

# AFE-A503

## Qualcomm® IQ9075M, AMR Control System



### Features

- AMR AI control system up to 100 TOPS
- Dedicated I/Os for AMR: 4x GbE, 4xUSB, 2x CAN FD, 16-bit DIO
- 3x M.2 Expansions: 1x E-Key, 1x B-Key, 1x M-Key (support NVMe)
- Sensor connection for camera, LiDAR, IMU, and optional GMSL...etc.
- Supports Ubuntu 24.04
- Supports Advantech Robotic Suite



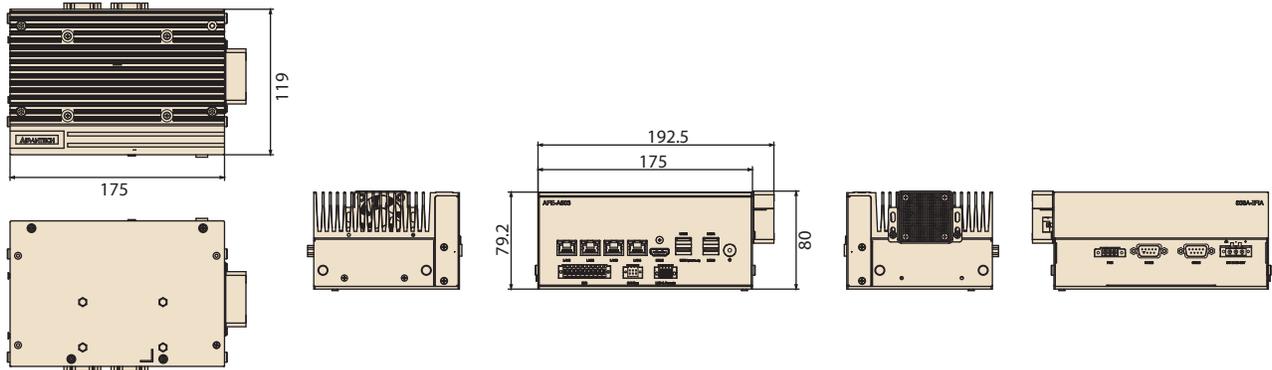
### Specifications

CPU	SoC	IQ9075M
	CPU	Kryo™ CPU Gen 6
	Clock Speed	2.36 GHz
	Number of CPU Cores	8
Memory	Technology	LPDDR5 3200MHz
	Max. Capacity	Up to 36GB
	Data Rate	3200MHz
Storage	UFS	Up to 128GB
	NVMe	Support through M.2 M-Key
GPU & AI	GPU	Adreno 663
	Clock Speed	Up to 800 MHz
	AI DSP	Hexagon
	Performance	Up to dense 100 TPOS, sparse 200 TOPS
Display	HDMI	1x HDMI port 1.4a up to 4K@ 24Hz, 24bpp
Ethernet	Controller	LAN1-3: Intel i226; LAN4: RTL8221
	Speed	2.5GbE
I/O	Ethernet	4x RJ45 Optional PoE: LAN1-2 with PoE (available with MIOe-PSE power solution)
	USB Type-A	1x USB3.1 Gen 2 (10 Gbps), OTG 3x USB3.1 Gen.1 (5 Gbps)
	COM Port	2x RS-232/422/485
	GPIO	16bit general purpose input output I/O with isolation
	CAN Bus	1x CAN2.0 A/B& CAN-FD, with isolation
	GMSL	8x GMSL (MIPI-CSI 4x 4-lane)
	FAN	1x Smart Fan 1A@12V
	LED/ Reset	Power-on, Reset
Board Feature	Watchdog Timer	Support
	TPM	TPM 2.0
	Time Sync	Support GNSS-based time sync
Expansion	M.2 E-Key	1x E-Key 2230 (PCIe x1, USB2.0, UART)
	M.2 B-Key	1x B-Key 3052, 2242 (USB 3.2, USB2.0) w/ Nano-SIM
	M.2 M-Key	1x M-Key 2280 (PCIe Gen4x4)
	GMSL	8x GMSL (by option)
Power	Supply Voltage	Vin: 20-36V, ± 10%
	Power Management	AT, ATX
	Max. Consumption	42W
	Idle Consumption	28W
Environment	Temperature	Operating: Standard: -20-55° C (-4°F to 131°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	Up to 3.5 Grms
Certification	EMC	CE/FCC/CCC/BSMI Class B, ESD 8KV/15KV Criteria B
	Safety	CB/UL/CCC/BSMI 62368
Mechanical	Dimensions (W x D x H)	175 x 119 x 80 mm w/o external fan 213 x 119 x 80 mm w/ external fan
	Net Weight	1.85kg
	Construction	Aluminum housing

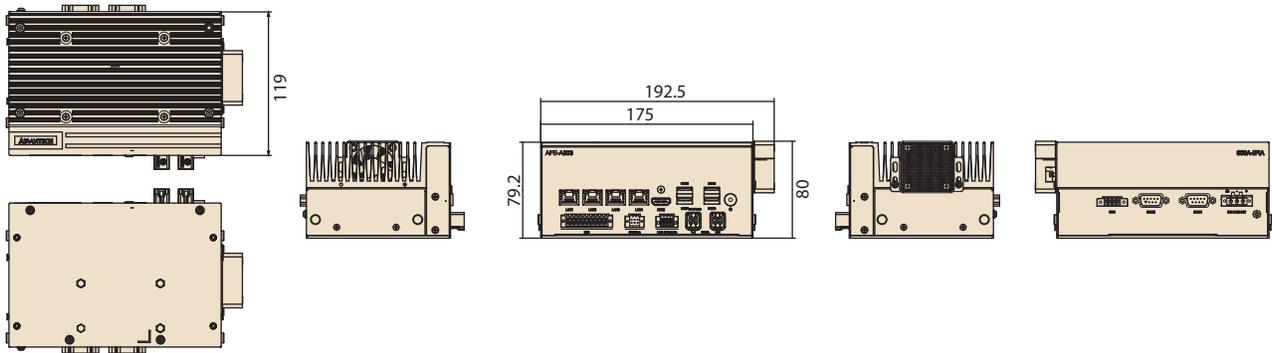
**Dimensions**

Unit: mm

**Standard Dimension**



**GMSL Dimension**



**Front I/O**



**Rear I/O**



**Ordering Information**

Part No.	SoC	Memory	HDMI	GbE	USB	COM	CAN FD	DIO	DC-in	Made in
AFE-A503-M2A1U	IQ9075M	36GB LPDDR5	1	4	4	2	2 Iso.	16bit Iso.	20-36V DC	Taiwan

**Packing List**

Part Number	Description	Quantity
-	AFE-A503 Unit	1
-	AFE-RM06-00A1	1
-	User Manual (Simplified Chinese)	1
-	China RoHS	1
-	Mounting kit	1
1652000099	1 x 2-pin plug-in block for power in	1

**Optional Accessories**

Part Number	Description	Suggest Quantity per AFE-A503
96PSA-A150W24T2-4	AC to DC adapter, DC 24V 150W	1
1702002600	Power cable 3-pin 183cm, USA type	1
1702002605	Power cable 3-pin 183cm, EU type	1
1702031801-11	Power cable 3-pin 183cm, UK type	1
1700000596-11	Power cable, 3-Pin 183cm, China/Australia type	1
MIOE-PSE-DPA1* (need thermal pad)	MIOE-PSE Dual Port 15.4W PoE PSE module	1
AMK-A0053	AFE-R760 Fan Kit	1
1700034874-01	Fan Cable	1
AFE-RM06-8PA1	AFE-A503 8ports GMSL, isolation IO board, bundled with 1 to 4 MINI FAKRA to FAKRA cable	1
AMK-A0065	AFE-A503 8ports GMSL, isolation IO bracket	1
1751000759-01	Cable Ant. FAKRA-Z/F FAKRA-Z/F RG174 BLK 1M	8

**Embedded OS/ API**

Part Number	Description
TBD	Ubuntu 24.04
TBD	Ready by Advantech Robotic Suite