

Head Office

ADLINK Technology, Inc.

No. 66, Huaya 1st Rd., Guishan Dist.,
Taoyuan City 333411, Taiwan
Tel : +886-3-216-5088
Fax: +886-3-328-5706

f in @ www.adlinktech.com

Worldwide Offices

Ampro ADLINK Technology, Inc.

6450 Via Del Oro, San Jose, CA 95119-1208, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.

1008 Toa Payoh North, 07-17/18
Singapore 318996
Tel: +65-6844-2261
Fax: +65-6844-2263
singapore@adlinktech.com

ADLINK Technology, Inc. (Israel Liaison Office)

MIXER Herzliya (Building B, 9 Floor)
3 Arik Einstein st., Zip code 4610301
Herzliya, Israel, P.O.Box - 351
Tel: +972-54-632-5251
Fax: +972-77-208-0230
Email: israel@adlinktech.com

ADLINK Technology (China) Co., Ltd.

上海市浦东新区张江高科技园区芳春路300号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5192-3588
Email: market@adlinktech.com

ADLINK Technology Singapore Pte Ltd. (Indian Liaison Office)

#50-56, First Floor, Spearhead Towers
Margosa Main Road (between 16th/17th Cross)
Malleswaram, Bangalore - 560 055, India
Tel: +91-80-42246107, +91-80-23464606
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology GmbH

Hans-Thoma-Straße 11
D-68163 Mannheim, Germany
Tel: +49 621 43214-0
Fax: +49 621 43214-30
Email: germany@adlinktech.com

ADLINK Technology Beijing

北京市海淀区上地东路1号盈创动力大厦E座801室
(100085)
Rm. 801, Power Creative E, No. 1 Shang Di East Rd.
Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology Japan Corporation

〒101-0045 東京都千代田区神田鍛冶町3-7-4
三ノ神田鍛冶町三丁目ビル4F
Unizo Kanda Kajicho 3 Chome Bldg. 4F,
3-7-4 Kanda Kajicho, Chiyoda-ku,
Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

Ulrichsbergerstraße 17
D-94469 Deggendorf, Germany
Tel: +49 991 290 94-10
Fax: +49 991 290 94-29
Email: germany@adlinktech.com

ADLINK Technology, Inc. (French Liaison Office)

Bâtiment Thalès - Parc des Algorithmes,
Route de l'Orme des Merisiers,
91190 SAINT AUBIN, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Shenzhen

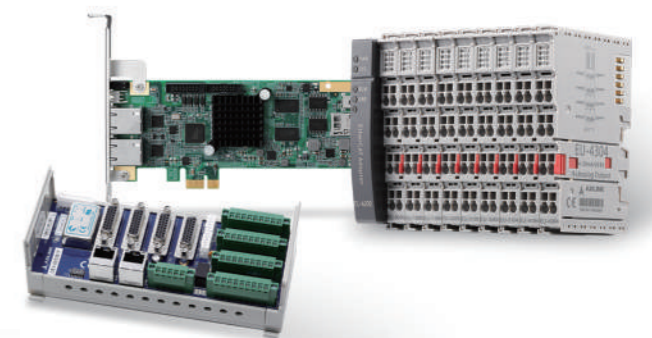
深圳市南山区科技园南区高新南七道数字技术园
A1栋2楼C区(518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin
Ave. Sec. 7 High-Tech Industrial Park S.,
Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

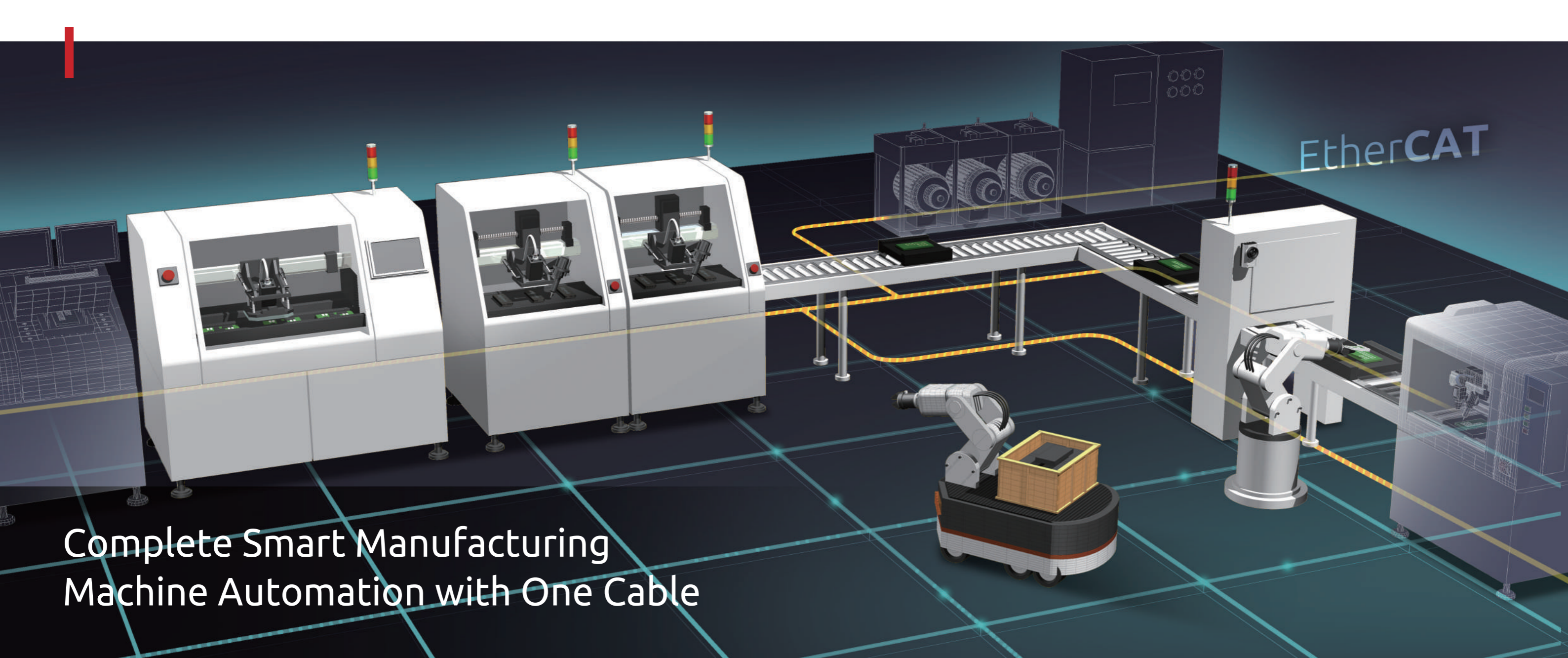
ADLINK Technology Korea Ltd.

경기도 용인시 수지구 신수로 767 A동 1503호
(동천동, 분당수지유타워) (우) 16827
A-1503, U-TOWER, 767 Sinsu-ro, Suji-gu,
Yongin-si, Gyeonggi-do, Republic of Korea, 16827
Toll Free: +82-80-800-0585
Tel: +82-31-786-0585
Fax: +82-31-786-0583
Email: korea@adlinktech.com

ADLINK Technology, Inc. (UK Liaison Office)

First Floor West Exeter House,
Chichester fields Business Park Tangmere,
West Sussex, PO20 2FU, United Kingdom
Tel: +44-1243-859677
Email: uk@adlinktech.com





Complete Smart Manufacturing Machine Automation with One Cable

Factories and supply networks need better real-time solutions to meet quickly changing demand and guarantee reliable and smooth production. The rapidly growing global industrial automation market and expansion of automated production lines are helping them achieve this through increasingly extensive motion control.

Smart factories today are under enormous pressure to expand and must be able to scale quickly to seize new business opportunities. As those factories extend their capabilities, they need highly-synchronized motion control systems to keep all their machines running in sync. The open protocol EtherCAT fieldbus system uses Ethernet cables to connect all motion control systems in series for synchronous control, providing flexibility in matching different master-slave, IO sensing, and other subsystems. Customers can quickly deploy and maintain the automation system according to the needs of the original equipment, easily cope with different manufacturing conditions, and optimize the overall intelligent manufacturing efficiency. ADLINK has a unique ability to integrate hardware and software in motion control. Through the upgradable centralized management of motion control software, manufacturers can capture the long-term development potential of intelligent manufacturing.



Why ADLINK

ADLINK Technology Inc. has many years of market-proven expertise in automation technology, with the domain knowledge and field experience to meet and exceed customer needs, and a wealth of highly integrated automation solutions and industrial motion control products for real-time I/O and motion control.



Scalability
For future expansion of smart factories



Synchronization
For multi-axis simultaneous motion control



Flexibility
For deployment without communication issues



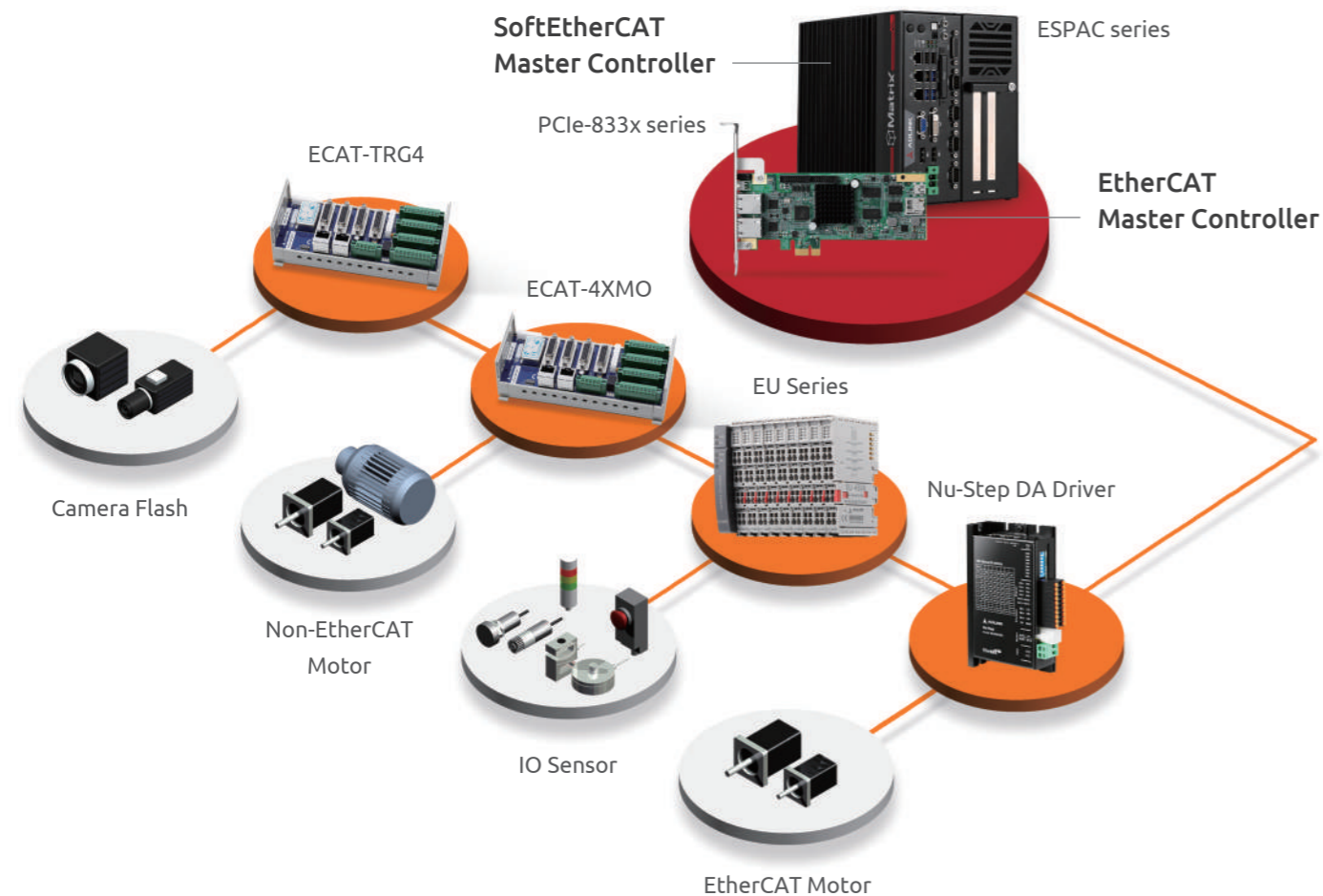
Performance
For optimized smart manufacturing



Software
For centralized management and faster development

One-stop Shop for Open, Powerful, and Scalable PC-based EtherCAT Motion Control Systems

ADLINK provides a comprehensive one-stop shop with EtherCAT hardware and software for deploying suitable motion control systems in different fields, from the master controller, slave system, and drivers and motors to universal software. The EtherCAT open communication provides easy connections using standard Ethernet cables, making it ideal for developing optimal systems to build and scale smart factories.



Expertise for any industrial manufacturing process

Machine automation is at the core of smart manufacturing, and control capabilities have improved to meet the increased demands of more sophisticated machines and greater automation. ADLINK's proven support resources help customers overcome even the most critical industrial automation challenges for semiconductors, electric vehicle, AOI, and more.

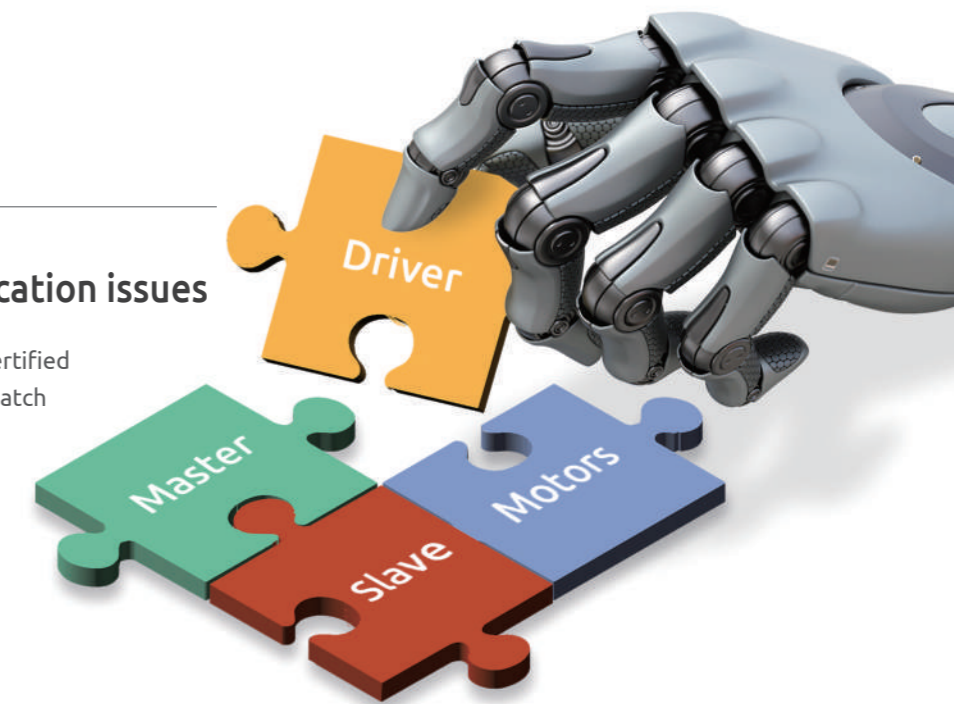


Tight synchronization improves productivity

ADLINK EtherCAT provides high synchronization capability ≤ 200 ns with performance of 64-axis movement, maximizing throughput.

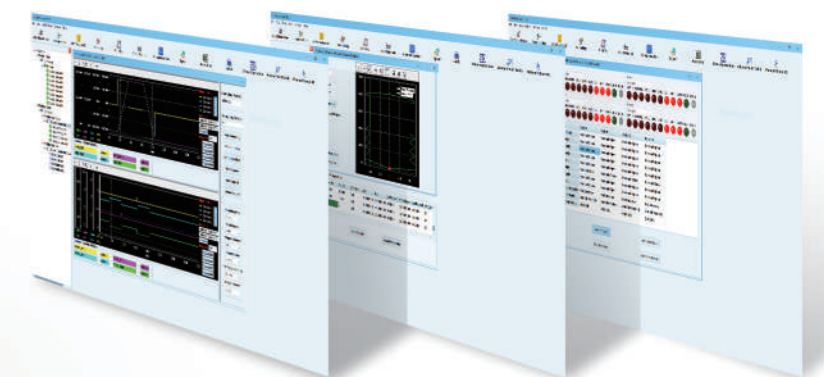
Compatibility cuts communication issues

ADLINK's EtherCAT system supports 100+ certified EtherCAT slave modules so customers can match their own suitable slave systems without compatibility problems.



Universal software optimizes motion control management

ADLINK APS SDK provides dependable motion control management that allows existing motion control systems to upgrade to EtherCAT-based motion control without complicated program modifications or application redevelopment.

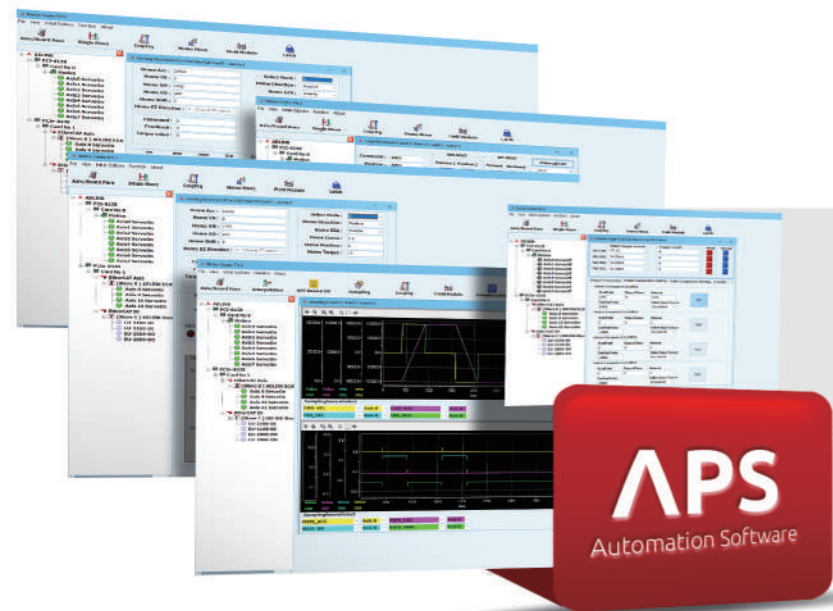




Automation Product Software SDK

All-you-can-control on APS SDK from development, execution to maintenance

Automation Product Software SDK (APS SDK) is an integrated motion control software with a uniform interface designed for centralized deployment, execution, and maintenance, supporting EtherCAT and Pulse types of motion control cards. APS SDK provides rich function libraries supported by various application development environments and enables operators to develop or upgrade their specific motion functions. ADLINK's exclusive MotionCreatorPro2 utility has a no-code testing tool that allows operators to do a simple feasibility test, saving time on comprehensive inspection. ADLINK motion control cards with APS SDK bring the advantages of rapid development, deployment, and cost reduction to all users.



APS SDK supports 15+ motion and 30+ I/O products



Abundant application-ready functions in one library



Uniform interface with intuitive interactive configuration



No-code testing with ADLINK exclusive MotionCreatorPro2 utility

Application-ready functions streamline development

Supports over 400 motion functions with a range of general, advanced, and application-ready motion functions to help developers dramatically reduce development and maintenance costs by lowering the technical threshold of manufacturing automation applications.



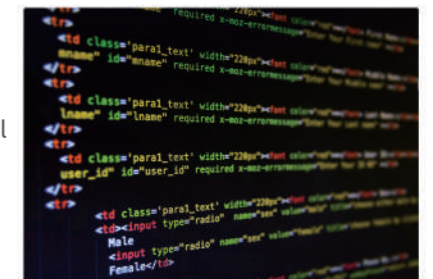
Uniform interface with quick configuration reduces operational complexity

APS SDK has a uniform interface with an intuitive interactive configuration, so users can operate ADLINK motion products simply and consistently without the need to reprogram if the hardware, operating system, or programming language are different.



No-code testing speeds up automation application development

ADLINK's exclusive visualization utility, MotionCreatorPro2, allows users to tune device performance and verify control results and hardware functions without coding. The universal visual interface reduces the effort needed for product testing, system development, and debugging, making the deployment process faster and easier.



Lithium-ion Vehicle Battery Manufacturing



Challenges

As the electric vehicle market expands, so does the demand for front-end process equipment and materials, such as lithium ions, mixers, coaters, roll presses, or lamination machines with many control axes and I/O points. The synchronization of those multiple axes and I/O points is essential to improving overall operation. However, the transmission efficiency of traditional distributed control communication protocols is not ideal, requiring a long period of motion control signal exchange, and it is difficult to achieve synchronization.

ADLINK Solutions

The EtherCAT solution with PCIe-833X series master motion controller:

- Supports up to 64-axis synchronous control and controls 1000+ motion functions.
- Increases the output of electric vehicle battery equipment suppliers by 20%-30% with multi-axis synchronization
- Reduces production cost by 15% through higher performance

Warehouse Logistics



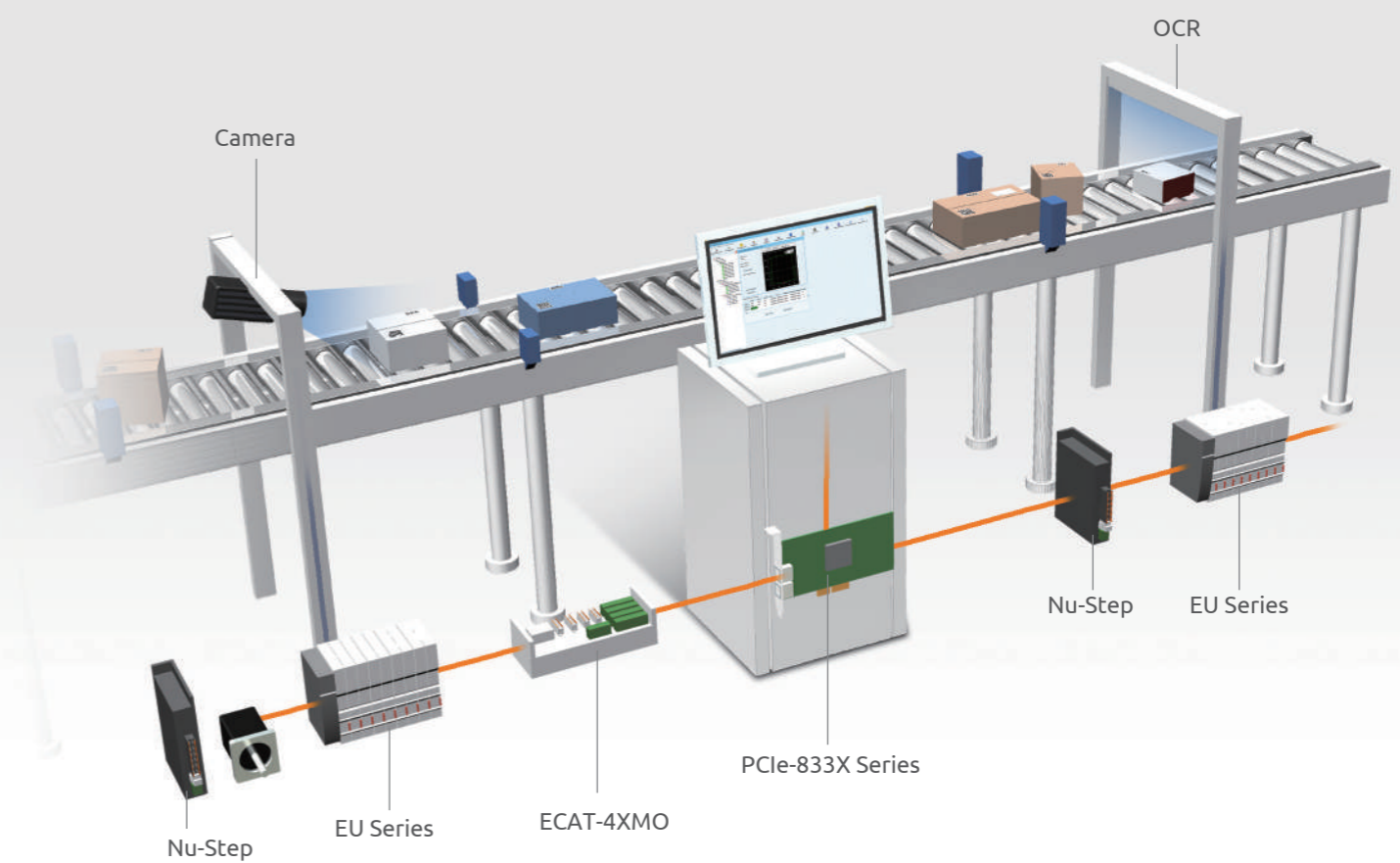
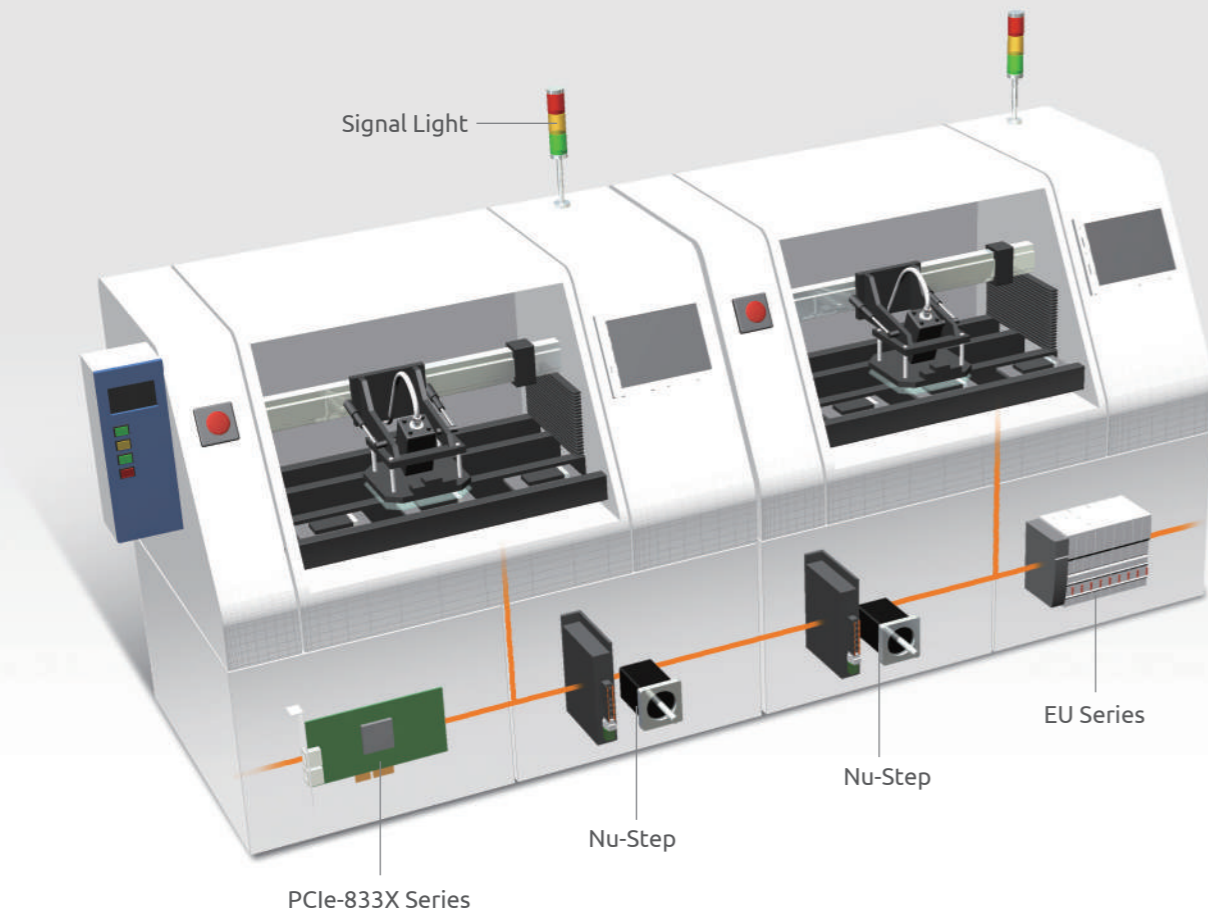
Challenges

Belt conveyors are not a standardized system, embodying a nearly limitless array of configurations with different lengths and paths to suit different environmental layouts. Some operations also use photo interrupters or electronic scales to measure package dimensions, or cameras to scan barcodes and verify product traceability. Hence the need to support an increasing number of precisely synchronized axes and I/O.

ADLINK Solutions

The EtherCAT solution with PCIe-833X series master motion controller:

- Supports up to 64-axis synchronous control, which enables pick-and-place on a moving conveyor belt during sorting and increases productivity by 20%
- Works with the ECAT-4XMO and EU series to support a wide range of third-party slave modules, allowing the use of different motors and I/Os based on cost-effectiveness considerations, thereby building a more efficient operating environment with lower procurement costs



TFT-LCD Production Process



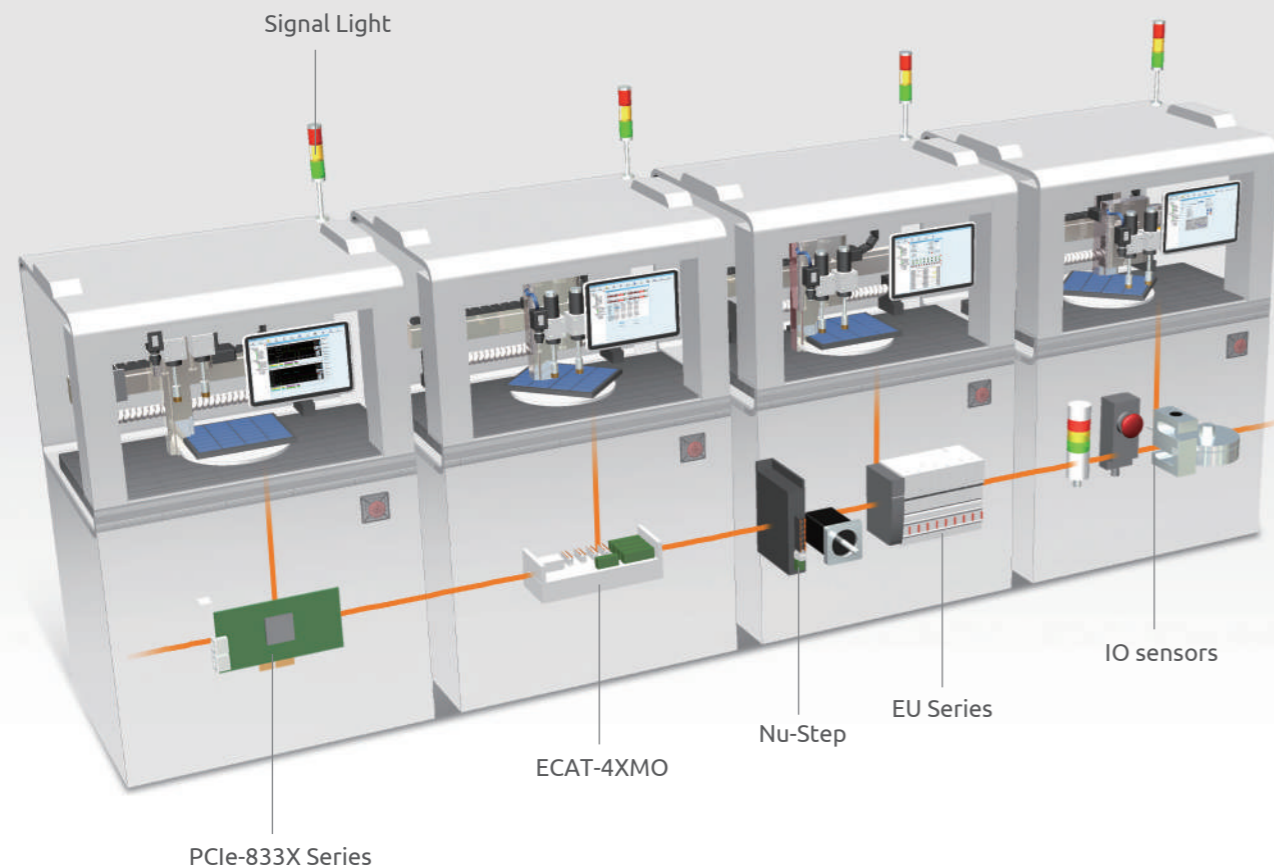
Challenges

Large-size panels have been the trend in recent years, and in the manufacturing process, these panels require more motion control axes for handling. However, expanding into multi-axis poses a major challenge to machine control and accuracy. It requires more powerful synchronization to avoid LCD panel cracks and distortions caused by asynchrony during the manufacturing process, affecting the overall quality.

ADLINK Solutions

The EtherCAT solution with PCIe-833X series master motion controller:

- Supports up to 64-axis synchronous control with latency of less than 200ns, achieving a 20% boost in production efficiency
- Works with the ECAT-4XMO to enable powerful synchronization control and high-speed trigger function, which can meet the needs of moving or screen bonding in the LCD manufacturing process
- Achieves higher performance, higher quality, and reduces production cost by up to 30%



Optical Lens Manufacturing



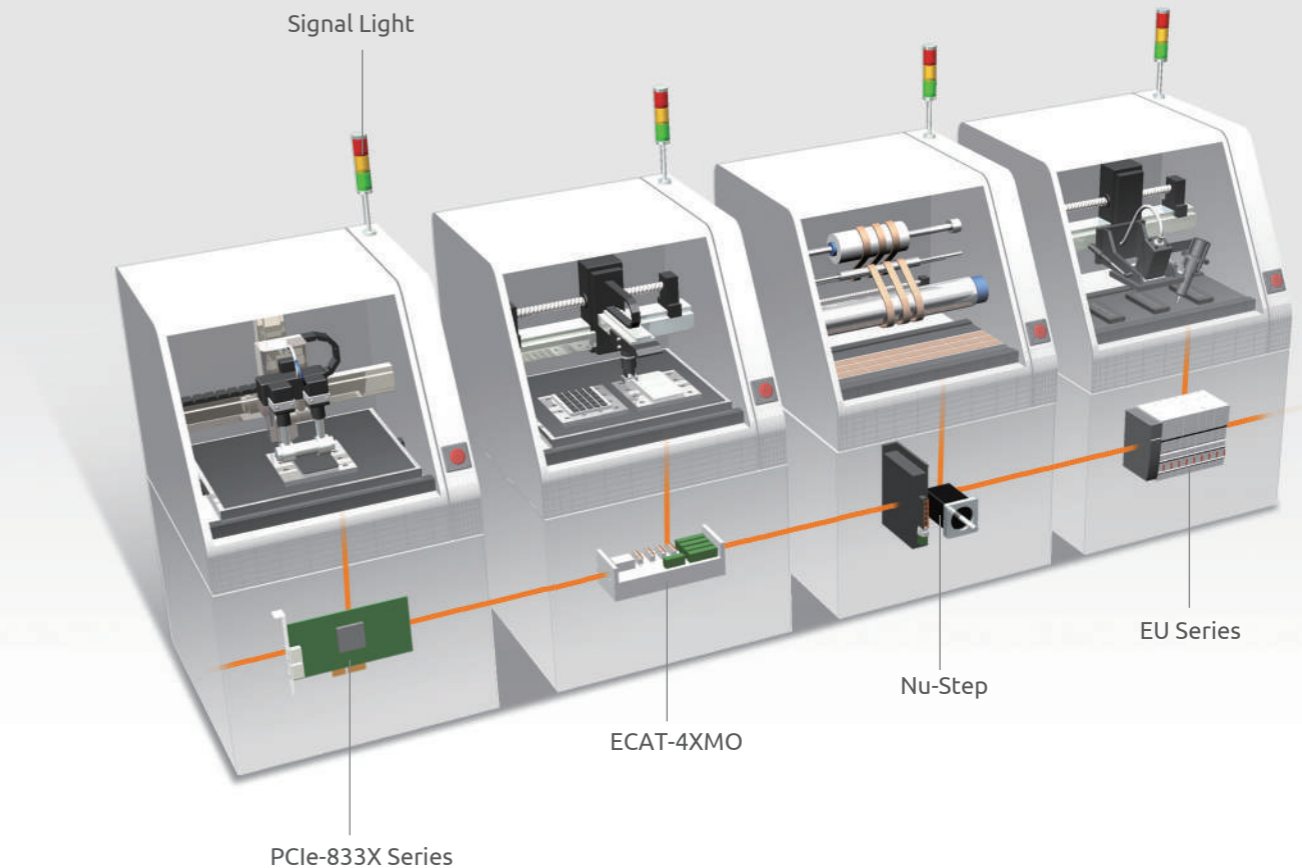
Challenges

In the optical lens industry, manufacturers protect their trade secrets by developing their own production equipment through the independent research and development of the automation team. Instead of buying equipment from suppliers to increase production capacity, they need to find ways to improve the equipment's ability to respond to rapid production line changes and fully meet the precision control requirements. Camera modules come in a variety of configurations and require precise assembly work. If the positions and bonding angles between the lenses are not exact, misalignment of the optical axis may occur, resulting in blurred images and poor quality.

ADLINK Solutions

The EtherCAT solution with PCIe-833X series master motion controller:

- Supports up to 64-axis synchronous control, and the availability of 10,000 DIO and 2,500 AIO allows for ample expandability.
- Takes full advantage of synchronous control command latency of less than 1ms, achieving a 20% boost in production efficiency





EtherCAT



Software-defined EtherCAT for Mobile Robots
Compact, Responsive, and Configurable

Software-defined EtherCAT Controller

SuperCAT—the ideal option for fast response machine automation

ADLINK's SuperCAT series is a software-defined motion controller with the EtherCAT motion control function built into the Windows architecture of the industrial computer. No add on motion control card is necessary, and the industrial computer acts as the EtherCAT master controller, which controls all slave systems. The SuperCAT series is equipped with a high-performance Intel® CPU to support a large number of axes with better synchronization, making it suitable for complex, high-speed applications such as EMS and semiconductors.

Multi-axis Synchronization



Supports up to 128 axes synchronously to execute more motion functionalities

High Response Control



Shortens response time from 4ms~125µs for high-speed applications

Space-saving and Flexible Configuration



Compact size and no motion control card, increase free space for other functions, lower overall costs by 30%

Platform Selections:

Ultra-compact embedded platform with optimum I/O design for maximum connectivity	Fanless industrial computer with flexible configuration	Industrial ATX motherboard with 4U rackmount industrial chassis	Embedded robotic controller for autonomous mobile application

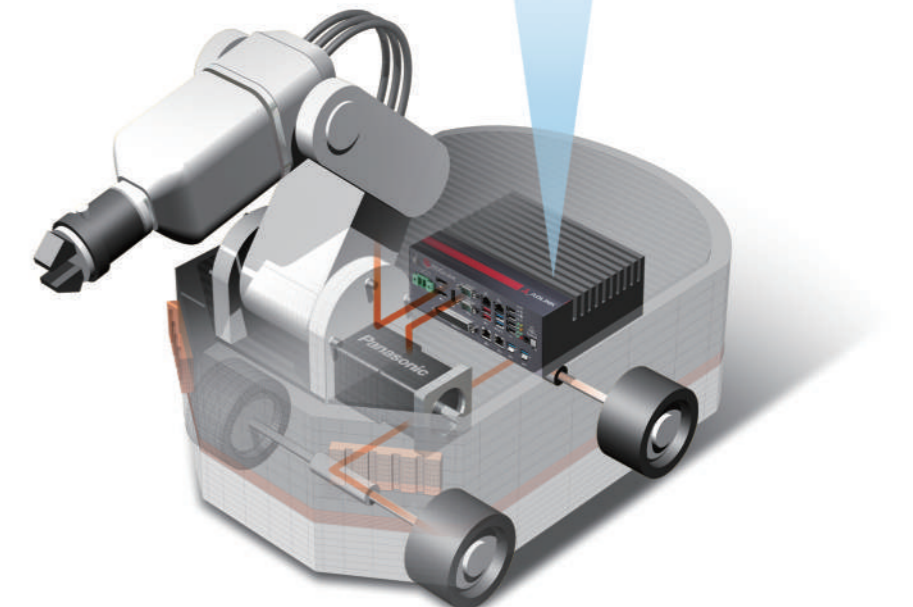
Cardless design with application-ready software package

Autonomous mobile robot (AMR) manufacturers are developing increasingly intelligent AMRs that must fit high-precision motion controllers, such as robotic arms, wheels, and environmental detection devices into the AMR's space-limited interior. Panasonic's AMR combines ADLINK's softEtherCAT and ROS with its EtherCAT motors for more responsive and precise synchronous control. Application-ready apps and utilities accelerate IT and OT integration for different application scenarios, reducing development time by at least two months. Manufacturers now have more options without relying on system integrators for minor configuration changes, maintenance, and updates.

Solution Features:

- Compact size computing platform meets AMR space constraints and increases battery space
- High response with SoftEtherCAT by eliminating communication issues between different motion controller
- Flexible configuration of computing power optimizes deployment, providing different CPU options
- Easy integration of IT and OT speeds up development time and reduces costs with EtherCAT and application-ready ROS app and utility for applications such as factory automation, warehouse, and retail

	Windows	Linux	RT Linux
Software/ APP	GUI Image Process Motion Control	ROS1/ROS2 SLAM MoveIt Rviz Linux App	RT Process APS RT EtherCAT Master
Kernel/ Driver	Hypervisor		
Interface	CPU/RAM/NIC/PCIe/USB/COM....		CPU/RAM/NIC/PCIe/USB/COM....



ROS EtherCAT

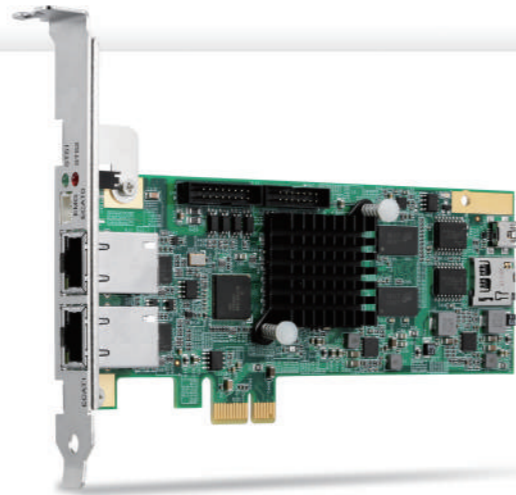
EtherCAT Motion Control System Selection Guide

Master Controllers

PCIe-833X series

PCIe EtherCAT master motion controllers

- Up to 64-axis motion control and 10,000 I/O point control
- EtherCAT cycle times up to 250µs
- Broad range of compatible EtherCAT slaves
- Dedicated emergency stop input
- 4CH isolated digital input/4CH isolated digital output



EtherCAT Communication	
EtherCAT Cycle Time	1CH @250µs / 500µs / 1000µs / 2000µs
Max. Number of Axes	16 32 64
Motion I/O Interface Signals	
Emergency Stop In	1CH
Isolated I/O Signals	
Digital Input	4CH (2CH configured as Pulsar Input)
Pulsar Input Mode	CW/CCW; 1x/2x/4x AB Phases
Pulsar Input Frequency	Up to 1MHz
Digital Input Voltage	24Vdc (typ.) / 5Vdc for pulsar connection
Digital Input Type	Sourcing type
Digital Output	4CH, Isolated
Digital Output Voltage	24V (typ.)
Digital Output Type	90mA, NPN sinking type
General Specification	
Operating Temp.	0°C to +60°C (32°F to 140°F)
Humidity	5% to 95%, non-condensing
Environmental Specification	
Safety Compliance	CE/FCC, RoHS

Motion Slave System

Model	ECAT-4XMO	ECAT-TRG4	Nu-step
Description	Supports 4-channel motion control and high-speed trigger EtherCAT slave	Supports 4-channel high-speed trigger EtherCAT slave	EtherCAT stepper driver with CMP trigger
Key functions	<ul style="list-style-type: none"> • Convert EtherCAT to pulse train motion control with up to 12MHz pulse output frequency • Supports full trigger as ECAT-TRG4 	<ul style="list-style-type: none"> • Up to 10 MHz table/linear CMP trigger and 3 Mhz position latch • Supports 2D CMP trigger (MT type only) • Hardware encoder re-driver to next EtherCAT slave 	<ul style="list-style-type: none"> • Supports 1KHz table/linear CMP trigger • Supports closed loop motion control (EC type only)
IO interface	HW EL / ORG / EMG / Pulsar / LTC	HW EMG / LTC	Programmable IO for EL / EMG / ORG / DIO
Features	<ul style="list-style-type: none"> • Up to 12 MHz pulse output for 4 axes motion control • Up to 20 MHz encoder input @4xAB • Up to 4-channel, 3Mhz position latch 	<ul style="list-style-type: none"> • Up to 10 Mhz table/linear comparison trigger out on 4 channels • Up to 20 MHz encoder input @4xAB 	<ul style="list-style-type: none"> • Up to 1KHz table/linear comparison trigger for inspection
Application	EMS assembly, New energy, Semiconductor industry	EMS assembly, New energy, Semiconductor industry	EMS assembly, Passive components packaging and testing, Packaging test, AOI

IO System

Model	EU series
Description	EtherCAT DIO / AIO slave modules
I/O support	512-channel DI / 512-channel DO
AI/O	128-channel
Cycle time	250 µs
Input/output type	Sourcing / Sinking
Features	<ul style="list-style-type: none"> • Optimization with ADLINK EtherCAT master • Compliance with industrial IEC standard • Excellent scalability powered by modularized and slice-type design
Application	Cutting machine / Gluing / Probing