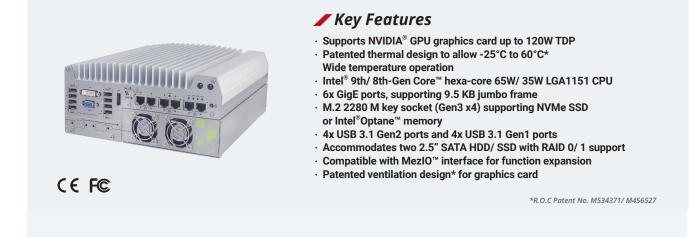
Nuvo-7160GC Series

Ruggedized GPU-Computing Platform Supporting 120W NVIDIA® GPU and Intel® 9th/8th-Gen Core™ Processor



Nuvo-7160GC is a ruggedized GPU-aided edge computer designed for modern machine learning applications such as autonomous driving, facial recognition and machine vision. It supports up to a 120W GPU, delivering 4~6 TFLOPS computing power for inference, as well as Intel[®] 9th/ 8th-Gen Core[™] 6-core/ 8-core CPU, offering up to 50% CPU performance enhancement over previous generations.

Thanks to Neousys' patented Cassette design and ingenious ventilation mechanism, Nuvo-7160GC can effectively dissipate the heat generated by the GPU. By introducing the guided airflow from intake to exhaust with powerful fans featuring smart fan control, it allows a 120W GPU to operate at 60°C ambient temperature under 100% GPU loading.

Nuvo-7160GC incorporates rich I/O functions such as USB 3.1 Gen2/ Gen1, GbE, COM and MezIO[™] interface in its restricted footprint. It also leverages cutting-edge M.2 NVMe SSD technology for over 2000MB/s disk read/ write speed or Intel[®] Optane[™] memory for the ultimate system acceleration. Neousys Nuvo-7160GC is the ideal solution for emerging edge computing by combining exceptional CPU and GPU performances.

Specifications

Processor(LČA115 ¹ socket, GSW/ 3SW TDP) - Intel [®] Core [®] 1-78007 (7-9700E (7-9700E) - Intel [®] Core [®] 1-78007 (7-9700E)PC//PCI Expressinstalling an NVIDIA [®] graphics card up to 120 [®] DDP - sockat with internal SIM socket (Max, graphics card unension is 188 mm(L) x 121 mm(V) - sockat with internal SIM socket (Max, graphics card up to 120 [®] DDP - Sockat with internal SIM socket (max with selected M.2 LTE module Expandable I/O 1 x MezlO [®] x Maz Sim Socket With dual front-accessible SIM s supports TPM 2.0VIO Interface Ethernet ForthSupports TPM 2.0Ma1 x MezlO [®] x Maz Sim Socket for Resolution 1 x MezlO 1 x MezlO 1 x MezlO 1 No W total power budgetNa Sim Socket for Resolution 1 x MezlO 1 x MezlO 1 x MezlO 1 x MezlO 1 x MezlO 1 x MezlO 2 x Sockat Sim	System Core		Internal Expansion Bus	
ChipsetIntel® Q370 platform controller hubMini PCI ExpressNith Size mini PCI	Processor	(LGA1151 socket, 65W/ 35W TDP) - Intel [®] Core™ i7-8700/ i7-8700T/ i7-9700E/ i7-9700TE - Intel [®] Core™ i5-8500/ i5-8500T/ i5-9500E/ i5-9500TE	PCI/PCI Express	(Max. graphics card dimension is 188 mm(L) x 121 mm(W), dua
Min.2supporting dual SiM mode with selected M.2 LTE moduleMin.2supporting dual SiM mode with selected M.2 LTE moduleAMTSupports AMT 12.0Expandable I/O1x MezIO ^M expansion port for Neousys MezIO ^M modulesTPMSupports TPM 2.0DC Input1x 3-pin pluggable terminal block for 8-35VDC DC inputI/O InterfaceEthernet6x Gigabit Ethernet ports by I219 and 5x I210DC Input1x 3-pin pluggable terminal block for 8-35VDC DC inputPoE+Optional IEEE 802.3at POE+ PSE for Port 3 ~ Port 6MechanicalMin.2MechanicalJUSB 3.14x USB 3.1 Gen1 (5 Gbps) portsWeight4.5 KgMountingWall-mount (standard) or DIN-rail mount (optional)Serial Port2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)Qerating remperatureWith 35W CPU and 120W GPU -25°C - 60°C **/*** (configured as 35W TDP)Storage InterfaceStorage remperature-40°C ~ 85°CStorage Temperature-40°C ~ 85°CM.21x M.2 2280 M key socket (PcIe Gen3 x4) for NVMe SSD or Intel [®] Optane ^M memory installation, 	Chipset		Mini PCI Express	
Memory Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots) Expandable I/O 1x MezIO [™] expansion port for Neousys MezIO [™] modules AMT Supports AMT 12.0 Expandable I/O 1x MezIO [™] expansion port for Neousys MezIO [™] modules TPM Supports TPM 2.0 DC Input 1x MezIO [™] expansion port for Neousys MezIO [™] modules I/O Interface Power Supply DC Input 1x MezIO [™] expansion port for Neousys MezIO [™] modules Phote Optional IEEE 802.3at PoEr PSE for Port 3 ~ Port 6 Dure for remote control and PWR LED output Mechanical USB 3.1 4x USB 3.1 Gen2 (10 Gbps) ports Mechanical Dimension 240 mm (W) x 225 mm (D) x 111 mm (H) Video Port 1x VGA, supporting 1920 x 1200 resolution 1x Weight 4.5 Kg 1x DVI-D, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution Environmental Serial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) With 35W CPU and 120W GPU -25°° C ~ 60°C **/*** (configured as 35W TDP) Storage Interface Storage Interface 4uridity 10%-software Storage -40°C ~ 85°C M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD Storage -40°C ~ 85°C Method 514.6, Category 4	Graphics	Integrated Intel [®] UHD graphics 630	M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets
AMT Supports AMT 12.0 TPM Supports TPM 2.0 I/O Interface Power Supply Ethernet 6x Gigabit Ethernet ports by 1219 and 5x 1210 DC Input 1x 3-pin pluggable terminal block for 8-35VDC DC input PoE+ Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 Mechanical Doutput Mechanical USB 3.1 4x USB 3.1 Gen2 (10 Gbps) ports Mechanical Dimension 240 mm (W) x 225 mm (D) x 111 mm (H) Video Port 1x VGA, supporting 1920 x 1200 resolution Weight 4.5 Kg Video Port 1x SJ, Supporting 1920 x 1200 resolution Weight 4.5 Kg Serial Port 2x software-programmable Rs-232/422/485 ports (COM1/ COM2) With 35W CPU and 120W GPU Operating Storage Interface Storage Interface Storage -25°C ~ 60°C *** fix (configured as 35W TDP) -25°C ~ 60°C **/*** (configured as 35W TDP) Storage Interface Storage -40°C ~ 85°C Humidity 10%-90%, non-condensing M.2 1x Mul-size mSATA port (mux with mini-PCle) Storage -40°C ~ 85°C Storage raing, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)		
IVM Supports IPM 2.0 I/O Interface Ethernet 6x Gigabit Ethernet ports by I219 and 5x I210 DC Input 1x 3-pin pluggable terminal block for 8-35VDC DC input PoE+ Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 100 W total power budget Mechanical Mechanical USB 3.1 4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports Dimension 240 mm (W) x 225 mm (D) x 111 mm (H) Video Port (Integrated Graphics) 1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution Mounting Wall-mount (standard) or DIN-rail mount (optional) Serial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4) Operating Temperature With 35W CPU and 120W GPU -25°C - 60°C **/*** (configured as 35W TDP) -25°C - 60°C **/*** (configured as 65W TDP) Storage Interface Storage Temperature -40°C ~ 85°C Humidity 10%-90%, non-condensing M.2 1x M_2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel [®] Optane [™] memory installation Vibration Operating, MIL-STD-810G, Method 514.6, Category 4 Shock MSATA 1x full-size mSATA port (mux with mini-PCIe) Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II </td <td>AMT</td> <td>Supports AMT 12.0</td> <td>Expandable I/O</td> <td>1x MezIO™ expansion port for Neousys MezIO™ modules</td>	AMT	Supports AMT 12.0	Expandable I/O	1x MezIO™ expansion port for Neousys MezIO™ modules
I/O Interface Remote Ctrl. & 1x 3-pin pluggable terminal block for remote control and PWR LED output PoE+ Optional IEEE 802.3at POE+ PSE for Port 3 ~ Port 6 100 W total power budget Mechanical USB 3.1 4x USB 3.1 Gen2 (10 Gbps) ports Mechanical Video Port (Integrated Graphics) 1x VGA, supporting 1920 x 1200 resolution 1x DVI-p, supporting 1920 x 1200 resolution 1x DVI-p, supporting 1920 x 1200 resolution 1x DVI-p, supporting 1920 x 1200 resolution Mounting Wall-mount (standard) or DIN-rail mount (optional) Serial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4) Operating Temperature With 35W CPU and 120W GPU -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 60°C **/*** (configured as 65W TDP) Storage Interface Storage Interface Storage Store Rate Mechanical Numention M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation or Intel® Optane™ memory installation Storage Store S	ТРМ	Supports TPM 2.0	Power Supply	
Ethernet6x Gigabit Ethernet ports by I219 and 5x I210IED Outputfor remote control and PWR LED outputPoE+Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 100 W total power budgetMechanicalUSB 3.14x USB 3.1 Gen1 (5 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports240 mm (W) x 225 mm (D) x 111 mm (H)Video Port (Integrated Graphic)1x VGA, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolutionMechanicalSerial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)With 35W CPU and 120W GPU -25°C ~ 60°C *** With 65W CPU and 120W GPU -25°C ~ 60°C *** With 65W CPU and 120W GPU -25°C ~ 60°C **** (configured as 35W TDP) -25°C ~ 60°C **** (configured as 35W TDP) -25°C ~ 60°C **** (configured as 65W TDP)Storage supporting RAID 0/11x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installationStorage Temperature-40°C ~ 85°CM.21x M.2 22	I/O Interface		DC Input	1x 3-pin pluggable terminal block for 8~35VDC DC input
PoE+Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 100 W total power budgetMechanicalUSB 3.14x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) portsDimension240 mm (W) x 225 mm (D) x 111 mm (H)Weight4.5 KgVideo Port (Integrated Graphics)1x VGA, supporting 1920 x 1200 resolution 1x Dyl-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution 2x R5-232 ports (COM3/ COM4)MountingWall-mount (standard) or DIN-rail mount (optional)Serial Port2x software-programmable R5-232/422/485 ports (COM1/ COM2) 2x R5-232 ports (COM3/ COM4)Operating TemperatureWith 35W CPU and 120W GPU -25°C ~ 60°C **Audio1x 3.5 mm jack for mic-in and speaker-outOperating TemperatureVith asw CPU and 120W GPU -25°C ~ 60°C **SATA HDD2x internal SATA port for 2.5″ HDD/ SSD installation, supporting RAID 0/ 1Storage Temperature-40°C ~ 85°CM.21x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel* Optane™ memory installation10% -90%, non-condensingM3ATA1x full-size mSATA port (mux with mini-PCIe)ShockOperating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Ethernet	6x Gigabit Ethernet ports by I219 and 5x I210		
USB 3.1 4x OSB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen2 (10 Gbps) ports Weight 4.5 Kg Video Port (Integrated Graphics) 1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution Mounting Wall-mount (standard) or DIN-rail mount (optional) Serial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4) Operating Temperature With 35W CPU and 120W GPU -25°C ~ 60°C ** Audio 1x 3.5 mm jack for mic-in and speaker-out Operating Temperature Vith 65W CPU and 120W GPU -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 60°C **/*** (configured as 65W TDP) SATA HDD 2x internal SATA port for 2.5″ HDD/ SSD installation, supporting RAID 0/ 1 Storage 1x M.2 2280 M key socket (PCle Gen3 x4) for NVMe SSD or Intel [®] Optane [™] memory installation Storage 7 Emperature -40°C ~ 85°C Munidity 10%-90%, non-condensing Vibration Operating, MIL-STD-810G, Method 514.6, Category 4 MSATA 1x full-size mSATA port (mux with mini-PCle) Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	PoE+		· · ·	
Video Port (Integrated Graphics)1× VGA, supporting 1920 x 1200 resolution 1× DVI-D, supporting 1920 x 1200 resolution 1× DisplayPort, supporting 406 x 2304 resolutionMountingWall-mount (standard) or DIN-rail mount (optional)Serial Port2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)Operating TemperatureWith 35W CPU and 120W GPU -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP)SATA HDD2x internal SATA port for 2.5″ HDD/ SSD installation, supporting RAID 0/1Storage Temperature-40°C ~ 85°CM.21x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation1widity10%~90%, non-condensingWibrationOperating, MIL-STD-810G, Method 514.6, Category 4MSATA1x full-size mSATA port (mux with mini-PCIe)ShockOperating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	USB 3.1		Dimension	240 mm (W) x 225 mm (D) x 111 mm (H)
Video Port (Integrated Graphics) 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution Environmental Serial Port 2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4) Operating Temperature With 35W CPU and 120W GPU -25°C ~ 60°C ** Audio 1x 3.5 mm jack for mic-in and speaker-out Operating Temperature Vithe 65W CPU and 120W GPU -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP) Storage Interface Storage Interface Storage Temperature -40°C ~ 85°C M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel [®] Optane [™] memory installation Storage -40°C ~ 85°C M.2 1x full-size mSATA port (mux with mini-PCIe) Vibration Operating, MIL-STD-810G, Method 514.6, Category 4			Weight	4.5 Kg
It DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolutionEnvironmentalSerial Port2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)Operating TemperatureWith 35W CPU and 120W GPU -25°C ~ 60°C **Audio1x 3.5 mm jack for mic-in and speaker-outOperating TemperatureVith 65W CPU and 120W GPU -25°C ~ 60°C **Storage Interface2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/1Storage Temperature-40°C ~ 85°CM.21x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installationVibrationOperating, MIL-STD-810G, Method 514.6, Category 4MSATA1x full-size mSATA port (mux with mini-PCIe)ShockOperating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Video Port	1x DVI-D, supporting 1920 x 1200 resolution	Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Serial Port 2X N3-232 ports (COM3) -25°C ~ 60°C ** Audio 1x 3.5 mm jack for mic-in and speaker-out Operating Temperature -25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 60°C **/*** (configured as 65W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP) Storage Interface 2x internal SATA port for 2.5″ HDD/ SSD installation, supporting RAID 0/1 Storage Temperature -40°C ~ 85°C M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation Vibration Operating MIL-STD-810G, Method 514.6, Category 4 MSATA 1x full-size mSATA port (mux with mini-PCIe) Shock Operating MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II			Environmental	
Audio1x 3.5 mm jack for mic-in and speaker-outTemperature-25°C ~ 60°C **/*** (configured as 35W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP)SATA HDD2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/1Storage Temperature-40°C ~ 85°CM.21x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installationHumidity10%-90%, non-condensingWibrationOperating, MIL-STD-810G, Method 514.6, Category 4ShockOperating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Serial Port		Operating	-25°C ~ 60°C **
Storage Interface Storage Interface SATA HDD 2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/1 Storage Temperature -40°C ~ 85°C M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation Humidity 10%~90%, non-condensing MSATA 1x full-size mSATA port (mux with mini-PCIe) Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Audio	1x 3.5 mm jack for mic-in and speaker-out	Temperature	
SATA HDD 2X Internal SATA port for 2.5 mbD/SSD Installation, supporting RAID 0/1 Temperature -40°C ~ 85°C M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation Humidity 10%~90%, non-condensing M.2 1x full-size mSATA port (mux with mini-PCIe) Vibration Operating, MIL-STD-810G, Method 514.6, Category 4 Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	Storage Interfa	ce		-25°C ~ 50°C **/*** (configured as 65W TDP)
M.2 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel [®] Optane [™] memory installation Humidity 10%~90%, non-condensing With the memory installation Vibration Operating, MIL-STD-810G, Method 514.6, Category 4 msATA 1x full-size mSATA port (mux with mini-PCIe) Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	SATA HDD			-40°C ~ 85°C
M.2 or Intel [®] Optane [™] memory installation Vibration Operating, MIL-STD-810G, Method 514.6, Category 4 mSATA 1x full-size mSATA port (mux with mini-PCle) Shock Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD	Humidity	10%~90% , non-condensing
Shock Table 516.6-II			Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Safety EN62368-1	mSATA	1x full-size mSATA port (mux with mini-PCle)	Shock	
			Safety	EN62368-1

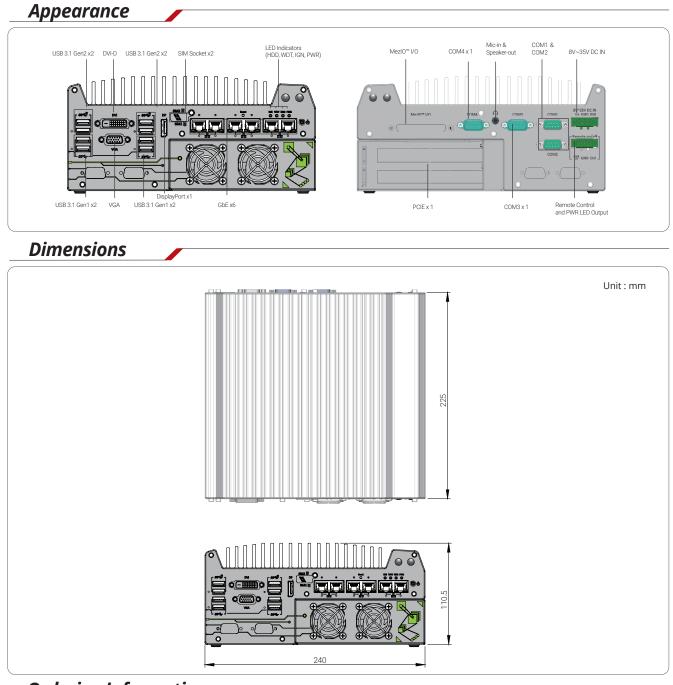
FMC

* For i7-9700E and i7-8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.
** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

CE/FCC Class A, according to EN 55032 & EN 55024



Nuvo-7160GC Series



Ordering Information

Model No.	Product Description		
Nuvo-7160GC	Intel [®] 9th/8th-Gen Core™ GPU-computing platform with 6x GbE and MezIO™ interface, supporting selected NVIDIA [®] 120W GPU		
Optional IEEE 802.3at PoE+ for GbE ports 3 ~ 6			

Optional Accessories

PA-280W-ET2	280W AC/DC power adapter 24V/11.67A; 16AWG/100cm; cord end terminals for terminal block, operating temperature : -30°C to 60°C.
Damping bracket	Neousys' patented damping brackets assembly for Nuvo-7160GC/ Nuvo-7164GC

MezIO™ Modu	les		
MezIO [™] -C180	MezIO [™] module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	MezIO [™] -V20-EP	MezIO [™] module with ignition power control function for in-vehicle application
MezIO [™] -C181	MezIO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	MezIO [™] -U4	MezIO [™] module with 4x USB 3.1 ports
MezIO [™] -D220	MezIO™ module with 8-CH isolated digital input and 8-CH isolated digital output	MezIO [™] -G4	MezIO [™] module with 4x GigE ports
MezIO [™] -D230	MezIO [™] module with 16-CH isolated digital input and 16-CH isolated digital output	MezIO [™] -G4P	MezIO [™] module with 4x IEEE 802.3at PoE+ ports
			Only Nuvo-7160-PoE support MezIO-G4P