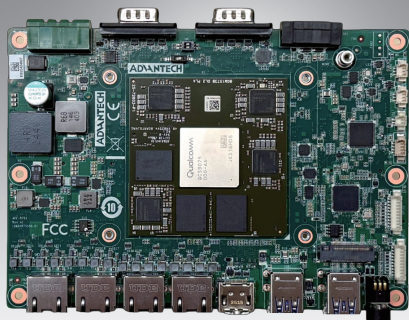


ASR-A503

Qualcomm® IQ9075M, Robot Controller Board

Preliminary



Features

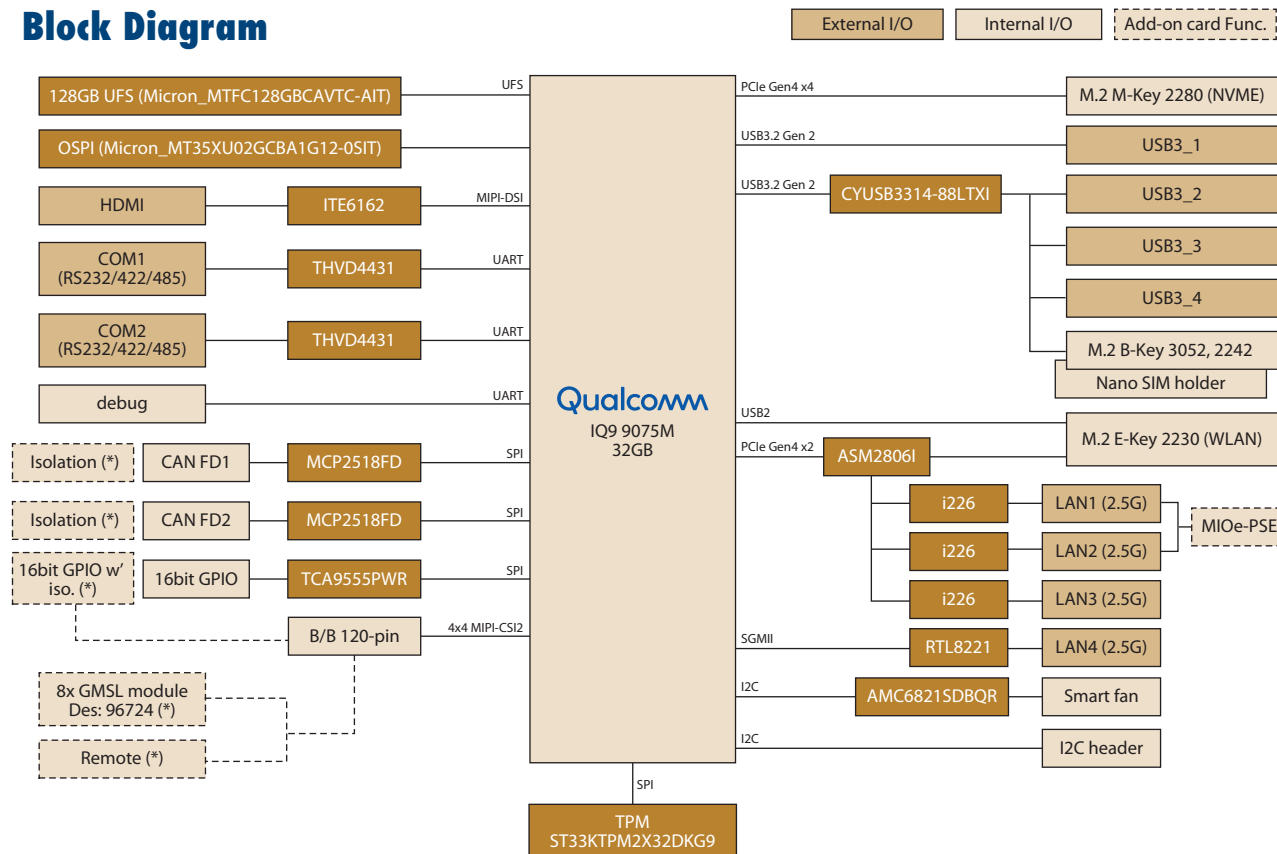
- AMR AI control system up to 100 TOPS
- Dedicated I/Os for AMR: 4x GbE, 4xUSB, 2x CAN FD, 16-bit DIO
- 3x M.2 Expansions: 1x E-Key, 1x B-Key, 1x M-Key (support NVMe)
- Sensor connection for camera, LiDAR, IMU, and optional GMSL...etc.
- Supports Ubuntu 24.04
- Supports Advantech Robotic Suite



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, up to 32bit with AFE-RM06 extension board
	CAN Bus	2x CAN2.0 A/B& CAN-FD (5Mbps), optional isolation CAN FD with AFE-RM06 extension board (total 2 ports)
	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	TBD
	Idle Consumption	TBD
Environment	Temperature	Operating: Standard: -20~70° 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 Class B, ESD 8KV/15KV Criteria A
Mechanical	Dimensions (W x D x H)	115 x 165 mm (4.5 x 6.5 inches)
	Net Weight	235g

Block Diagram



* POE support by MIOe-PSE module

** Iso. CAN, Iso. 16bit GPIO, GMSL support by AFE-RM06 module

Ordering Information

Part No.	SoC	Memory	HDMI	GbE	USB	COM	CAN	DIO	DC-in	Made in
ASR-A503-M1A1U	IQ9075M	36GB LPDDR5	1	4	4	2	2	16bit	20-36V DC	Taiwan

Packing List

Part Number	Description	Quantity
-	ASR-A503 unit	1
1970006284T001	ASR-A503 active cooler	1
1700030518-01	CANBus Cable D-SUB 9P 15cm	2
1700030508-01	DIO D-SUB cable 25cm	2
1652004519	1 x 3-pin plug-in block for power in	1

Embedded OS/ API

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

Optional Accessories

Part Number	Description	Suggest Quantity per ASR-A503
96PSA-A150W24T2-4	AC to DC adapter, DC 24V 150W	1
MI0E-PSE-DPA1* (need thermal pad)	MI0e-PSE Dual Port 15.4W PoE PSE module	1
AFE-RM06-00A1	AFE-A503 Isolation IO board	1
AFE-RM06-00A2	AFE-A503 8ports GMSL, isolation IO board, bundled with 1 to 4 MINI FAKRA to FAKRA cable	1
1751000759-01	Cable Ant. FAKRA-Z/F FAKRA-Z/F RG174 BLK 1M	8
1751000758-01	Cable MINI FAKRA B-Z/F FAKRA-Z/M 1x4 BLK L300	2

Front I/O View



Rear I/O View

