NET 300-ECM

Front-Access High-Performance EtherCAT Controller

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
- Support 6th generation Intel® Core™ i5-6500TE processor
- Intel® Q170 PCH

- 1 x DVI-D, and 1 x HDMI for dual independent display support
- 4 x USB 3.0, 2 x USB 2.0 and 2 x RS232/422/485 auto
- 1 x Front access 2.5" SATA HDD tray
- 2 x mini-PCIe socket support optional modules and mSATA device
- 1 x External CFast socket and 1 x SIM card socket

Product Overview

NET 300-ECM is a high-performance EtherCAT controller, built in 6th generation Intel® Core™ i5-6500TE processor (Skylake-S). Based on a real-time operating system, NET 300-ECM'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.

NET 300-ECM 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

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

CPU Support
- Support 6th generation Intel® Core™ i5-6500TE, Quad Core, 2.3GHz, 6M Cache

Main Memory
- 1 x 4GB DDR4 SO-DIMM

Display Option
- Dual independent display
  - HDMI + DVI-D

Front I/O Interface
- 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

Top I/O Interface
- 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 Slot
- 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 +24V_{DC} ±20%, with reverse polarity protection
- Power adapter: optional AC to DC power adapter (+24V_{DC}, 120W)

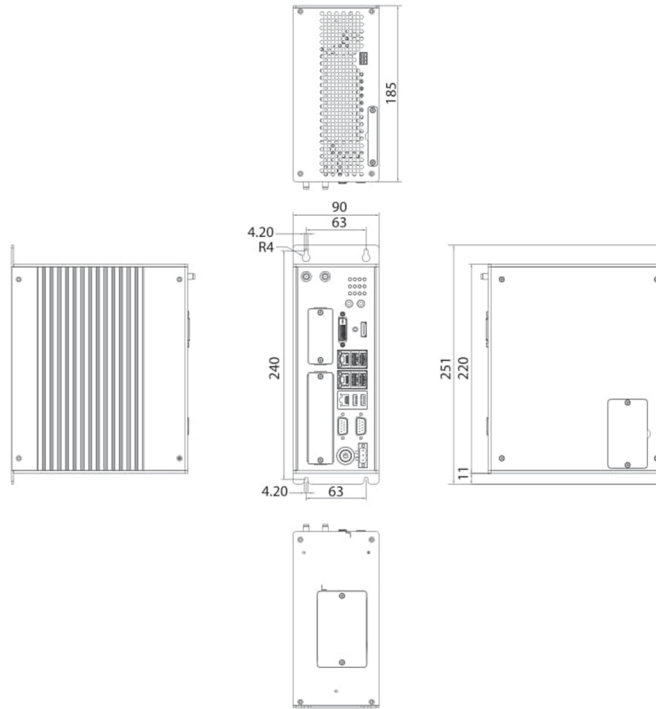### Dimensions
- 90 mm(W) x 185mm (D) x 251mm (H)

Construction
- Aluminum and metal chassis with front access design

Environment
- Operating temperature:
  Ambient with air flow: -5°C to 55°C
  (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)

Dimension Drawing

- 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 approval
  - EN61000-6-2
  - EN61000-6-4
- FCC Class A
- LVD

Pre-Installed Software Package
- Operating system: Windows Embedded Standard 7
- Real-time extension:
  - RTX2012/RTX2016 for 32-bit OS
  - RTX2014/RTX64 3.0 for 64-bit OS
- EtherCAT Master: NexECM
- EtherCAT configurator

EtherCAT Support Table

Feature Name	Short Description	NexECMRtx
Basic Features		
Service Commands	Support of all commands	V
IRQ Field in Datagram	Use IRQ information from Slave in datagram header	V
Slaves with Device Emulation	Support Slaves with and without application controller	V
EtherCAT State Machine	Support of ESM special behavior	V
Error Handling	Checking of network or slave errors, e.g. working counter	V

Process Data Exchange		
Cyclic PDO	Cyclic process data exchange	V
Network Configuration		
Reading ENI	Network configuration taken from ENI file	V
Compare Network Configuration	Compare configured and existing network configuration during boot-up	V
Explicit Device Identification	Identification used for hot connect and prevention against cable swapping	V
Station Alias Addressing	Support configured station alias in slave, i.e. enable 2nd Address and use it	V
Access to EEPROM	Support routines to access EEPROM via ESC register	V
Mailbox Support		
Support Mailbox	Main functionality for mailbox transfer	V
Mailbox polling	Polling mailbox state in slaves	V
CAN Application Layer Over EtherCAT (CoE)		
SDO Up/ Download	Normal and expedited transfer	V
Complete Access	Transfer the entire object (with all sub-indices) at once	V
Distributed Clocks		
DC	Support of distributed clock	V

Ordering Information

- **NET 300 (P/N: A0J10030000X0)**
  Front-access high-performance EtherCAT controller

  ### Image Selection
  NET 300-ECM WES7 32-bit & RTX2012 (P/N:88J10030000X0)
  NET 300-ECM WES7 32-bit & RTX2016 (P/N:88J10030001X0)
  NET 300-ECM WES7 64-bit & RTX64 3.0 (P/N:88J10030002X0)

- **24V, 120W AC to DC power adapter w/o power core (P/N: 7400120015X00)**