NET 3500-ECM

EtherCAT Controller with one PCI Expansion Slot

Main Features

- Support Intel® Core™ i5-520M PGA processor
- EtherCAT technology with NexECM, Class A EtherCAT Master
- EtherCAT communication cycle up to 250 μs
- Support CoE protocol
- Support high-level API for CiA 402 profile

- Build-in full function EtherCAT application configurator
- Dual VGA or VGA/DVI independent display
- 3 x RS232 and 1 x RS232/422/485 with Auto Flow Control
- 5th RS232 (option: 4 x digital input, 4 x digital output)
- Support +9 to 30V$_{DC}$ power input; support ATX power mode

Product Overview

NET 3500-ECM features Intel® Turbo Boost and Intel® Hyper-Threading technologies (2 cores, 4 threads), as well as on-processor graphics and two DDRIII 800/1066 memory modules up to 4GB. In addition, NET 3500-ECM provides a wide variety of display I/O configurations and rich I/O interfaces including two Intel® GbE Ethernet ports, 5 x COM ports, 6 x USB, 8 x GPIO, 2 x SATAII, 2 x eSATA, audio interfaces. NET 3500-ECM is designed for a broad range of applications which demand an EtherCAT controller to handle advanced motion & I/O control.

Specifications

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

CPU support
- Support Intel® Core™ i5-520M PGA processor (2.4GHz, 3M Cache)

Main Memory
- 2 x 2GB DDR3 SDRAM

I/O Interface-Front
- ATX power on/off switch
- HDD access/power status LEDs
- 2 x USB 2.0 ports
- 2 x eSATA ports

I/O Interface-Rear
- 2-pin remote power on/ff switch
- +9 to 30V$_{DC}$ input
- 1 x PS/2 for Keyboard/mouse
- 1 x DB9 for COM5, RS232 (option: 4 x GPI and 4 x GPO)
- 1 x DB44 serial port for 4 x RS232
  (COM2: RS232/422/485 with auto flow control)
- 2 x GbE LAN ports; support WoL and PXE
- 4 x USB 2.0 ports
- 1 x DB15 VGA port

- 1 x DVI-I port
- 1 x Line-out and 1 x Mic-in

Device
- 1 x 2.5" HDD driver bay

Expansion
- 1 x PCI expansion (10W max./per slot)
- Add-on card length: 169mm max.

Power Requirements
- ATX power mode
- Onboard DC to DC power support from +9 to 30V$_{DC}$
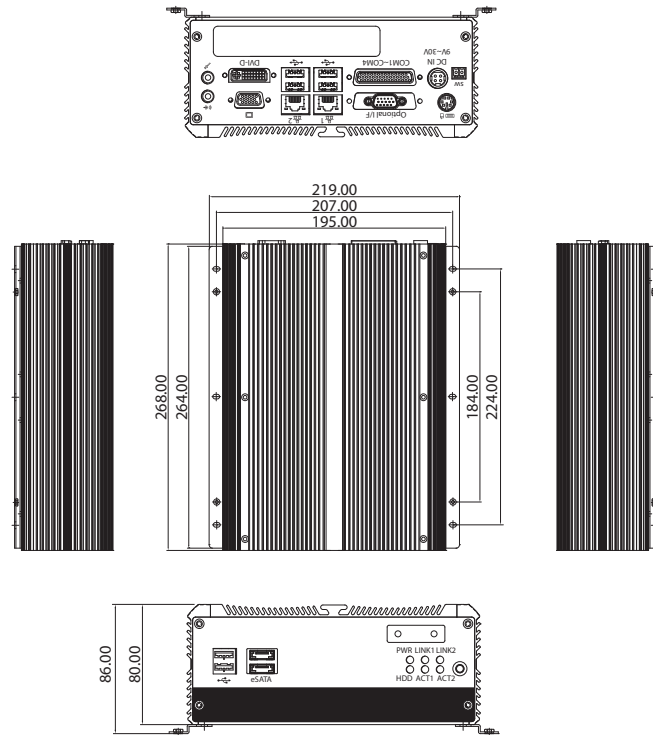- Optional power adapter

Dimensions
- 195mm (W) x 268mm (D) x 80mm (H) (7.7" x 10.5" x 3.1")

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 80°C
- Relative humidity: 10% to 93% (non-condensing)
- Shock protection:
  HDD: 20G, half sine, 11ms, IEC60068-2-27
- Vibration protection:
  - Random: 0.5Grms @ 5~500 Hz according to IEC68-2-64
  - Sinusoidal: 0.5 Grms @ 5~500 Hz according to IEC68-2-6

Dimension Drawing

Certifications

- CE approval
- FCC Class B
- UL/cUL
- e13

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 3500 (P/N: A0J10350001X0)**
  EtherCAT controller with one PCI expansion slot

  ### Image Selection
  NET 3500-ECM WES7 32-bit & RTX2012 (P/N:88J10350000X0)
  NET 3500-ECM WES7 32-bit & RTX2016 (P/N:88J10350001X0)
  NET 3500-ECM WES7 64-bit & RTX2014 (P/N:88J10350002X0)
  NET 3500-ECM WES7 64-bit & RTX64 3.0 (P/N:88J10350003X0)

- **19V, 120W AC/DC power adapter w/o power core (P/N: 7410120002X00)**