

# ECM F200 Series

EtherCAT Master Controller  
Intel® Celeron® processor J1900 Quad Core 2.0GHz



## Main Features

- EtherCAT technology with NexECM, **Class A** EtherCAT Master
- EtherCAT communication cycle up to 250 μs
- Support high-level API for CiA 402 profile
- Powerful & flexible EtherCAT configuration tool NexECM Studio
- Support NexRTOS (A real-time verified Linux system)
- Fanless design, supports wide temperature range of -10°C to 60°C
- Dual independent display from DP and DVI-I
- 3 x USB 2.0, 1 x USB 3.0
- 2 x RS232/422/485
- 2 x Intel® I210AT GbE LAN ports support WoL, Teaming, and PXE
- 2 x mini-PCIe socket for optional mSATA/Wi-Fi/3.5G/4G LTE/Fieldbus modules

## Product Overview

Powered by Intel® Celeron® processor J1900 (formerly codenamed "Bay Trail-D"), ECM F200 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 μs. ECM F200 also provides API for CiA 402 profile and built-in EtherCAT configuration tool to speed up development time for automation users.

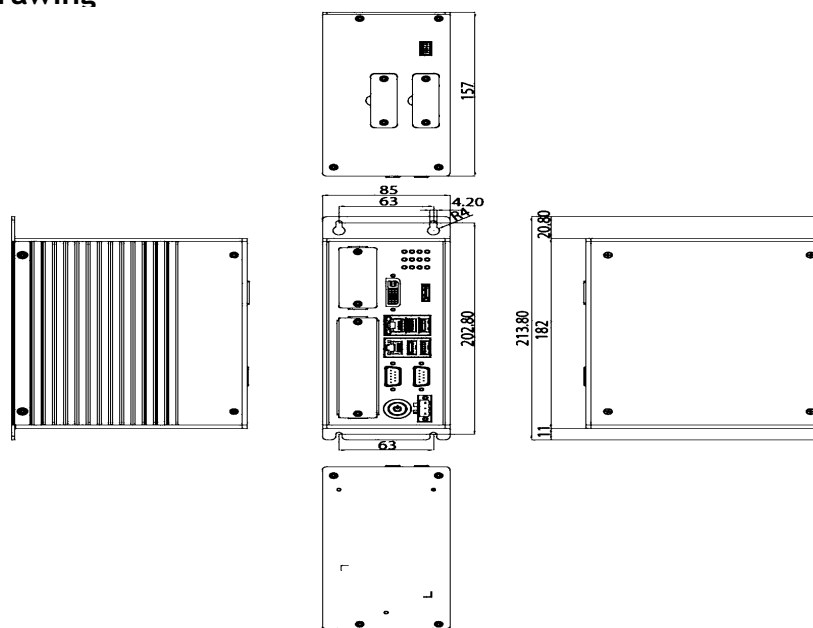
## Software Specifications

| 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 μs</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 (F200-I)                       | <ul style="list-style-type: none"><li>■ INtime6 : 23337</li></ul>                                                                                                                                                                                                                                                             |
| NexRTOS (F200-X)                      | <ul style="list-style-type: none"><li>■ Ubuntu : 20.04</li><li>■ Linux Kernel : 5</li><li>■ Realtime Package : Xenomai</li></ul>                                                                                                                                                                                              |

# Hardware Specifications

| Catalog             | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU Support         | ■ Onboard Intel® Celeron® processor J1900 Quad Core 2.0GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Memory              | ■ DDR3L 8GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Storage             | ■ 1 X 2.5" SSD 128GB 3DTLC<br>■ 1 x 2.5" SSD/HDD (SATA 2.0) - front accessible<br>■ 1 x SD card (data storage only)<br>■ 1 x mSATA                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| I/O Interface-Front | ■ ATX power on/off switch<br>■ LEDs for HDD LED, batty LEDs, power LED, COM port Tx/Rx, 5x programmable GPO LEDs<br>■ 1 x External SD card<br>■ 1 x SIM card holder<br>■ 1 x Intel® I210-AT GbE LAN ports, support WoL, teaming and PXE<br>■ 1 x DP display output<br>■ 1 x DVI-I display output<br>■ 1 x USB 3.0 (900mA per each)<br>■ 3 x USB 2.0 (500mA per each)<br>■ 2 x RS232/422/485 support auto flow control<br>✓ Jumper-free setting on RS232/422/485<br>✓ Support 2.5KV isolation protection on COM1<br>■ 1 x 3-pin DC input, typical 24V DC input with ±20% range |
| I/O Interface-Top   | ■ 1 x HDMI<br>■ 1 x Power connector<br>■ 1 x OTG<br>■ 1 x Recovery<br>■ 1 x Ground screw hole<br>■ 1 x Line Out<br>■ 6 x Antenna holes<br>■ 1 x SIM slot                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Expansion Slot      | ■ 2 x mini-PCle socket for optional Wi-Fi/3.5G/4G LTE/fieldbus modules                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Power Requirement   | ■ Typical 24V DC input with ±20% range, with reverse polarity protection<br>■ 1 x Optional 24V, 60W power adapter                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimensions          | ■ 85mm (W) x 157mm (D) x 214mm (H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Construction        | ■ Aluminum and metal chassis with fanless design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Environment         | ■ Operating temperature : Ambient with air flow: -10°C to 60°C (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)<br>■ Storage temperature: -20°C to 80°C                                                                                                                                                                                                                                                                                                                                                                                                               |
| Certifications      | ■ CE approval<br>✓ EN61000-6-2<br>✓ EN61000-6-4<br>■ FCC Class A<br>■ LVDU<br>■ L60950                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Dimension Drawing



## Software Architecture



OS Layer

NexECM Studio  
Remote Runtime

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

- Operating system: Windows or Linux
- Real-Time OS
- EtherCAT Master Software: NexECM

|      | ECM F200-I | ECM F200-X   |
|------|------------|--------------|
| OS   | Win10 IoT  | Ubuntu 20.04 |
|      | 22H2       | kernel 5     |
| RTOS | INTime 6   | Xenomai      |
|      | 23337      | 3            |

## Ordering Information

### ECM F200-I (P/N: 98EMF200I01XF)

EtherCAT Master Controller, NexECM bundle INtime 6 runtime.

Intel® Celeron® J1900 With DDR3L 8GB, 128G 3DTLC SSD, Win10 License, Without Adapter.

### ECM F200-X (P/N: 98EMF200X01XF)

EtherCAT Master Controller, NexECM bundle NexRTOS.

Intel® Celeron® J1900 With DDR3L 8GB, 128G 3DTLC SSD, Without Adapter.