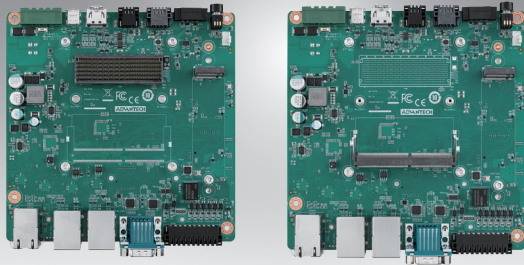


# ASR-A701

## NVIDIA® Jetson Orin™ NX / AGX Orin™ AMR Control Board

NEW



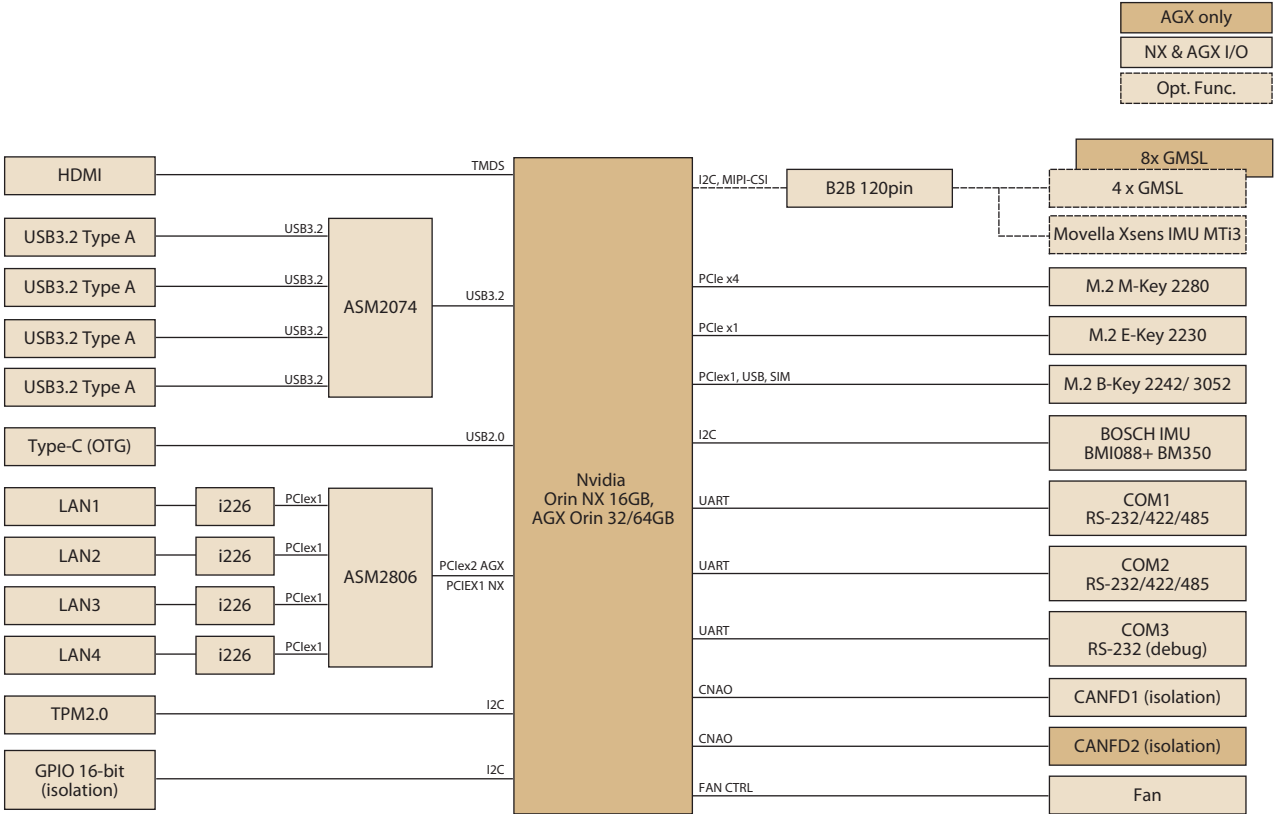
### Features

- 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

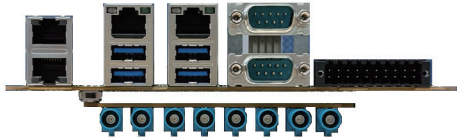
### Specifications

|                  |                          |   |   |
|------------------|--------------------------|---|---|
| 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<br>Maximum Operating Frequency: 765/918MHz       | 1792/2048-core NVIDIA Ampere GPU with 56/64 Tensor Cores,<br>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 3042/3052 (PCIex1, USB2, SIM)   |   |
|                  | GMSL                     | 4 x FAKRA (Optional)  | 8 x FAKRA (Optional)  |
|                  | IMU                      | BOSCH BMI088 6-axis (On Board), Movella Xsens MTi3 AHRS 9-axis (Optional)                         |   |
| 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  | 32GB: -10 ~ 60°C with 0.7 m/s air flow<br>64GB: -10 ~ 50°C with 0.7 m/s air flow<br>(MaxN MODE_50W)     |
|                  | Operating Humidity       | 95% @ 40 °C (non-condensing)  |   |
|                  | Vibration                | Support with system solution: AFE-R750  |   |
| Mechanical       | Dimensions (W x D x H)   | mini-ITX 170 x 170 mm   | mini-ITX 170 x 170 mm   |
|                  | Weight                   | 320g  | 340g  |
| Operating System | Linux                    | Ubuntu 22.04 LTS with JetPack 6.1 (for JetPack 6.2 and above, please contact your sales directly) |   |
| Software Support | ROS2                     | Ready by Advantech Robotic Suite  |   |
| Certifications   | EMC/Safety               | CE/FCC Class B  |   |

### Block Diagram



### Front I/O View



### Rear I/O View



## 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.       | Description                | Memory  | eMMC | NVME     | HDMI | GbE | USB | CANBus | COM | DIO   | Power input          | Made in |
|----------------|----------------------------|---------|------|----------|------|-----|-----|--------|-----|-------|----------------------|---------|
| ASR-A701-X0A1U | Carrier Board for AGX Orin | 32/64GB | 64GB | Optional | 1    | 4   | 4   | 2      | 2   | 16bit | 20-28V <sub>DC</sub> | Taiwan  |
| ASR-A701-X1A1U | built in AGX Orin 64G      | 64GB    | 64GB | Optional | 1    | 4   | 4   | 2      | 2   | 16bit | 20-28V <sub>DC</sub> | Taiwan  |
| ASR-A701-M0A1U | Carrier Board for Orin NX  | 16GB    | -    | Optional | 1    | 4   | 4   | 1      | 2   | 8bit  | 20-28V <sub>DC</sub> | Taiwan  |
| ASR-A701-M1A1U | built in 16GB Orin NX      | 16GB    | -    | 128GB    | 1    | 4   | 4   | 1      | 2   | 8bit  | 20-28V <sub>DC</sub> | Taiwan  |

## Packing List

| Part Number    | Description                  |
|----------------|------------------------------|
| 1960086357N021 | Mounting kit (default qty:2) |
| 1652003234     | DC IN terminal block         |
| 1652008233-01  | CAN BUS terminal block       |
| 1652005282     | FAN terminal block           |
| 1652008721-01  | LED & Remote terminal block  |
| 1652008720-01  | DIO terminal block           |

## Compatible Sensors List

For comprehensive hardware integration details, please [visit the Sensor Selector](#)

## Optional Item for Default SKU

| Part Number       | Description                                    |
|-------------------|--|
| AFE-RM04-4PA1     | MAX96712, 4ports GMSL for Orin NX and AGX Orin |
| AFE-RM04-8PA1     | MAX96712, 8ports GMSL for AGX Orin             |
| 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               |
| 1702031801-11     | Power cable 3-pin 183cm, UK type               |
| 1700000237        | Power cable, 3-Pin 183cm, PSE type             |
| 1751000759-01     | FAKRA Cable 1M, Z Type                         |