

AFE-R750

NVIDIA® Jetson Orin™ NX / AGX Orin™ AMR Control System

Preliminary



Features

- AMR AI Controller Board up to 275 TOPS AI computing
- Dedicated I/Os for AMR: 4xGbE, 2xCOM, DIO, CANFD
- Sensor connection for camera, LiDAR, IMU...etc.
- Supports Ubuntu 22.04, JetPack 6.1SDK
- IEC 61000-6-4 Heavy Industry Certificate
- Supports Advantech Robotic Suite



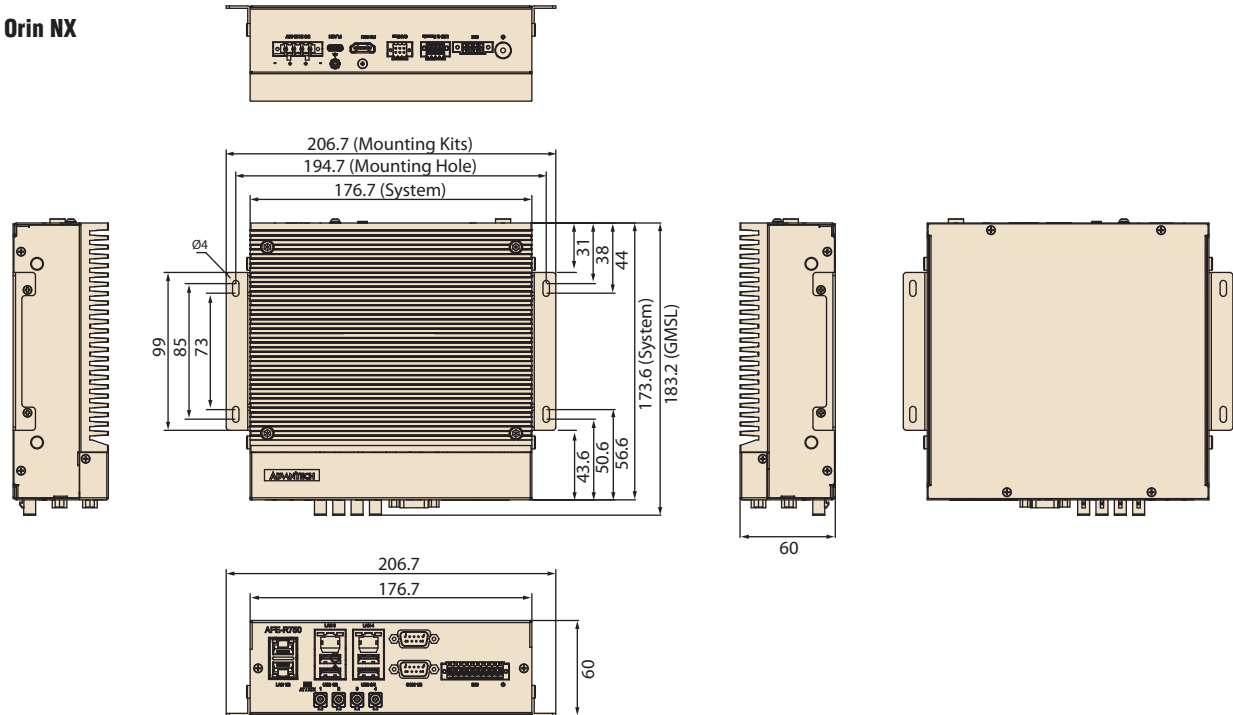
Specifications

Processor System	NVIDIA Jetson Series	Optional Orin NX 16GB	Optional AGX Orin 32GB/64GB
	CPU	8-core NVIDIA Arm® Cortex A78AE v8.2	8/12-core NVIDIA Arm® Cortex A78AE v8.2
	GPU	1024-core NVIDIA Ampere GPU with 32 Tensor Cores Maximum Operating Frequency: 918MHz	1792/2048-core NVIDIA Ampere GPU with 56/64 Tensor Cores, Maximum Operating Frequency: 930MHz/1.3GHz
	AI Performance Reference	Up to 100 Sparse TOPs (INT8)	Up to 200/275 Sparse TOPs (INT8)
	TDP	10~25W	15~40/50W
	Memory	16GB 256-bit LPDDR5 DRAM	32/64GB 256-bit LPDDR5 DRAM
	Flash	NA	64GB eMMC5.1
Ethernet	Interface	RJ-45	
	Controller	Intel® i226	
	Speed	4 x GbE	4 x 2.5GbE
Display	HDMI	1 x HDMI 2.0 (Max. resolution 3840 x 2160 @ 24Hz)	
IO Ports	USB	4 x USB 3.2 Type A	
	OTG USB	1 x Type C USB (for system recovery only)	
	CANBus	1 x isolated CANFD 1Mbps/2Mbps	2 x isolated CANFD 1Mbps/2Mbps
	DI/DO	8bit isolated DIO	16bit isolated DIO
	COM	2 x RS232/422/485	
	Remote switch	LED/WDT/PWS/GND/RESET/Debug	
	Fan	1x Fan connector (12V/1A)	
	Switch	AT/ATX	
Expansion	M.2 E key	1 x 2230 (PCIex1, USB2)	
	M.2 B key	1 x 2280/3042/3052 (PCIex1, USB2, SIM)	
	GMSL	4 x FAKRA (Optional)	8 x FAKRA (Optional)
	IMU	BOSCH BMI088 6-axis (Optional), Movella Xsens MTi3 AHRS 9-axis (Only for AGX, optional by AFE-RM05 with AFE-RM04-8PA1)	
Others	TPM	TPM2.0	
	Time Sync	Supports GPS PPS signal (optional)	
Storage	M.2 M key	1 x M.2 2280 (PCIex4)	
Power	Power Supply voltage	20~28V	
	Power Type	ATX/AT mode, ATX default	
Environment	Operational Temperature	-10 ~ 55°C with 0.7 m/s air flow	32GB: -10 ~ 60°C with 0.7 m/s air flow 64GB : -10 ~ 50°C with 0.7 m/s air flow (MaxN MODE_50W on AMK-A0057 fan kit)
	Operating Humidity	95% @ 40 °C (non-condensing)	
	Vibration	3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis	
Mechanical	Dimensions (W x D x H)	177 x 174 x 60 mm	177 x 174 x 80 mm
	Weight	1.83Kg	2.66Kg
	Mounting Support	Wall mounting	
Operating System	Linux	Ubuntu 22.04 LTS with JetPack 6.1	
Software Support	ROS2	Ready by Advantech Robotic Suite	
Certifications	EMC/Safety	CE/FCC Class B, CB, UL, CCC and BSMI (No RED Certificate)	

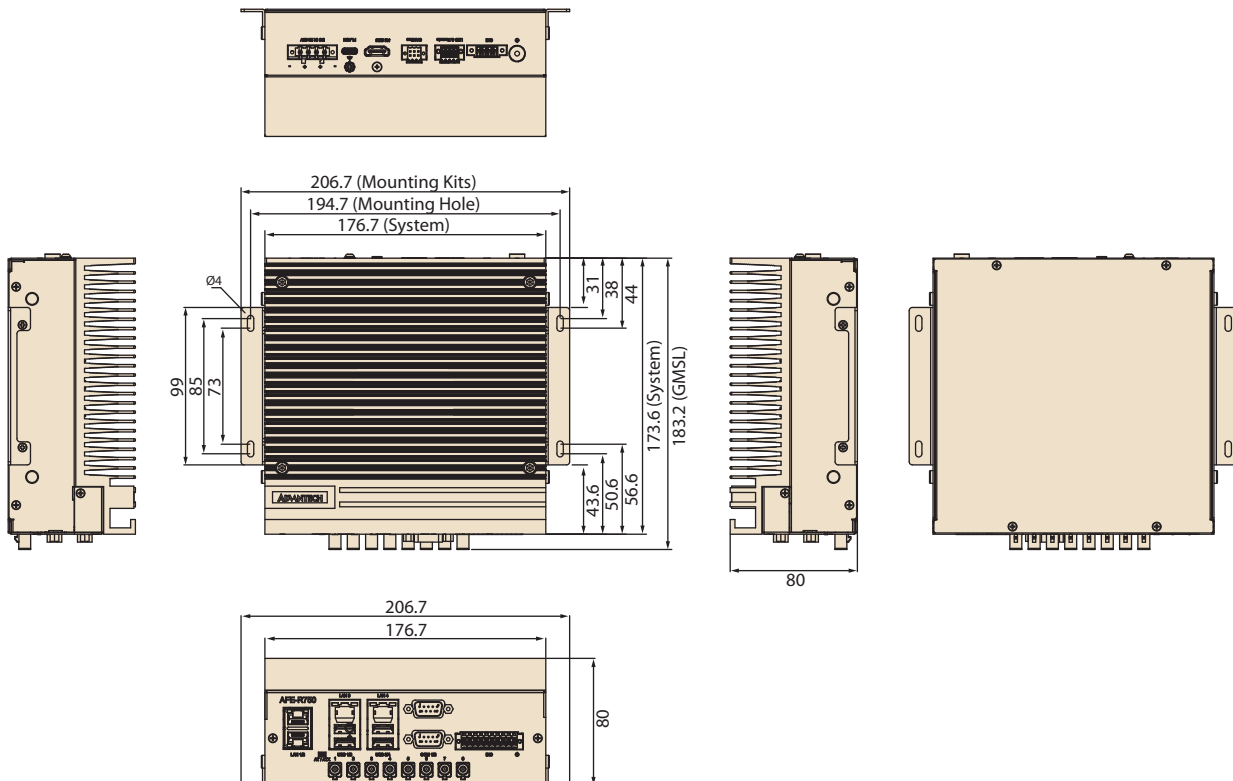
Dimensions

Unit: mm

Orin NX



AGX Orin



Front Panel I/O Mechanical Layout

Orin NX



AGX Orin



Rear Panel I/O Mechanical Layout

Orin NX



AGX Orin



Ordering Information

Part No.	Description
968DD00269	NVIDIA Jetson AGX Orin 64GB Module
968DD00255	NVIDIA Jetson AGX Orin 32GB Module
968DD00537	NVIDIA Jetson Orin NX 16GB Module

Part No.	Module	Memory	eMMC	NVME	HDMI	GbE	USB	CANBus	COM	DIO	Power input	Made in
AFE-R750-X1A1U	AGX Orin	64GB	64GB	Optional	1	4	4	2	2	16bit	20-28V _{DC}	Taiwan
AFE-R750-X2A1U	AGX Orin	32GB	64GB	Optional	1	4	4	2	2	16bit	20-28V _{DC}	Taiwan
AFE-R750-M1A1U	Orin NX	16GB	-	128GB	1	4	4	1	2	8bit	20-28V _{DC}	Taiwan
AFE-R750-X0A1U	Without Jetson module	Barebone for AGX Orin 32/64GB	64GB	Optional	1	4	4	2	2	16bit	20-28V _{DC}	Taiwan
AFE-R750-M0A1U	Without Jetson Module	Barebone for Orin NX 16GB	-	Optional	1	4	4	1	2	8bit	20-28V _{DC}	Taiwan

Packing List

Part Number	Description
-	AFE-R750 Unit
-	User Manual (Simplified Chinese)
-	China RoHS
-	Mounting Kit

Optional Item for Default SKU

Part Number	Description
96PSA-A230W24P4-3	AC to DC adapter, DC 24V 230W, -20 ~ 60 °C
1702002600	Power cable 3-pin 183cm, USA type
1702002605	Power cable 3-pin 183cm, EU type
1702031801	Power cable 3-pin 183cm, UK type
1700000237	Power cable, 3-Pin 183cm, PSE type
AFE-RM04-4PA1	MAX96712, 4ports GMSL for Orin NX
AFE-RM04-8PA1	MAX96712, 8ports GMSL for AGX Orin
AMK-A0057	External Fan kit for AFE-R750

Compatible Sensors List

Compatible Sensors for Autonomous Applications						
Sensors	Manufacturer	Spec	Sensor MPN	Camera Resolution	Camera Sensor	Advantech PN
GMSL Camera	oToBrite	2D	oToCAM222	2MP	Sony ISX021	96ICAM-222
	Orbbec	2D+3D	Gemini 335Lg	1MP (RGB) 1 MP (depth)		TBD
USB Camera	Orbbec	2D+3D	Gemini 335L	1MP (RGB) 1 MP (depth)		-
IMU	BOSCH	6-axis	BMI088			On board
	Movella	9-axis	MTi-3-5A-DK			AFE-RM05
Lidar	Slamtec	2D	RPLIDAR-A2M12			-
	Slamtec	2D	RPLIDAR C1 LiDAR			-
	SICK	2D	NanoScan3			-
	SICK	3D	multiScan100			-