NET 104-ECM

Main Features

- OnBoard Intel® Atom™ Dual Core D2550 processor, 1.86GHz
- 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
- 2 x RS232/422/485 and 2 x RS232
- 6 x USB 2.0
- 1 x External CFast socket
- 1 x mini-PCIe with two antenna holes

Product Overview

Powered by Intel® Atom™ Dual Core D2550 1.86GHz and NM10 PCH, NET 104-ECM has higher graphic and computing performance, but less power consumption! With performance enhance, NET 104-ECM is an ideal compact EtherCAT controller with fanless and cables-less concept housed in a compact chassis, 185mm (W) x 131mm (D) x 54mm (H). The NET 104-ECM offers dual independent display capability through DVI-I and HDMI connectors, Dual Intel® GbE LAN ports, 6 x USB 2.0, 2 x RS232, 2 x RS232/422/485, CFast socket and mini-PCIe socket for optional wireless module connection, either Wi-Fi or 3.5G module.

NET 104-ECM's support for +10 to 28V_{DC} input enhances its reliability in different power condition in factory automation or machinery automation. NET 104-ECM offers comprehensive and easy-to-use application configurator for system development and debugging to speed up development period.

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
- Onboard Intel® Atom™ Dual Core D2550 processor, 1.86GHz, 1M L2 Cache
- Intel® NM10 express chipset

Main Memory
- 1 x DDR3 SO-DIMM sockets, support up to 4G DDR3 800/1066
- SDRAM, un-buffered and non-ECC

I/O Interface-Front
- ATX power on/off switch
- HDD access/power status LEDs
- 4 x COM ports (COM2& 3: RS232/422/485)
- 2 x USB 2.0 port
- Audio jack (Line-out and Mic-in)
- 2 x Antenna holes

I/O Interface-Rear
- Dual Intel® 82574L GbE LAN ports; support WoL, teaming and PXE

- 4 x USB 2.0 port
- 1 x HDMI
- 1 x DVI-I (support VGA & DVI-D display via cable)
- 1 x 2-pin DC input, support +10 to 28V_{DC} input
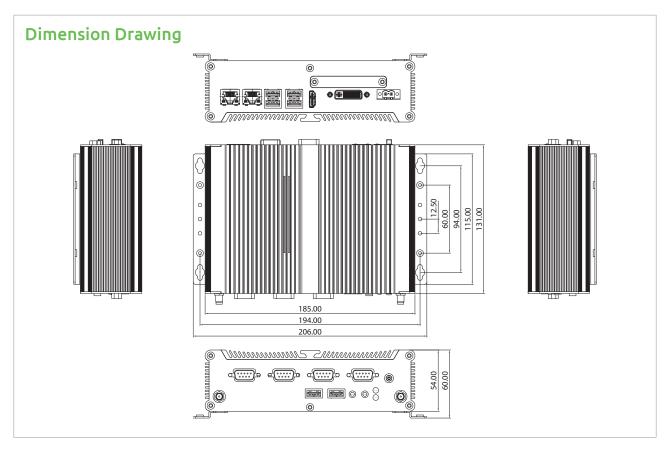- 1 x External screwed type CFast socket

Device
- 1 x 2.5" HDD driver bay
- 1 x External CFast socket
- 1 x mini-PCIe socket (support optional Wi-Fi or 3.5G module)

Dimensions
- 185mm (W) x 131mm (D) x 54mm (H) (7.28" x 5.2" x 2.13")

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
  - CFast: 50G, half sine, 11ms, IEC60068-2-27
- Vibration protection w/ HDD condition
  - Random: 0.5Grms @ 5~500Hz according to IEC60068-2-64
  - Sinusoidal: 0.5Grms @ 5~500Hz according to IEC60068-2-6

Dimension Drawing

Certifications
- CE approval
- FCC Class A
- UL

Pre-Installed Software Package
- Operating system: Windows Embedded Standard 7
- Real-time extension:
  - RTX2012/ RTX2016 for 32-bit OS
  - RTX2014 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 104-ECM (P/N: 10J10010400X0)**
  Compact EtherCAT controller

- **12V, 60W AC/DC power adapter w/o power cord (P/N: 7400060018X00)**