M.2, Key B 3042/3052 (USB 2.0 + USB 3.0 + PCIe 3.0 (BOM optional)), up to 4	2 x M.2, Key B 3042/3052 (USB 2.0 + USB 3.0 + PCIe 3.0 (BOM optional)), up to 4
SIM Socket	1	3	6 (8, eSIM, BOM optional)	6 (8, eSIM, BOM optional)	2 (eSIM, BOM optional)	6 (8, eSIM, BOM optional)	6 (8, eSIM, BOM optional)	6 (8, eSIM, BOM optional)
WWAN	1	2	3 (4, BOM optional)	3 (4, BOM optional)	1	3 (4, BOM optional)	3 (4, BOM optional)	3 (4, BOM optional)
GPS	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	u-blox NEO-M8N on board	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)
Power Input	DC 24V (w/o isolation)	DC 24/36V (w/o isolaiton), 110V (w/ isolation)	DC 24/36V (w/o isolation), DC 24/110V (w/ isolation, optional)	DC 24 (w/ isolation), DC 24/36V (w/o isolation, optional), DC 110V (w/ isolation, optional)	DC 24/36V (w/o isolation) DC 16~160V (w/ isolation, external power kit, optional)	DC 24/36V (w/o isolation) DC 16~160V (w/ isolation, external power kit, optional)	DC 24/36V (w/o isolation)	DC 16~160V (w/ isolation, 3-second protection against temporary voltage dips, optional)
Ignition Control	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting
Power Management	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software
Ingress Protection	N/A	N/A	N/A	IP65	N/A	N/A	N/A	N/A
Certification	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155	CE, FCC Class A, EN50155
OS	Win 10 64-bit, Linux (kernel 4.x)	Win 10, Win 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)
Dimensions (mm)	185 x 120 x 45	260 x 176 x 70	260 x 196 x 70	260 x 198 x 70	260 x 196 x 66.5	260 x 266 x 110	260 x 266 x 110	260 x 266 x 110
Operating Temperature	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)	-40°C to 70°C (TX)

## Modular Vehicle Computer System

Model											
	MVS 2620-IPK	MVS 2623-C6SMK	MVS 2623-C8SK	MVS 5600-3BU	MVS 5600-7BU	MVS 5600-3IPK	MVS 5600-7IPK	MVS 5603-3C6SMK	MVS 5603-7C6SMK	MVS 5603-3C8SU	MVS 5603-7C8SU
CPU	Intel Atom® x7-E3950, 4c, 2.0GHz	Intel Atom® x7-E3950, 4c, 2.0GHz	Intel Atom® x7-E3950, 4c, 2.0GHz	Intel® Core™ i3-6100U	Intel® Core™ i7-6600U	Intel® Core™ i3-6100U	Intel® Core™ i7-6600U	Intel® Core™ i3-6100U	Intel® Core™ i7-6600U	Intel® Core™ i3-6100U	Intel® Core™ i7-6600U
Chipset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Memory	1 x DDR3L 1600 SO-DIMM, 4GB (default) up to 8GB	1 x DDR3L 1600 SO-DIMM, 4GB (default) up to 8GB	1 x DDR3L 1600 SO-DIMM, 4GB (default) up to 8GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB	2 x DDR3L 1600 SO-DIMM, 2GB (default) up to 16GB
Storage	1 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	1 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)	2 x 2.5" SATA 3.0 SSD/HDD (removable, 9.5mm)
Second Storage	1 x CFast (external accessible)	N/A	N/A	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)	1 x CFast (external accessible)
Video Out	1 x VGA	1 x VGA, 1 x HDMI	1 x VGA	1 x VGA	1 x VGA, 1 x HDMI						
Audio	1 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out	1 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out	2 x Mic-in, 2 x Line-out
Ethernet	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000
PoE	N/A	6 x GbE in switching (802.3af/at), M12, 60W	8 x GbE in switching (802.3af), 60W	N/A	N/A	N/A	N/A	6 x GbE in switching (802.3af/at), M12, 60W	6 x GbE in switching (802.3af), 60W	8 x GbE in switching (802.3af), 60W	8 x GbE in switching (802.3af), 60W
USB	3 x USB 2.0	2 x USB 3.0, 1 x USB 2.0	2 x USB 3.0, 1 x USB 2.0	4 x USB 3.0	4 x USB 3.0	1 x USB 3.0, 2 x USB 2.0	1 x USB 3.0, 2 x USB 2.0	4 x USB 3.0			
COM	3 x RS232, 2 x RS485	2 x RS232, 1 x RS232/422/485	3 x RS232, 2 x RS485	3 x RS232, 2 x RS485	2 x RS232, 1 x RS232/422/485						
GPIO	Isolation, 3 x DI, 3 x DO	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	Isolation, 3 x DI, 3 x DO	Isolation, 3 x DI, 3 x DO	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency	8 x Programmable DIO MCU: 2 x DI, 2 x DO, 1 x Speed Frequency
CAN/OBD	Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	Isolated CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module	CAN Bus 2.0B onboard. Optional OBD SAE J1939/J1708 module
DC Output	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)	12V (2A)
SMBus	N/A	1	1	1	1	N/A	N/A	1	1	1	1
Optional Communication	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
mini-PCIe Socket	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0), BOM optional for USB 3.0. 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0), BOM optional for USB 3.0. 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0), BOM optional for USB 3.0. 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	2 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)
M.2	N/A	1 x M.2 Key B (USB 3.0)	N/A	N/A	N/A	N/A	N/A	1 x M.2 Key B (USB 3.0)	1 x M.2 Key B (USB 3.0)	N/A	N/A
SIM Socket	3	5	3	3	3	3	3	5	5	3	3
GPS	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)
Power Input	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V	DC 9V to 36V
Ignition Control	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting
Power Management	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software
Back Up Battery	N/A	Internal (option)	Internal (option)	Internal (option)	Internal (option)	N/A	N/A	Internal (option)	Internal (option)	Internal (option)	Internal (option)
Ingress Protection	IP65	N/A	N/A	N/A	N/A	IP65	IP65	N/A	N/A	N/A	N/A
Certification	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13	CE, FCC Class A, E13
OS	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Win 10, Linux (Kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)	Win 10, Win 8, WES 8, Win 7, WES 7, Linux (kernel 4.x)
Dimensions (mm)	260 x 198 x 50	260 x 196 x 79.6	260 x 196 x 79.6	260 x 196 x 66.5	260 x 196 x 66.5	260 x 198 x 66.5	260 x 198 x 66.5	260 x 196 x 91			
Operating Temperature	-40°C to 70°C (w/o internal back up battery)	-40°C to 70°C (w/o internal back up battery)	-40°C to 70°C (w/o internal back up battery)	-30°C to 60°C (w/o internal back up battery)	-30°C to 60°C (w/o internal back up battery)	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C

## Vehicle Mount Computer

Model	VMC 110/111	VMC 1100	VMC 2020-PC1	VMC 2020-PR1	VMC 3020	VMC 3021	VMC 4020-4A0	VMC 4020-4A1
	Freescale i.MX6 Dual Lite	Intel Atom® E3825	Intel Atom® E3950	Intel Atom® E3950	Intel Atom® E3930	Intel Atom® E3950	Intel Atom® E3950	Intel Atom® E3950
CPU	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chipset	2GB DDR3L onboard	1 x DDR3L 1600 SO-DIMM, 2GB (default) up to 4GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB	DDR3L 1866 SO-DIMM, slot 4GB (default) up to 8GB
Memory	1 x EMMC 1 x Micro SD	1 x SATA DOM	1 x eMMC 64GB 1 x mSATA (occupied mini-Pelease slot)	1 x eMMC 64GB 1 x mSATA (occupied mini-Pelease slot)	1 x CFast 1 x 2.5" SSD bay, (9.5mm)	1 x CFast 1 x 2.5" SSD bay, (9.5mm)	1 x CFast 1 x 2.5" SSD bay, (9.5mm)	1 x CFast 1 x 2.5" SSD bay, (9.5mm)
Storage	7" TFT LCD	7" TFT LCD	8" TFT LCD	8" TFT LCD	10.4" TFT LCD	10.4" TFT LCD	12.1" TFT LCD	12.1" TFT LCD
LCD Size	1024 x 600	800 x 480	1280 x 720	1280 x 720	1024 x 768	1024 x 768	1024 x 768	1024 x 768
Resolution	500cd/m²	400cd/m²	1000cd/m²	1000cd/m²	1200cd/m²	1200cd/m²	1200cd/m²	1200cd/m²
Brightness (Typ.)	800:1	600:1	1000:1	1000:1	500:1	500:1	750:1	750:1
Contrast Ratio	V: 70/75 H: 75/75	V: 50/70 H: 70/70	V: 85/85 H: 85/85	V: 85/85 H: 85/85	V: 60/60 H: 70/70	V: 60/60 H: 70/70	V: 85/85 H: 85/85	V: 85/85 H: 85/85
View Angle	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor
Brightness Adjustment	4-wire resistive, anti-glare	4-wire resistive, anti-glare	Projected capacitive, anti-glare	5-wire resistive, anti-glare	5-wire resistive, anti-glare	5-wire resistive, anti-glare	5-wire resistive, anti-glare	5-wire resistive, anti-glare
Touch Screen	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker
Speaker	F1~F5 function key 1 x Power button 2 x Brightness/volume control 1 x System reset button	F1~F5 function key 1 x Power button 2 x Brightness/volume control 1 x System reset button	F1~F4 function key 1 x Power button 2 x Brightness/volume control 1 x System reset button	F1~F4 function key 1 x Power button 2 x Brightness/volume control 1 x System reset button	1 x Power button 2 x Brightness control 2 x Volume control 5 x Function key 1 x Shift key	1 x Power button 2 x Brightness control 2 x Volume control 5 x Function key 1 x Shift key	1 x Power button 2 x Brightness control 2 x Volume control 5 x Function key 1 x Shift key	1 x Power button 2 x Brightness control 2 x Volume control 5 x Function key 1 x Shift key
Control Button	N/A	N/A	4 x CVBS (optional)	4 x CVBS (optional)	N/A	3 x CVBS	3 x CVBS	3 x CVBS
Video Input	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out	1 x Mic-in, 1 x Line-out
Audio	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	1 x Intel® 10/100/1000	2 x Intel® 10/100/1000	2 x Intel® 10/100/1000
Ethernet	N/A	N/A	N/A	N/A	N/A	1 x (802.3af/at). Total 30W (optional)	1 x (802.3af/at). Total 30W (optional)	1 x (802.3af/at). Total 30W (optional)
PoE	3 x USB 2.0	1 x USB 3.0	1 x USB 3.1 2 x USB 2.0	1 x USB 3.1 2 x USB 2.0	2 x USB 2.0 (5V/1.0A) 1 x Power USB (5V/1.5A, 12V/1.5A)	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0
USB	1 x RS232, 1 x RS232/485	1 x RS232, 1 x RS232 (Tx/Rx) or 1 x RS485	1 x RS232 (Full), 1 x RS232 (Tx/Rx), 1 x RS232 (Tx/Rx)/RS422/RS485	1 x RS232 (Full), 1 x RS232 (Tx/Rx), 1 x RS232 (Tx/Rx)/RS422/RS485	2 x Powered RS232 (5V/1.5A, 12V/1.5A)	1 x RS232/422/485, 1 x RS232(Tx/Rx)/422/485	1 x RS232/422/485 + 4A0: 1 x RS232/422/485, 4A1: 1 x RS232(Tx/Rx)/422/485	1 x RS232/422/485 + 4A0: 1 x RS232/422/485, 4A1: 1 x RS232(Tx/Rx)/422/485
COM	3 x GPO, 3 x GPIO	2 x PWM, 2 x Analog input, 2 x In, 2 x Out	1 x PWM, 1 x Direction, 2 x In, 2 x Out	1 x PWM, 1 x Direction, 2 x In, 2 x Out	2 x In, 2 x Out	2 x In, 2 x Out	1 x In, 2 x Out	2 x In, 2 x Out
GPIO	2 x CAN Bus 2.0B	1 x CAN Bus 2.0B Optional OBDII	1 x Isolated CAN Bus 2.0B	1 x Isolated CAN Bus 2.0B	1 x Isolated CAN Bus 2.0B	2 x Isolated CAN Bus 2.0B	2 x Isolated CAN Bus 2.0B	2 x Isolated CAN Bus 2.0B
CAN/OBD	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN	Wi-Fi/Bluetooth/WWAN
Optional Communication	1 x (PCIe 2.0+ USB 2.0). 1 x (USB 2.0)	1 x (PCIe 2.0+ USB 2.0). 1 x (USB 2.0)	1 x (PCIe 2.0+USB 2.0). 1 x (PCIe 2.0/SATA 3.0 (BIOS selection)+USB 2.0). 1 x (USB 2.0+USB 3.0 (BOM optional)), BOM optional M.2 Key B 3042/3052	1 x (PCIe 2.0+USB 2.0). 1 x (PCIe 2.0/SATA 3.0 (BIOS selection)+USB 2.0). 1 x (USB 2.0+USB 3.0 (BOM optional)), BOM optional M.2 Key B 3042/3052	1 x (PCIe 2.0 + USB 2.0). 1 x (USB 2.0)	3 x (PCIe 2.0 + USB 2.0). 1 x USB 2.0	3 x (PCIe 2.0 + USB 2.0). 1 x USB 2.0	3 x (PCIe 2.0 + USB 2.0). 1 x USB 2.0
mini-Pelease Socket	N/A	N/A	BOM optional M.2 Key B 3042/3052	BOM optional M.2 Key B 3042/3052	1 x M.2 Key E (PCIe 2.0+SDIO+UART+USB 2.0)	N/A	N/A	N/A
M.2	1	1	2	2	1	1	2	2
SIM Socket	On board u-blox NEO-M8N	On board u-blox NEO-M8N	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	Optional	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)	VIOB-GPS-02 module (u-blox NEO-M8N)
WWAN	DC 9V to 36V	DC 9V to 36V	DC 9V to 60V	DC 9V to 60V	DC 9V to 60V	DC 9V to 60V	DC 9V to 60V	DC 9V to 60V
GPS	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting	Yes, w/ 8 level delay time setting
Power Input	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software	Low voltage protection & configuration via software
Ignition Control	N/A	N/A	Internal (optional)	Internal (optional)	Internal (optional)	Internal (optional)	Internal (optional)	Internal (optional)
Power Management	Front panel IP54	Front panel IP54	IP65	IP65	Front Panel IP65	IP65	Front IP65	IP65
Back Up Battery	CE, FCC Class B, E13, SAE J1455, ISO7637-2, EN 60950-1 LVD	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class B, E13	CE, FCC Class B, E13
Ingress Protection	Android 5.1	Win 8, WES8, Win 7, WES 7, Linux (kernel 3.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)	Win 10 64-bit, Linux (kernel 4.x)
Certification	VESA 75	VESA 75	VESA 75	VESA 75	VESA 75/100	VESA 75/100	VESA 75/100	VESA 75/100
OS	213 x 145 x 40	213 x 145 x 50	240 x 169 x 51.7	240 x 169 x 51.7	290 x 230 x 68	290 x 230 x 68	340 x 262 x 75	340 x 262 x 75
Mounting	-20°C to 70°C	-20°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C	-30°C to 60°C
Dimensions (mm)								
Operating Temperature								

## Vehicle Mount Display

Model	VMD 1000	VMD 1001	VMD 2000	VMD 2002	VMD 2003	VMD 3002	VMD 3110
LCD Size	7" TFT LCD	7" TFT LCD	8" TFT LCD	8" TFT LCD	8" TFT LCD	10.4" TFT LCD	10.4" TFT LCD
Resolution	800 x 480	800 x 480	800 x 600	800 x 600	800 x 600	1024 x 768	1024 x 768
Brightness (Typ.)	500cd/m²	500cd/m²	400cd/m²	400cd/m²	1000cd/m²	1200cd/m²	1200cd/m²
Contrast Ratio	600:1	600:1	500:1	500:1	500:1	500:1	500:1
View Angle	V: 60/60 H: 70/70	V: 60/60 H: 70/70	V: 50/70 H: 70/70	V: 50/70 H: 70/70	V: 60/60 H: 70/70	V: 60/60 H: 70/70	V: 60/60 H: 70/70
Brightness Adjustment	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor	Auto via light sensor
Touch Screen	4-wire resistive, anti-glare	4-wire resistive, anti-glare	4-wire resistive, anti-glare	4-wire resistive, anti-glare	4-wire resistive, anti-glare	Projected capacitive	Projected capacitive
Speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker	2 x Built-in speaker
Camera	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Control Button	1 x Monitor power button 2 x Brightness control 2 x Volume control	1 x Monitor power button 2 x Brightness control 2 x Volume control	1 x Monitor power button 2 x Brightness control 2 x Volume control	1 x Monitor power button 2 x Brightness control 2 x Volume control	1 x Monitor power button 1 x OSD menu 2 x Brightness control 2 x Volume control 1 x Auto Config	1 x Monitor power button 1 x OSD menu 2 x Brightness control 2 x Volume control 1 x Auto Config	1 x Monitor power button 1 x OSD menu 2 x Brightness control 2 x Volume control 1 x Auto Config
Video Input	Integrated LVDS CONN (LVDS, USB, 12V)	VGA	Integrated LVDS CONN (LVDS, USB, 12V)	Integrated DVI CONN (VGA, USB, 12V)	ultraONE+, 4 x CVBS	VGA, 4 x CVBS	ultraONE+, 4 x CVBS
Audio	1 x Mic-in (lateral side) 1 x Mic-out (lateral side) 1 x Line-in (bottom side) 1 x Mic-out (bottom side)	1 x Line-in (lateral side) 1 x Line-out (lateral side)	1 x Line-out (lateral side) 1 x Mic-in (lateral side) 1 x Line-in (bottom side) 1 x Mic-out (bottom side)	1 x Line-out (lateral side) 1 x Mic-in (lateral side) 1 x Line-in (bottom side) 1 x Mic-out (bottom side)	1 x Line-out (lateral side) 1 x Mic-in (lateral side)	1 x Line-in	1 x Line-in
USB	1 x USB 2.0	2 x USB 2.0	1 x USB 2.0	1 x USB 2.0	1 x USB 2.0	1 x USB 2.0	1 x USB 2.0
Remote Power Button	Remotely power on/off VTC, MVS & ATC	N/A	Remotely power on/off VTC, MVS & ATC	N/A	Remotely power on/off VTC, MVS & ATC	N/A	Remotely power off VTC, MVS & ATC
Power Input	DC 12V (via LVDS)	DC 9V to 36V	DC 12V (via LVDS)	DC 9V to 36V	DC 24V (via ultraONE+)	DC 9V to 36V	DC 24V (via ultraONE+)
Ingress Protection	Front panel IP54	Front panel IP54	Front panel IP54	Front panel IP54	Front panel IP54	IP65	IP65
Certification	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B
Mounting	VESA 75	VESA 75	VESA 75	VESA 75	VESA 75	VESA 75/100	VESA 75/100
Dimensions (mm)	182 x 138 x 36.3	182 x 138 x 36.3	207 x 173 x 36.7	207 x 173 x 36.7	207 x 173 x 36.7	256.5 x 202.1 x 31.5	256.5 x 202.1 x 31.5
Operating Temperature	-20°C to 70°C	-20°C to 70°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C

## Add-On Modules

Model								
	AIBooster-X1	VIOB-CAN-03	VIOB-CAN-04-RAG	VIOB-CAN-05	VIOB-CAN-06	VIOB-TPMS-01	VIOB-GPS-02	VIOB-GPS-DR02
Description	Intel® Movidius™ MA 2485 x 1	CAN Bus 2.0B or OBD SAE J1939 module	Dual CAN Bus 2.0B module	SAE J1708 module	OBD SAE J1939 module	Tire Pressure Monitoring System (TPMS) module	u-blox M8N module	u-blox M8L module
Input I/F	PCIe	UART	USB 2.0	USB 2.0	USB 2.0	USB 2.0	UART	UART
Input Connector	mini-Pcie socket	2 x 5-pin wafer	mini-Pcie Socket	mini-Pcie Socket or USB wafer	mini-Pcie Socket or USB wafer	mini-Pcie Socket or USB wafer	6-pin wafer	6-pin wafer
Output I/F	N/A	CAN Bus 2.0B or OBD SAE J1939	CAN Bus 2.0B	SAE J1708/J1587/J1922	OBD SAE J939	None	UART	UART
Output Connector	N/A	2 x 5-pin wafer	6-pin wafer to DB9	3-pin wafer to DB9	3-pin wafer to DB9	None	6-pin wafer	6-pin wafer
Form Factor	Full-size mini-Pcie	Proprietary	Full-size mini-Pcie	Full-size mini-Pcie	Full-size mini-Pcie	Full-size mini-Pcie	Proprietary	Proprietary
Dimensions (mm)	51 x 30	50 x 28	51 x 30	51 x 30	51 x 30	51 x 30	25.4 x 25.4	25.4 x 25.4
Operating Temperature	-30°C to 70°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Remark	Intel® Movidius™ VPU AI module	* CAN Bus 2.0B & SAE J1939 selection by switch	-	-	-	* Tire Pressure, Temperature and Voltage Information available. * RF 433MHz	* GNSS Support with GPS, GLONASS, Galileo, BeiDou and QZSS * Automotive Dead Reckoning (ADR) * With Battery	* GNSS Support with GPS, GLONASS, Galileo, BeiDou and QZSS * Automotive Dead Reckoning (ADR) * With Battery

Model								
	VIOB-GPS-DR03	VIOB-LTE-AD	VIOB-AE1M-01	VIOB-PA22-01	VTK-62B + VTK-62B1-BK/VTK-62B2-BK	VTK-RELAY-01	VTK6222-APK/FPK	VTK-GE64/GE74
Description	u-blox M8U module	M.2 to mini-Pcie converter module	1-Port 100Mbps Automotive Ethernet module	2 x Mic-in & 2 x Line-out module	Smart backup battery kit	Vehicle Relay module	External attachable power isolation kit	4-port RJ45 GigE/GbE PoE PCIe card
Input I/F	UART	USB 2.0	USB 2.0	USB 2.0	9~36VDC	USB 2.0 or RS-232 (Tx/Rx)	VTK6222-APK: 24VDC VTK6222-FPK: 110VDC	PCIe 3.0
Input Connector	6-pin wafer	mini-Pcie socket	mini-Pcie or USB wafer	mini-Pcie or USB wafer	3 Pin terminal block	USB type A or DB9	M12 (5 pin)	PCIe x4 (GE64) PCIe x4 + Proprietary G.F. (GE74)
Output I/F	UART	M.2	1-Pair UTP	Audio	Power: 12VDC (from backup battery) 24VDC (from vehicle battery) Communication: RS232/SMBus	4 x Relay 4 x DI 4 x DO 1 x ADC input 1 x PWM input	24VDC	4x 10/100/1000Mbps Ethernet. 2 x M.2 NVMe storage (GE74 only)
Output Connector	6-pin wafer	M.2	4-pin wafer to DB9	2 x 6-pin wafer to DB9	Power: 3-pin terminal block Communication: 2 x 5 Pin	Terminal block	M12 (5 pin)	4 x RJ45
Form Factor	Proprietary	Full-size mini-Pcie	Full-size mini-Pcie	Full-size mini-Pcie	Proprietary	Proprietary	Proprietary	PCIe x4 card
Dimensions (mm)	25.4 x 25.4	51 x 30	51 x 30	51 x 30	(1) 280 (W) x 150 (D) x 42.2 (H) mm (2) 297.3 (W) x 175 (D) x 39 (H) mm	126.5 (W) x 124 (D) x 24 (H)	120 (W) x 198 (D) x 50 (H)	168 x 111 (L x H), 1-slot width (GE64) 190 x 111 (L x H), 1-slot width (GE74)
Operating Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	Charging: 0°C to 45°C Discharging: 0°C to 55°C	-40°C to 85°C	-40°C to 70°C	-30°C to 85°C
Remark	* GNSS Support with GPS, GLONASS, Galileo, and BeiDou * Untethered Dead Reckoning (UDR) * With Battery	* Only for Sierra EM7430/EM7455	* BroadR-Reach Technology	-	Capacity: 8600mAh (Li-Ion)	It is remotely controlled through RS-232 (Tx/Rx) or USB communication	Only for nROK6222	NVMe M.2 storage is valid when GE74 is installed on ATC 8110/8111 series

# About NEXCOM

## Reliable Partner for the Intelligent Solutions — Committed to Customer Success

Founded in 1992 and headquartered in Taipei, Taiwan, NEXCOM is committed to being your trustworthy partner in building the intelligent solutions. To surpass customers' expectations, NEXCOM makes the difference by utilizing its decades of industrial computing experience, a highly talented R&D team, and by providing exceptional levels of customer service. With these core strengths, NEXCOM has enabled its customers to win key projects in a diverse range of industries.

With its focus on delivering these core values to better serve customers, NEXCOM integrates its capabilities and operates eight global businesses, which are Industrial Mesh, Intelligent Digital Security, Intelligent Platforms and Services, Mobile Computing Solutions, Medical and Healthcare Informatics, Network and Communication Solutions, Smart

Manufacturing, and Open Robotics and Machinery. This strategic deployment enables NEXCOM to offer time-to-market, time-to-solution products and service without compromising cost.

In addition, the service-to-market business model gives NEXCOM core competence to build a strong world-class service network by providing customized service, global logistics, local access, and real-time support. Operating six subsidiaries, from China, Japan, Taiwan, the United States, to the United Kingdom, NEXCOM is able to better facilitate customers' requirements as well as closely work with global partners in different regions.

Partners should also be assured that NEXCOM's Taiwan based Headquarters and subsidiary offices in China, UK and USA have obtained ISO 9001:2008 Certification.



<b>EMBUX</b>	Industrial Mesh: Industry 4.0 Outdoor Wireless Solutions, IoT Sensor Networking, ARM/MCU Embedded Board Design and Manufacturing Services
<b>GreenBase</b>	Intelligent Digital Security: IP Video Surveillance Cameras, Mobile Cameras, ANPR/LPR Network Cameras, Panoramic Cameras, NVR Server Platform
<b>IPS</b>	Intelligent Platforms and Services: Smart City, Smart Retail, Digital Signage, Interactive Kiosks, Hospitality, Gateway, AI Edge and ODM Customization Services
<b>MCS</b>	Mobile Computing Solutions: Computerized Vehicle Telematics, In-Vehicle Panel Computers, In-Vehicle AI, Railway Computers, Vehicle Mount Displays, Modular Vehicle Computer Systems, In-Vehicle Networking Switches, Mobile NVR
<b>MHI</b>	Medical and Healthcare Informatics: Total Solutions with a Variety of Medical IT Systems
<b>NCS</b>	Network and Communication Solutions: Network Security, HPC, Telecommunications, Storage, SDN/NFV, Industrial Security
<b>NexAIoT</b>	Smart Manufacturing: iAT2000 Cloud SCADA and Enterprise War Room, Predictive Diagnostic Maintenance, IoT Edge Solutions, Industry 4.0 Project Execution
<b>NexCobot</b>	Open Robotics and Machinery: Industrial Robot Controllers, EtherCAT Motion Control, Smart M2M Solutions, Educational Robots, Smart Retail Solutions

## Corporate Vision

To become the industrial leader in providing intelligent solutions, NEXCOM utilizes its industry leading technology, localized customer support and worldwide logistics services. This will be achieved by:

- Great team work
- Cooperation with trusted partners
- Growth through innovation

## Corporate Mission

- An innovative supplier in vertical application markets
- A quality partner in engineering, manufacturing and services

## Business Strategy

Aim to better support the activities of all its partners, NEXCOM divides its sales force into eight dedicated business units to target rapidly expanding vertical markets. This enhances each business unit concentrating on strategic channel accounts and on repeat order business. Moreover, NEXCOM's business units have been set up to serve the requirements of key project accounts, where product ODM and project support are frequently required.

NEXCOM is working with embedded computing solution providers to envision new opportunities for growth. We'll help you deliver reliable vertical solutions, optimized for the next wave of IoT and Industry 4.0 solutions.

## Green Policy

As a global citizen, NEXCOM is committed to providing green products and services, which are compliant with WEEE and RoHS legislation.



NEXCOM continues to proactively work with industry peers and suppliers, to clarify standards, and identify compatible technologies and practices that help reduce hazardous substances from our products and manufacturing processes.

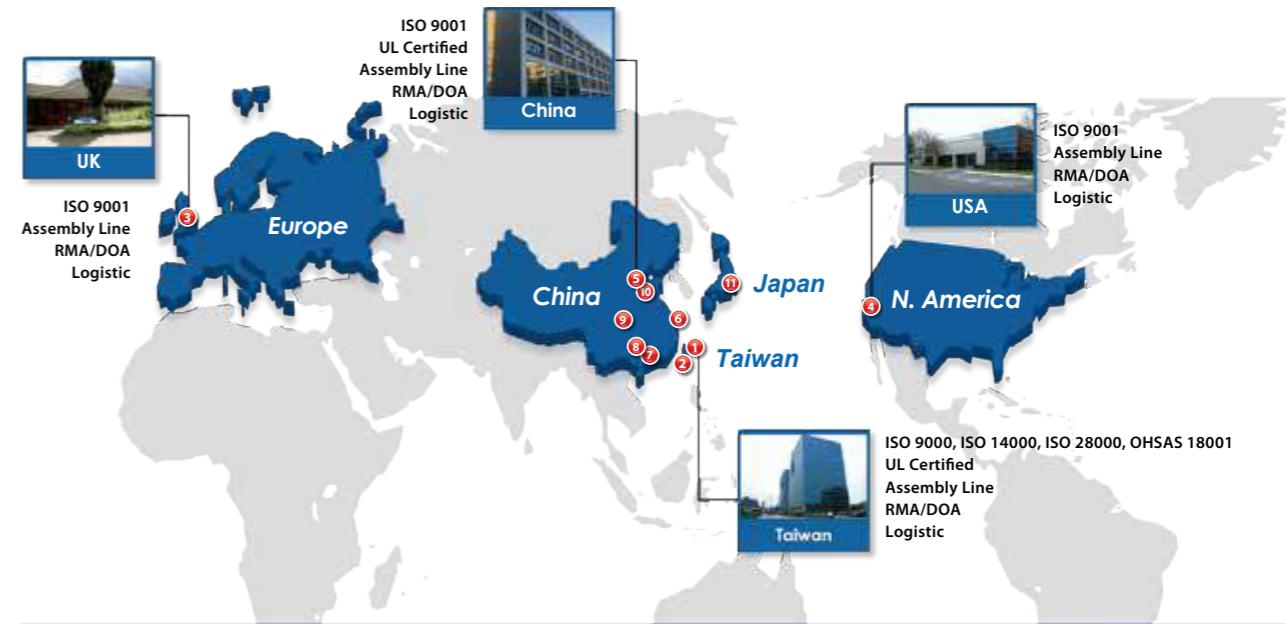


NEXCOM has invested heavily to establish operational infrastructures, including advanced equipment and facilities, not only at its global headquarters but also at subsidiary offices. Today, each of our service centers, with ISO 9001:2008 certification, has a purpose built assembly line, RMA/ DOA center and warehouse storage capability.



## Global Fulfillment Service

Product delivery and customer support are always more effective when delivered locally. NEXCOM localizes support and provides a global customer service network to handle all aspects of global business, from presales, order taking, and system assembly to logistics. For expeditious product delivery, NEXCOM has established four regional service centers: Taiwan (for Asia), USA (for North America and South America), the United Kingdom (for Europe) and China. Therefore, NEXCOM customers benefit from quality assured product assembly and four service centers.



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