

# AI Drone Solution

Jetson Serials  
CDS500



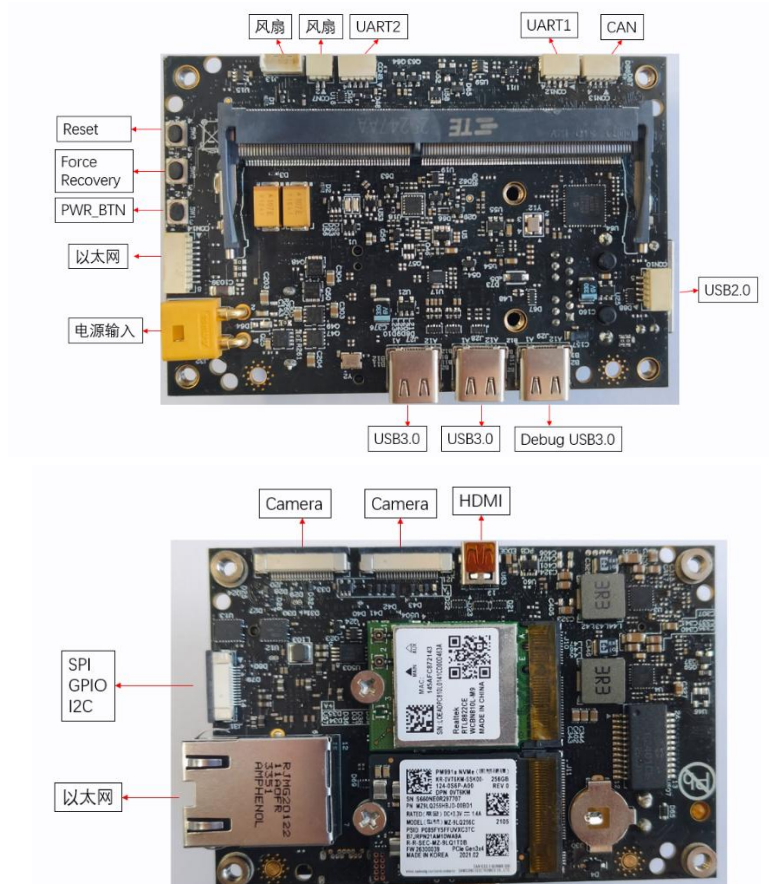
## 特点

- Jetson Orin NX 16GB/8GB Nano 8GB/4GB
- 显示：1 路 Micro HDMI
- USB：3 路 USB 3.2, 1 路 USB2.0
- 网络：2 路 100/1000Mbps
- CAN：2 路 CAN2.0
- 电源：DC 9-19V

## 技术参数

| 产品       | CDS-516                                                                 | CDS-508                                                | CDS-506                             | CDS-504                                      |
|----------|-------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------|----------------------------------------------|
| 模组       | Orin NX 16GB                                                            | Orin NX 8GB                                            | Orin Nano 8GB                       | Orin Nano 4GB                                |
| AI 性能    | 167 TOPS                                                                | 117 TOPS                                               | 67 TOPS                             | 34 TOPS                                      |
| GPU      | 1024 NVIDIA® CUDA® cores   32 Tensor cores                              |                                                        |                                     | 512 NVIDIA® CUDA® cores<br>  16 Tensor cores |
| GPU 最大频率 | 1173 MHz                                                                |                                                        | 1020 MHz                            |                                              |
| CPU      | 8-core Cortex A78AE<br>ARMv8.2 (64-bit) 2MB L2 +<br>4MB L3              | 6 core Cortex A78AE ARMv8.2 (64-bit) 1.5MB L2 + 4MB L3 |                                     |                                              |
| CPU 最大频率 | 2 GHz                                                                   |                                                        | 1.7 GH                              |                                              |
| DLA      | 2x NVDLA v2 (614 MHz)                                                   | 1x NVDLA v2 (610 MHz)                                  | -                                   |                                              |
| VA       | 1x PVA v2                                                               |                                                        | -                                   |                                              |
| 内存       | 16 GB 128-bit LPDDR5<br>DRAM 102.4 GB/s                                 | 8 GB 128-bit LPDDR5<br>DRAM 102.4 GB/s                 | 8 GB 128-bit LPDDR5 DRAM<br>68 GB/s | 4 GB 128-bit LPDDR5 DRAM<br>34 GB/s          |
| 存储       | 2230 M.2 NVMe 256 SSD (up to 2TB)                                       |                                                        |                                     |                                              |
| 显示       | 1 x Micro HDMI                                                          |                                                        |                                     |                                              |
| 摄像头输入    | 2 x 22 pin MIPI (4 Lanes CSI)                                           |                                                        |                                     |                                              |
| USB      | 3 x USB3.2 Type C, 1 x USB 2.0                                          |                                                        |                                     |                                              |
| 网络       | 1 x 100/1000 Mbps (RJ45), 1 x 100/1000Mbps (1.0mm x 8), Wi-Fi 5, BT 5.0 |                                                        |                                     |                                              |
| M.2      | M.2 2230, Wi-Fi 5, BT 5.0                                               |                                                        |                                     |                                              |
| UART     | 2 x UART (LVTTTL)                                                       |                                                        |                                     |                                              |
| CAN      | 1 x CAN 2.0                                                             |                                                        |                                     |                                              |
| FAN      | 1 x 4 Wires + 1 x 2 Wires                                               |                                                        |                                     |                                              |
| 其他功能     | 14 PIN Expansion Header (1 x I2C, 10 x GPIO)                            |                                                        |                                     |                                              |
| 工作温度     | -20℃~80℃                                                                |                                                        |                                     |                                              |
| 工作湿度     | 5%-90%                                                                  |                                                        |                                     |                                              |
| 电源       | XT30APW-M, DC 9 ~ 19 V                                                  |                                                        |                                     |                                              |
| 尺寸       | 90 mm(L) x 60 mm(W) x 42 mm(H) (包括模组散热器)                                |                                                        |                                     |                                              |

### 布局图



### 接口定义

#### Camera 扩展接口

Camera 接口连接器 J20, J21, 型号为: Molex 54548-2272。J20 支持 CSI 1 x2 lane, J21 支持 CSI 1 x2 lane 或 1 x4 lane, J20,J21 都提供 I2C 接口, GIPO 控制以及 3.3V 电源。CSI 接口信号支持:

| 引脚 | 信号        | 模组引脚 | 描述                                   | 信号类型        |
|----|-----------|------|--------------------------------------|-------------|
| 1  | VDD_3V3   | -    | +3.3V                                | Power       |
| 2  | I2C_SDA   | 215  | Camera I2C 2.2 kΩ pull-ups on module | Bidir, 3.3V |
| 3  | I2C_SCL   | 213  |                                      | Output 3.3V |
| 4  | GND       | -    | Ground                               | Ground      |
| 5  | MCLK      | 116  | Camera #0 Primary Clock              | Output 1.8V |
| 6  | PWDN      | 114  | Camera #0 Power-down                 | Output 1.8V |
| 7  | GND       | -    | Ground                               | Ground      |
| 8  | CSI0_D1_P | 18   | CSI 0 Data 1                         | Input       |
| 9  | CSI0_D1_N | 16   |                                      |             |
| 10 | GND       | -    | Ground                               | Ground      |
| 11 | CSI0_D0_P | 6    | CSI 0 Data 0                         | Input       |
| 12 | CSI0_D0_N | 4    |                                      |             |
| 13 | GND       | -    | Ground                               | Ground      |
| 14 | CSI_CLK_P | 11   | CSI 0 CLK                            | Input       |
| 15 | CSI_CLK_N | 9    |                                      |             |

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|    |           |    |              |        |
|----|-----------|----|--------------|--------|
| 16 | GND       | —  | Ground       | Ground |
| 17 | CSI1_D1_P | 17 | CSI 1 Data 1 | Input  |
| 18 | CSI1_D1_N | 15 |              |        |
| 19 | GND       | —  | Ground       | Ground |
| 20 | CSI1_D0_P | 5  | CSI 1 Data 0 | Input  |
| 21 | CSI1_D0_N | 3  |              |        |
| 22 | GND       | —  | Ground       | Ground |

## GPIO 连接器

### CON10 USB 2.0

CON10 为 USB 2.0 Host，连接器型号为：WAFER-SH1.0-5PWB，其引脚定义如下。

| 引脚 | 信号     | 模组引脚 | 描述           | 信号类型   |
|----|--------|------|--------------|--------|
| 1  | USB_5V | -    | +5V          | Power  |
| 2  | DN     | 115  | USB 2.0 Data | Bidir  |
| 3  | DP     | 117  |              |        |
| 4  | -      | -    | -            | -      |
| 5  | GND    | -    | Ground       | Ground |

### CON13 CAN 2.0

CON13 为 CAN2.0，连接器型号为：WAFER-SH1.0-4PWB，其引脚定义如下。

| 引脚 | 信号      | 模组引脚 | 描述           | 信号类型   |
|----|---------|------|--------------|--------|
| 1  | CANH    | -    | CAN Bus Data | Bidir  |
| 2  | CANL    | -    |              |        |
| 3  | GND     | -    | Ground       | Ground |
| 4  | VDD_3V3 | -    | +3.3V        | Power  |

### CON12 UART1

CON12 为 UART1，连接器型号为：WAFER-SH1.0-4PWB，其引脚定义如下。

| 引脚 | 信号       | 模组引脚 | 描述              | 信号类型   |
|----|----------|------|-----------------|--------|
| 1  | GND      | -    | Ground          | Ground |
| 2  | UART1_RX | -    | UART1 RX LVTTTL | Input  |
| 3  | UART1_TX | -    | UART1 TX LVTTTL | Output |
| 4  | -        | -    | -               | -      |

### CON8 UART2

CON8 为 UART2，连接器型号为：WAFER-SH1.0-4PWB，其引脚定义如下。

| 引脚 | 信号       | 模组引脚 | 描述              | 信号类型   |
|----|----------|------|-----------------|--------|
| 1  | GND      | -    | Ground          | Ground |
| 2  | UART2_RX | -    | UART2 RX LVTTTL | Input  |
| 3  | UART2_TX | -    | UART2 TX LVTTTL | Output |
| 4  | -        | -    | -               | -      |

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## CON7 FAN 接口

CON7 为风扇接口，连接器型号为：WAFER-SH1.0-2PWB，其引脚定义如下。

| 引脚 | 信号     | 模组引脚 | 描述     | 信号类型   |
|----|--------|------|--------|--------|
| 1  | PWR_5V | -    | +5V    | +5V    |
| 2  | GND    | -    | Ground | Ground |

## J13 FAN

J13 为风扇接口，连接器型号为：50275-00471-003，其引脚定义如下。

| 引脚 | 信号     | 模组引脚 | 描述                                         | 信号类型       |
|----|--------|------|--------------------------------------------|------------|
| 1  | GND    | -    | Ground                                     | Ground     |
| 2  | PWR_5V | -    | +5V                                        | +5V        |
| 2  | TACH   | 208  | Fan Tachometer signal (GPIO08)             | Input, 5V  |
| 3  | PWM    | 230  | Fan Pulse Width Modulation signal (GPIO14) | Output, 5V |

## CON14

CON14 为 GbE，连接器型号为：WAFER-SH1.0-8PWB，其引脚定义如下。

| 引脚 | 信号   | 模组引脚 | 描述 | 信号类型 |
|----|------|------|----|------|
| 1  | TD1+ |      |    |      |
| 2  | TD1- |      |    |      |
| 3  | TD2+ |      |    |      |
| 4  | TD2- |      |    |      |
| 5  | TD3+ |      |    |      |
| 6  | TD3- |      |    |      |
| 7  | TD4+ |      |    |      |
| 8  | TD4- |      |    |      |

## J32 电源接口

J32 为电源接口，连接器型号为：XT30APW-M，其引脚定义如下。

| 引脚 | 信号     | 模组引脚 | 描述     | 信号类型   |
|----|--------|------|--------|--------|
| 1  | PWR_IN | -    | +9~20V | Power  |
| 2  | GND    | -    | Ground | Ground |

## J10 Wi-Fi + BT

J10 为 M.2 Key E 连接器，包括 PCIe(x1), USB 2.0, UART,I2S,I2C 等信号。默认用于连接 Wi-Fi/BT。

| 引脚 | 信号       | 模组引脚 | 描述           | 类型     | 引脚 | 信号       | 模组引脚 | 描述                      | 类型          |
|----|----------|------|--------------|--------|----|----------|------|-------------------------|-------------|
| 1  | -        |      | Ground       | Ground |    | -        | -    | No Pin                  | -           |
| 3  | USB2_D_P | 123  | USB 2.0 Data | Bidir  | 2  | -        | -    | Main 3.3V Supply        | Power       |
| 5  | USB2_D_N | 121  |              |        | 4  |          |      |                         |             |
| 7  | -        |      | Ground       | Ground | 6  | -        | -    | Unused                  | Unused      |
| 9  | -        | -    | Unused       | Unused | 8  | I2S1_CLK | 226  | I2S #1 Clock            | Bidir, 1.8V |
| 11 |          |      |              |        | 10 | I2S1_FS  | 224  | I2S #1 Left/Right Clock | Bidir, 1.8V |

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|    |             |     |                         |             |    |             |     |                            |                   |
|----|-------------|-----|-------------------------|-------------|----|-------------|-----|----------------------------|-------------------|
| 13 |             |     |                         |             | 12 | I2S1_DIN    | 222 | I2S #1 Data In             | Input, 1.8V       |
| 15 |             |     |                         |             | 14 | I2S1_DOUT   | 220 | I2S #1 Data Out            | Bidir, 1.8V       |
| 17 |             |     |                         |             | 16 | –           | –   | Unused                     | Unused            |
| 19 |             |     |                         |             | 18 | –           | –   | Ground                     | Ground            |
| 21 |             |     |                         |             | 20 | GPIO02      | 124 | Bluetooth #2 Wake AP       | Input, 3.3V       |
| 23 |             |     |                         |             | 22 | UART0_RXD   | 101 | UART #0 Receive            | Input, 1.8V       |
| 25 |             |     |                         |             | 24 |             |     |                            |                   |
| 27 |             |     |                         |             | 26 |             |     |                            |                   |
| 29 | –           | –   | Key                     | Unused      | 28 |             |     | Key                        | Unused            |
| 31 |             |     |                         |             | 30 |             |     |                            |                   |
| 33 | –           | –   | Ground                  | Ground      | 32 | UART0_TXD   | 99  | UART #0 Transmit           | Output, 1.8V      |
| 35 | PEX1_TX0_P  | 174 | PCle #1 Transmit        | Output      | 34 | UART0_CTS*  | 105 | UART #0 Clear to Send      | Input, 1.8V       |
| 37 | PEX1_TX0_N  | 172 | Lane 0                  |             | 36 | UART0_RTS*  | 103 | UART #0 Request to Send    | Output, 1.8V      |
| 39 | –           | –   | Ground                  | Ground      | 38 |             |     |                            |                   |
| 41 | PEX1_RX0_P  | 169 | PCle #1 Receive Lane 0  | Input       | 40 |             |     |                            |                   |
| 43 | PEX1_RX0_N  | 167 |                         |             | 42 |             |     |                            |                   |
| 45 | –           | –   | Ground                  | Ground      | 44 |             |     | Unused                     | Unused            |
| 47 | PEX1_CLK_P  | 175 | PCle #1 Reference clock | Output      | 46 |             |     |                            |                   |
| 49 | PEX1_CLK_N  | 173 |                         |             | 48 |             |     |                            |                   |
| 51 | –           | –   | Ground                  | Ground      | 50 | CLK_32K_OUT | 210 | Suspend Clock (32 KHz)     | Output, 3.3V      |
| 53 | PEX1_CLKREQ | 182 | PCle #1 Clock Request   | Bidir, 3.3V | 52 | PEX0_RST*   | 183 | PCle #0 Reset              | Output, 3.3V      |
| 55 | PEX_WAKE*   | 179 | PCle Wake               | Input, 3.3V | 54 | GPIO3       | 126 | BT Enable                  | Output, 3.3V      |
| 57 | –           | –   | Ground                  | Ground      | 56 | GPIO5       | 128 | Wi-Fi Disable              | Output, 3.3V      |
| 59 |             |     |                         |             | 58 | I2C2_SDA    | 234 | General I2C #2 (optional)  | Bidir/OD,<br>1.8V |
| 61 | –           | –   | Unused                  | Unused      | 60 | I2C2_SCL    | 232 |                            |                   |
| 63 | –           | –   | Ground                  | Ground      | 62 | GPIO10      | 212 | M.2, Key E Connector Alert | Input, 1.8V       |
| 65 |             |     |                         |             | 64 |             |     |                            |                   |
| 67 | –           | –   | Unused                  | Unused      | 66 |             |     | Unused                     | Unused            |
| 69 | –           | –   | Ground                  | Ground      | 68 |             |     |                            |                   |
| 71 |             |     |                         |             | 70 |             |     |                            |                   |
| 73 | –           | –   | Unused                  | Unused      | 72 |             |     |                            |                   |
| 75 | –           | –   | Ground                  | Ground      | 74 | –           | –   | Main 3.3V Supply           | Power             |

## J11 NVME

J11 为 M.2 Key M 连接器，支持 PCIe(x4)，用于 NVM 存储。

| 引脚 | 信号          | 模组引脚 | 描述                | 类型     | 引脚 | 信号 | 模组引脚 | 描述               | 类型     |
|----|-------------|------|-------------------|--------|----|----|------|------------------|--------|
| 1  |             |      |                   |        | 2  |    |      |                  |        |
| 3  | –           | –    | Ground            | Ground | 4  | –  | –    | Main 3.3V Supply | Power  |
| 5  | PCIE0_RX3_N | 155  | PCle IF #0 Lane 3 | Input  | 6  |    |      |                  |        |
| 7  | PCIE0_RX3_P | 157  |                   |        | 8  | –  | –    | Unused           | Unused |
| 9  | –           | –    | Ground            | Ground | 10 |    |      |                  |        |
| 11 | PCIE0_TX3_N | 154  | PCle IF #0 Lane 3 |        | 12 | –  | –    | Main 3.3V Supply | Power  |

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|----|-------------|-----|-------------------|--------|----|---|---|--------|--------|
| 13 | PCIE0_TX3_P | 156 | Transmit          | Output | 14 |   |   |        |        |
| 15 | —           | —   | Ground            | Ground | 16 |   |   |        |        |
| 17 | PCIE0_RX2_N | 149 | PCIe IF #0 Lane 2 | Input  | 18 |   |   |        |        |
| 19 | PCIE0_RX2_P | 151 | Receive           |        | 20 | — | — | Unused | Unused |

## U505 GbE 以太网

U505 标准千兆以太网接口

| 引脚 | 信号         | 模组引脚 | 描述                      | 信号类型  |
|----|------------|------|-------------------------|-------|
| 1  | GPE_MDI0_P | 186  | Gigabit Ethernet MDI 0+ | Bidir |
| 2  | GPE_MDI0_N | 184  | Gigabit Ethernet MDI 0– | Bidir |
| 3  | GPE_MDI1_P | 192  | Gigabit Ethernet MDI 1+ | Bidir |
| 4  | —          | —    | MCT                     | —     |
| 5  | —          | —    | MCT                     | —     |
| 6  | GPE_MDI1_N | 190  | Gigabit Ethernet MDI 1– | Bidir |
| 7  | GPE_MDI2_P | 198  | Gigabit Ethernet MDI 2+ | Bidir |
| 8  | GPE_MDI2_N | 196  | Gigabit Ethernet MDI 2– | Bidir |
| 9  | GPE_MDI3_P | 204  | Gigabit Ethernet MDI 3+ | Bidir |

## J31 GPIO

J31 为 GPIO 连接器，包括 GPIO, SPI 及 I2C 信号，连接器为：Molex 54548-1472

| 引脚 | 信号       | 模组引脚 | 描述                      | 信号类型  |
|----|----------|------|-------------------------|-------|
| 1  | GND      | -    | Ground                  | GND   |
| 2  | I2C1_SDA | 191  | Gigabit Ethernet MDI 0– | Bidir |
| 3  | I2C1_SCL | 189  | Gigabit Ethernet MDI 1+ | Bidir |
| 4  | GPIO12   | 218  | GPIO                    | Bidir |
| 5  | GPIO     | 95   | GPIO                    | Bidir |
| 6  | GPIO     | 89   | GPIO                    | Bidir |
| 7  | GPIO     | 93   | GPIO                    | Bidir |
| 8  | GPIO     | 91   | GPIO                    | Bidir |
| 9  | PWR_5V   | -    | +5V                     | +5V   |
| 10 | GPIO07   | 206  | GPIO                    | Bidir |
| 11 | GPIO1    | 118  | GPIO                    | Bidir |
| 12 | GPIO11   | 216  | GPIO                    | Bidir |
| 13 | GPIO13   | 228  | GPIO                    | Bidir |
| 14 | GND      | -    | Ground                  | GND   |

## U63 Micro HDMI

U63 Micro HDMI 接口

## J29 USB 3.0

J29 为 USB3.0 接口，Type C 连接器，用于系统文件烧写。

## J28,J27 USB 3.0

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J27,J28 为 USB 3.0, Type C 连接器

## 按键说明

SW1: 电源按键。

SW2: 系统恢复按键。

SW3: 复位按键。

## 附件

- 电源适配器
- USB 电缆 Type-C 转 USB Type-A
- 用户指南

## 订货信息

| 产品型号    | 产品描述                                                                                                            |
|---------|-----------------------------------------------------------------------------------------------------------------|
| CDS-516 | Orin NX 16GB, 1 x Micro HDMI, 3 x USB 3.2, 1 x USB2.0, 2 x 100/1000Mbps, 1 x CAN2.0, SSD, 9-19V DC, -20°C~80°C  |
| CDS-508 | Orin NX 8GB, 1 x Micro HDMI, 3 x USB 3.2, 1 x USB2.0, 2 x 100/1000Mbps, 1 x CAN2.0, SSD, 9-19V DC, -20°C~80°C   |
| CDS-506 | Orin Nano 8GB, 1 x Micro HDMI, 3 x USB 3.2, 1 x USB2.0, 2 x 100/1000Mbps, 1 x CAN2.0, SSD, 9-19V DC, -20°C~80°C |
| CDS-504 | Orin Nano 4GB, 1 x Micro HDMI, 3 x USB 3.2, 1 x USB2.0, 2 x 100/1000Mbps, 1 x CAN2.0, SSD, 9-19V DC, -20°C~80°C |

## 联系我们

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