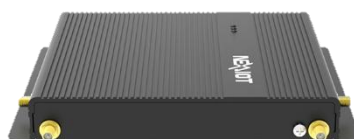


# ECM S50 Series



## Main Features

- EtherCAT technology with NexECM, **Class A** EtherCAT Master
- EtherCAT communication cycle up to 250  $\mu$ s
- Support high-level API for CiA 402 profile
- Powerful & flexible EtherCAT configuration tool NexECM Studio
- Support NexRTOS (A real-time verified Linux system)
- 2 x USB 3.2 Gen 1, 1 x COM Port(DB9), 4 x DI, 4 x DO
- 3 x 2.5GbE RJ45 port
- 2 x M.2 Key B, 1 x M.2 Key E
- Typical 12 to 24V DC input with  $\pm 20\%$  range
- Support -40~60 °C operating temperature

## Product Overview

Powered by Intel® processor N97 (formerly codenamed "Alder Lake-N"), ECM S50 presents intelligent PC-based EtherCAT controller for machine automation. It integrates NexCOBOT's EtherCAT Master, NexECM, to perform real-time communication with cycle time up to 250  $\mu$ s. ECM S50 also provides API for CiA 402 profile and built-in EtherCAT configuration tool to speed up development time for automation users.

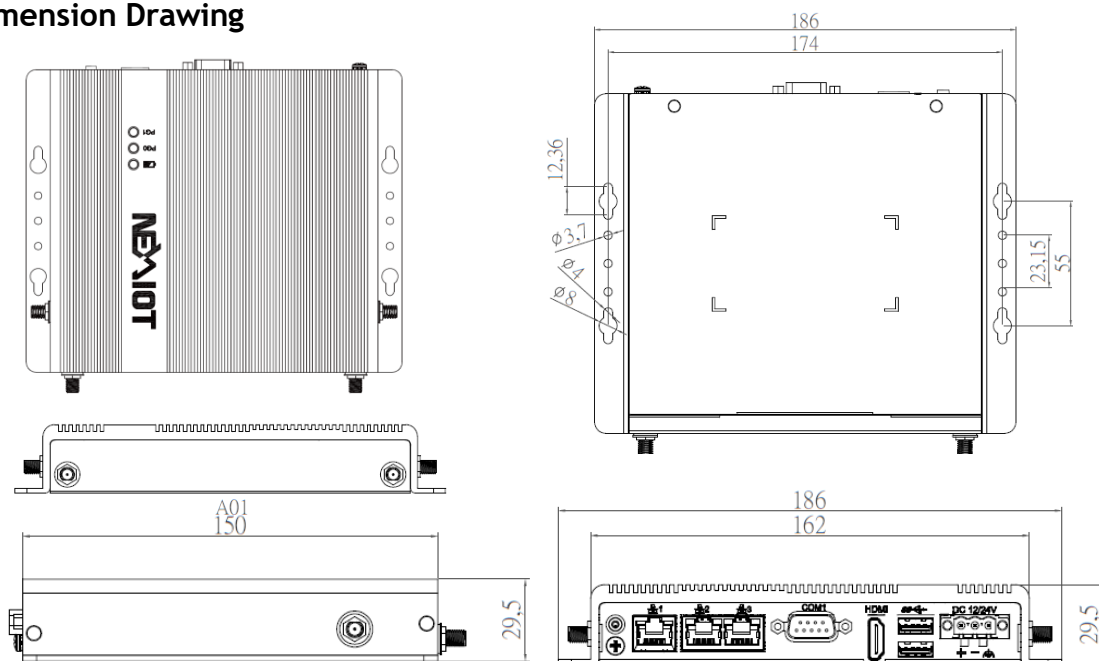
## Software Specifications

| Catalog                               | Specifications                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EtherCAT Master Performance & Utility | <ul style="list-style-type: none"><li>■ EtherCAT Compliance : EtherCAT Standard Class A</li><li>■ Maximum Number of Slave Modules : Up to 64</li><li>■ Cycle Time : As low as 250 <math>\mu</math>s</li><li>■ Protocol Support: Compliant with the CiA 402 standard protocol</li><li>■ EtherCAT Configuration Tool : NexECM Studio</li></ul> |
| EtherCAT Master Standard Function     | <ul style="list-style-type: none"><li>■ Process data (PDO)</li><li>■ CoE / FoE</li><li>■ Distributed Clock (DC)</li><li>■ ESI / ENI file</li><li>■ Slave to Slave</li></ul>                                                                                                                                                                  |
| EtherCAT Master Advanced Function     | <ul style="list-style-type: none"><li>■ Cable redundancy</li><li>■ CiA402 servo stack</li><li>■ Hot connect</li><li>■ Remote control</li></ul>                                                                                                                                                                                               |
| INtime (ECM S50A04-I)                 | <ul style="list-style-type: none"><li>■ INtime7 : 7.1.24270</li></ul>                                                                                                                                                                                                                                                                        |
| NexRTOS (ECM S50A04-02-X)             | <ul style="list-style-type: none"><li>■ Ubuntu : 22.04</li><li>■ Linux Kernel : 6.6.48-rt40 (with PREEMPT_RT)</li></ul>                                                                                                                                                                                                                      |

# Hardware Specifications

| Catalog             | Specifications                                                                                                                                                                                                                       |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU Support         | ■ Intel® processor N97 Quad Cord 3.00GHz, 12W                                                                                                                                                                                        |
| Memory              | ■ DDR5 8GB                                                                                                                                                                                                                           |
| Storage             | ■ 1 x M.2 Key B 2280 128GB SSD                                                                                                                                                                                                       |
| Storage Device      | ■ 1 x M.2 Key B 2242/2280 (SATA 3.0)                                                                                                                                                                                                 |
| I/O Interface-Front | ■ 1 x HDMI display output<br>■ 1 x EtherCAT port, 2 x Intel® I225 GbE LAN port<br>■ 2 x USB 3.2 Gen 1<br>■ 1 x COM Port (DB9),<br>✓ Supports RS-232/RS422/RS485.<br>■ 1 x 3-pic DC input, typical 12 to 24V DC input with ±20% range |
| Expansion Slot      | ■ 1 x M.2 Key B 3042/3052 (PCIe x1, USB 3.0, USB 2.0, SATA)<br>✓ Support 5G/LTE module<br>■ 1 x M.2 Key E 2230 (PCIe x1, USB 2.0)<br>✓ Support Wi-Fi/BT modules                                                                      |
| Power Requirement   | ■ Typical 12 or 24V DC input with ±20% range                                                                                                                                                                                         |
| Dimensions          | ■ 186mm (W) x 150mm (D) x 26mm (H) without wall-mount bracket                                                                                                                                                                        |
| Construction        | ■ Aluminum and metal chassis with fanless design                                                                                                                                                                                     |
| Environment         | ■ Operating temperature: Ambient with air flow: -40°C to 60°C (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)<br>■ Storage temperature: -20°C to 80°C<br>■ Relative humidity: 0% ~ 90% (non-condensing)                     |
| Certifications      | ■ CE<br>■ FCC Class A                                                                                                                                                                                                                |

## Dimension Drawing



## Software Architecture



OS Layer

NexECM Studio

User's Application

Realtime Layer  
(RTOS)

User's Realtime  
Motion Control Program

nexECM EtherCAT Master Software

Hardware Layer

EtherCAT Master Controller

EtherCAT



## Pre-Installed Software Package & Realtime Performance

### ECM S50A04-02-I

- Operating System: **Win10 IOT 22H2**
- Real-Time Package: **INTime 7.x**

### ECM S50A04-02-X

- Operating System: **Ubuntu 22.04**
- Linux Kernel: **6.6.48-rt40**
- Real-Time Package: **PREEMPT\_RT**

### ECM S50A04-02-I / ECM S50A04-02-X

- EtherCAT Master: **NexECM**
- Realtime Performance : **Class A (< 50us)**

## Ordering Information

### ECM S50A04-02-I (P/N: 98EMS050I01XF)

EtherCAT Master Controller, NexECM bundle INtime 7.1 runtime.  
Intel® N97 With DDR5 8GB, 128G 3DTLC SSD, Win10 License,  
Without Adapter.

### ECM S50A04-02-X (P/N: 98EMS050X01XF)

EtherCAT Master Controller, NexECM bundle NexRTOS.  
Intel® N97 With DDR5 8GB, 128G 3DTLC SSD,  
Without Adapter.