AFE-A505

Intel® Core™ Ultra Series 4 Processors (Codename: Nova Lake-H) Robotic Fanless IPC



Features

- Intel® Core™ Ultra Series 4 Processors, TDP 25W
- Supports up to 128GB dual-channel DDR5-8000MT/s using CSODIMM module
- Supports 8-ch GMSL3.0/2.0 with mini-FAKRA connectors through optional AFE-RM07
- 4x LAN, 5x USB (incl. 1x USB-C), 2x COM, 2x CAN-FD, non-isolated 16-bit+isolated 16-bit GPIO, 1x HDMI
- 4x Expansions: 2x M.2 M-Key, 1x E-key, 1x B-key
- Sensor connection for camera, LiDAR, IMU, and optional GMSL…etc.
- Supports Ubuntu 26.04, Windows 11 LTSC, embedded software API SUSI, Robotic Suite, WEDA

Specifications

Platform	Processor	Core™ Ultra Series 4 processors
	Max. Frequency	4.8GHz
	Base Frequency (P-Core)	2GHz
	Core Number	16, 8P+4E+4LE
	LLC	18MB
	CPU TDP	25W
	BIOS	AMI EFI 256Mbit
Memory	Technology	DDR5 8000 MT/s CSODIMM
	Max. Capacity	Up to 128GB
	Channel/ Socket	Dual Channels/ 2 Sockets
Graphics	Controller	Intel® ARC® Graphics
	Max. Frequency	2.3GHz
	Execution Unit	TBD
	3D/ HW Acceleration	TBD
Display	HDMI	1 x HDMI 2.1 (4096 x 2160 @60Hz)
Ethernet	LAN1	10/100/1000/2500 GbE Intel i226IT GbE, support Wake On LAN, support PoE module
	LAN2	10/100/1000/2500 GbE Intel i226IT GbE, support Wake On LAN, support PoE module
	LAN3	10/100/1000/2500 GbE Intel i226IT GbE
	LAN4	10/100/1000/2500 GbE Intel i226IT GbE
Expansion	M.2 E-Key	1 x E-Key 2230 (PCIe Gen3 x1, USB2.0)
	M.2 B-Key	1 x B-Key 3042*/ 3052 (PCIe Gen3 x1/USB2.0/TGPIO) w' Nano SIM
	M.2 M-Key	2 x M-Key 2280 (PCIe Gen5 x4)
	GMSL	8 x GMSL (optional)
External I/O	Ethernet	4 x RJ-45
	HDMI	1 x HDMI2.1
	USB Type-C	1 x USB3.2 Gen2x1 10Gbps, support DisplayPort1.4 Alt. Mode (PD15W)
	USB Type-A	2 x USB3.2 Gen2x1 10Gbps, 2 x USB2.0
	CANBus	1 x CAN-FD (optional 2nd isolated CAN-FD via AFE-RM07)
	GPIO	1 x 16bit GPIO (optional 2nd isolated 16-bit GPIO via AFE-RM07)
	FAN	12V, 1A (mutually exclusive with internal fan)
	COM	2 x COM (optional)
	Power Button	1 x Power on/off button
	Front Panel Control	Reset/LED/WDT
	Power Connector	3-pin phoenix connector
Board Feature	Watchdog Timer	65536 level, 0~65535 sec
	TPM	Discrete TPM2.0, fTPM* support by request
	SUSI	SW API for Hardware Monitor, Smart Fan Control, I2C, GPIO, WDT
	Time Sync	Support GNSS-based time sync
Power	Supply Voltage	Vin: DC 20V ~36V ± 10%; RTC Battery: Lithium 3V/210mAH
	Connector	3P Phoenix
	Power Management	AT, ATX
	Max Consumption	TBD
	Idle Consumption	TBD
Environment	Temperature	Operating: -15 ~ 50 °C (5~122°F) Storage: -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	Operating: 40 °C @ 95% relative humidity, non-condensing Storage: 60 °C @ 95%relative humidity, non-condensing
	Vibration Resistance	3.5 Grms
Certification	EMC	CE/FCC Class B, CCC, BSMI, Contact 8KV, air 15KV ESD protection
	Safety	CCC, BSMI
Mechanical	Dimensions	175 x 119 x 63 mm (6.9" x 4.6" x 2.5")
	Net Weight	1.8 kg

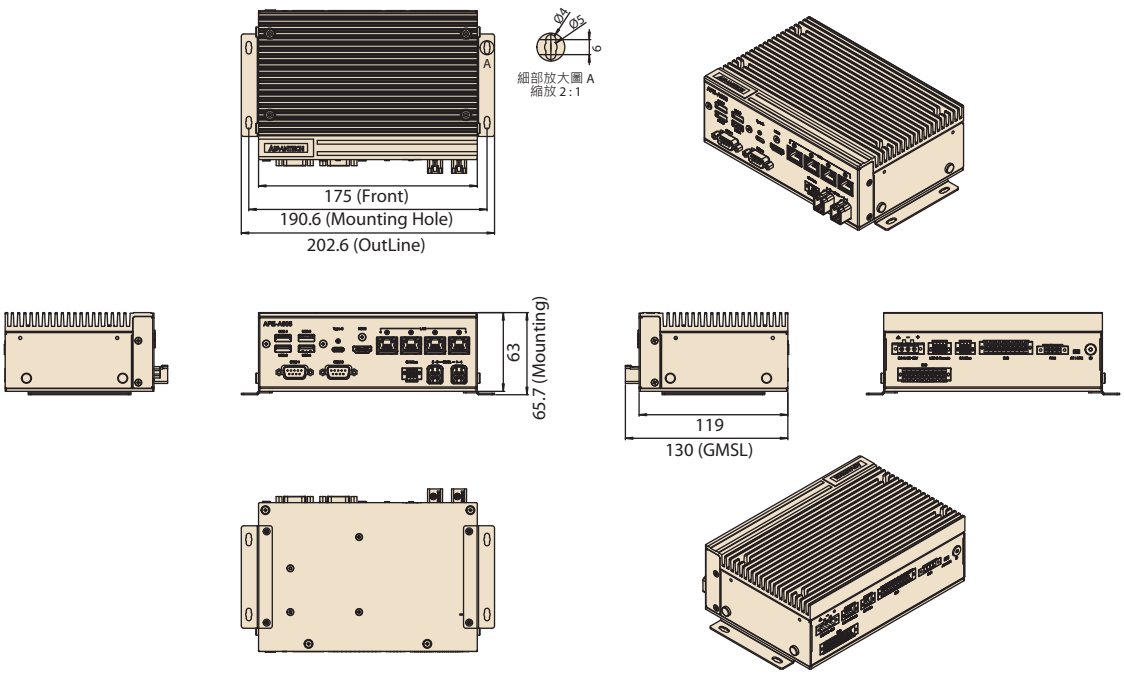
*Note: Support by request

All product specifications are subject to change without notice.

Last updated: 15-Oct-2026

Dimensions

Unit: mm



Ordering Information

PN	CPU sku	Core	Max. Frequency	TDP	Thermal	Operating Temp.	Made in
AFE-A505-X0A1	Core Ultra 4Xe	16C	4.8GHz	25W	Active Cooler	-15 ~ 50 °C	China

Packing List

Part No.	Description	Quantity
	AFE-A505 fanless IPC	1
1652004519	3P DC IN terminal block	1
1652005282	FAN terminal block	1
1652008233-01	CANBus terminal block	2
1652008720-01	DIO terminal block	2
1652008721-01	LED & Remote terminal block	1

Optional Accessories

Part No.	Description
1702002600	Power cable 3-pin 183cm, USA type
1702002605	Power cable 3-pin 183cm, EU type
1702031801-11	Power cable 3-pin 183cm, UK type
1700000596-11	Power cable, 3-Pin 183cm, China/ Australia type

Embedded OS/API

OS	Part No.	Description
Win11	TBD	64-bit (UEFI mode only)
Ubuntu 26.04 LTS	TBD	TBD
ROS2	NA	Ready by Advantech Robotic Suite

Front IO View

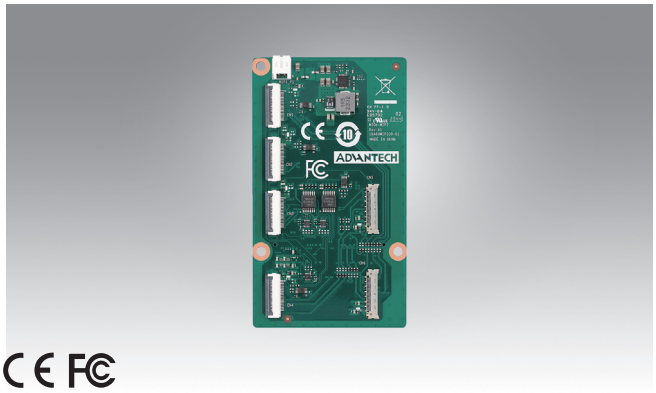


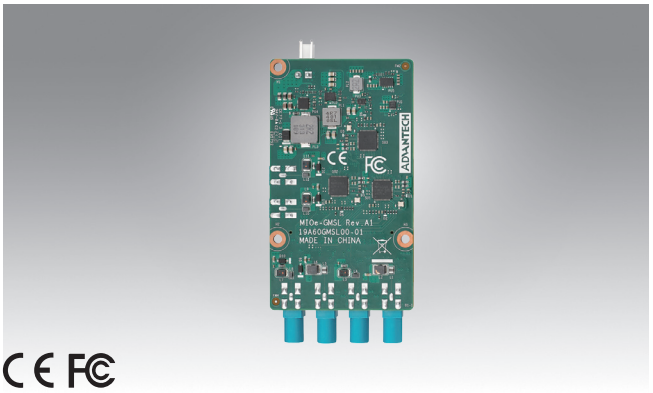
Rear IO View



AFE-RM07

Isolated CANBus& 16-bit GPIO and 8 x GMSL expansion card





Specifications

General	Product	AFE-RM07-00A1	AFE-RM07-10A1
	Interface	Samtec 120pin B2B connector	
Power	DC input	From ASR-A505	From ASR-A505
	Connector	NA	
I/O	CANbus	1x CANBus with 2.5kV isolation, via 2 x 3-pin terminal blocks interface	
	GPIO	8 x DI and 8 x DO with 2.5 kV isolation	
Camera	Interface	GMSL	
	Connector	8 channel GMSL through 2x Mini Fakra	
	MIPI lane	MIPI-CSI C-phy	
	Data pin	I2C	
	Output Voltage	12V	
Environment	Operating Temperature	0 ~ 60 °C (32 ~ 140 °F)	
	Operating Humidity	40°C @ 95% relative humidity, non-condensing	
	Storage	60 °C @ 95%relative humidity, non-condensing	
	Vibration Resistance	3.5 Grms	
	Certification	CE, FCC Class B	
Mechanical	Dimensions	115 x 55 mm	
	Net weight	30g	
Compatibility	Board	ASR-A505/AFE-A505 series	
	Camera	TBD	TBD

Ordering Information

Part No.	Description
AFE-RM07-00A1	Isolated CANBUS+GPIO+8-ch GMSL
AFE-RM07-10A1	Isolated CANBus& GPIO expansion card

ASR-A505 Compatible Sensors List

TBD