ECM-211F

High-performance EtherCAT Master Controller, Intel® 6th Core™ i5-6500TE processor

Main Features

- EtherCAT technology with NexECM, Class A EtherCAT master
- EtherCAT communication cycle up to 250 us
- Support high-level API for CiA 402 profile
- Support Intel ® 6th processor
- Intel ® Q170 PCH
- 1 x DVI-D, and 1 x HDMI for dual independent display
- 1 x front access 2.5” SATA HDD tray
- 2 x mini-PCIe socket support optional modules and mSATA device

Product Overview

ECM-211F is a high-performance EtherCAT controller, built-in 6th generation Intel® Core™ i5-6500TE processor (Skylake-S). Based on a real-time operating system, ECM-211F’s communication cycle time can be up to 250 µs, and also offers EtherCAT distributed clocks functions. The EtherCAT controller supports up to 64 slave modules which could be a wide variety of third-party devices, such as servo motors/drives and I/O modules.

ECM-211F is the ideal intelligence system for machine applications. Its front-access I/O Design simplifies the wiring, and it provides expansion mini-PCIe slot which can integrate other Fieldbus devices for more application possibilities.

Specifications

NexECM Runtime

- Slave module no.: up to 64
- Cycle time: up to 250 us
- Synchronization error:± 50 ns
- Support CiA 402 standard protocol

NexECM Studio

- Powerful configuration tool:
  Verification EtherCAT slave hardware configuration
  Setting parameter for EtherCAT protocol
  Setting parameter for EtherCAT slave
  Control EtherCAT slave

CPU/Chipset

- Intel® 6th Core™ i5-6500TE, 2.3 GHz
- Intel® Q170 Chipset

Main Memory

- 4 GB DDR4 2400 SO-DIMM

Storage

- 256 GB 2.5" SATA3 MLC SSD

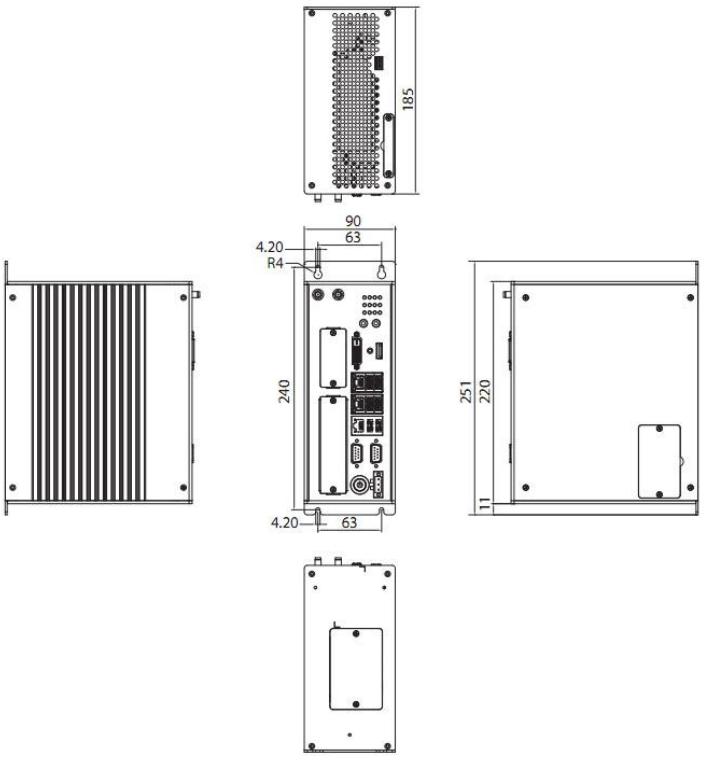
Display

- Dual independent display (HDMI, DVI-D)

NexECM Function List

Feature Name	Short Description
Basic Features	
Service Commands	Support of all commands
IRQ Field in Datagram	Use IRQ information from slave in datagram header
Slaves with Device Emulation	Support slaves with and without application controller
EtherCAT State Machine	Support of ESM special behavior
Error Handling	Checking of network or slave errors, e.g. working counter
Process Data Exchange	
Cyclic PDO	Cyclic process data exchange
Network Configuration	
Reading ENI	Network configuration taken from ENI file
Compare Network Configuration	Compare configured and existing network configuration during boot-up
Explicit Device Identification	Identification used for Hot Connect and prevention against cable swapping
Station Alias Addressing	Support configured station alias in slave, i.e. enable 2nd address and use it
Access to EEPROM	Support functions to access EEPROM via ESC register
Mailbox Support	
Support Mailbox	Main functionality for mailbox transfer
Mailbox Polling	Polling mailbox state in slaves
CAN Application Layer Over EtherCAT (CoE)	
SDO Up/ Download	Normal and expedited transfer
Complete Access	Transfer the entire object (with all sub-indices) at Once
SDO Info Service	Services to read object dictionary
Emergency Message	Receive emergency messages
Distributed Clocks	
DC	Support of distributed clock

Dimension Drawing



I/O Interface- Front
- 1 x ATX power on/off switch
- 1 x HDMI and 1 x DVI-D
- 4 x USB 3.0 ports (900mA per each)
- 2 x USB 2.0 ports (500mA per each)
- 1 x Line-out and 1 x Mic-in
- 2 x Antenna holes for WI-FI/ GSM
- 1 x Front access 2.5" HDD tray
- 1 x Mini-PCIe expansion support optional modules
- 2 x RS232/422/485 auto with 2.5KV Isolation
- 3 x Intel® I210IT GbE LAN ports, support WoL, teaming and PXE

I/O Interface-Top
- 1 x 3-pin remote switch
- 1 x CFast expansion
- 1 x SIM card

Storage Device
- 1 x CFast (SATA 3.0)1 x 2.5" HDD (external, SATA 3.0)
- 1 x 2.5" HDD (internal, SATA 3.0)
- 1 x mSATA (via internal Mini-PCIe socket)

Expansion Slots
- 2 x mini-PCIe socket for optional Wi-Fi/3.5G/4G LTE/Fieldbus modules

Power requirement
- AT/ ATX power mode (default with ATX power mode
- Power input: typical +24 VDC ±20%

Dimensions
- 90 mm(W) x 185mm (D) x 251mm (H)

Environment
- Operating temperature: Ambient with air flow: -5°C to 55°C (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 85°C
- Relative humidity: 10% to 93% (non-condensing)
- Shock protection:
  HDD: 20G, half sine, 11ms, IEC60068-27
  CFast: 50G, half sine, 11ms, IEC60068-27
- Vibration protection w/HDD condition:
  Random: 0.5Grms @ 5~500 Hz, IEC60068-2-64
  Sinusoidal: 0.5Grms @ 5~500 Hz, IEC60068-2-64

Certifications
- CE/FCC Class A

Pre-installed Software Package
- Operating system: Windows Embedded Standard 7 (32-bit, 64-bit)
- Real-time OS
- EtherCAT Master Software: NexECM

Ordering Information
ECM-211F (P/N: 98ECM211F000F)
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