



The Intelligent Systems

The Next Generation MOTION Control Solution



NexMotion™ Product Selection Guide

NexMotion

The Next Generation MOTION Control Solution

The fourth industrial revolution, Industry 4.0, defines the technological convergence of smart factories, smart machines and smart products to the Internet of Things, allowing direct communication and information sharing between one another, which can promote instant business decision making.

To lay the groundwork for Industry 4.0, NEXCOM's leading machine automation solution, NexMotion™, provides the combination of advanced embedded computing and automation technology to harness the capabilities of smart

machines. NexMotion's full spectrum of product lines is based on open architecture, integrated and decentralized designs to meet a range of industrial automation applications, from general motion control, CNC machines, industrial robots, to EtherCAT distributed control systems.



Industry 4.0

- Smart Manufacturing
- Human and Robot Collaboration
- Flexible Production



General Motion Control

- Standalone Machines
- Vision Inspection Systems
- Semiconductor Testing



EtherCAT Distributed Control System

- Assembly Lines
- Bending Machines
- Packing Machines



CNC Machine

- 2.5D or 3D Machining
- CAD/CAM Conversion
- Mills, Lathes, Plasma Cutters



Industrial Robot

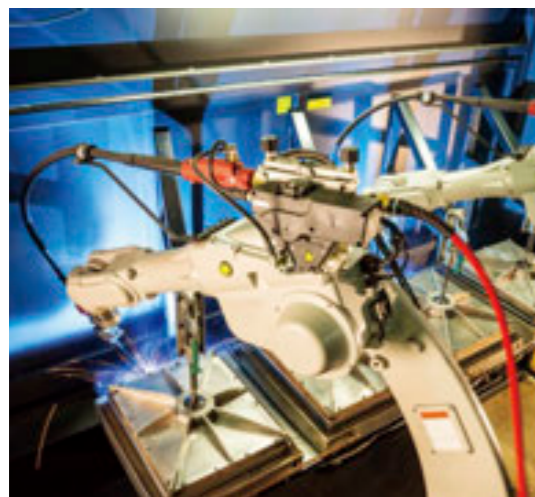
- Articulated Robots
- Delta Robots
- SCARA Robots



NexMotion

Solution Map & Application Focus

NexMotion™, the brand name of NEXCOM Motion Control Solutions, is categorized into PAC, NET, NControl and MAC series. NexMotion offers total machine automation solutions by integrating with NEXCOM's in-house MA products and 3rd party solutions, such as servo motor, machine vision, SoftMotion and EtherCAT I/O modules. It also provides quality services that are vital to the success of an industrial project, including the capability of customization, product training, direct technical support, and great after-sales service.



NexMotion

Ready-for-application Packages

NEXCOM provides package solutions that can be used to work directly with vertical applications. Combining technical expertise and application knowledge, NexMotion's package solutions are available for quick implementation in specified machine automation applications.



6R Robot Package

The 6R Robot Package is a complete 6-axis jointed-arm robot solution for precise part transfer and assembly, workpiece loading and unloading.

Package Contents

- 6-axis Articulated Robot (5kg load) x 1
- Control Cabinet x 1

Application Coverage

Pick and place, handling and assembly



Vision Inspection System Package

The Vision Inspection System Package is a compact machine vision controller with integrated advanced motion control and vision inspection functions.

Package Contents

- Machine Vision Controller x 1
- Cable & Terminal Board for Motion Control x 1
- CCD Camera x 1
- Lens x 1

Application Coverage

Vision inspection machine (1 CCD, 4-axis)



Packaging Machine Demo Kit

The Packaging Machine Package provides a touch-panel computer with built-in software program to simulate the process of food-and-beverage packing. Customers can modify its HMI program and flexibly expand EtherCAT I/O and motor based on real machine needs and deploy the package solution to real applications.

Package Contents

- 21.5" TFT WXGA 16:9 Touch Panel PC x 1
- EtherCAT Drive & Motor Set (100W) x 2
- EtherCAT DI/O Module Set (16DI/16DO) x 1
- Suitcase Box x 1

Application Coverage

Food and beverage packing machine



Compact 5-axis CNC Demo Kit

The 5-axis CNC Demo Kit is a small CNC machine capable of performing precise 3D component design. Customers can use the demo kit to produce miniature yet delicate products.

Package Contents

- 5-axis CNC Machine x 1
- Control Box x 1

Application Coverage

3D wood and plastic CNC



PAC

The Unified Controller for All Industrial Robots

One Platform for All Robot Types

PAC 1100 series features high flexibility for controlling robots with different mechanical designs. Using specialized software packages designed for different robots, PAC 1100 series can control articulated robot arms, delta robots, SCARA robots and many more. In addition, with support for D-H parameters and full closed-loop control, PAC 1100 series offers deterministic performance and seamless compatibility with robots of different types and sizes, all in a single platform.



Open Architecture Enables Easy Customization

For robot manufacturers, research organizations and users with highly customized requirements, PAC 1100 series features integrated robot kinematics, logic control and built-in HMI editor to allow developers to build solutions faster. PAC 1100 series supports IEC 61131-3 standard to provide an open source environment for programming custom functions. Add-on modules are also available for vertical applications such as welding and machine vision.



Open to Support for General Servo Systems

PAC 1100 series supports general servo systems with analog commands and quadrature encoders, and runs advanced closed-loop control algorithms to provide high performance for servo systems of various brands.



Robot Control Features

General Function

- Support teach, replay and remote control mode
- Forward / backward teach inspection
- Support Joint-Space PTP, PTP and linear motion in Cartesian space, and arc CP command
- Customized I/O configuration and operation
- Support common coordinate systems and teaching functions, such as joint coordinate system, the base coordinate system, the tool coordinate system, the world coordinate system, the workpiece coordinate system
- On/off-line robot language editing
- Arc welding, palletizing, handling and so on

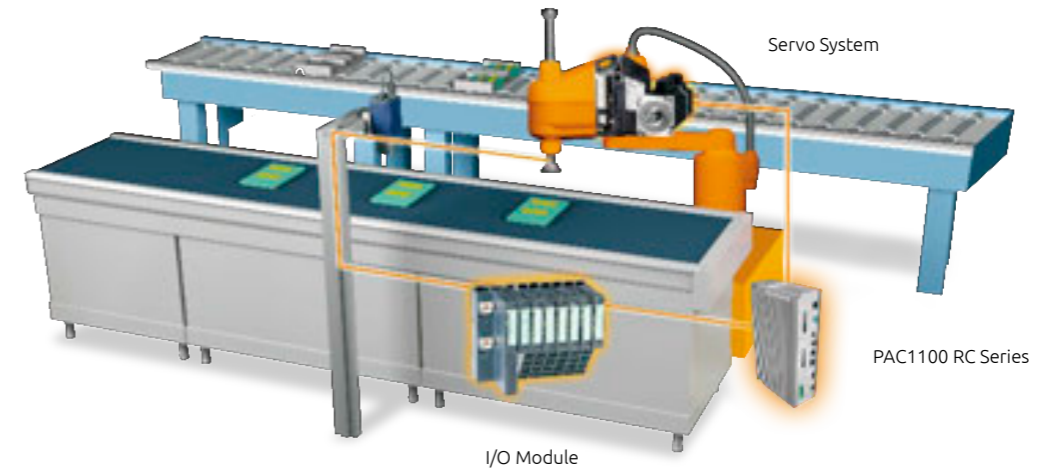


Specific Function

- Support different types of robots
- D-H parameter function
- Support general servo drivers
- Kinetic parameters function
- Robot flush function
- Forward / backward teach check and point function return
- Simulation function



System Architecture



Specification

Model	PAC1100-RAA	PAC1100-RDL	PAC1100-RSC
Motion Control	Teach, replay and remote control mode		
Robot Type Support	Articulated Robot	DELTA Robot	SCARA Robot
Number of Axes	8	4	4
Control Mode	Forward / backward teach inspection		
Teaching Mode	Support Joint-Space PTP, PTP and linear motion in Cartesian space, and arc CP command		
Motion Control	Support joint coordinate system, the base coordinate system, the tool coordinate system, the world coordinate system, the workpiece coordinate system		
Coordinate System	Robot programming languages and macro program		
Programming Language	Documents offline editing		
Offline Editing	Stacking, arc defensed, tracking, position changing		
Robot Functions (Optional)	Software and mechanical limitation		
Protection Function	Emergency stop, timing anomalies, servo alarm, teach pendant communication error, user operation exception		
Exception Handling	Standard articulated robot	Standard DELTA/SCARA robot	
D-H Parameter Function	Kinematics parameter setting		
Motion Parameter	Simulation operation function		
Simulation Operation	3ms	3ms	3ms
Controller Clock	200us	200us	200us
Real-time Control Loop	AC Servo Driver	AC Servo Driver	AC Servo Driver
Servo Drive Type	v	v	v
Analog Control	System		
CPU	Intel® Atom™ Processor N455 (1.6 GHz)		
Storage	4G	4G	4G
USB ports	USB 2.0 x2	USB 2.0 x2	USB 2.0 x2
Operating System	Win CE 6.0	Win CE 6.0	Win CE 6.0
Serial Port	RS232 x1	RS232 x1	RS232 x1
LAN Port	2	2	2
DIO	16-CH DI/16-CH DO	16-CH DI/16-CH DO	16-CH DI/16-CH DO
Operating Temperature	0 to +55 °C	0 to +55 °C	0 to +55 °C
Power Input	24 VDC	24 VDC	24 VDC
Dimension of Controller	296mm x 160mm x 79mm	296mm x 160mm x 79mm	296mm x 160mm x 79mm
Dimension of Terminal Block	292mm x 165mm x 42mm	266mm x 137mm x 42mm	266mm x 137mm x 42mm

NET

Open EtherCAT Platform for Robot Control

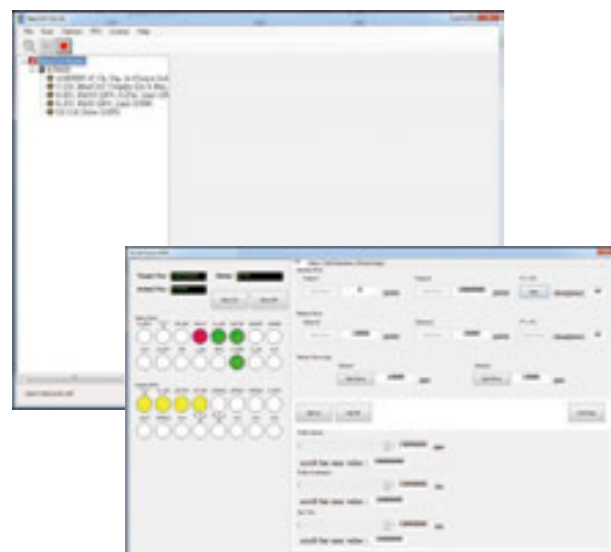
EtherCAT System Brings Flexibility to Robotic Control

A robot control system can be complicated as it involves complex calculations of sensing, motor driving and movement algorithms, and requires vast experience in remote teaching and application know-how. NET series provides open EtherCAT platforms that flexibly connect I/Os, sensors and drives in a distributed architecture so that robot makers can implement robot design without the limitation of signal wiring. NET EtherCAT platforms support two different programming environments – NET ECM for PC users and NET CODESYS for PLC users.



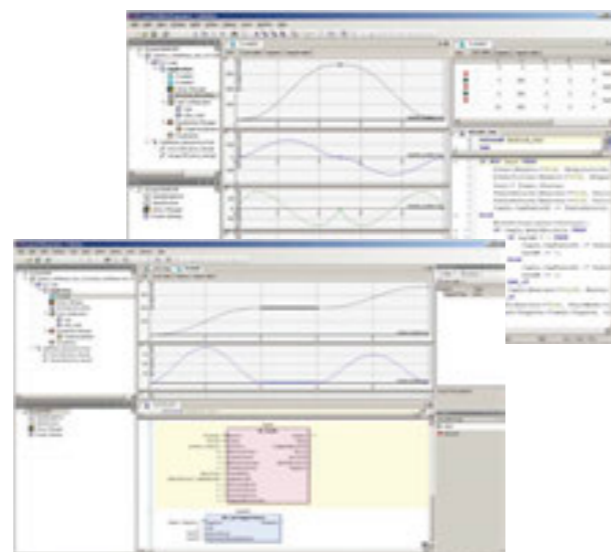
NET ECM Controller

NEXCOM has been investing R&D resources to develop its own core architecture of EtherCAT master, nexECM. NexMotion's NET ECM controller provides EtherCAT master driver running under real-time extension to perform high precision motion controls and advanced communication capabilities. The Windows library allows users to develop application codes in Microsoft Visual Studio programming environment. NexCAT, a Windows-based software tool built by NEXCOM, will also be provided for users to easily configure EtherCAT master parameters and test EtherCAT slave modules.

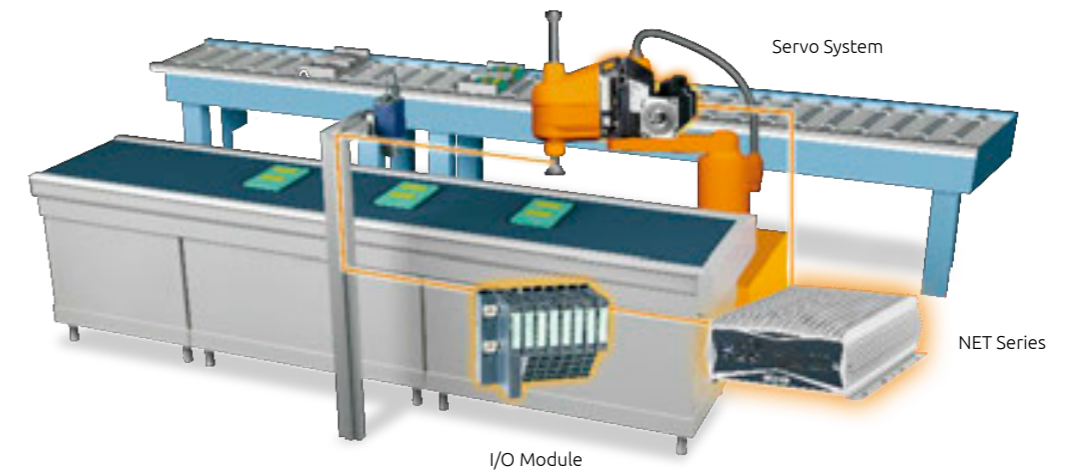


NET CODESYS Controller


NET CODESYS controller supports IEC61131-3 programming, which accommodates five PLC programming languages such as Ladder Diagram, Function Block Diagram, Sequential Functional Chart, Structured Text and Instruction List. There are also built-in libraries for motion and numerical controls that can be used to shorten development time. With NET CODESYS controller, users can choose the preferred programming language, along with motion libraries, to develop control codes for their robot systems.




System Architecture



Specification

Model Name	
	NET3600E-ECM
EtherCAT	
Real-time Function	v
Service Commands	v
IRQ Field in Datagram	v
Slaves with Device Emulation	v
EtherCAT State Machine	v
Error Handling	v
EtherCAT Frame Types	v
UDP Frame Types	v
Cyclic	v
Reading ENI	v
Compare Network Configuration	v
Explicit Device Identification	v
Station Alias Addressing	v
Support Mailbox	v
Mailbox Resilient Layer	v
SDO Up/Download	v
DC Support	v
System	
CPU	Intel® Core™ i5-3610ME
Memory	4GB
USB Ports	2 x USB 2.0/4 x USB 3.0
Operating System	WES 7
Serial Port	6
LAN Port	2
Operating Temperature	-5 ~ +55 °C
Power Input	ATX, DC +9 ~ 30V
Dimension (WxDxH)	215 x 272 x 93mm

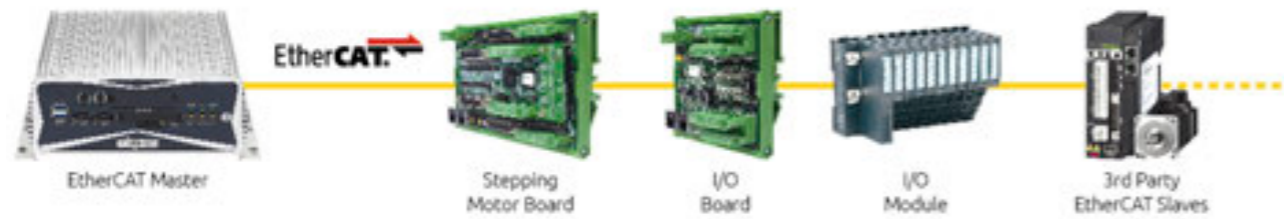
Model Name	
	NET104-CDS
CoDeSys SoftMotion+EtherCAT	
Real-time Function	v
SoftPLC (IEC61131-3) Syntax	FBD, LD, IL, ST, SFC
Single Movement	v
Multi-axis Movement	v
Absolute Movement	v
Relative Movement	v
Jogging	v
Velocity Move	v
Homing	v
Compare Tigger	v
E-Gear	v
E-CAM	v
System	
CPU	Intel® Atom™ D2550 1.86GHz
Memory	4GB
USB ports	6 x USB 2.0
Operating System	WES 7
Serial Port	4
LAN Port	2
Operating Temperature	-5 ~ +55 °C
Power Input	ATX, DC +10 ~ 28V
Dimension (WxDxH)	185 x 131 x 54mm

NET

EtherCAT Machine Automation

EtherCAT- The Real-time Ethernet Fieldbus

EtherCAT (Ethernet for Control Automation Technology) is a high-performance fieldbus protocol that allows automation equipment such as servo drives, intelligent sensors and I/O devices, to be connected using Ethernet. Because it offers higher accuracy and throughput at a lower cost, EtherCAT has been widely adopted in the automation industry as the mainstream real-time Ethernet protocol for machine automation.



NexMotion's NET Series Offers Complete EtherCAT Solution

NET series leverages industrial grade Ethernet technology and offers a complete EtherCAT solution, ranging from EtherCAT master platforms to a series of EtherCAT slave modules. Compared to legacy pulse and voltage commands, EtherCAT commands are digitized to improve its immunity from electrical noises in machine automation environments. Furthermore, the Ethernet-based wiring design allows NET series to add greater flexibility and expandability to control systems.

System Architecture



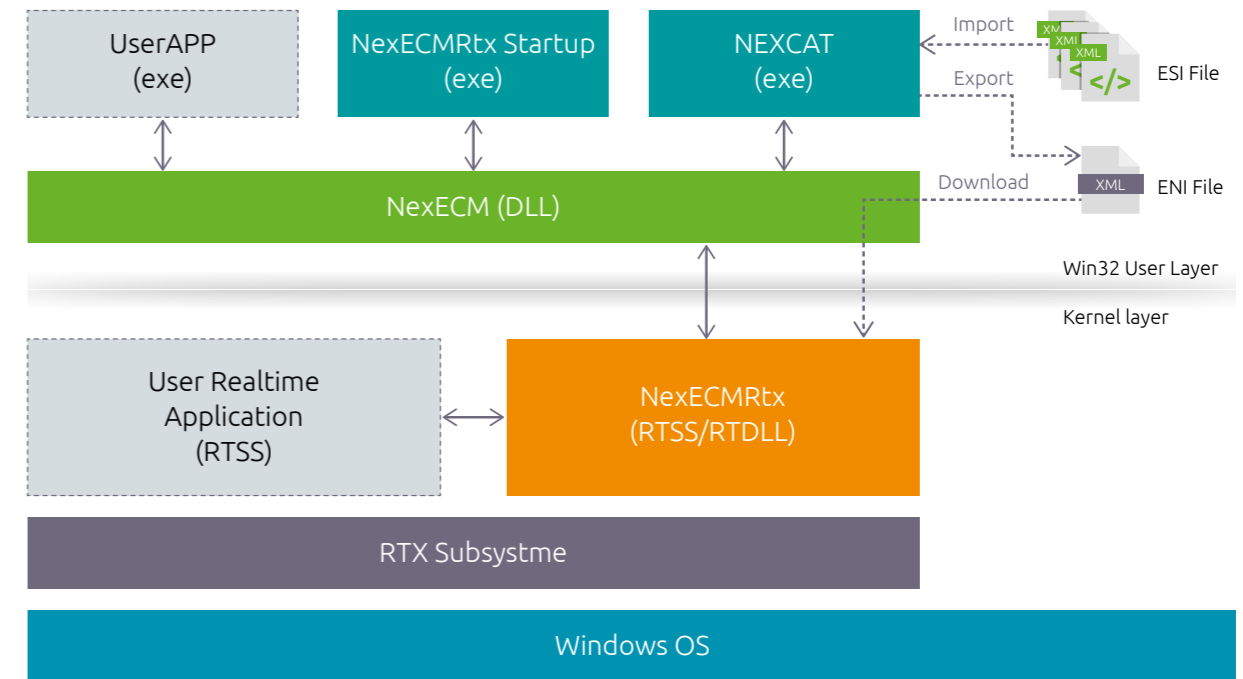
nexECM Software Structure

Based on Windows OS and well-known real-time extensions, NEXCOM's EtherCAT master software, nexECM, can bridge user applications in the Windows layer to real-time operations in the kernel layer. nexECM takes care of the EtherCAT master by periodically performing EtherCAT communication operations, so that users can simply develop their applications

in Microsoft Visual Studio programming environment.

NexCAT - EtherCAT Configurator

The configuration tool, NexCAT, is also provided for importing ESI files for EtherCAT slave modules and generating ENI files for the whole EtherCAT system. Users can also use this tool to configure EtherCAT master parameters and test EtherCAT slave modules.



CiA402 Motion Library Support

nexECM supports CiA402, CANopen device profile for drives and motion control. Users can easily control CoE (CAN application protocol over EtherAT) servo drives by using nexECM's CiA402 motion library. Servo modes and operations for motors can be operated with the library and provided Visual Studio examples.

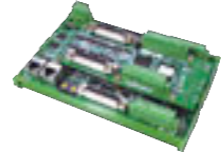

Operation Mode	Define
Profile Position	CIA402_OP_MODE_PROFILE_POSITION
Profile Velocity	CIA402_OP_MODE_PROFILE_VELOCITY
Profile Torque	CIA402_OP_MODE_TORQUE_PROFILE
Homing	CIA402_OP_MODE_HOMING
Interpolated Position	CIA402_OP_MODE_INTERPOLATED_POSITION
Cyclic Sync Position	CIA402_OP_MODE_CYCLIC_POSITION
Cyclic Sync Velocity	CIA402_OP_MODE_CYCLIC_VELOCITY
Cyclic Sync Torque	CIA402_OP_MODE_CYCLIC_TORQUE

NET

Selection Guide

Model Name					
	NET104-CDS	NET104-ECM	NET 3140P2E-ECM	NET 3500-ECM	NET 3600E-ECM
CPU	Intel® Atom™ D2550 1.86GHz	Intel® Atom™ D2550 1.86GHz	Intel® Core™ 2 Duo P8400	Intel® Core™ i5-520M	Intel® Core™ i5-3610ME
Chipset	Intel® NM10	Intel® NM10	Intel® GM45/CH9M	Intel® QM57	Intel® QM77
Memory	4GB DDR3	4GB DDR3	4GB DDR3	4GB DDR3	4GB DDR3
HDD	2.5" SATA 500GB	2.5" SATA 500GB	2.5" SATA 500GB	2.5" SATA 500GB	2.5" SATA 500GB
Operating System	WES 7	WES 7	WES 7	WES 7	WES 7
CF Socket	1 (External, CFast)	1 (External, CFast)	1 (External)	-	1 (External, CFast)
VGA	-	-	1	1	1
LVDS	-	-	Dual, 24bit (Internal)	Dual, 24bit (Internal)	Dual, 24bit (Internal)
DVI	1 (DVH)	1 (DVH)	1 (DVH)	1 (DVH)	1 (DVH)
DisplayPort	-	-	-	-	2
HDMI	1	1	-	-	-
eSATA	-	-	-	2	-
USB	6 x USB2.0	6 x USB2.0	6 x USB2.0	6	2 x USB2.0 4 x USB3.0
PS2	-	-	1	1	-
Parallel Port	-	-	1	1 (Internal)	-
RS-232	2	2	3	3	5
RS-232/422/485	2	2	1	1	1
Mini-PCIe	1	1	-	-	1
SIM Card Holder	1 (Internal)	1 (Internal)	-	-	1
GPIO	-	-	4-in/4-out (Internal)	4-in/4-out (Internal)	-
LAN	1 x GbE	1 x GbE	1 x GbE	1 x GbE	1 x GbE
Audio	Mic-in & Line-out	Mic-in & Line-out	Mic-in & Line-out	Mic-in & Line-out	Mic-in & Line-out
Power Input	ATX, DC +10 ~ 28V	ATX, DC +10 ~ 28V	ATX, DC +16 ~ 30V	ATX, DC +9 ~ 30V	ATX, DC +9 ~ 30V
Expansion	-	-	1 x PCI or 1 x PCIe1	1 x PCI	1 x PCIe4
Operating Temperature	-5°C to 55°C	-5°C to 55°C	-5°C to 55°C	-5°C to 55°C	-5°C to 55°C
Dimension (WxDxH)	185 x 131 x 54mm	185 x 131 x 54mm	195 x 268 x 101mm	195 x 268 x 80mm	215 x 272 x 93mm

EtherCAT I/O Module – Terminal Type

Model Name		
	AXE-5904	AXE-9200-D16N16
Pulse Output	CW/CCW, OUT/DIR, 4xAB	-
Encoder Feedback	4xAB	-
Dedicated I/O	LIM/HOME/INP/ALM/ARST/SVON	-
Digital Input	-	-
Digital Output	8	16
Power Supply	24Vdc (+10%)	24Vdc (+10%)
Storage Temperature	-25 to +85 °C	-25 to +85 °C
Working Temperature	0 to +50 °C	0 to +55 °C
Relative Humidity	90% no condensation	90% no condensation

EtherCAT I/O Module – Modular Type

Model Name							
	SLIO 053-1EC00	SLIO 021-1BF00	SLIO 021-1BD00	SLIO 022-1BF50	SLIO 022-1BD50	SLIO 031-1BD70	SLIO 032-1CB70
Type	Coupler	DI Active High	DI Active High	DO Low-side Output	DO Low-side Output	AI 12-bit Voltage Input	AO 16-bit Voltage Output
Channels	-	8	4	8	4	4	2
Voltage	DC24V	DC24V	DC24V	DC24V	DC24V	±10V	±10V
Current	-	-	-	0.5A	0.5A	-	-

EtherCAT Servo Driver and Motor

Model Name						
	50W	100W	200W	400W	750W	1KW
Driver	Protocol	EtherCAT	EtherCAT	EtherCAT	EtherCAT	EtherCAT
	Voltage	220VAC	220VAC	220VAC	220VAC	220VAC
	Encoder	13/17-bit	13/17-bit	13/17-bit	13/17-bit	13/17-bit
	Rated Output	100W		400W		1KW
Motor	Inertia	Low	Low	Low	Middle	Middle
	Rated Speed (rpm)	3000	3000	3000	3000	2000
	Max Speed (rpm)	4500	4500	4500	4500	3000
	Encoder	13/17-bit	13/17-bit	13/17-bit	13/17-bit	13/17-bit
	Shaft Type	Round / with Key	Round / with Key	Round / with Key	Round / with Key	Round / with Key

MAC

Machine Automation Controllers

MAC Meets Your Machine Control Needs in a Single Platform

NexMotion's MAC Controller is an all-in-one machine automation controller that integrates the functions of motion control, input/output and vision in a single platform. With all the related drivers and software pre-installed, this ready-for-application controller allows users to jump right into application development.

Advanced Motion Functions

The MAC controller provides up to 8-axis close-loop motion control with advanced functions. Besides point-to-point movement for single axis, it also supports multi-axis linear/circular interpolation, continuous moving, PT/PVT, T/S curve velocity profiles, E-gearing, etc. Advanced applications such as gantry and fly-cut can be accomplished by the motion control functions the MAC controller provides. Adding machine vision control with triggering I/O also enables the MAC controllers to handle vision inspection in assembly lines or inspection machines.

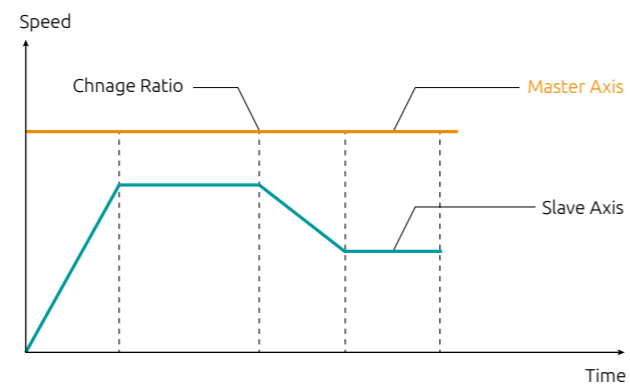
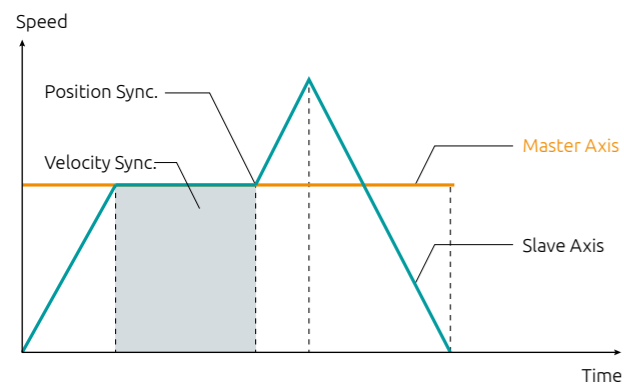
Electronic Gearing & Electronic Cam

In some systems where different rotating drums must turn at a given ratio to each. MAC controller supports electronic gearing so that the position of a slave axis can be mathematically linked to the position of a master axis.

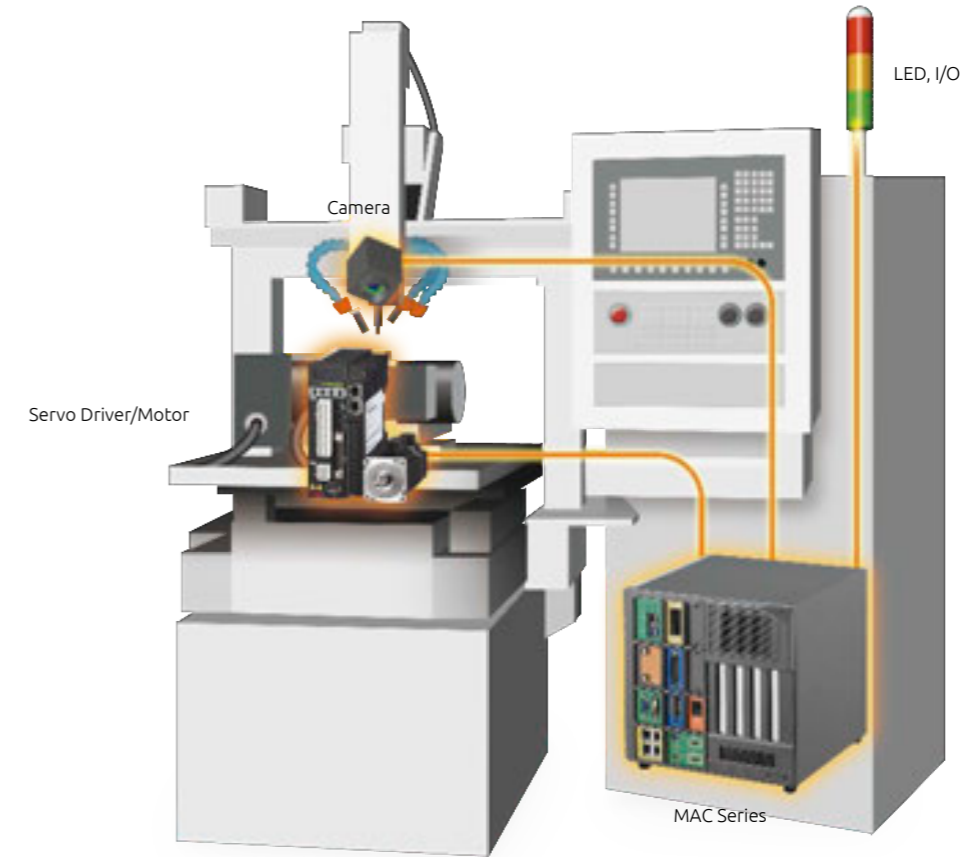


All-in-one Motion Controller

A more advanced case of electronic gearing is electronic camming. With electronic camming, a slave axis follows a profile that is a function of the master position. This profile needs not be salted, but it must be an animated function.

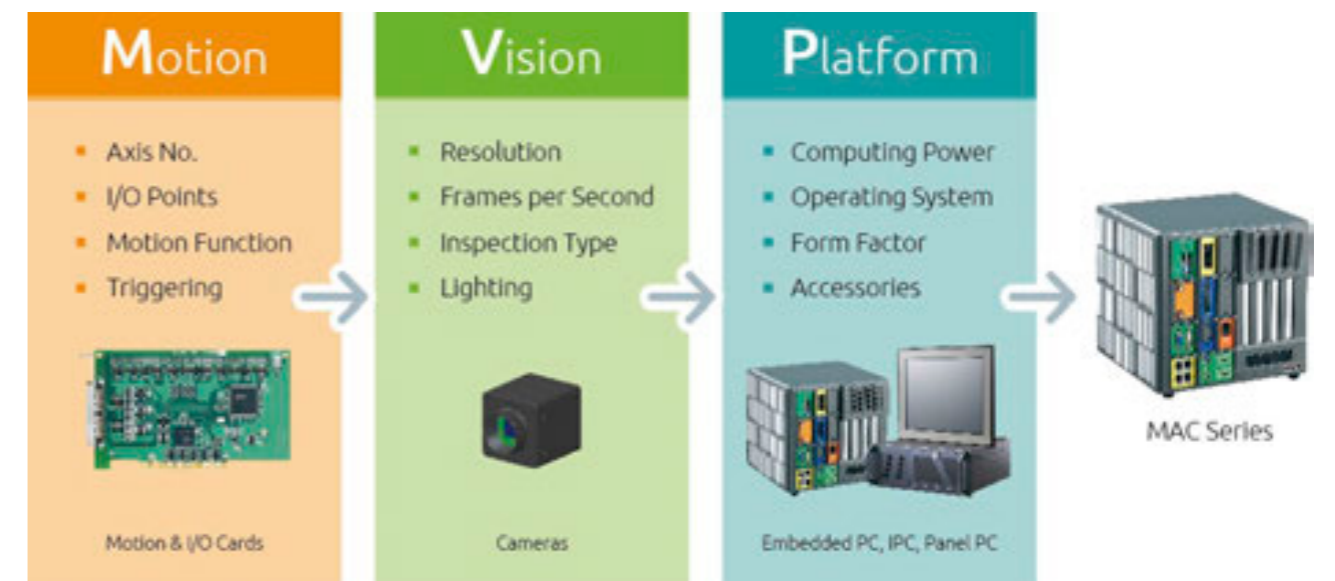


System Architecture



MVP Configuration Process






NEXCOM's 3-step MVP process aims to offer the best-fit controller solution for customers' applications. By consolidating the Motion, Vision and Platform needs of customers, NEXCOM can provide a configuration setup that's most efficient and effective for customers. The proposed configuration will be tested beforehand so that customers can enjoy the benefits of verified system compatibility and cost-effectiveness provided by MAC controllers.



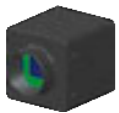
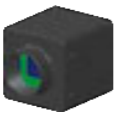
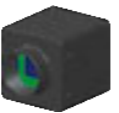
MAC

Selection Guide






Motion

Model Name					
	AXE-5004	GTS-400-PG-PCI-G	GTS-800-PG-PCI-G	GTS-400-PV-PCI-G	GTS-800-PV-PCI-G
Axis No.	4	4	8	4	8
Command Type	Pulse	Pulse	Pulse	Pulse & Analog	Pulse & Analog
Pulse Output Rate (Max.)	9.8 Mpps	1Mpps	1Mpps	1Mpps	1Mpps
Analog Output	-	-	-	±10V with 16-bit DAC	±10V with 16-bit DAC
Encoder Input Frequency (Max.)	5MHz under 4 x AB phase	8MHz under 4 x AB phase	8MHz under 4 x AB phase	8MHz under 4 x AB phase	8MHz under 4 x AB phase
Dedicated Motion I/O	±LIM/ORG/INP/ALM/ALMCLR/LTC	±LIM/ORG/ALM/ALMCLR/SVON			
DI/O Channels	7DI/3DO	16DI/16DO	16DI/16DO	16DI/16DO	16DI/16DO
Card Index Switch	v	-	-	-	-
Point-to-point Function	v	v	v	v	v
Continuous Move	-	v	v	v	v
Contouring	-	-	-	v	v
Linear Interpolation	v	v	v	v	v
Circular Interpolation	-	v	v	v	v
T/S Curve Velocity Profiles	v	v	v	v	v
Position Override/Speed Override	v	v	v	v	v
Full-closed Loop	-	-	-	v	v
E-Gearing	-	v	v	v	v

Vision

Model Name			
	ROKA30	ROKA130	ROKA500
Interface		GigE	
Mono/Color		Mono	
Resolution	752 x 480	1280 x 960	2592 x 1944
Pixel Size	6 µm	3.75 µm	2.2 µm
Sensor Size	1/3"	1/3"	1/2.5"
Sensor Technology	CMOS Binning and ROI	CMOS	CMOS
Frame Rate	100 fps	60 fps	15 fps
Pixel Bit Depth		8/12 bit	
Shutter	Global shutter		Rolling
Lens Mount	C/CS mount		
Digital Input	Input x 1 (Trigger) Max.:24V		
General Purpose Output	output x 1 (strobe) Max.:24V		
Supply Voltage	11 VDC to 13 VDC or PoE: 48 VDC to 56 VDC		
Current Consumption	approx 400 mA at 12 VDC	approx 500 mA at 12 VDC	approx 400 mA at 12 VDC
Operating Temperature	-5 °C to 45 °C		
Dimensions	H: 29, W: 29, L: 57 mm		
Weight	65g		
Support OS	Windows XP, Windows Vista, Windows 7 (32 & 64 bit), Windows 8 (32 & 64 bit)		
SDK Compatible	Windows .NET/C/C++/ActiveX		
Driver Compatible	WDM, DirectShow, DirectX®, TWAIN, ActiVisionTools, HALCON, VFW and		

Platform

Model Name					
	NISE-2420	NISE-3500P2	NISE-3600P2	NISE-4000P4E	IPPC-2160P
Panel					
LCD Size	-	-	-	-	21.5" 16:9
Max. Resolution	-	-	-	-	Full HD, 1920 x 1080
Touch Screen	-	-	-	-	Ten Point P-Cap
System					
CPU	Intel® Atom™ E3845 Quad core	Intel® Core™ i7/i5 socket	3rd Gen. Intel® Core™ i5/i3 socket (2nd Gen. Intel® Core™ i5/i3 socket)	3rd Gen. Intel® Core™ i5/i3 rPGA socket	3rd Gen. Intel® Core™ i5-3610ME 2 x 2.7GHz
Chipset	-	Intel® QM57	Intel® QM77	Intel® QM77	Intel® HM76
Memory	8G DDR3L	4GB DDR3	8GB DDR3	8GB DDR3/DDR3L	4GB DDR3 SO-DIMM module
HDD	1 x 2.5" HDD space (SATA 2.0)	1 x 2.5" HDD driver bay	1 x 2.5" SATA HDD bay	2 x 2.5" HDD bay (External)	2 x 2.5" SATA HDD bay
CF Socket	1 (External, CFast)	-	1 (External, CFast)	1 (External, CFast)	1
VGA	-	1	1	1	1 (2nd Display Output)
LVDS	-	Dual, 24bit (Internal)	Dual, 24bit (Internal)	-	-
DVI	1 (DVI-I)	1 (DVI-I)	1 (DVI-D)	1 (DVI-I)	-
Display Port	-	-	2	-	-
HDMI	1	-	-	-	-
eSATA	-	2	-	-	-
USB	4 x USB 2.0/1 x USB 3.0	6	2 x USB2.0/4 x USB3.0	2 x USB2.0/2 x USB3.0	4 x USB2.0
PS2	-	1	-	1	2
Parallel Port	-	1 (Internal)	-	-	1
RS-232	2	3	5	2	4
RS-232/422/485	2	1	1	2 (Isolation)	2
Mini-PCIe	2	-	1	2	2
SIM Card Holder	1	-	1	1	-
Digital I/O	-	-	-	16-in/16-out	4-in/4-out
GPIO	4-in/4-out (Internal)	4-in/4-out (Internal)	4-in/4-out (Internal)	-	4-in/4-out (Internal)
LAN	2 x GbE	2 x GbE	2 x GbE	4 x GbE	2 x GbE
Audio	Mic-in & Line-out	Mic-in & Line-out	Mic-in & Line-out	Mic-in & Line-out	Mic-in, Line-in & Line-out
Expansion	2 x PCI	2 x PCI	2 x PCI	3 x PCI and 1 x PCIe4	2 x PCI or PCIe Slots
Power Input	ATX, DC +9 ~ 30V	ATX, DC +9 ~ 30V	ATX, DC +9 ~ 30V	ATX, DC +24V	100-240 V~, 1.5A
Operating Temperature	-20°C to 70°C	-5°C to 55°C	-5°C to 55°C	0°C to 55°C	-10°C to 50°C
Dimensions (WxDxH)	195 x 200 x 111mm	195 x 268 x 101mm	215 x 272 x 114mm	258 x 250 x 255mm	562.4 x 382.4 x 92.27mm

NControl Series

The Comprehensive CNC Solution for 2D/3D Machining

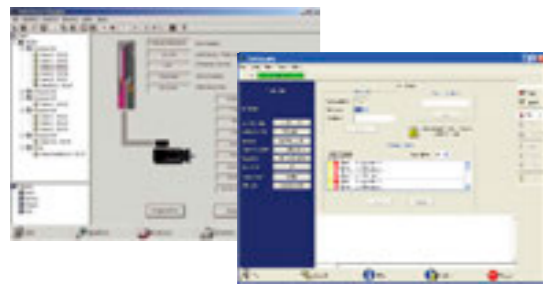
One Platform for All Machinery Applications

The NControl series leverage unified hardware platform to perform various CNC applications.

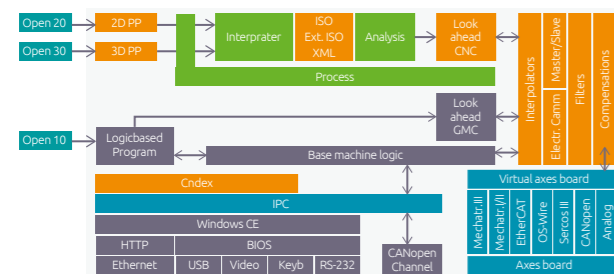


Open Yet Robust

The open software architecture of the NControl series allows flexible programming of various CNC functions, such as enabling CNC machine makers to customize the HMI screen using the built-in editor or Windows-based programming tools.



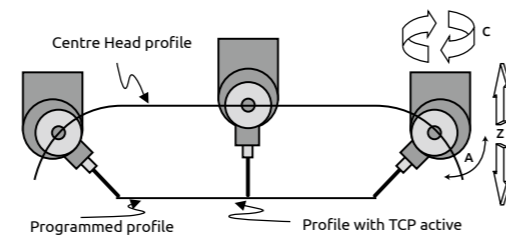
The graphical suite WinNBI (Windows™ Network Based Interface) offers a simple development environment and a range of pre-configured objects that CNC makers can use to develop graphical interfaces, without the need to code. Available in versions for both Windows XP/7 and Windows CE, WinNBI also includes many other graphical tools such as MachinePlot, DigiCAD and PathView to facilitate development.



Premium CNC Features

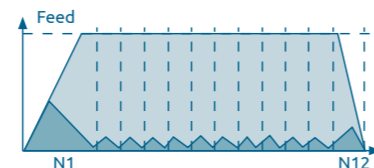
3D Axes Motion

- Circular 3D interpolation
- Tool Centre Point (TCP)
- TCP for double twist and prismatic heads with 2 or 3 rotary axes
- TCP for non standard kinematics
- Tool direction axis movement
- TCP on rotated planes
- PathView to facilitate development



High-speed Machining

- Look ahead speed planning
- 5-degree polynomial trajectory planning
- TCP with 5-degree polynomial trajectory planning





Multi-channel of Machining

- 2 channel of machining work simultaneously
- Up to 24 channels can be customized

System Architecture



Specification

Model		
	NControl 20 Series	NControl 30 Series
Controlled axes	Up to 10	Up to 14
Machining Channels	Up to 2	Up to 2
Fieldbus	EtherCAT	EtherCAT & Mechatrolink III
Servo Driver	Hiwinmikro D2 EtherCAT Series	Yaskawa Σ-V Mechatrolink III Series
High Speed I/O	4in/4out	4in/4out
Manual Pulser Input	1 (A/B/Z)	1 (A/B/Z)
Analog I/O	2in (12bit) / 2out (16bit)	2in (12bit) / 2out (16bit)
Remote I/O support	Yes, EtherCAT	Yes, EtherCAT
Display port	Dual VGA or VGA/DVI Independent Display	Dual VGA or VGA/DVI Independent Display
Ethernet	2x 10/100/1000 MHz	2x 10/100/1000 MHz
USB	6 x USB 2.0	6 x USB 2.0
COM port	3x RS232 - 1x RS232/422/485	3x RS232 - 1x RS232/422/485
Operating system	Windows CE 6.0 or optional Dual Op. Sys. (Windows CE 6.0 + WES2009)	Windows CE 6.0 or optional Dual Op. Sys. (Windows CE 6.0 + WES2009)
Power Supply	24VDC	24VDC
Power Consumption	2.5 Amp at 24VDC	2.5 Amp at 24VDC
Dimensions	195mm (W) x 268mm (D) x 101mm (H) (7.7" x 10.5" x 3.98")	195mm (W) x 268mm (D) x 101mm (H) (7.7" x 10.5" x 3.98")

Ordering Information

- NControl20 2.5D EtherCAT CNC Controller
- NControl20D 2.5D EtherCAT CNC Controller with Dual Operating System
- NControl30 3D EtherCAT CNC Controller
- NControl30D 3D EtherCAT CNC Controller with Dual Operating System

NControl Series



Main Features

- Support 2D½ & 3D CNC machining
- Support EtherCAT and MechatrolinkIII protocols
- G/M Code supported
- Tool Center Point (TCP) Support
- Look ahead speed planning (up to 1024 blocks)
- High speed machining with polynomial interpolation
- TCP with high speed machining
- Multiple CNC channels supported
- Up to 24 channels can be customized

Product Overview

NControl series provides a comprehensive CNC solution to 2D and 3D machining. Providing high level CNC functionalities, such as TCP for 5-axis machining and high speed machining with look ahead and polynomial, NControl series ensures high machining precision with high speed. Derived from NexMotion cloud and open feature, NControl series can upgrade its function without changing any hardware and can easily integrate with 3rd party hardware and software.

Specifications

System

- Intel® Core™ 2 Duo P8400 processor pre-installed
- 2GB DDR3 SDRAM, pre-installed
- 32GB SSD pre-installed
- Windows CE 6.0 pre-installed
- VGA/DVI-I independent display
- 2 x Intel® GbE LAN ports (support WoL & LAN teaming)
- 1 x DB44 Serial Port for 4 x RS232 (COM2: RS232/422/485 with Auto Flow Control)
- 6 x USB 2.0 ports
- 1 x PS2 Connector supporting KB/MS
- Fast I/O: 4 digital in/4 digital out
- Analog I/O: 1 in (16-bit)/1 out (16-bit)
- Encoder: 1 in (A/B/Z phase)

CNC Control

- Axes Management
 - Circular 3D interpolation
 - Rollover Axes
 - Gantry Axes
 - Dynamic follower axes
- Canned Cycles
 - Spot-facing (G82)
 - Deep drilling with chip take out (G83)
 - Tapping (G84)
 - Reaming or tapping by Tapmatic (G85)
 - Boring with spot facing (G89)
- Motion control types
 - G code ISO 6983 programming

- M, S, T functions programming
- Look Ahead (up to 1024 blocks)
- Velocity Feed Forward (VFF)
- Tool Centre Point (TCP)
 - TCP for Double Twist and Prismatic Heads with 2 or 3 rotary axes
 - TCP for non-standard kinematics
- Special Feature
 - Bidirectional pitch compensation

Optional Remote I/O

- Modular type
 - Coupler: C-101
 - Digital I/O module: E-101/E-201/E-202
 - Analog I/O module: E-501
- Terminal type
 - Digital I/O module: AXE-9200

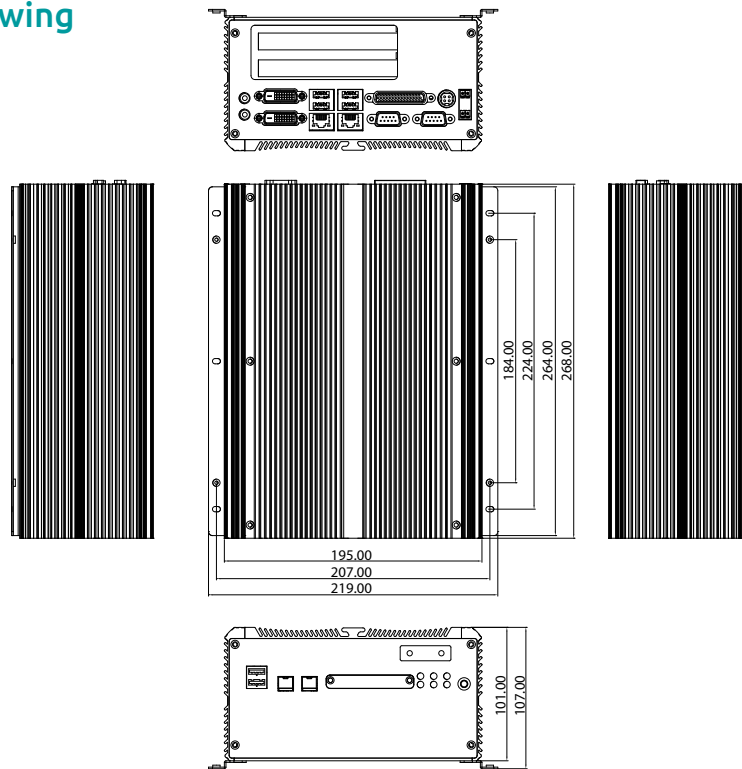
Power Requirements

- DC input range: +16 to 30VDC input ATX Power mode (Optional AC/DC 120W power adapter)

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
 - CF: 50G, half sine, 11ms, IEC60068-2-27

Dimension Drawing



- Vibration protection w/ HDD Condition
 - Random: 0.5Grms @ 5 ~ 500 Hz according to IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5 ~ 500 Hz according to IEC60068-2-6

Certifications

- CE
- FCC Class A

Ordering Information

CNC Controller

- **NControl20**
2D½ CNC Controller for Machining and Turning Center with Win CE 6.0
- **NControl20D**
2D½ CNC Controller for Machining and Turning Center with Win CE 6.0 and WE2009
- **NControl30**
3D CNC Controller for Machining and Turning Center with Win CE 6.0
- **NControl30D**
3D CNC Controller for Machining and Turning Center with Win CE 6.0 and WE2009

Optional Accessories

- **C-101 Coupler**
OPENrio EtherCAT Bus-coupler
- **E-101 Module**
OPENrio 16 Digital Input block
- **E-201 Module**
OPENrio 16 Digital Output block
- **E-202 Module**
OPENrio 4 x 2A Digital Output block
- **E-501 Module**
OPENrio 2 Analog Input and 2 Analog Output block



Main Features

- 4:3 12.1" Fanless Panel Computer
- Intel® Atom™ D425, Low-Power Consumption CPU
- DDR3 1GB/3 x GbE/2nd display-VGA/Line-out/MIC-in/PS2 KB/MS
- USB x 2/1 x PCI slot/1 x CF/2 x RS232/1 x RS232/422/485
- IP65 Compliant Front Panel
- Mounting Support: Panel/Wall/Stand/VESA 75mm x 75mm, 100mm x 100mm

Product Overview

Incorporated a 12.1" 4:3 LCD panel with resolutions up to 800 x 600 (SVGA) and 370 nits brightness, industrial motherboard for diverse industrial applications, the factory automation fanless Panel PC FPPC 1220 utilizes Atom™ D425 processor. The IP65 compliant front panel can be offered for automation machine applications.

The FPPC 1220 Panel PC has 3 GbE LAN, 3 x COMs, 2 x USB, PS2 KB/MS, and Line-out/MIC-in. With a VGA port, FPPC series can hook 2nd display delivering different content.

Specifications

Panel

- LCD Size: 12.1", 4:3
- Resolution: SVGA 800x600
- Luminance: 370cd/m²
- Contrast ratio: 450
- Viewing angle: 50(U), 60(D), 70(L), 70(R)
- Backlight: CCFL

System

- CPU: Intel® Atom™ D425, 1.8GHz
- BIOS: AMI BIOS
- System chipset: Intel® ICH8M
- System memory: 1 x 204-pin DDR3 SO-DIMM socket, 1G DDR3 (Default)
- Support up to 2GB DDR3 800, non-ECC and un-buffered
- SSD: one external locked CF socket by IDE support Type I/II compact Flash card
- Watchdog timer: Watchdog timeout can be programmable by software from 1 second to 255 seconds and from 1 minute to 255 minutes (Tolerance 15% under room temperature 25°C)
- H/W status monitor: monitoring system temperature and voltage
- Expansion: 1 x PCI slot
- NEXCOM Xcare™ platform system management supported

Rear I/O

- COM #1: RS232
- COM #2: RS232
- COM #3: RS232/422/485
- Ethernet: 3 x RJ45

- 2nd display VGA port: 1 x DB15
- Audio port: 1 x Line out; 1 x MIC-in
- USB: 2 x USB 2.0
- PS2 keyboard/mouse

Audio

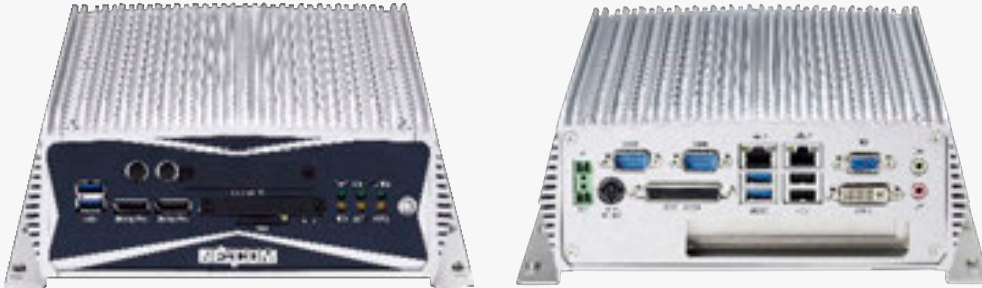
- AC97 codec: Realtek ALC888
- Audio interface: Line out/MIC-in Audio Jack

Ethernet

- LAN chip: 3 x Realtek 8111L Gigabit LAN
- Ethernet interface: 10/100/1000 Based-Tx Ethernet compatible

Mechanical & Environment

- IP protection: IP65 front
- Mounting: panel/wall/stand/VESA 75mm x 75mm; 100mm x 100mm
- Power input: 24VDC
- Vibration:
 - IEC 68 2-64 (w/HDD)
 - 0.5Grms @sine, 5~500Hz, 1hr/axis (HDD operating)
 - 2.2Grms @ random condition, 5~500Hz, 0.5hr/axis (non-operating)
- Shock:
 - IEC 68 2-27
- HDD: 20G@wall mount, half sine, 11ms
- Operating temperature: -5°C to 50°C
- Storage temperature: -20°C to 75°C
- Operating humidity: 10% to 90% relative humidity, non-condensing



Main Features

- Support 3rd generation Intel® Core™ i5-3610 processor with Intel® QM77 PCH
- EtherCAT technology with NexECM, Class B EtherCAT Master, and RTX2012
- EtherCAT communication cycle up to 250 μ s
- Support CoE protocol
- Support high-level API for CiA 402 profile
- Support DC (Distributed Clocks) technology
- Build-in full function EtherCAT application configurator, NexCAT
- Management of real time task SDK
- I/O access API for Windows user mode and RTX subsystem

Product Overview

NET3600E-ECM is an open real-time EtherCAT controller over Windows real-time extension, RTX, allowing integrating users' algorithm and I/O control with communication cycle up to 250 μ s. Not only does NET3600E-ECM support CoE protocol, but provide advanced API for CiA 402 profile, enabling seamless integration with servo drivers. Distributed Clocks function support allows synchronization of all slave modules. In addition, NET3600E-ECM offers comprehensive and easy-to-use application configurator, NexCAT, for system development and debugging to speed up development period.

Specifications

System

- Intel® Core™ i5-3610ME processor pre-installed
- 1 x 4GB DDR3 SDRAM, pre-installed
- 160GB or above HDD pre-installed
- 1 x EtherCAT port (Intel® 82574L)
- 1 x Intel® GbE LAN port
- 2 x Display Ports and 1 x VGA or 2 x Display Ports and 1 x DVI-D
- 4 x USB 3.0 & 2 x USB 2.0 ports
- 1 x CFast socket
- 5 x RS232 & 1 x RS232/422/485 with Auto Flow Control
- One PCIe x4 slot (10W max. per slot)
 - 169mm max. with HDD installed
 - 240mm max. without HDD installed

Pre-installed Software Package

- Operating System: Windows Embedded Standard 7
- Windows Extension: RTX 2012
- EtherCAT Master: NexECM
- EtherCAT Configurator: NexCAT

Power Requirements

- DC input range: +9 to 30VDC input

Dimensions

- 216mm (W) x 270mm (D) x 93mm (H)

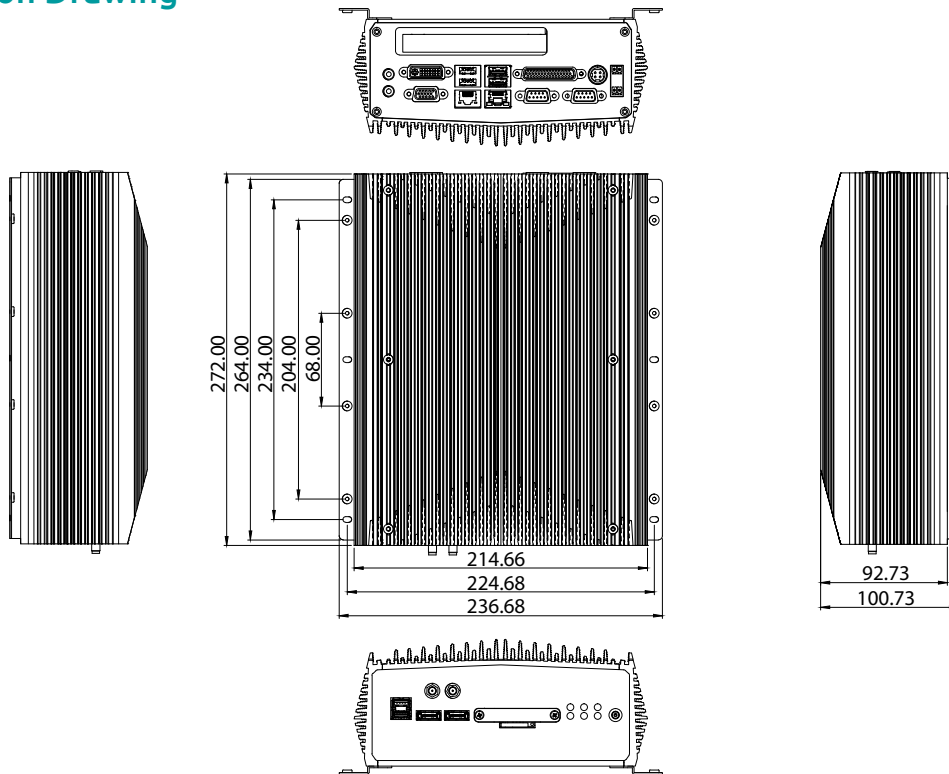
Environment

- 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 80°C
- Relative humidity: 10% to 93% (non-condensing)
- Shock protection: 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

Certifications

- CE
- FCC Class A

Dimension Drawing



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

EtherCAT Controller

- ♦ **NET3600E-ECM (P/N: 10J10360002X0)**
High performance EtherCAT controller with NexECM and RTX

Remote I/O Board

- ♦ **AXE-9200 (P/N: 10J40920000X0)**
Remote I/O module with 16-CH digital input and 16-CH digital output



Main Features

- Compact and powerful PC-based motion controller with real-time engine.
- Follow the IEC 61131-3, EtherCAT and PLCOpen standards.
- Integrated HMI.
- Support the EtherCAT, PROFINET, EtherNet/IP, Modbus/TCP and SERCOS protocols.
- Onboard Intel® Atom™ dual core D2550 processor, 1.86 GHz
- 1x 204-pin DDR3 SO-DIMM socket, 2GB DDR3 (Default), support up to 4GB DDR3-800/1066, non-ECC and Un-buffered
- Dual Intel® 82574L GbE LAN ports
- 2x RS-232/422/485 and 2x RS-232

Product Overview

Powered by Intel® Atom™ Dual Core D2550 1.86GHz and NM10 PCH, NET104-CDS has higher graphic and computing performance, but 3 Watts less power consumption compared with previous Atom™ platform! With performance enhance, NET104-CDS still follow NISE guideline with fanless and cables-less concept housed in a compact chassis, 185mm (W) x 131mm (D) x 54mm (H). The NET104-CDS 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.

With pre-installed CODESYS SoftMotion/SoftMotion CNC, the NET104-CDS performs as a powerful motion controller. Base on the IEC 61131-3, EtherCAT protocol, PLCOpen and runtime engine, the NET104-CDS can easily connect to the drives and distributed I/Os to control the motors with complex motion algorithm in real-time performance. From large scale of control systems to individual machineries, the NET104-CDS is the ideal solution for multi-axes applications, such as packaging machinery, conveyor, robotics and so on.

Specifications

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 28VDC input
- 1 x external screwed type CFast socket

Device

- 1x 2.5" 16GB SSD
- 1 x External CFast Socket
- 1 x Mini-PCIe socket (support optional Wi-Fi or 3.5G module)

Power Requirements

- Support +10 to 28VDC input
- 1 x optional 12V, 60W power adapter

Dimensions

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

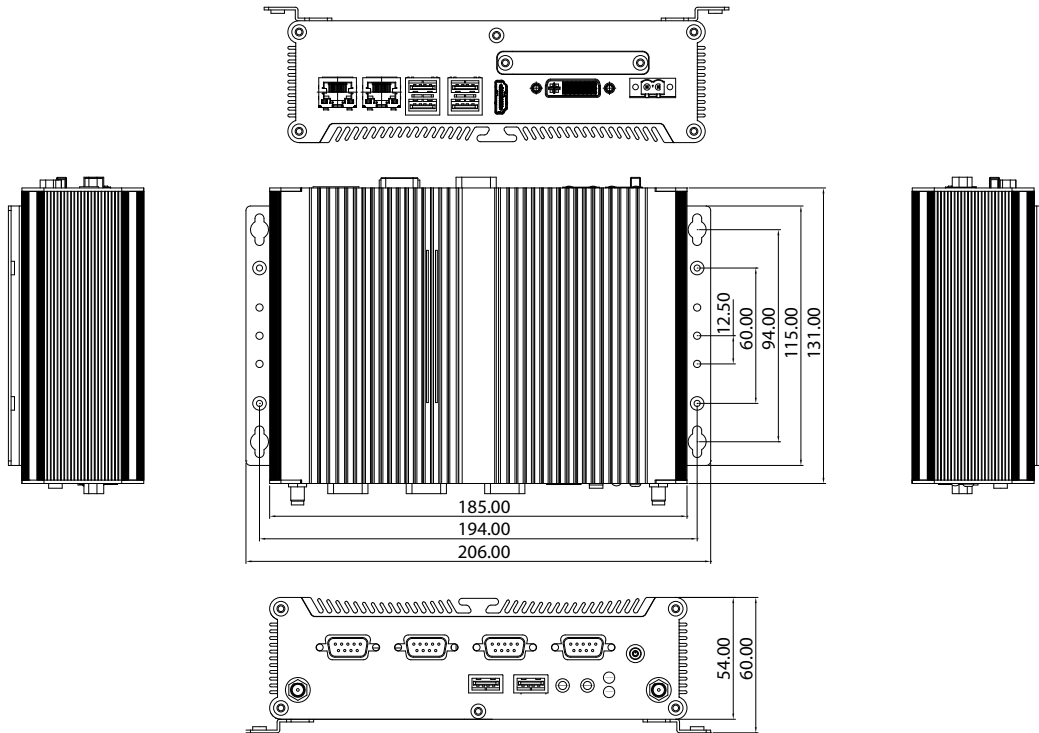
Construction

- Aluminum chassis with fanless design

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

Dimension Drawing



- 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

Certifications

- CE approval
- FCC Class A
- UL

OS Support List

- windows XP 32bits/64bits
- Windows 7 32bits/64bits
- WinCE 7.0
- Andriod 4.0

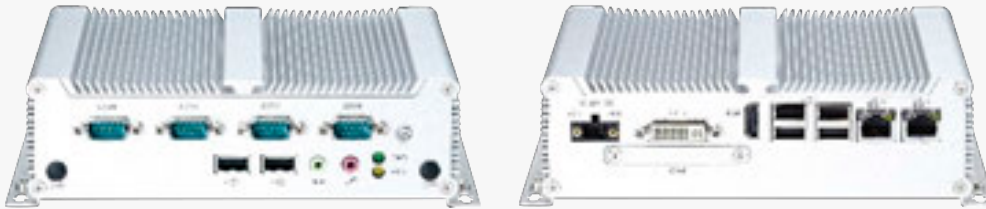
Software List

- CODESYS SoftMotion V3.5
- CODESYS SoftMotion CNC V3.5

Ordering Information

Barebone

- **NET104-CDS (P/N: TBD)**
Compact SoftMotion/CNC Controller
- **12V, 60W AC/DC power adapter w/ o power cord**
(P/N: 7400060018X00)



Main Features

- OnBoard Intel® Atom™ Dual Core D2550 processor, 1.86GHz
- EtherCAT technology with NexECM, Class B EtherCAT Master, and RTX2012
- 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, NexCAT
- 2 x RS232/422/485 and 2 x RS232
- 6 x USB 2.0
- 1 x external CFast socket
- 1 x Mini-PCle with two antenna holes

Product Overview

Powered by Intel® Atom™ Dual Core D2550 1.86GHz and NM10 PCH, NET104-ECM has higher graphic and computing performance, but less power consumption! With performance enhance, NET104-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 NET104-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-PCle socket for optional wireless module connection, either Wi-Fi or 3.5G module.

NET104-ECM's support for +10 to 28VDC input enhances its reliability in different power condition in factory automation or machinery automation. NET104-ECM offers comprehensive and easy-to-use application configurator, NexCAT, for system development and debugging to speed up development period.

Specifications

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 28VDC input
- 1 x external screwed type CFast socket

Device

- 1 x 2.5" HDD driver bay
- 1 x External CFast Socket
- 1 x Mini-PCle socket (support optional Wi-Fi or 3.5G module)

Power Requirements

- Support +10 to 28VDC input
- 1 x optional 12V, 60W power adapter

Pre-installed Software Package

- Operating System: Windows Embedded Standard 7
- Windows Extension: RTX 2012
- EtherCAT Master: NexECM
- EtherCAT Configurator: NexCAT

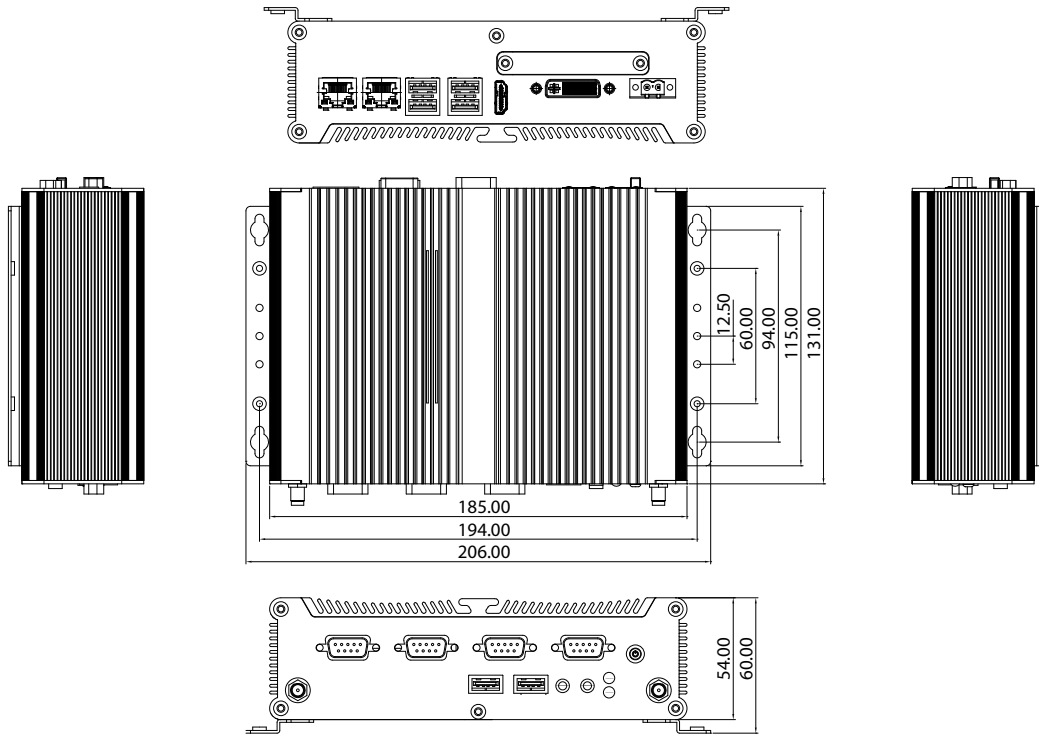
Dimensions

- 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)

Dimension Drawing



- 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

Certifications

- CE approval
- FCC Class A
- UL

Ordering Information

EtherCAT Controller

- **NET104-ECM (P/N: 10J10010400X0)**
Compact EtherCAT controller
- **12V, 60W AC/DC power adapter w/ o power cord (P/N: 7400060018X00)**
- **Remote I/O**
AXE-9200 (P/N: 10J40920000X0)
Remote I/O module with 16-CH digital input and 16-CH digital output

EtherCAT Support Table

Feature Name	Short Description	NexECMRtx
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 routines 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	√
Distributed Clocks		
DC	Support of Distributed Clock	√



Main Features

- Support Intel® Core™ 2 Duo/Celeron® processor
- EtherCAT technology with NexECM, Class B EtherCAT Master, and RTX2012
- 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, NexCAT
- Dual VGA or VGA/DVI Independent Display
- 3 x RS232 and 1 x RS232/422/485 with Auto Direction Control
- One external locked CF socket
- OnBoard DC to DC power design to support +16 to 30VDC power input

Product Overview

Utilizing the Intel® GM45 chipsets, NET3140P2E-ECM is highly scalable supporting a wide variety of Intel® Core™ 2 Duo and Celeron® processors. With pre-installed NexECM EtherCAT master software, NET3140P2E-ECM delivers exceptional performance with notable stability. NET3140P2E-ECM supports dual independent displays through 2 x VGA, DVI or LVDS outputs. Housed in a robust aluminum chassis, its fanless design offers noise-free, ultra reliable operating in the demanding industrial environment. NET3140P2E-ECM offers comprehensive and easy-to-use application configurator, NexCAT, for system development and debugging to speed up development period.

Specifications

Main Board

- NISB 3140
- Support Intel® Core™ 2 Duo Processor P8400 (3M Cache, 2.26GHz, 1066MHz FSB)
- Support Intel® Celeron® Processor 575 (1M Cache, 2.00GHz, 667MHz FSB)

Main Memory

- 2 x 240-pin DIMM, up to 4GB DDR3 800/1066MHz SDRAM, un-buffered and non-ECC

Chipset

- Intel® GM45 Graphics and Memory Controller Hub
- Featuring the Mobile Intel® Graphics Media Accelerator 4500MHD
- Intel® 82801IBM (ICH9M) I/O Controller Hub

I/O Interface-Front

- ATX power on/off switch
- HDD Access/Power status LEDs
- 1 x Front Access CF Card Socket
- 2 x USB 2.0 ports

I/O Interface-Rear

- 2-pin Remote Power on/off switch
- +16 to 30VDC input
- 1 x PS/2 for Keyboard/Mouse
- 1 x DB25 Parallel Port (Optional GPIO or LVDS interface)
- 1 x DB44 Serial Port for 4 x RS232

- (COM2: RS232/422/485 with Auto Flow Control)
- 2 x GbE LAN ports (support WoL & LAN teaming)
- 4 x USB 2.0 ports
- 1 x DB15 VGA port
- 1 x DVI-I Port (DVI-D + VGA)
- 1 x Line-out and 1 x Mic-in

Device

- 1 x 2.5" SATA HDD drive bay
- 1 x external locked CF card socket
- Optional power adapter

Pre-installed Software Package

- Operating System: Windows Embedded Standard 7
- Windows Extension: RTX 2012
- EtherCAT Master: NexECM
- EtherCAT Configurator: NexCAT

Expansion

- Add-on card length support:
Max. 169mm x1 and 240mm x1 (with 2.5" HDD installed)
Max. 240mm x2 (without 2.5" HDD installed)

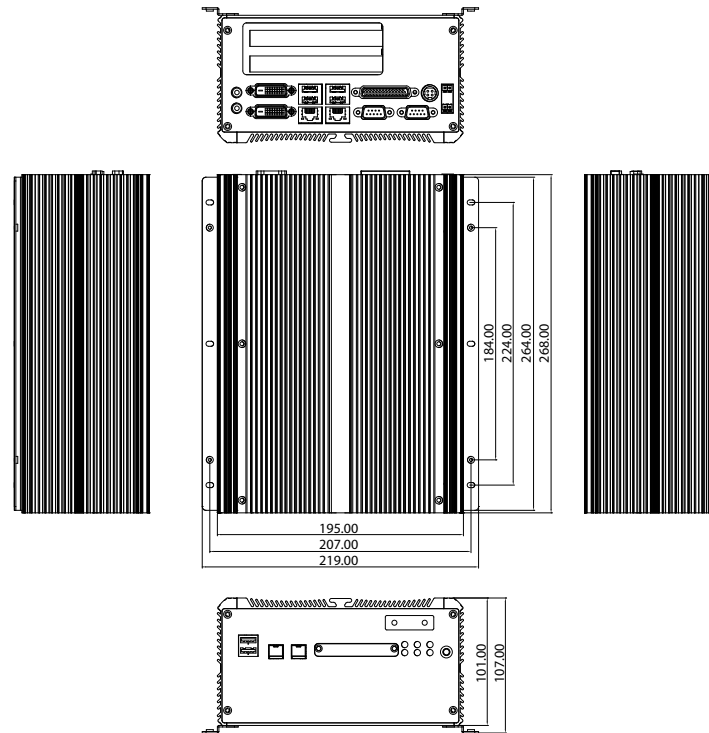
Power Requirements

- ATX power mode
- OnBoard DC to DC power support from +16 to 30VDC

Dimensions

- 195mm (W) x 268mm (D) x 101mm (H) (7.7" x 10.5" x 3.98")

Dimension Drawing



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
 - CF: 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

Certifications

- CE approval
- FCC Class B

Ordering Information

EtherCAT Controller

- **NET3140P2E-ECM (P/N: 10J10314000X0)**
EtherCAT Controller with PCI and PCIe Expansion Slots
- **19V, 120W AC/DC power adapter w/ o power cord**
(P/N: 7410120002X00)

Remote I/O

- **AXE-9200 (P/N: 10J40920000X0)**
Remote I/O module with 16-CH digital input and 16-CH digital output

EtherCAT Support Table

Feature Name	Short Description	NexECMRtx
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 routines 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	√
Distributed Clocks		
DC	Support of Distributed Clock	√



Main Features

- Support Intel® Core™ i7/i5 socket processor
- EtherCAT technology with NexECM, Class B EtherCAT Master, and RTX2012
- EtherCAT communication cycle up to 250 μ s
- Support CoE protocol
- Support high-level API for CiA 402 profile
- Build-in full function EtherCAT application configurator, NexCAT
- 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 30VDC power input; Support ATX power mode

Product Overview

Utilizing 32nm Intel® Core™ i7/i5 processor, NET3500ECM 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, NET3500-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. NET3500-ECM is designed for a broad range of applications which demand an EtherCAT controller to handle advanced motion & I/O control.

Specifications

Main Board

- NISB 3500
- OnBoard Mobile Intel® QM57 Platform Controller Hub
- Support Intel® Core™ i7-620M PGA Processor (2.66GHz, 4M Cache)
- Support Intel® Core™ i5-520M PGA Processor (2.4GHz, 3M Cache)
- Support Intel® P4500 PGA Processor (1.86GHz, 2M Cache)

Main Memory

- 2 x 240-pin memory DIMM, up to 4GB DDR3 800/1066MHz SDRAM, un-buffered and non-ECC

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 30VDC 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

Pre-installed Software Package

- Operating System: Windows Embedded Standard 7
- Windows Extension: RTX 2012
- EtherCAT Master: NexECM
- EtherCAT Configurator: NexCAT

Device

- 1 x 2.5" HDD driver bay

Expansion

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

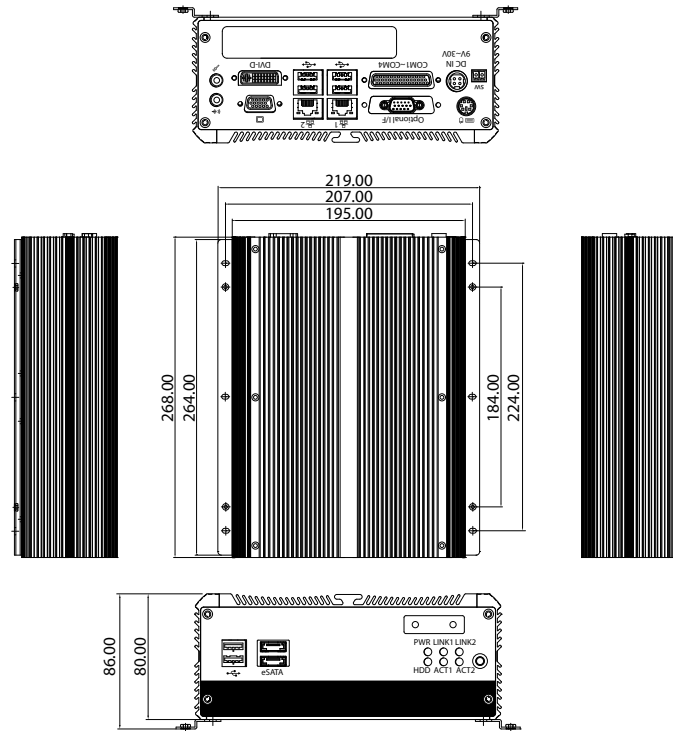
Power Requirements

- ATX power mode
- OnBoard DC to DC power support from +9 to 30VDC
- Optional power adapter

Dimensions

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

Dimension Drawing



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 w/ HDD Condition
 - Random: 0.5Grms @ 5 ~ 500Hz according to IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5 ~ 500Hz according to IEC60068-2-6

Certifications

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

Ordering Information

EtherCAT Controller

- **NET3500ECM (P/N: 10J10350000X0)**
EtherCAT Controller with one PCI Expansion Slot
- **19V, 120W AC/DC Power Adapter w/ o power core**
(P/N: 7410120002X00)

Remote I/O

- **AXE-9200 (P/N: 10J40920000X0)**
Remote I/O module with 16-CH digital input and 16-CH digital output

EtherCAT Support Table

Feature Name	Short Description	NexECMRtx
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 routines 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	√
Distributed Clocks		
DC	Support of Distributed Clock	√



Main Features

- 4-axis independent control and pulse output up to 8Mpps
- Pulse output options: CW/ CCW, OUT/DIR
- 4x differential encoder interface, ABZ phase
- EtherCAT slave protocol communication
- Support CiA 402 device profile
- General purpose I/O: 12 DI and 3 DO

Product Overview

AXE-5904 is a 4-axis pulse type point-to-point motion EtherCAT slave module, featuring real-time EtherCAT communication and CiA 402 device profile for machine automation applications requiring high-speed and point-to-points function. With pulse type commands, AXE-5904 supports pulse output rate up to 8MHz and encoder input up to 8MHz in 4 x AB phase mode and build-in dedicated I/O points for servo control and mechanism to facilitate building up whole machines.

Specifications

Pulse Type Motion Control

- Number of axes: 4
- Pulse output rate: up to 8pps
- Pulse command output: CW/ CCW, OUT/DIR, ABZ Phase
- Committed I/O Signal: \pm LIM/ \pm CMP/ORG/SVON/RDY/INP/ALM/ALMCLR/DCLR for each axis

Encoder Input

- Encoder input type: Incremental, 32-bit
- Encoder signal: CW/ CCW, AB/Z
- Positioning Range: -2,147,483,648 through 2,147,483,647 pulse (32-bit)
- Max. input frequency: 8MHz

General I/O

- General-purpose input: 3 channel per axis
- Input type: photo-coupler input (corresponding to current sink output)
- Response time of DI (Max.): 100 μ sec
- General-purpose output: 2 channel per axis
- Response time of DO (Max.): 100 μ sec

Power Requirements

- DC input range: DC 24V \pm 10% with over-voltage and reversed-voltage protection

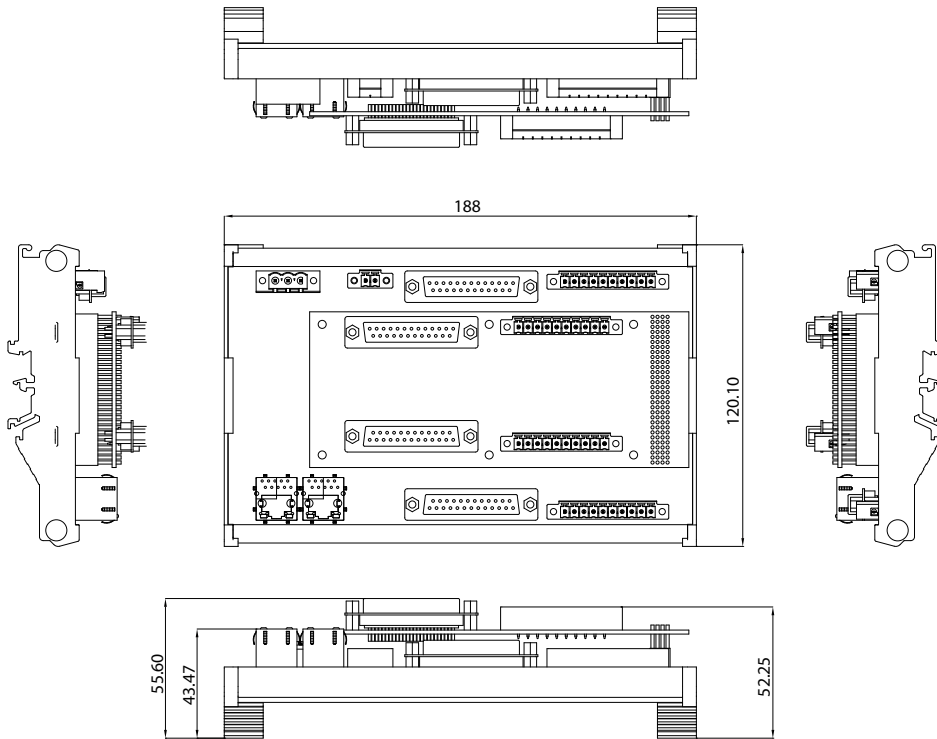
Common Section

- Data transfer medium: Ethernet cable (min CAT 5), shield
- Bus interface: 2x RJ-45
- Data transfer rate: 100M baud
- Protocol: EtherCAT
- Device profile: CiA 402
- Operating temperature: 0°C to 50°C
- Relative humidity:
 - 35~85%, non-condensation, operating
 - 10~90%, non-condensation, non-operating
- Shock: IEC 60068 2-27
- Vibration: IEC 60068 2-64
- Enclosure type rating: IP00
- Mounting type: DIN-rail
- Dimension (mm): 107(W) x 185(L) x 64(H)

Certifications

- CE
- FCC Class A

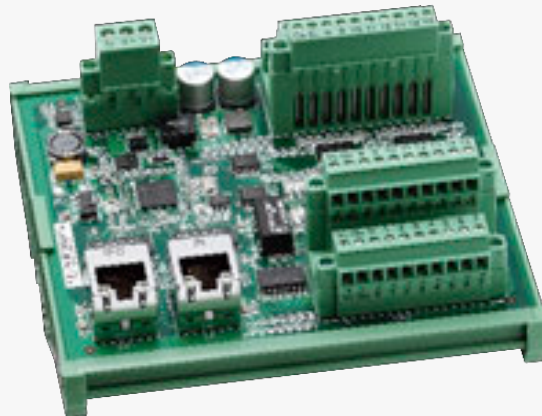
Dimension Drawing



Ordering Information

Motion Controller

- **AXE-5904 (P/N: TBD)**
Point-to-point 4-axis pulse type motion EtherCAT Slave Module



Main Features

- High density I/O module
- Multi-functional digital input/output
- High-performance EtherCAT communication
- Support bipolar (sinking and sourcing) input
- Quick and easy installation
- Configuration free

Product Overview

AXE-9200 is a 16ch Digital Input a 16ch Digital Output Module with EtherCAT Protocol for distributed industrial application. Multi-functional I/O, daisy chain cabling, configuration free make the users easy to install and maintain. Base on the EtherCAT technology, it enhances the performance for machinery and factory applications.

Specifications

Digital Input (Bold type)

- Number of channels: 16
- Input type: 24VDC, bipolar photo coupler (sinking/sourcing), 1-wire
- "0" voltage: 0-5VDC
- "1" voltage: 15-30VDC
- Input current: 3mA
- Input filter: 3ms

Digital Output:

- Number of channels: 16
- Output type: 24VDC, Sinking, 1-wire
- On-state current: 200mA/ch
- On-state voltage drop: Maximum 0.2VDC
- Output signal delay:
- Off to on: 50μsec
- On to off: 200μsec

Power Requirements

- DC input range: DC 24V ±10% with over-voltage and reversed-voltage protection

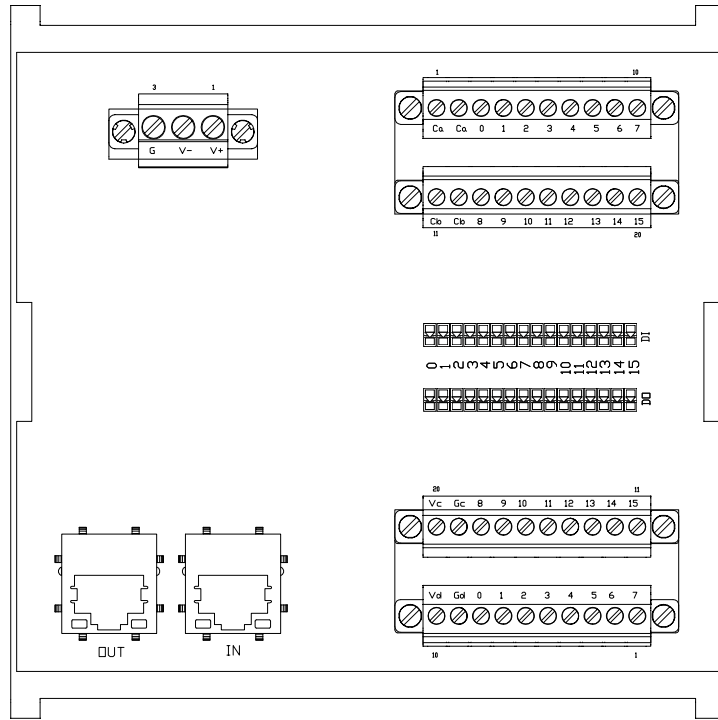
Common Section

- Data transfer medium: Ethernet cable (min CAT 5), shield
- Bus interface: 2x RJ-45
- Data transfer rate: 100M baud
- Protocol: EtherCAT
- Operating temperature: 0°C to 55°C
- Relative humidity: 10~90%, non-condensation, non-operating
- Shock: IEC 68 2-27
- Vibration: IEC 68 2-64
- Enclosure type rating: IP00
- Mounting type: DIN-rail
- Shock: IEC 68 2-27
- Vibration: IEC 68 2-64
- Dimension (mm): 123(W) x 116(L) x 28.4(H)

Certifications

- CE
- FCC Class A

Dimension Drawing



Ordering Information

Motion Controller

- **AXE-9200 (P/N: 60177B0275X00)**
16ch Digital Input and 16ch Digital Output EtherCAT Slave Module



Main Features

- Support commonly-used industrial robots and general servo systems
- Support various coordinate systems
- Teach, replay and remote control mode
- Forward/backward teach inspection
- On-/off-line robot language editing
- D-H parameter function
- Kinetic parameters function

Product Overview

PAC 1100 series is a compact and open architecture industrial robot controller, providing a mandatory framework to control commonly-used industrial robots, such as articulated robot arms, 4-axis delta robots and SCARA robots. Supporting various coordination systems, storage of positions, on-/off-line robot language editing and different operation modes, PAC 1100 series covers basic requirement of a robot controller. With general analog commands to servo drivers and signals from quadrature encoders, PAC 1100 series supports robots with general servo systems and performs a full-closed loop servo control enabling fast and precise movement. Integrating robot kinematics, logic control and built-in HMI editor, PAC 1100 series realizes fast solution building up, ideally suited for robot manufacturers and users with highly customization requirements and research organization.

Specifications

System

- CPU: Intel® Atom™ N455 processor
- RAM: 4G
- 2 x Realtek 10/100M LAN
- 2 x USB 2.0 ports
- 1 x RS232 COM port
- 1 x VGA & 1 x specialized HMI connector
- 1 x PS/2 connector
- Windows CE 6.0 pre-installed

Robot Control Feature

- Full-closed loop servo motors control up to 4/8 axes
- Teach, replay and remote control mode
- Forward/backward teach inspection
- Support Joint-Space PTP, PTP and linear motion in Cartesian space, and arc CP command
- Various coordinate system support, joint coordinate system, the base coordinate system, the tool coordinate system, the world coordinate system, the workpiece coordinate system
- On-/off-line robot language editing
- Support D-H parameter function
- Kinematics parameter setting
- Simulation operation function

- Real-time Control Loop: 200μs

General I/O

- Terminal board: uncommitted DI/O up to 16-channel DI and 16-channel DO

Power Requirements

- DC input range: +24VDC input

Dimensions

- System: 296mm (H) x 75mm (W) x 160mm (D)

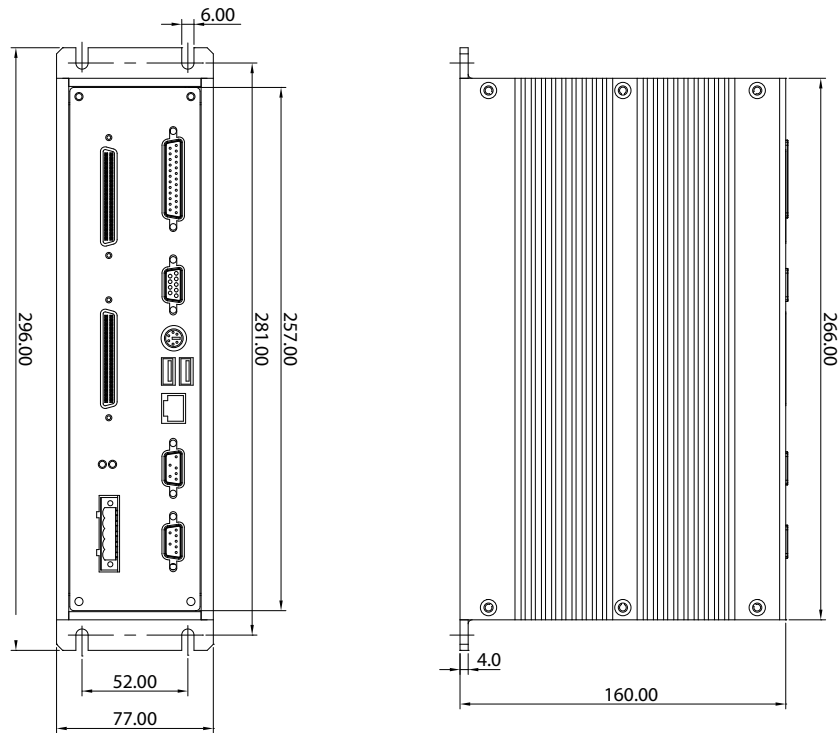
Environment

- Operating temperature: 0°C to 55°C
- Relative humidity: 5% to 90% (non-condensing)

Teach Pendant

- 6.5" color TFT backlit LCD display
- Resolution: 640 x 480
- Support touch panel function
- Function button: emergency stop, teaching start, pause, mode rotation (55 action buttons with numeric keys)
- DC input range: +24VDC input
- Dimensions: 392.8mm(H) x 226mm (W) x 82mm (D)

Dimension Drawing



Ordering Information

Robot Controller

- ♦ **PAC 1100-RAA**
Unified Industrial Robot Controller for 6-axis articulated robot arms
- ♦ **PAC 1100-RDL**
Unified Industrial Robot Controller for 4-axis delta robots
- ♦ **PAC 1100-RSC**
Unified Industrial Robot Controller for SCARA robots

Optional Accessories

- ♦ **GRP 2000-II**
6.5" industrial robot teach pendant



Main Features

- Dedicated motion control DI/O for every single axis
- 32 channels digital inputs and 32 channels digital outputs
- Support E-CAM, E-Gear, PT and PVT control
- Support Standalone Procedure Access up to 32 tasks
- 2 x USB 3.0 & 2 x USB 2.0
- 4 x Intel® GbE LAN Ports
- 1 x CFast socket
- Triple individual display
- Support +24VDC power input
- 2 x RS232/422/485 with Auto Flow Control
- One PCIe4, two PCI expansion slots (MAC4000P4E-GTP only)

Product Overview

MAC4000P4E-GTS series is a coordinated motion controller, featuring T/S-Curve, PT (Position-Time profiling), E-Gear and E-CAM functions for machine automation applications requiring more accuracy and excellent performance. Equipped with uncommitted DI/O up to 32 channels DI and 32 channels DO in total, MAC4000P4E-GTS series reduces the number of add-on cards and thus reduces the controller size. When working on machine vision applications, data from industrial cameras can be transmitted via GbE LAN ports, USB 3.0 ports or add-on cards depending on the interfaces of the camera. MAC4000P4E-GTS series is designed for modern machine automation applications and ensures the shortest integration and development period.

Specifications

System

- CPU:
 - Support 3rd generation Intel® Core™ i5-3610ME (2.7 GHz, 3M Cache)
 - Support 3rd generation Intel® Core™ i3-3120ME (2.4 GHz, 3M Cache)
- Up to 8GB DDR3 1333 un-buffered and non-ECC SDRAM
- 4 x Intel® GbE LAN ports
- 2 x USB 2.0 ports & 2 x USB 3.0 ports
- 2 x RS232/422/485 with Auto Flow Control
- 1 x VGA & 1 x DVI-I, triple independent display supported
- 1 x PS/2 connector
- 1 x Speaker-out and 1 x Mic-in
- ATX power on/off switch & remote power on/off switch

Motion Control

- $\pm 10V$ 16-bit control output with 4 x AB phase encoder input
- Dedicated HOME, LIMITs and ALARM for every single axis
- Dedicated SVON and Clear for every single axis
- Intelligent look-ahead trajectory planning
- Support PID plus feed forward gain control (PID+vff+Aff)
- Support E-CAM, E-Gear, PT and PVT control
- Support Standalone Procedure Access up to 32 tasks

General I/O

- System: Uncommitted DI/O up to 16-channel DI and 16-channel DO
- Terminal board: Uncommitted DI/O up to 16-channel DI and 16-channel DO
- Optional remote I/O
 - Digital I/O modules: AXE-9200

Power Requirements

- DC input range: +24VDC input

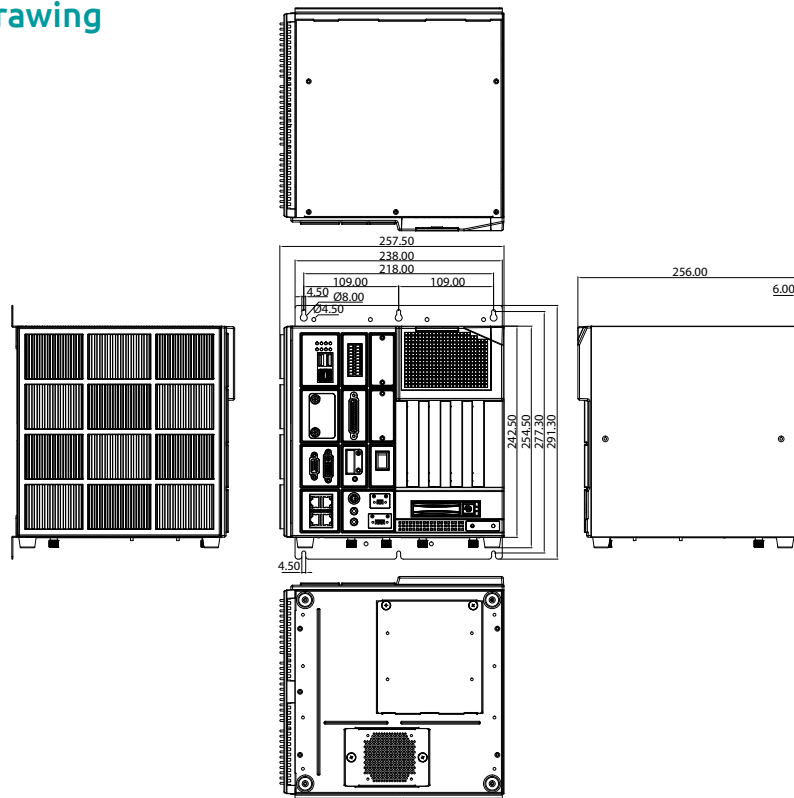
Environment

- Operating temperature:
 - Ambient with air flow: 0°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: 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

Certifications

- CE
- FCC Class A

Dimension Drawing



Ordering Information

Motion Controller

- **MAC4000P4E-GTS (P/N:10J30400003X0)**
Expandable 4-axis motion controller for coordinated application, with 3rd generation Intel® Core™ processor family, Please note that 1 PCI slot is occupied by the motion controller
- **MAC4000P4E-GTS8 (P/N:10J30400004X0)**
Expandable 8-axis motion controller for coordinated application, with 3rd generation Intel® Core™ processor family, Please note that 2 PCI slots are occupied by the motion controller

Optional Accessory

- **AXE-9200 (P/N: 60177B0275X00)**
16ch Digital Input and 16ch Digital Output EtherCAT Slave Module



Main Features

- Onboard Intel® Atom™ processor E3845 Quad core, 1.91GHz
- Dual independent display from DVI-I and HDMI
- 2 x Intel® I210IT GbE LAN ports support WoL, Teaming and PXE
- 4 x RS232 & 2 x RS422/485 with auto flow control
- 4 x USB 2.0 & 1 x USB 3.0
- 2 x Mini-PCIe socket for optional mSATA/Wi-Fi/4G LTE/3.5G
- Support -20 to 70 degree Celsius extended operating temperature
- Support 9-30V DC input

Product Overview

Powered by Intel® Atom™ Bay Trail Quad core processor E3845, 1.91GHz. Driven by the latest Dual Core Intel® Atom™ processor, NISE 2420 can provide excellent computing power and is more power-efficient than the platforms based on the previous generation Intel® Atom™ product family.

NISE 2420 supports up to 8G DDR3L memory and have several options on storage devices like C-Fast, HDD, SSD or mSATA . The NISE 2420 comes with 1 x HDMI, 1 x DVI-I, 2 x Gigabit LAN ports, 2x COM port with RS232/422/485 and 5x USB ports including one USB 3.0. NISE 2420 supports 9 ~ 30V DC input, and can be operated in an extended operating temperature range from -20 to 70 degrees Celsius. This Fanless system supports two Mini-PCIe modules, which can be an excellent platform for IOT applications (with optional GbE LAN, Wi-Fi, 3.5G/4G LTE module) and factory automation applications with optional fieldbus module expansion versatility makes NISE 2420 a perfect platform for factory automation and M2M intelligent computing applications.

Specifications

CPU Support

- Onboard Intel® Atom™ E3845 Quad core, 1.91GHz
- Support Intel® Atom™ E3800 processor family from single core E3815, dual core E3825/E3826/E3827 and quad core E3845 with difference SKUs

Main Memory

- 2 x DDR3L SO-DIMM socket, support DDR3L 1066/1333 8GB RAM max., un-buffered and non-ECC

Display Option

- Dual independent display
 - HDMI and DVI-D
 - HDMI and VGA (via DVI-I connector)

Front I/O Interface

- ATX power on/off switch
- 1 x Power Status, 1 x HDD access, 1 x battery low, 4 x programming LEDs, 4 x Tx/Rx LEDs, 2 x LAN LEDs
- 2 x DB9 RS232 for COM1 & COM2
- 1 x External CFast socket
- 1 x SIM card holder
- 1 x USB 3.0 (900mA Max.)
- 1 x Mic-in & 1 x Line-out
- 2 x antenna holes for optional Wi-Fi/3.5G antenna

I/O Interface - Rear

- 4 x USB 2.0
- 1 x DVI-I display output
- 1 x HDMI display output
- 1 x remote power on/off switch
- 2 x Intel® I210IT GbE LAN ports, support wake on LAN, Teaming and PXE
- 2 x DB9 for COM3 & COM4, both support RS232/422/485 with auto flow control
 - Jumper-free setting on RS232/422/485
- 1 x 3-pin DC input, support +9 to 30VDC input

I/O Interface - Internal

- 4 x GPI and 4 GPO (5V, TTL Type)

Storage Device

- 1 x CFast card socket (SATA 2.0)
- 1 x 2.5" HDD space (SATA 2.0)
- 1 x mSATA from miniPCI socket if SATA HDD is not installed

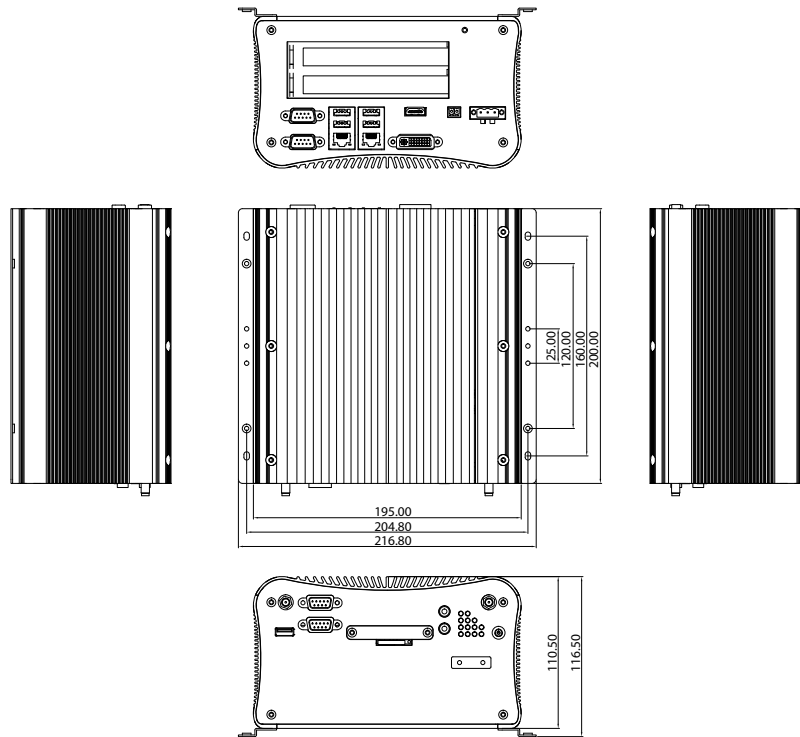
Expansion Slot

- 2 x Mini-PCIe socket for optional Wi-Fi/4G LTE/3.5G
- NISE 2420: Two PCI Expansion
 - Add-on card length: 176mm max.
 - Power consumption: 10W/ slot max.

Power Requirement

- Power input: +9Vdc to +30Vdc
- 1 x optional 24V, 60W power adapter

Dimension Drawing



Dimensions

- 195mm (W) x 200mm (D) x 111mm (H) without wall-mount bracket

Construction

- Aluminum and metal chassis with fanless design

Environment

- Operating Temperature:
Ambient with air flow: -20°C to 70°C
(According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -30°C to 85°C
- Relative humidity: 10% to 95% (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, IEC60068-2-64
Sinusoidal: 0.5Grms @ 5 ~ 500Hz, IEC60068-2-6
- Vibration protection w/ CFast & SSD condition:
Random: 2Grms @ 5 ~ 500Hz, IEC60068-2-64
Sinusoidal: 2Grms @ 5 ~ 500Hz, IEC60068-2-6

Certifications

- CE
- FCC Class A

OS Support Lists

- Windows 8, 32bit/64bit
- Windows Embedded Standard 8, 32bit/64bit
- Windows 7, 32bit/64bit
- Windows Embedded Standard 7, 32bit/64bit
- Linux Kernel version 3.8.0
- Android 4.4, 64bit
- Moon Island

Ordering Information

- **NISE 2420 (P/N: 10J00242000X0)**
Onboard Intel® Atom™ processor E3845 Quad core, 1.91GHz with Two PCI expansion
- **24V 60W AC/DC power adapter w/ o power cord (P/N: 7400060024X00)**



Main Features

- Support Intel® Core™ i7/i5 socket processor
- Mobile Intel® QM57 PCH
- Dual Intel® Gigabit Ethernet ports; Support WoL and PXE
- 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 30VDC power input; Support ATX power mode

Product Overview

Utilizing 32nm Intel® Core™ i7/i5 processor, NISE 3500 series feature 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, NISE 3500 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. NISE 3500M has more features than NISE 3500, for example, it is equipped with 3 x IEEE1394b ports and 1 x HDMI port. NISE 3500 is designed for a broad range of applications which demand intense graphics performance, these include medical diagnostic equipment, medical imaging, data storage, industrial automation, public infotainment, surveillance security applications.

Specifications

Main Board

- NISB 3500
- OnBoard Mobile Intel® QM57 Platform Controller Hub
- Support Intel® Core™ i7-620M PGA Processor (2.66GHz, 4M Cache)
- Support Intel® Core™ i5-520M PGA Processor (2.4GHz, 3M Cache)
- Support Intel® P4500 PGA Processor (1.86GHz, 2M Cache)

Main Memory

- 2 x 240-pin memory DIMM, up to 4GB DDR3 800/1066MHz SDRAM, unbuffered and non-ECC
- Note: Actual memory size is dynamic based on the OS I/O resource allocation

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/off switch
- +9 to 30VDC 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

- 2 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 30VDC
- Optional power adapter

Dimensions

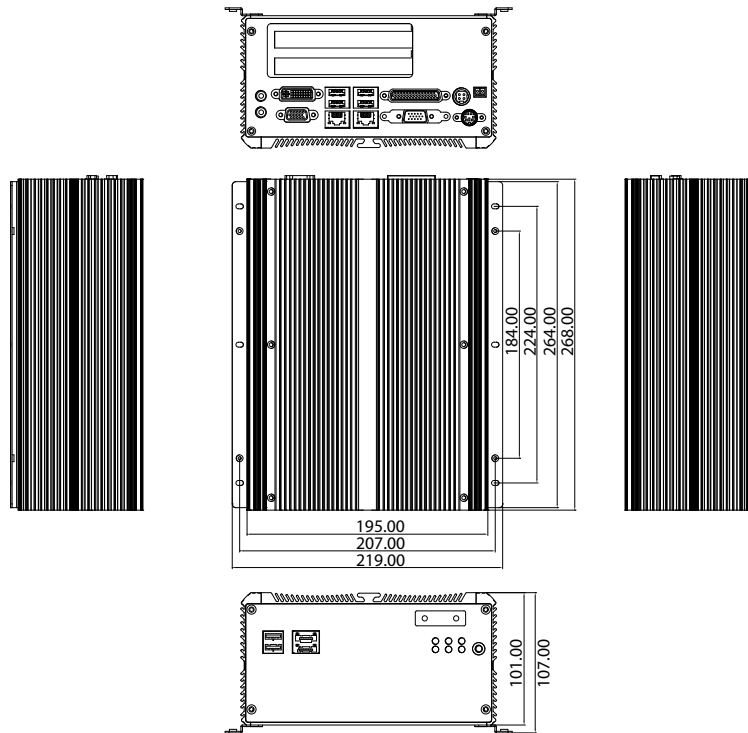
- 195mm (W) x 268mm (D) x 101mm (H) (7.7" x 10.5" x 3.98")

Construction

- Aluminum Chassis with fanless design

Environment

Dimension Drawing



- 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 w/ HDD Condition
 - Random: 0.5Grms @ 5 ~ 500Hz according to IEC60068-2-64
 - Sinusoidal: 0.5Grms @ 5 ~ 500Hz according to IEC60068-2-6

Certifications

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

OS Support Lists

- Windows XP 32bits and 64bits
- Windows 7 32bits and 64bits

Ordering Information

Barebone

- **NISE 3500P2 (P/N: 10J00350002X0) RoHS Compliant**
Intel® Core™ i7/i5 fanless system with two PCI expansion slots
- **NISE 3500P2E (P/N: 10J00350004X0) RoHS Compliant**
Intel® Core™ i7/i5 fanless system with one PCI and one PCIe1 expansion slots (MoQ is required)
- **NISE 3500E2 (P/N: 10J00350005X0) RoHS Compliant**
Intel® Core™ i7/i5 fanless system with two PCIe1 expansion slots (MoQ is required, not in UL model list)
- **NISE 3500P2E4 (P/N: 10J00350017X0) RoHS Compliant**
Intel® Core™ i7/i5 fanless system with one PCI and one PCIe4 expansion slots (MoQ is required, not in UL model list)
- **19V, 120W AC/DC power adapter w/ o power core (P/N: 7410120002X00)**



Main Features

- Support 3rd generation Intel® Core™ i7/i5/i3 rPGA socket type processor
- Mobile Intel® QM77 PCH
- Support 1 x 2.5" SATA HDD or 2 x SATA DOM
- 1 x VGA, 1 x DVI-D and 2 x Display port with Independent Display support
- Dual Intel® GbE LAN ports; Support WoL, teaming & PXE
- 4 x USB 3.0, 2 x USB 2.0, 5 x RS232 and 1 x RS232/422/485
- 1 x internal Mini-PCIe socket support optional Wi-Fi or 3.5G module
- 1 x external CFast socket & 1 x SIM card socket
- Support +9V to 30VDC input; Support ATX power mode
- Two PCI or PCIe4 expansion

Product Overview

Integrated with 3rd generation Intel® Core™ i7/i5/i3 with QM77 PCH platform, NISE series evolve to a new generation called NISE 3600E series. It is not only sustained its good reputation on quality and user friendly features but also innovated its mechanical design.

With computing and graphic performance enhancement, NISE 3600E series supports 2 x display port, 1 x VGA port and 1 x DVI-D port to fulfill the graphic intensive or computing oriented applications, including Auto Optical Inspection, Machinery Automation, ePolice infotainment, Surveillance or Image Processing equipment and Healthcare industry. In addition, NISE 3600E series offers 4 x USB 3.0 and 2 x USB 2.0, greater expansion capability with 2 x Intel® GbE LAN ports, 6 x COM ports, and 1 x external CFast socket for front accessible availability. NISE 3600E series is sufficient to support wide range of DC input from +9 to 30V and ATX power; it is a new generation to meet most application requirements.

Specifications

CPU Support

- Support 3rd generation Intel® Core™ i7/i5/i3 rPGA Socket Type Processor
 - Core™ i7-3632QM, Quad Core, 3.2GHz, 6M Cache
 - Core™ i5-3610ME, Dual Core, 2.7GHz, 3M Cache
 - Core™ i3-3120ME, Dual Core, 2.4GHz, 3M Cache
 - Support Three Independent Display with above processors
- Support 2nd generation Intel® Core™ i5/i3 rPGA Socket Type Processor
 - Core™ i5-2510E, Dual Core, 2.5GHz, 3M Cache
 - Celeron® B810, Dual Core, 1.6GHz, 2M Cache
 - Support Dual Independent Display with above processors

Main Memory

- 2 x DDR3 SO-DIMM socket, supports up to 8GB DDR3/DDR3L 1333/1600 SDRAM, with un-buffered and non-ECC

Display Option

- Three Independent Display (only support on 3rd Generation Processor)
 - Two Display Port and 1 x VGA
 - Two Display Port and 1 x DVI-D
- Dual Independent Display
 - VGA and DVI-D
 - Display Port and VGA

- Display Port and DVI-D
- Display Port and Display Port

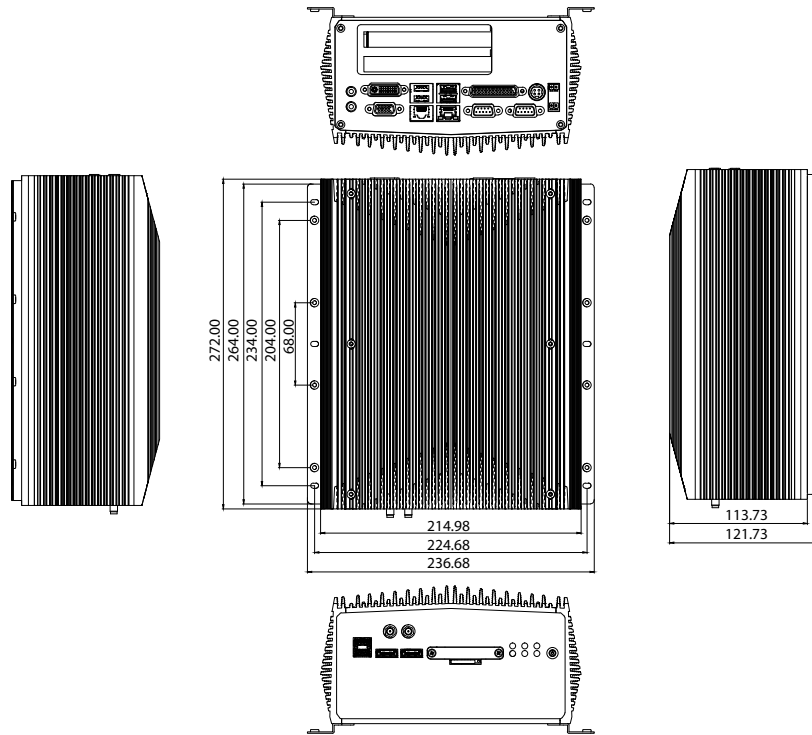
I/O Interface-Front

- ATX power on/off switch
- HDD Access/Power status LEDs
- 2 x USB 3.0 ports (Blue Color)
- 2 x Display Port (Can be converted to DVI-D or HDMI via active cables)
- 2 x Antenna holes
- 1 x external CFast
- 1 x SIM card socket

I/O Interface-Rear

- 2 x DB9 for COM5 & COM6 (RS232)
- 1 x DB44 Serial Port for 4 x COM port
 - COM1/COM3/COM4: RS232
 - COM2: RS232/422/485
- 2 x Intel® GbE LAN ports (Intel® 82574L and 82579LM); Support WoL, teaming and PXE
- 2 x USB 2.0 ports
- 2 x USB 3.0 ports (Blue Color)
- 1 x DB15 VGA port
- 1 x DVI-D port

Dimension Drawing



- 1 x Line-out and 1 x Mic-in
- 2-pin Remote Power on/off switch
- +9V to 30VDC input

Storage Device

- 1 x CFast socket
- 1 x 2.5" SATA HDD or 2 x SATA DOM
- SATA DOM: support 90°C horizontal type only

Expansion Slot

- NISE 3600E2: Two PCIe4 Expansion Slot
 - Add-on card length: One 169mm max. and One 240mm max.
 - Power consumption: 10W/ slot max.
- NISE 3600P2: Two PCI Expansion Slot
 - Add-on card length: One 169mm max. and One 240mm max.
 - Power consumption: 10W/ slot max.
- NISE 3600P2E: One PCIe4 and One PCI Expansion Slot
 - Add-on card length: 169mm max. for PCIe4 and 240mm max. for PCI expansion
 - Power consumption: 10W/ slot max.
- 1 x Mini-PCIe socket (Support optional Wi-Fi or 3.5G module)

Power Requirements

- ATX power mode
- OnBoard DC to DC power support from 9V to 30VDC
- Optional power adapter

Dimensions

- 215mm (W) x 272mm (D) x 114mm (H) without wall mount bracket (8.5" x 10.7" x 4.5")

Construction

- Aluminum Chassis with fanless design

Environment

- Operating temperature:
 - Ambient with air flow: -5°C to 50°C if using Core™ i7-3612QM
 - 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: 95% at 40°C
- 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

Certifications

- CE approval
- FCC Class A
- UL

OS Support Lists

- Windows XP 32bits and 64bits
- Windows 7 32bits and 64bits
- Windows 8.1 32bits and 64bits

Ordering Information

Barebone

- **NISE 3600E (P/N: 10J00360000X0)**
3rd Generation Intel® Core™ i3/i5 rPGA Fanless System with one PCIe4 Expansion
- **NISE 3600E2 (P/N: 10J00360001X2) RoHS Compliant**
3rd Generation Intel® Core™ i5/i3 Fanless System with two PCIe4 Expansion
- **NISE 3600P2 (P/N: 10J00360002X0)**
3rd Generation Intel® Core™ i3/i5 rPGA Fanless System with two PCI Expansion
- **NISE 3600P2E (P/N: 10J00360003X0)**
3rd Generation Intel® Core™ i3/i5 rPGA Fanless System with one PCI Expansion and one PCIe4 Expansion
- **19V, 120W AC/DC power adapter w/ o power core (P/N: 7410120002X00)**



Main Features

- Support 3rd generation Intel® Core™ i3/i5 rPGA socket type processor
- Intel® QM77 PCH
- 2 x USB 3.0 & 2 x USB 2.0
- 4 x Intel® GbE LAN Ports
- 1 x DVI-I & 1 x VGA
- 2 x 2.5KV isolated RS232/422/485
- 1 x CFAST socket
- Four PCI/PCIe expansion slots
- Two Mini-PCIe sockets
- Support +24VDC power input
- Support ATX power mode, WoL and PXE function

Product Overview

Integrated with Intel® 3rd generation Core™ i7 process, NISE 4000P4E offers excellent computing performance. The QM77 PCH provides original USB 3.0, which ensures the high throughput and is suitable for the high bandwidth devices, such as industrial cameras. The four Intel® GbE LAN ports provide high communication bandwidth and can be used to access GbE camera for surveillance and industrial automation projects. NISE 4000P4E provides built-in optical isolated digital input and digital output, 16 channels respectively. The LED indicators can be configured to show the status of the first four digital outputs. Four PCI/PCIe expansion slots and two Mini-PCIe sockets are available, providing the expansion for Fieldbus interface. All built-in I/O connectors of NISE 4000P4E locate at the front panel. It makes the wiring and maintenance easier for typical installation style for factory automation devices. Along with well-proven fanless design experience of NEXCOM which ensures the stability, these make NISE 4000P4E well fitting with the factory automation applications.

Specifications

CPU Support

- Support 3rd generation Intel® Core™ i5/i3 rPGA socket type processor
 - Core™ i5-3610ME, Dual Core, 2.7GHz, 3M Cache
 - Core™ i3-3120ME, Dual Core, 2.4GHz, 3M Cache
 - Support Three Independent Display with above processors
- Intel® QM77 PCH chipset

Main Memory

- 2 x DDR3/DDR3L SO-DIMM sockets, support dual channel up to 8GB, DDR3 1333 SDRAM, un-buffered and non-ECC

Display Option

- Dual independent display
 - VGA
 - DVI-D
- Three independent display
 - VGA
 - VGA (output via optional Y-cable)
 - DVI-D (output via optional Y-cable)

I/O Interface

- ATX power on/off switch
- Power status LED

- HDD/CFAST access LEDs
- RF access LED
- COM ports access LEDs
- 2 x USB 2.0 ports & 2 x USB 3.0 ports
- 2 x 2.5KV isolated RS232/422/485 terminal connector
- 1 x DB44 for 16CH isolated DI and 16CH isolated DO
- 1 x VGA output & 1 x DVI-I output
- 4 x Intel® GbE LAN ports (with Intel® WG82574L & WG82579LM LAN chip)
- 1 x PS/2 connector for keyboard and mouse
- 1 x Mic-in and 1 x Line-out
- 2-pin remote power on/off switch
- 2 x Optional I/O knockout for additional functions

Isolated Digital Input

- 16CH 2.5KV optical isolated Digital Input
- Digital logic levels
 - 0-24V, non-polarity type
 - Input low voltage (L): 0 ~ 1.5V
 - Input high voltage (H): 5 ~ 24V
 - Input resistance: 1.2kΩ @ 0.5W
 - Max. response frequency: 10KHz @ 50% duty

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The Intelligent Systems

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