⚠️ Safety Precautions

- Important Notes on exporting this product or equipment containing this product;
  If the end-user or application of this product is related to military affairs or weapons, its export may be controlled by "Foreign Exchange and Foreign Trade Control Law" of Japan where export license will be required before product can be exported from Japan.
- This product is designed and manufactured for use in General Purpose Industrial Equipment and it is not intended to be used in equipment or system that may cause personal injury or death.
- All servicing such as installation, wiring, operation, maintenance and etc., should be performed by qualified personnel only.
- Tighten mounting screws with an adequate torque by taking into consideration strength of the screws and the characteristics of material to which the product will be mounted. Over tightening can damage the screw and/or material; under tightening can result in loosening.
- Install safety equipment to prevent serious accidents or loss that is expected in case of failure of this product.
- Consult us before using this product under such special conditions and environments as nuclear energy control, aerospace, transportation, medical equipment, various safety equipments or equipments which require a lesser air contamination.
- We have been making the best effort to ensure the highest quality of our products, however, some applications with exceptionally large external noise disturbance and static electricity, or failure in input power, wiring and components may result in unexpected action. It is highly recommended that you make a fail-safe design and secure the safety in the operative range.
- If the motor shaft is not electrically grounded, it may cause an electrolytic corrosion to the bearing, depending on the condition of the machine and its mounting environment, and may result in the bearing noise. Checking and verification by customer is required.
- Failure of this product depending on its content may generate smoke of about one cigarette. Take this into consideration when the application of the machine is clean room related.
- Please be careful when using the product in an environment with high concentrations of sulfur or sulfuric gases, as sulfuration can lead to disconnection from the chip resistor or a poor contact connection.
- Do not input a supply voltage which significantly exceeds the rated range to the power supply of this product. Failure to heed this caution may lead to damage of the internal parts, causing smoke and/or fire and other troubles.
- The user is responsible for matching between machine and components in terms of configuration, dimensions, life expectancy, characteristics, when installing the machine or changing specification of the machine. The user is also responsible for complying with applicable laws and regulations.
- Manufacturer's warranty will be invalid if the product has been used outside its stated specifications.
- Component parts are subject to minor change to improve performance.
- Read and observe the instruction manual to ensure correct use of the product.

Repair	Consult to the dealer from whom you have purchased this product for details of repair work. When the product is incorporated to the machine you have purchased, consult to the machine manufacturer or its dealer.
URL	Electric data of this product (Instruciton Manual, CAD data) can be download from the following web stie; industrial.panasonic.com/ac/e/

● Contact to :

Panasonic
INDUSTRY

Panasonic Industry Co., Ltd.,
Industrial Device Business Division

1-1 Morofuku 7-chome, Daito, Osaka 574-0044, Japan

🔍 Panasonic Industrial | Search

Panasonic
INDUSTRY

AC Servo Partner products

Network/ Linear and Direct Drive Control
Feed back scale / Actuator

Collaboration
Network,Linear & Direct Drive Motor Control System

IN Better Solution

2023.2

● This product is for industrial equipment. Don't use this product at general household.

Introduction

By various partner products, Flexible support for various system construction.

RTEX
Realtime Express

EtherCAT®

A6B

A6N

Controller

A6NL

A6BL

IT network

Motor

Feed Back Scale

Linear motor

Direct drive motor

Actuator

INDEX

Network AC Servo RTEX compatible / EtherCAT compatible

Motion Controller GM1

Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

Equipped with main functions necessary for general-purpose machine

Positioning   Torque control   Speed control   Improves high-speed and high-accuracy

Motion control

- RTEX type **Real axes: 16**
- EtherCAT type **Real axes: 32**

Ethernet: 2 ports

- EtherNet/IP* (1 port)
- Modbus-TCP
- General-purpose communication

RS-232C

- Modbus-RTU
- General-purpose

High-speed counter input: 2 channels

- 4-multiple, 16 MHz

PWM output: 4 channels

- Up to 100 kHz

SD memory card

Selectable network

RTEX Realtime Express   **EtherCAT**

General-purpose I/O: 16 points each

- Input: 16 points/output: 16 points NPN/PNP transistor
- Expansion unit (64 points) × Up to 15 units

* EtherNet/IP is a trademark of ODVA, Inc.

System configuration

GM Programmer
- PLC programming
- Motion programming
- Various setting

PLC   **Various sensor**

Various I/O PWM High-speed counter

Motion Controller GM1

RTEX Realtime Express

AC servo motor MINAS A6N   Max. 16 axes

EtherCAT

AC servo motor MINAS A6B   Max. 32 axes
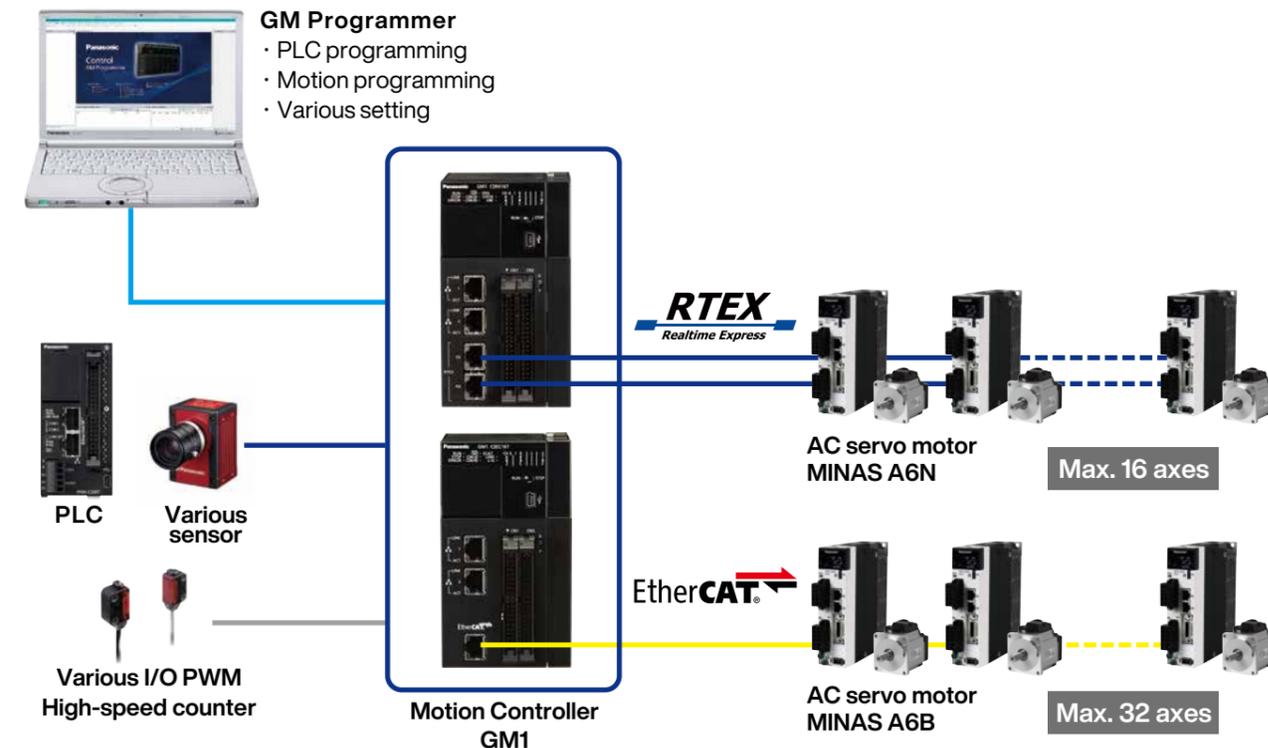
* Realtime Express and RTEX are registered trademarks of Panasonic Corporation. Realtime Express is a high-speed and synchronous motion network exclusively developed by our company.
* The EtherCAT is a registered trademark of patented technology licensed from Beckhoff Automation GmbH in Germany.

Configuration software

● Complies with IEC 61131-3 standard

Panasonic Control GM Programmer
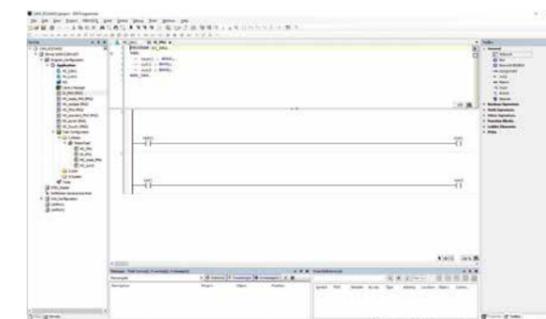
6 programming languages

- LD (Ladder Diagram)
- FBD (Function Block Diagram)
- ST (Structured Text)
- SFC (Sequential Function Chart)
- CFC (Continuous Function Chart)
- IL (Instruction List)*

* Selectable by changing software settings.

Product name	Number of axes	Network	Number of I/O	High-speed counter	Rated voltage	Output specifications	Part No.
GM1 controller	16 axes	RTEX	Input:16 points Output:16 points	2 ch	24 V DC	Transistor output sink(NPN)	AGM1CSRX16T
	32 axes	EtherCAT				Transistor output sink(NPN)	AGM1CSEC16T
						Transistor output sauce(PNP)	AGM1CSEC16P *

* Excluded from KC marking.

Ultra High-Speed Network Servo

MINAS A6N series

Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

RTEX *Realtime Express*

Realtime Express (RTEX)

Ultimate **Real-time** performance

- Com. period min. **0.0625 ms** — Max **16000** times/s
- Com. speed **100 Mbps** Full-duplex
- Velocity response **3200 Hz**

Functionality to meet various needs

- Precise position latch & comparing
- Infinitely rotatable absolute encoder
- IEC safety I/F model available *1

Simple network

- High-performance & Low-cost
- Isochronous established by ASIC
- Easy device development

Drive list

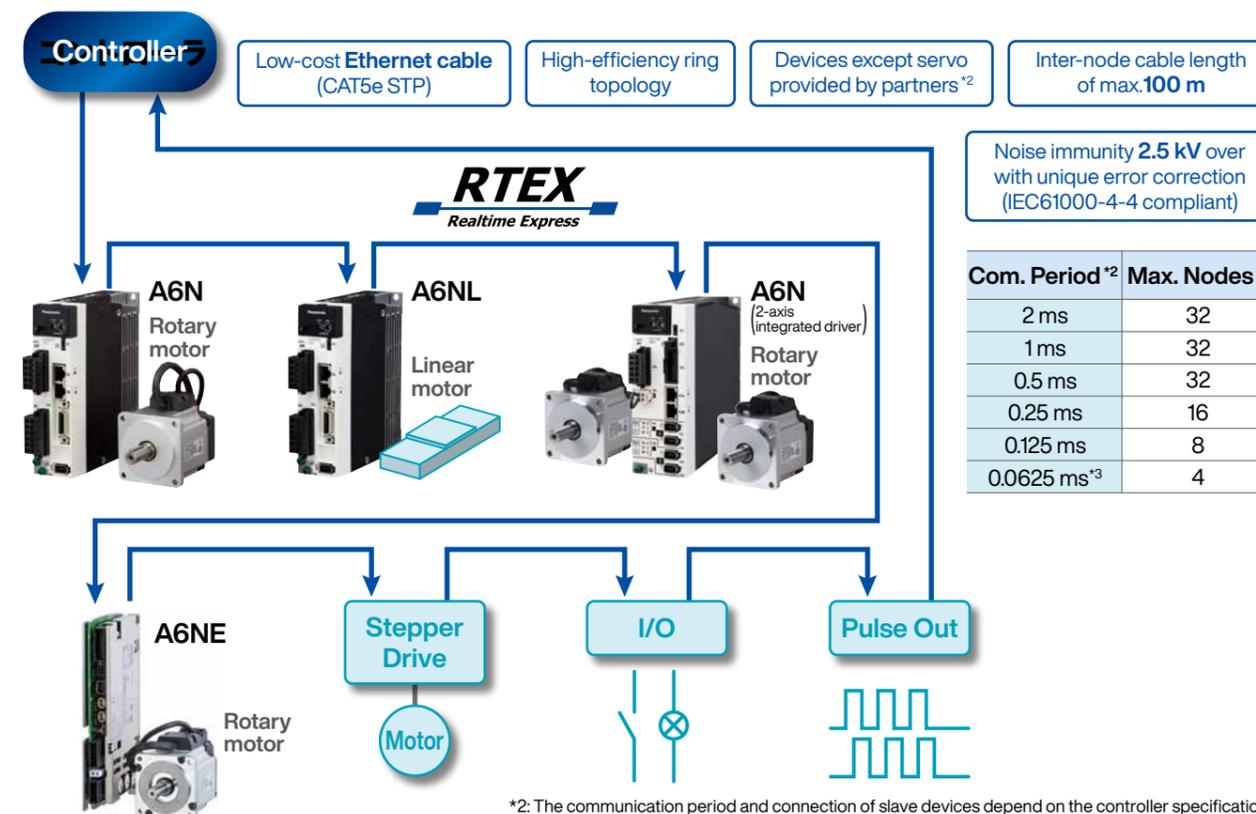|		Motor rated output												
Drive power supply		50 W	100 W	200 W	400 W	750 W	1 kW	1.5 kW	2 kW	3 kW	4 kW to 5 kW	7.5 kW	11 kW to 15 kW	22 kW
1-phase 100 V to 120 V AC	Frame size	A	A	B	C									
	Model No.	MADLT 01NE	MADLT 11NE	MBDLT 21NE	MCDLT 31NE									
1 or 3-phase 200 V to 240 V AC	Frame size	A		A	B	C	D	D						
	Model No.	MADLT 05NE		MADLT 15NE	MBDLT 25NE	MCDLT 35NE	MDDLT 45NE	MDDLT 55NE						
3-phase 200 V to 240 V AC	Frame size								E	F	F	G	H	H
	Model No.								MEDLT 83NE	MFDLT A3NE	MFDLT B3NE	MGDLT C3NF	MHDLT E3NF	MHDLT F3NF
3-phase 380 V to 480 V AC	Frame size				D	D	D		E	F	F	G	H	H
	Model No.				MDDLT 44NF	MDDLT 54NF	MDDLT 64NF		MEDLT 84NF	MFDLT A4NF	MFDLT B4NF	MGDLT C4NF under development	MHDLT E4NF under development	MHDLT F4NF under development
1 or 3-phase 200 V to 240 V AC	Model No.	MPDLT15N △ / MPDLT 25N △ / MQDLT 35N △												
3-phase 200 V to 240 V AC	Model No.	MQDLT 43N △												

(Left side labels: Single axis driver; 2-axis integrated driver)

- The above table shows a drive model number (Type E) in typical combination. (400 V specification, G frame and H frame are only multi-function type.)
- Since some motors are not suitable for the model number listed above, confirm the valid combination by the A6 family catalog.
- △ part 2-axis integrated driver S: Serial scale type A: AB phase scale type Refer to the specifications for details.
- For the 2-axis integrated driver, the rated motor output applicable to each axis is shown. Refer to catalogs and specifications for details on combinations.

*1: Multi-functional type F. IEC61800-5-2 STO, IEC61508 SIL3.

Typical system configuration

Controller

- Low-cost **Ethernet cable** (CAT5e STP)
- High-efficiency ring topology
- Devices except servo provided by partners *2
- Inter-node cable length of max.**100 m**

Noise immunity **2.5 kV** over with unique error correction (IEC61000-4-4 compliant)

RTEX *Realtime Express*

A6N Rotary motor

A6NL Linear motor

A6N (2-axis integrated driver) Rotary motor

Com. Period *2	Max. Nodes *4
2 ms	32
1 ms	32
0.5 ms	32
0.25 ms	16
0.125 ms	8
0.0625 ms *3	4

A6NE Rotary motor

Stepper Drive — Motor

I/O

Pulse Out

*2: The communication period and connection of slave devices depend on the controller specification.
*3: For communication period 0.0625 ms, command update period is 0.125 ms only. *4: Slave nodes.

Model nomenclature

M A D L N 1 5 N E ☐ ☐ ☐   Specific model

Servo drive A6 family

Frame size symbol
A to H: A Frame to H Frame (Single axis driver)
P : P Frame (2-axis integrated driver)
Q: Q Frame (2-axis integrated driver)

Safety I/F *
N: Without safety
T : With safety STO

Specifing max. current

Interface
N：RTEX

Power input
1: 1-phase 100 to 120 VAC
3: 3-phase 200 to 240 VAC
4: 3-phase 400 V
5: 1 or 3-phase 200 to 240 VAC

	Type*	Safty STO	Full-closed control	External scale
Single axis driver	E : Stadard	×	×	×
	F : Multi-functional	○	○	Serial/AB phase
2-axis integrated driver	S: Supports serial scale	○	○	Serial
	A: Supports AB phase scale	○	○	AB phase

* The combination has the following limitation. The standard type E is without safety I/F, and the muti-functional type F is with safety I/F.
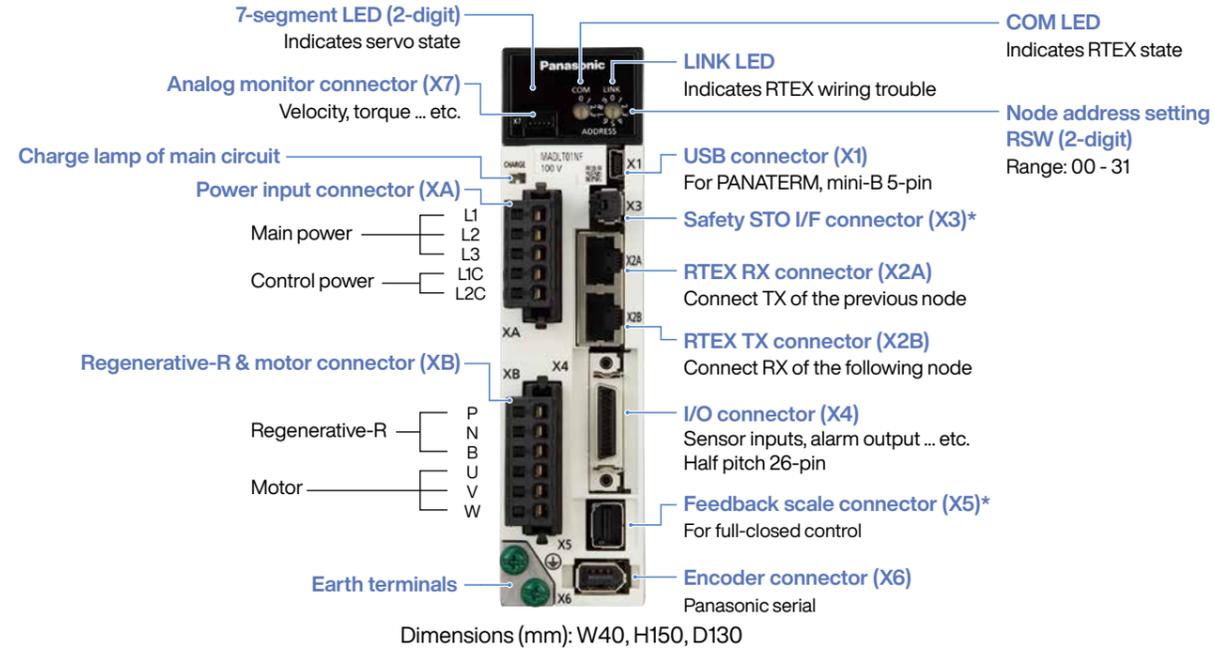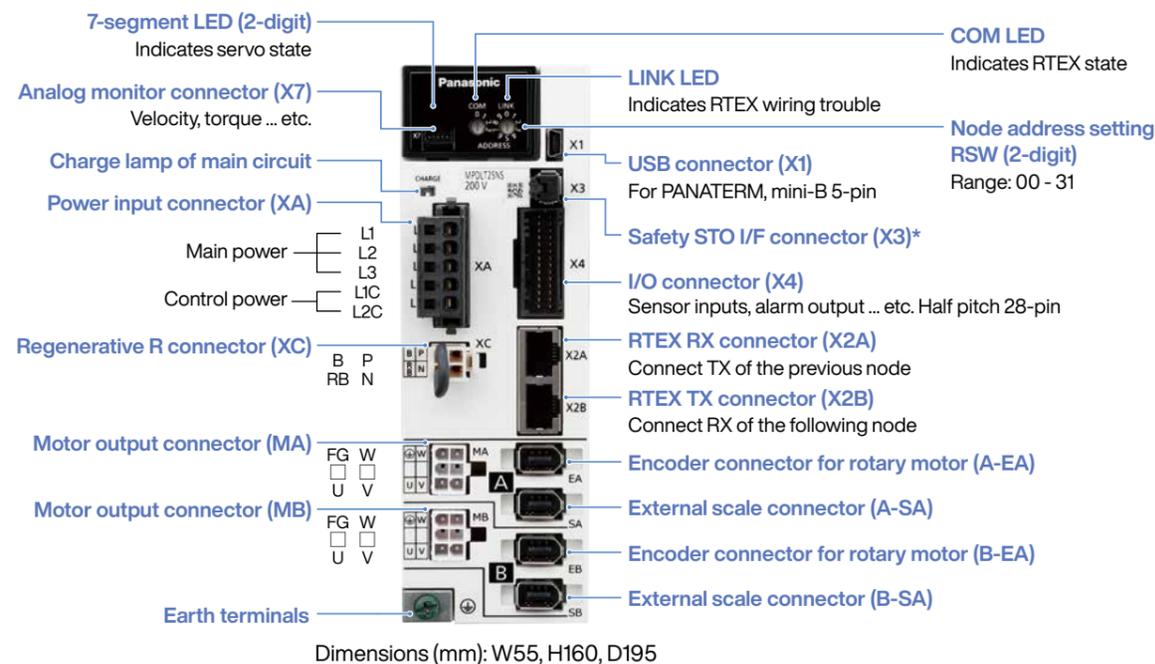
Compliance

CE UKCA c ᴺ us c UL us LISTED TÜV SÜD (Type E) TÜV SÜD (Type F) KC RoHS

Ultra High-Speed Network Servo

MINAS A6N series

RTEX *Realtime Express*

Drive appearance

A6N size A

* This photo shows multi-functional type F. Standard type E does not have X3 and X5 connectors.

- **7-segment LED (2-digit)** Indicates servo state
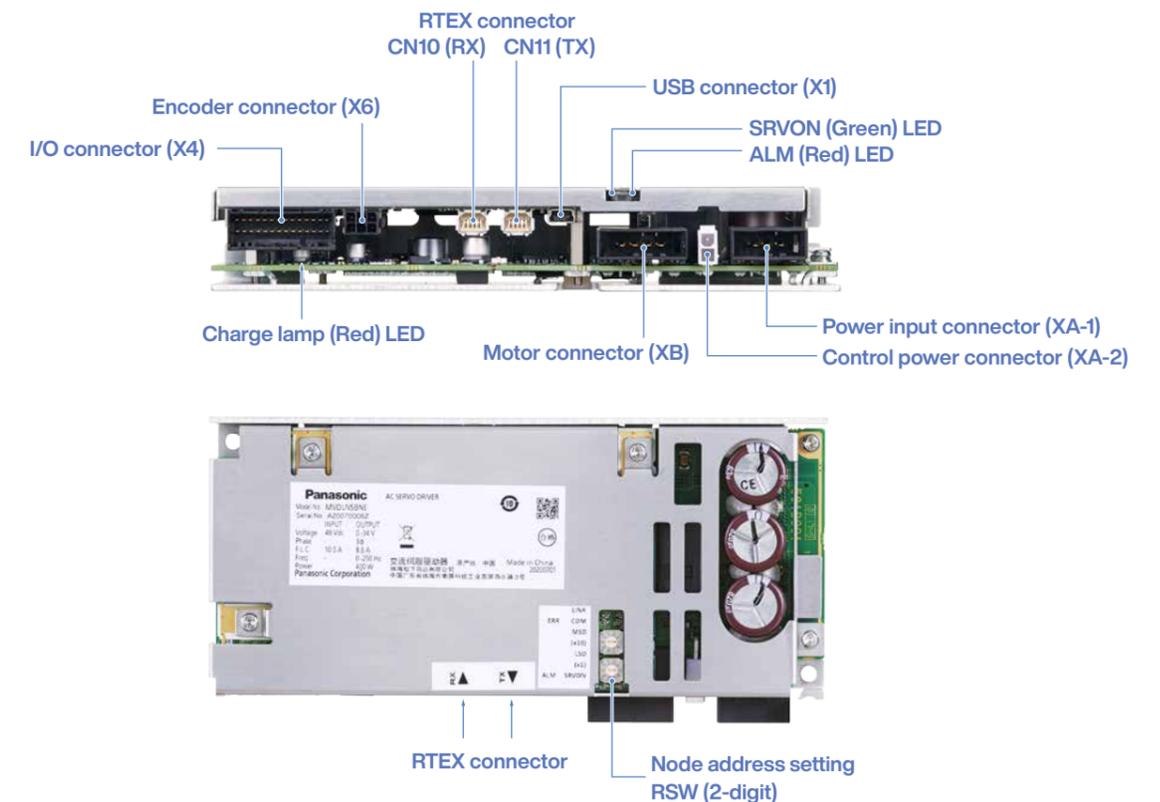- **COM LED** Indicates RTEX state
- **LINK LED** Indicates RTEX wiring trouble
- **Analog monitor connector (X7)** Velocity, torque … etc.
- **Node address setting RSW (2-digit)** Range: 00 - 31
- **Charge lamp of main circuit**
- **USB connector (X1)** For PANATERM, mini-B 5-pin
- **Power input connector (XA)**
  - Main power — L1 L2 L3
  - Control power — L1C L2C
- **Safety STO I/F connector (X3)***
- **RTEX RX connector (X2A)** Connect TX of the previous node
- **RTEX TX connector (X2B)** Connect RX of the following node
- **Regenerative-R & motor connector (XB)**
  - Regenerative-R — P N B
  - Motor — U V W
- **I/O connector (X4)** Sensor inputs, alarm output … etc. Half pitch 26-pin
- **Earth terminals**
- **Feedback scale connector (X5)*** For full-closed control
- **Encoder connector (X6)** Panasonic serial

Dimensions (mm): W40, H150, D130

A6N size P (2-axis integrated driver)

- **7-segment LED (2-digit)** Indicates servo state
- **COM LED** Indicates RTEX state
- **LINK LED** Indicates RTEX wiring trouble
- **Analog monitor connector (X7)** Velocity, torque … etc.
- **Node address setting RSW (2-digit)** Range: 00 - 31
- **Charge lamp of main circuit**
- **USB connector (X1)** For PANATERM, mini-B 5-pin
- **Power input connector (XA)**
  - Main power — L1 L2 L3
  - Control power — L1C L2C
- **Safety STO I/F connector (X3)***
- **I/O connector (X4)** Sensor inputs, alarm output … etc. Half pitch 28-pin
- **Regenerative R connector (XC)** B RB P N
- **RTEX RX connector (X2A)** Connect TX of the previous node
- **RTEX TX connector (X2B)** Connect RX of the following node
- **Motor output connector (MA)** FG W U V
- **Encoder connector for rotary motor (A-EA)**
- **Motor output connector (MB)** FG W U V
- **External scale connector (A-SA)**
- **Encoder connector for rotary motor (B-EA)**
- **Earth terminals**
- **External scale connector (B-SA)**

Dimensions (mm): W55, H160, D195

Low voltage small servo MINAS A6NE size V (DC24 V/48 V 100 W to 400 W)

Drive appearance

A6NE size V

- **RTEX connector CN10 (RX) CN11 (TX)**
- **USB connector (X1)**
- **Encoder connector (X6)**
- **SRVON (Green) LED**
- **ALM (Red) LED**
- **I/O connector (X4)**
- **Charge lamp (Red) LED**
- **Motor connector (XB)**
- **Power input connector (XA-1)**
- **Control power connector (XA-2)**

- **RTEX connector**
- **Node address setting RSW (2-digit)**

Dimensions (mm): W81, H180, D30

List of drivers

Driver power		Rated output of motor		
		100 W	200 W	400 W
DC 24 V	Frame symbol		V	
	Driver model number		MVDLN5CNE	
DC 48 V	Frame symbol		V	
	Driver model number		MVDLN5BNE	

- Depending on the motor series, there may be a combination different from the model number in the table, so be sure to check the specifications.

Manufacturer/Distributor: **ACE Automation** **ACE Automation Co., Ltd.**

# RTEX Network Motion Controller
PMC-KM2500P

Features

- RTEX (Realtime Express) Network
- PCI Interface
- Max. 16 Axes
- Max. 32 Nodes
- Multi-Axes Motion
- Linear / Circular Interpolation
- Synchronous Control, Gantry Contro
- 1D / 2D Position Error Compensation
- Motion API
- Controller Setup Software
- High Speed, High Precision and High Performance
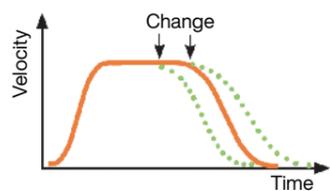- Very Simple and Easy to Develop Applications
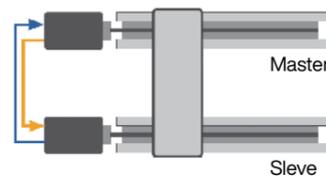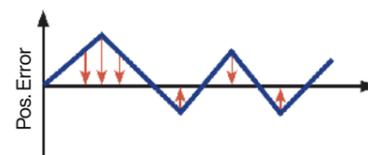
Velocity Profile
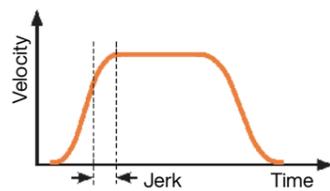
Motion Command
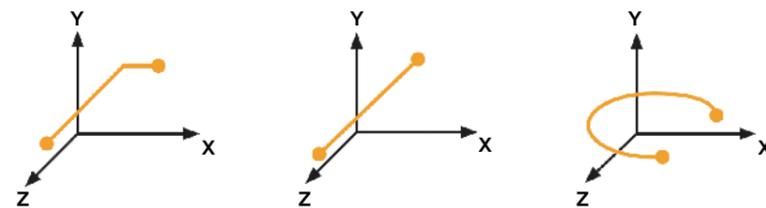
Change of Command

Gantry Control

Master

Sleve

Position Error Compensation

Application Sample

- Semiconductor / FPD Equipment
- Industrial Robot
- Machine Tool
- Other Industrial Equipment

System Configuration

PMC-KM2500P

- **Controller Setup Software**

MINAS A6N/A6NL
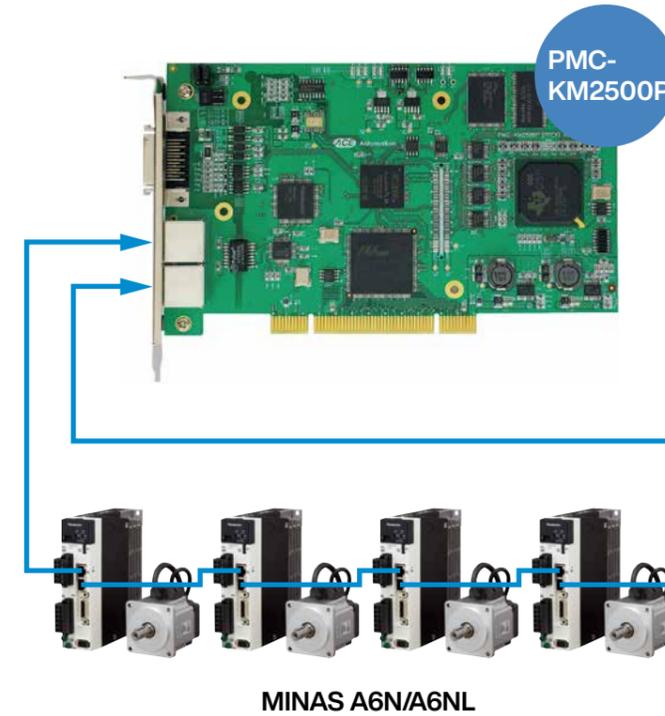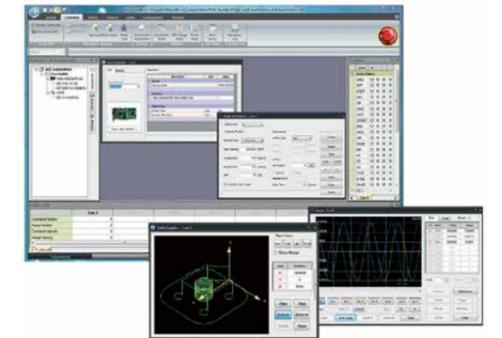
- Controller / Device / Motion Configuration
- Single / Multi / Coordinate Motion
- Path Graph, Realtime Scope
- Servo Configuration
- Monitoring, Diagnosis

Sales area

- Korea
- Japan
- United States of America
- China

Language

- Korean
- Japanese
- English
- Chinese

For more information

URL : http://www.aceautomation.co.kr

- Contact: **ACE Automation Co., Ltd.**

Complex-701, Heungdeok IT Valley, 13, Heungdeok 1-Ro, Giheung_Gu, Yongin-Si, Gyeonggi-Do, 16954, Korea

TEL : +82-31-340-1580   FAX : +82-31-340-1581

Manufacturer/Distributor: AJINEXTEK AXT **AJINEXTEK Co., Ltd.**

RTEX Master Board
PCIe-Rxx04-RTEX, PCI-R1604

PCIe-Rxx04-RTEX

PCI-R1604

Features

- RTEX network Master Board
- Network Speed 100 Mbps, Communication Period 0.5 ms
- Support RTEX Standard Servo Profile, Standard I/O Profile
- PCIe-Rxx04-RTEX Basic configuration is 8 axes control (Can be expanded to 16, 24 and 32axes)
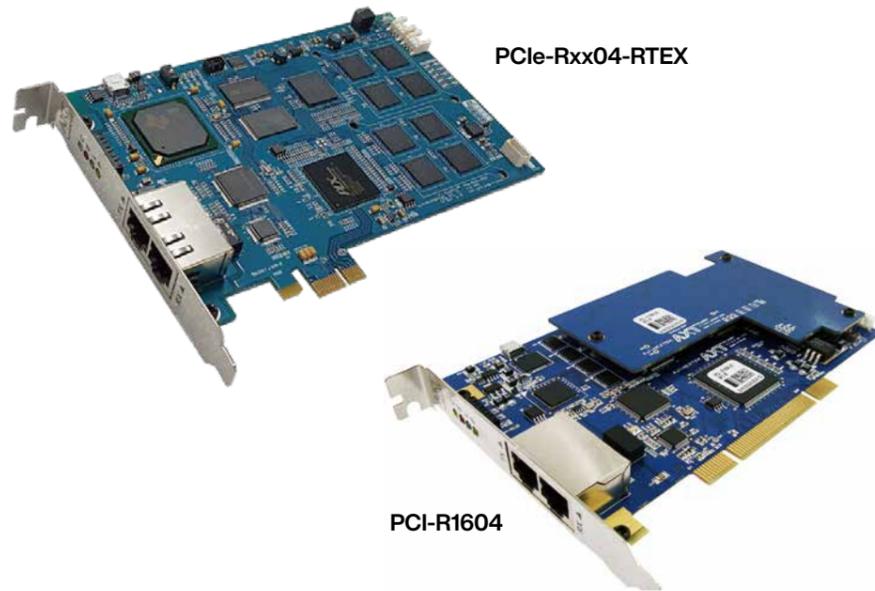- PCI-R1604 Basic configuration is 16 axes control (Can be expanded to 20, 24, 28 and 32axes)
- Easy to wire, saving wiring working-hour
- Max. 32 nodes
- Network connection - 100 BASE-TX, STP Cable (above CAT5e)
- Excellent Error correction
- Multi-axes linear / circular interpolation
- Limit setting functions : soft stop, emergency stop, and two positions

Application Sample

- Semiconductor front/back end process field
- Solar Energy/FPD/PCB field
- Processing machine field

Please contact the following address for details
URL : http://eng.ajinextek.com/customer/solution.php

System Configuration

RTEX Based Motion Network
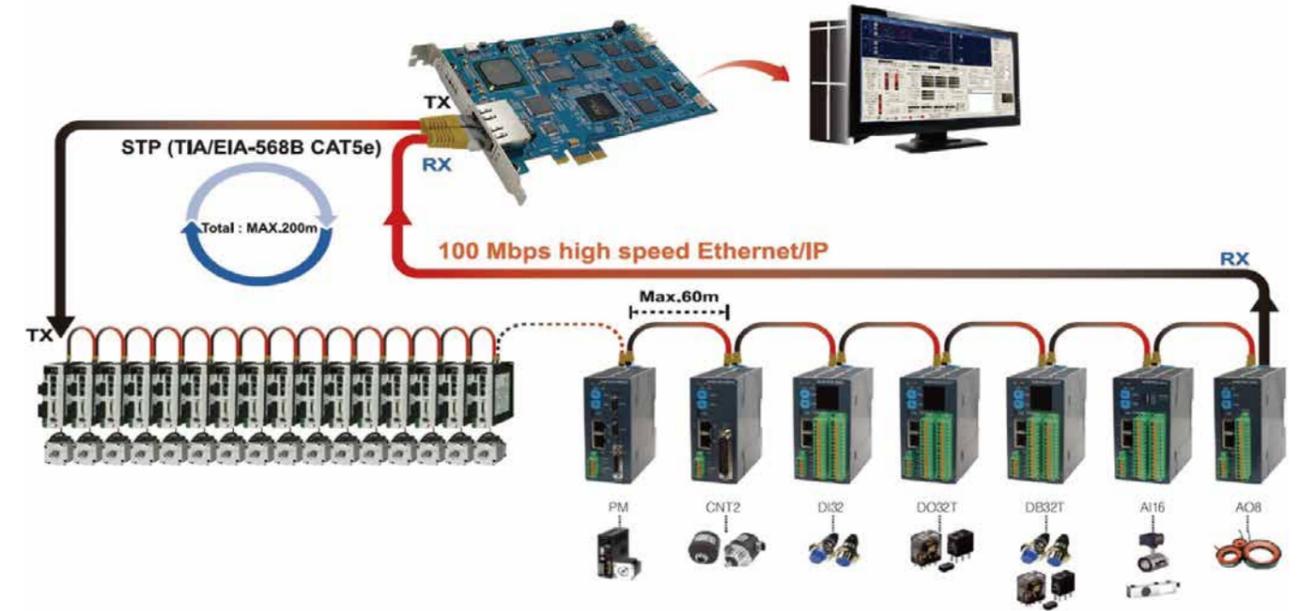
Master Board	PCIe-Rxx04-RTEX	DIO Module	N3RTEX-DI32	AIO Module	N3RTEX-AI16
	PCI-R1604		N3RTEX-DO32T		N3RTEX-AO8
Motion Module	N3RTEX-PM2Q/4Q		N3RTEX-DB32T	Counter Module	N3RTEX-CNT2

Sales area

- Korea
- China
- Taiwan
- Malaysia
- Singapore
- Vietnam
- Philippines

Language

- Korean
- Chinese
- English

For more information

URL : http://eng.ajinextek.com/

● Contact: **AJINEXTEK CO., LTD.**

27, Seongseogongdan-ro 11-gil, Dalseo-gu, Daegu, 42714, Rep. of KOREA
TEL : +82-53-593-3700   FAX : +82-53-593-3703

PLC Direct Access RTEX Motion Controller
PI-2300

Building a leading edge high speed motion network at low cost under PLC

Ethernet

PLC

PI-2300

AC servo
MINAS A6N series

Asahi Engineering
Stepping motor drive etc.

(1) Accessing PLC data register from PI-2300 over Ethernet
(2) Based on the contents of data register, the PI sends command to each axis (motor operation).
(3) The PI writes status information of each axis to data register.
Sales area Language

Features

1 Direct PLC access

The controller runs the motion program installed in PI while accessing PLC data register.
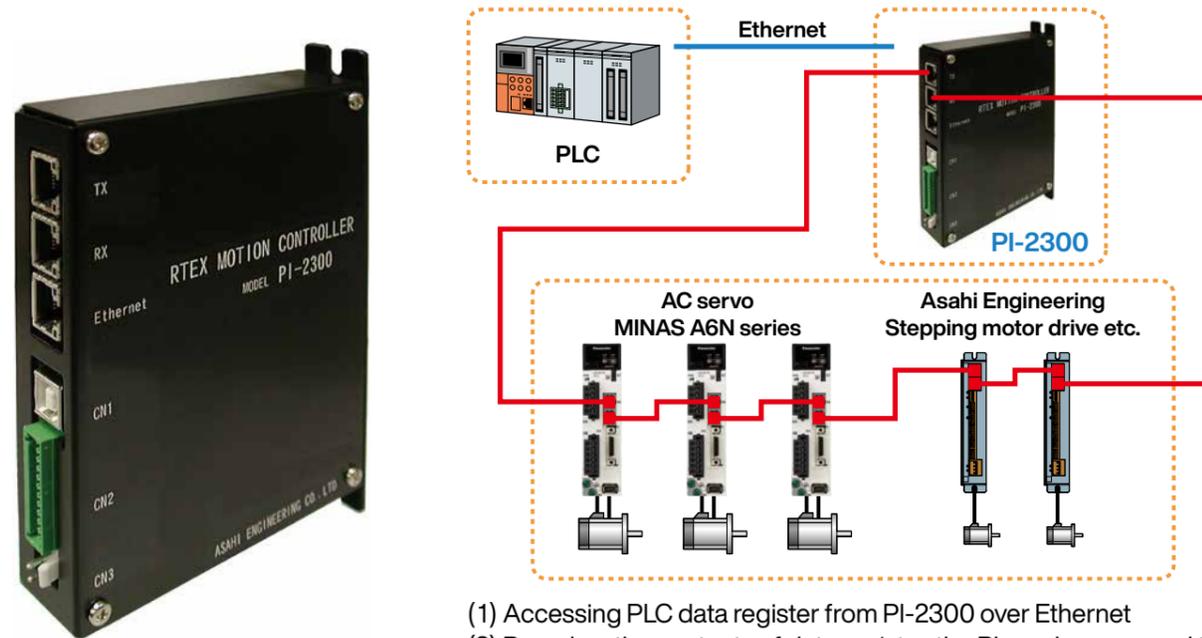▪ Preparation of ladder program for communication is not required on PLC.
▪ No CPU burden on PLC.

2 Simple motion control through data register

Motor can be controlled by operating PLC data register.
▪ Multiaxial motor can be controlled/monitored by simply operating numeric values on the data register.
▪ PLC operator having no knowledge on communication of motion (RTEX) can control the motor.

3 Stepping motor can be mixed

▪ The motion network can contain servo motor and stepping motor.
▪ Ultra high-speed fully-synchronized motion system can be built.

4 We also have simple controllers other than standard products.

Please contact us as individual special support is also available.

2-phase Microstep Drive
D4610 (1 Axis type) / D4620 (2 Axis type)

Leading Edge High Speed Motion Network (RTEX) At Low Cost

D4610
(1 Axis type)

D4620
(2 Axis type)

Features

1 High performance CPU enhances drive capability

• Step-out detection
• Motor over current protection
• Brake control (only D4610)
• Triangle drive prevention
• Vibration suppression
• Closed loop control by encoder signal (only D4610)

2 Network can connect up to 32 axes (depending on master specification)

3 Simultaneous multiaxial control within 0.16 ms, 0.5 msec, 1 msec communication period

Sales area
● Japan   ● China

Language
● English   ● Japanese

For more information

URL : http://www.asahi-engineering.co.jp/english

● Contact: **Asahi Engineering Co., Ltd. Kodaira Works**

3-3-22, Gakuen-Higashicho, Kodaira-shi, Tokyo 187-0043, Japan   TEL : +81-42-342-4422   FAX : +81-42-342-4423

Manufacturer/Distributor: **Aurotek** **Aurotek Corporation**

RTEX Network Motion Control board

MCN-8032P

Features

● **RTEX (Real Time Express) servo network**

● **Network Speed 100 Mbps, communication period 1 ms**

● **Easy to wire, saving wiring working-hour**

● **Up to 32 nodes**

● **Excellent error correction**

● **Multi-axis linear / circular interpolation**

● **Multi-axis synchronous motion (for gantry)**

● **Up to 16 boards in one PC**

Application Sample
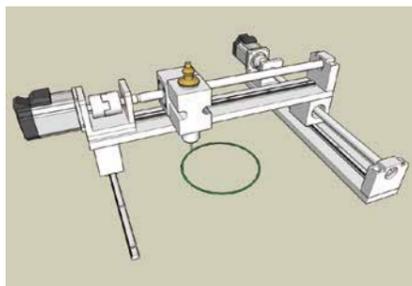
Linear and Circular Interpolations
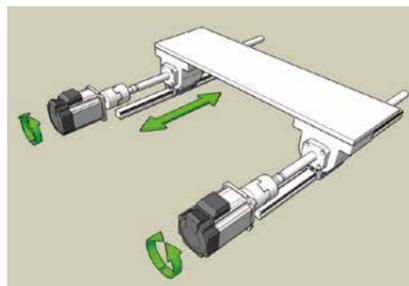
Gantry Motion
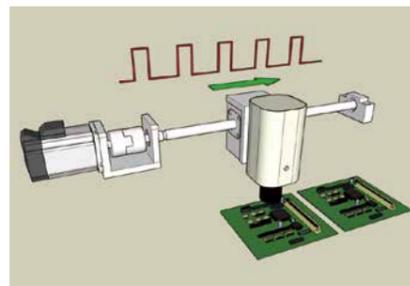
Position Comparing & Triggering Function

System Configuration
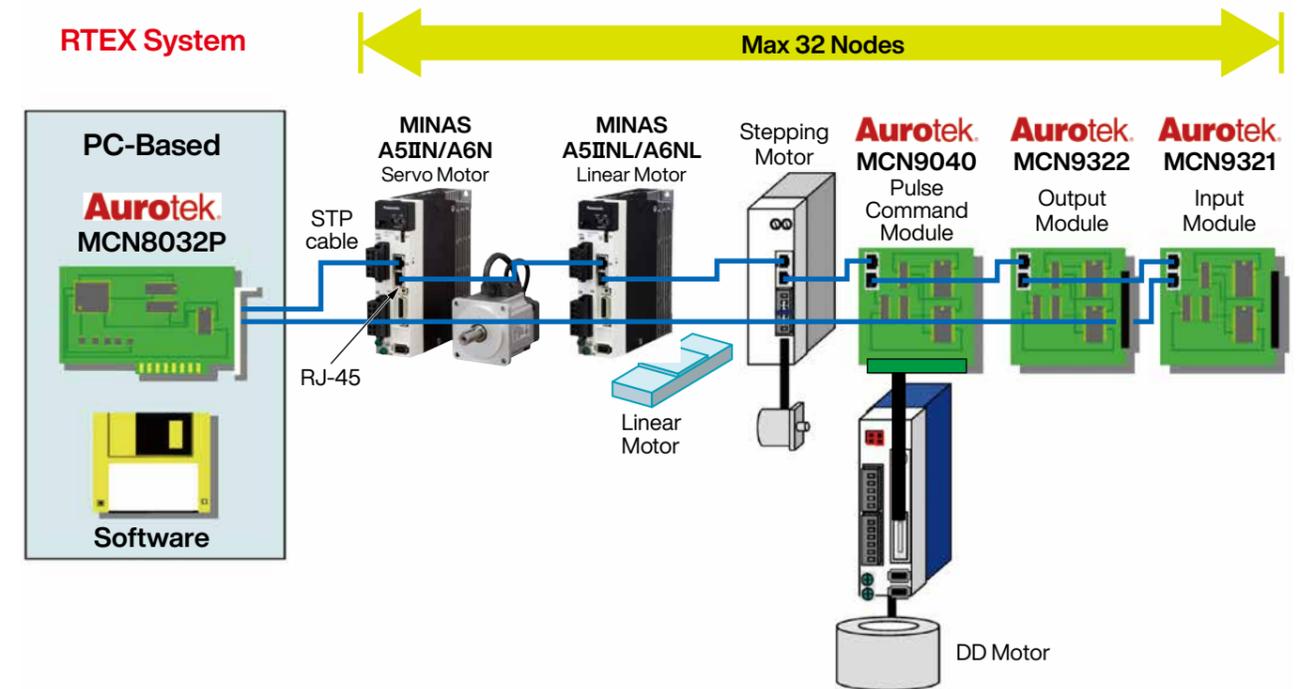
- ● MCN-9040   RTEX 4-axis pulse command module
- ● MCN-9321   RTEX 32 points input module with terminal block
- ● MCN-9322   RTEX 32 points output module with terminal block

Sales area

● **Japan**   ● **Taiwan**
● **China**   ● **Thailand**

Language

● **English**   ● **Chinese**

For more information

URL : http://www.robot.com.tw/EN/Default.aspx

● Contact: **Aurotek Corporation**

1st. Floor No. 60, Jhou-Zih St. Nei-Hu District, Taipei 114, Taiwan   TEL : +886-2-6600-7574   FAX : +886-2-8752-3347

Manufacturer/ Distributor: **COSMO** TECHS FACTORY AUTOMATION TECHNOLOGIES **COSMOTECHS**

Multifunctional motion controller
PXRP-3216CN / CSRC-32CN-RP

A controller that combines the high speed of hardware with the flexibility of software

Motion Controller GM1 RTEX type

Ethernet

CSRC-32CN-RP

RTEX

PXRP-3216CN

Features

1 ### Enhanced motion function and enhanced software processing speed

With conventional products, the processing related to control is controlled in a manner that depends on the PC side, so a waiting time is required between the PC and the controller. However, this product, which performs arithmetic processing with a motion engine, processes even complicated controls and functions at high speed.

2 ### Common software and selectable control method

PXRP-3216CN and CSRC-32CN-RP operate in the same software development environment. Since it can be operated with PCI-Express and USB (notebook PC, etc.), you can select the product that suits your device environment.

3 ### Camshaft control function

You can select from 6 types of cam curves "equal acceleration / single string / cycloid / deformed trapezoid / deformed sine / deformed constant velocity". While the electronic cam is being executed, cam data / arrival position change / correction, operation pause, and restart can be executed.

4 ### Compatible with a wide variety of devices

In addition to RTEX-compatible servos, it supports equipment required for device operation, such as in-house input boards, output boards, stepping drivers, analog conversion boards, digital conversion boards, and high-speed digital I / O boards.

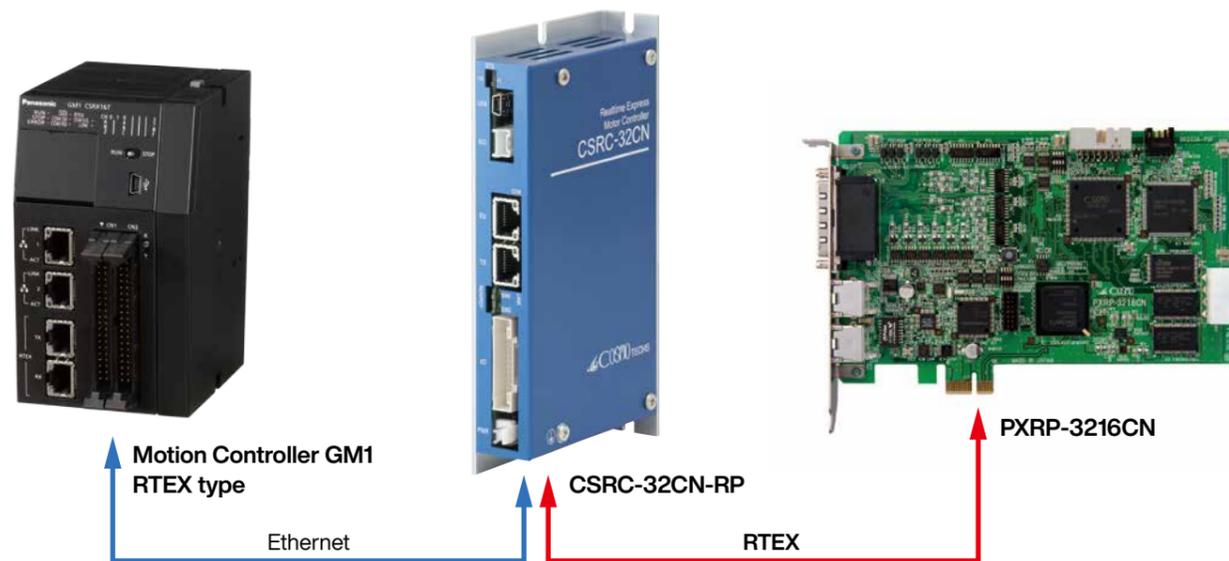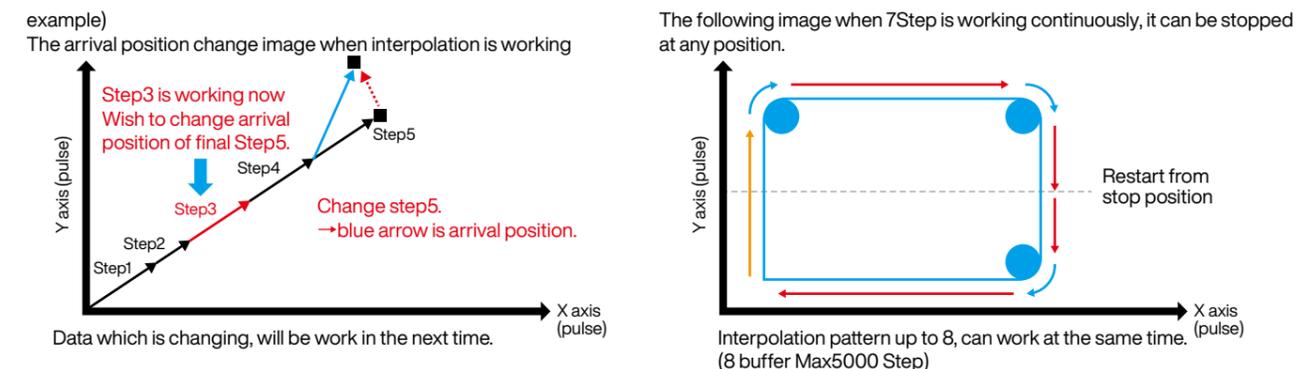## Main functions

Interpolation Control function

Interpolation data up to 5000 steps can be recorded. During working, changing Interpolation data, changing/revising object position, pausing interpolation actions is possible at any time. In addition, from pausing to restarting, exchanging interpolation axis etc, is possible.

example)
The arrival position change image when interpolation is working

Step3 is working now
Wish to change arrival position of final Step5.

Step5
Step4
Step3
Change step5.
→blue arrow is arrival position.
Step2
Step1
Y axis (pulse)
X axis (pulse)

Data which is changing, will be work in the next time.

The following image when 7Step is working continuously, it can be stopped at any position.

Restart from stop position
Y axis (pulse)
X axis (pulse)

Interpolation pattern up to 8, can work at the same time. (8 buffer Max5000 Step)

Axle linkage function / Gantry Axis Control / Soft landing function

Axle linkage function is on one axis we can addition and subtraction command position (output pulse) or actual position (input pulse) of another axis.

Y
X Work Stand
Direction of Conveyer
Encoder
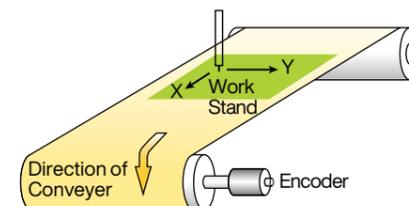
Connect Work Stand (XYZ axis) to the encoder of conveyer, we do not need to stop conveyer to control Work Stand.

Gantry Axis Control is carried as a base function. Using axle linkage function, connect axis Y2 to axis Y1, then send command to axis Y1 only, axis Y2 is also operating.

POT
HOME
Y1   Y2
X
NOT
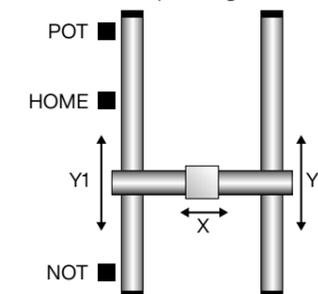
When to stop the bonding equipment etc., according to the overshoot, shock will happen. Parts may be damaged.
Soft landing function can control the overshoot, protects machine, material, or worker.

When put Parts on the pallet, speed can be slowed down.
material
adhesive
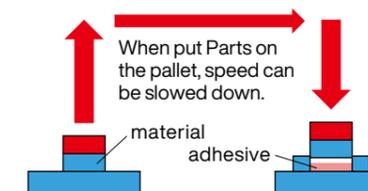
Others

● A total of 36 axes of RTEX 32 axes / pulse train 4 axes can be controlled. (Pulse train is PXRP-3216CN only)
● Speed, acceleration, and deceleration can be set between 1 PPS and 400 MPPS in 1 msec increments.
● You can set the output signal that can be used to turn ON / OFF the strobe, camera, sensor device, etc. in the motor position information.
● The general-purpose input can be used as a trigger signal for preset operation start and synchronization control.
● By measuring and storing the pitch error of the power transmission mechanism in advance, it is possible to add the pitch error to the position command and correct the movement amount.

Sales area
● Japan   ● China

Language
● Japanese

For more information

URL : http://www.cosmotechs.co.jp

● Contact : **COSMOTECHS CO., LTD.**

2-6-1 Matsue Atsugi Kanagawa 245-0005 Japan   TEL : +81-49-222-7351 FAX : +81-46-222-7355

eMotionTek Co., Ltd.

Motion Controller (Stand-alone & Remote Control type)

SNET-RTEX Serie

SNET-RTEX

Features

- ● Both Stand-alone & Remote Control
- ● Adopt standard G code and used Motion Instruction
- ● Position, Speed change and intervariable calculation using L variable, Macro Function
- ● PTP/CP/Helical
- ● Supports communication protocol with PLC, Touch Panel (Melsec etc.)
- ● 16 Axes - 6 Channel - Multi Tasking
- ● 2 Port – Supplied external Encoder Input
- ● Analog In/Out (Option)
- ● Gantry and Synchronous operation, S-curve, etc
- ● Remote I/O expansion using RS-485

Application Sample

- ● Dispenser
- ● SPI
- ● AOI
- ● Packaging Machine
- ● Laser Application
- ● Lens Cell Assembly
- ● OIS Lens Module Assembly
- ● Lens Module Inspection
- ● Pick & Place

System Configuration

【PC】

【Touch Panel】

【PLC】

EtherNet /RS232/RS4

SNET-RTEX

【I/O & MPG】

【Servo Motor & Driver】

RTEX Realtime Express

【External I/O】

RS485

【Stepper Motor & Driver】
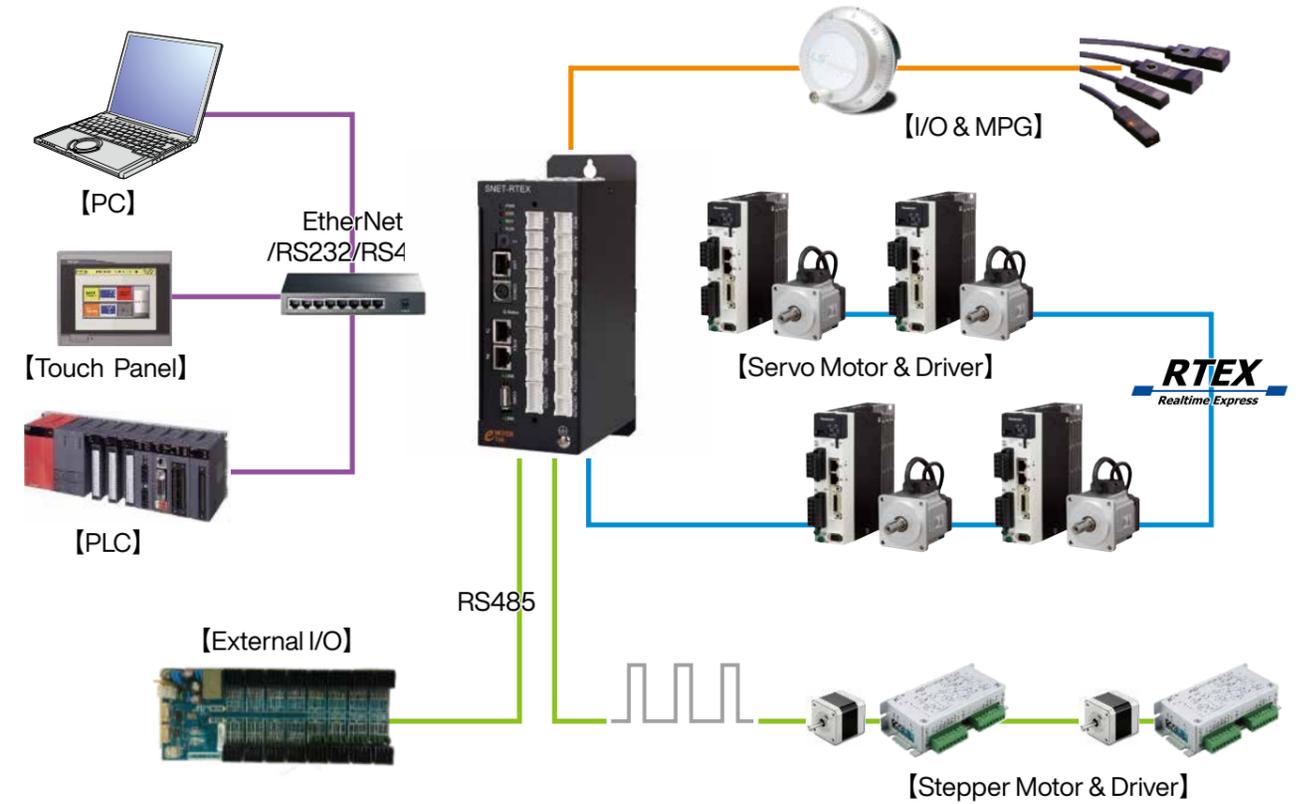
Sales area

- ● Korea
- ● China
- ● United States of America

Language

- ● Korean
- ● English

For more information

URL : http://www.emotiontek.com/

● Contact: **eMotionTek Co., Ltd.**

1206,(Byucksan Digitalvalley 5), 244, Beoktkot-ro, Geumcheon-gu, Seoul, Korea, 08513

TEL : +82-2-2082-5790 FAX : +82-2-2082-4466

Network Stepper Drive

EM3RT Series

Application Sample

● Automatic production line
● Automation equipment

System Configuration

Slave ID Setting

USB Cable

Control Card/Controller/PLC

TX   RX

RX **RTEX** TX
Realtime Express

Input / Output Interface

Power Supply

Motor Cable

Power Cable

Features

● Support RTEX network protocol
● Perfectly combine with RTEX servo
● Matched motor from NEMA 8 to NEMA 34
● Excellent performance & High reliability
● Easy development & Low cost
● 7 input signals, include 2 differential connections (200 KHz, 3.3 V - 5 V input voltage) and 5 single – ended connections (20 KHz, 12 V or 24 V input voltage)
● 2 output signals, optically isolated, maximum 24 mA/100 mA
● 1 brake output signal, maximum 24 mA/100 mA

Overview

EM3RT series drives are based on Panasonic RTEX network which supports CP operating mode (built in HM mode) and connect up to 32 axes. The products can be combined with RTEX servo drives perfectly and matched with various stepper motors from NEMA 8 to NEMA 34. The EM3RT series has excellent performance including enhanced reliability, super-low stepper noise, anti-resonance and low-speed ripple smoothing and remains low cost.

Sales area	
● China	● Worldwide response

Language	
● English	● Chinese

For more information

URL : http://www.leadshine.com

● Contact: **Leadshine Technology Co., Ltd.**

11/F, Block A3, iPark, 1001 Xueyuan Blvd, Nanshan District, Shenzhen, China   TEL : +86-755-26417674

Manufacturer/ Distributor: **Movensys, Inc.**

64-Axis Multi-Function Soft Motion Controller

WMX3 with Realtime Express

Soft Motion

LAN port

SSP-100 RTEX Interface Board

MINAS A6N

RTEX Realtime Express

(Servo Network)

EtherCAT I/O Modules, Stepping Motor Drivers

EtherCAT

<Advantages of hybrid controls>

If you feel...

☑ Not enough I/O points left for operations.

☑ A large number of nodes sacrifices the communication cycle.

☑ I/O modules are too costly.

☑ Want to choose the right I/O module from a lot of options.

Hybrid Network can provide solutions

➡ High-performance RTEX servo network for axis control requiring high synchronization

➡ High cost performance EtherCAT modules for I/O control and stepper motors.

➡ Soft motion enables high-speed real time control over the servo network and I/O network.

Solution!

Features

1 ### RTEX and EtherCAT. Soft Motion technology gets the best of both worlds.

● Proven high-performance motion controller WMX3 (patented) now supports "hybrid" networks that simultaneously communicate with the high-speed networks RTEX and EtherCAT. Up to 64 axis synchronous control is possible.

● Applying RTEX to the servo network and EtherCAT to the sub-network enables using cost effective EtherCAT I/O modules.

● Advanced functions such as gantry control and various acceleration/deceleration profiles can be easily realized.

2 ### Integrated into one PC. Slimming. Networking.

● WMX3 enables the integration of operation screens, image processing, and motion control applications of up to 64-axis for a slimmer control device.

● Reduced wiring man-hours and material costs by reducing wiring through networking. Contributes to noise immunity.
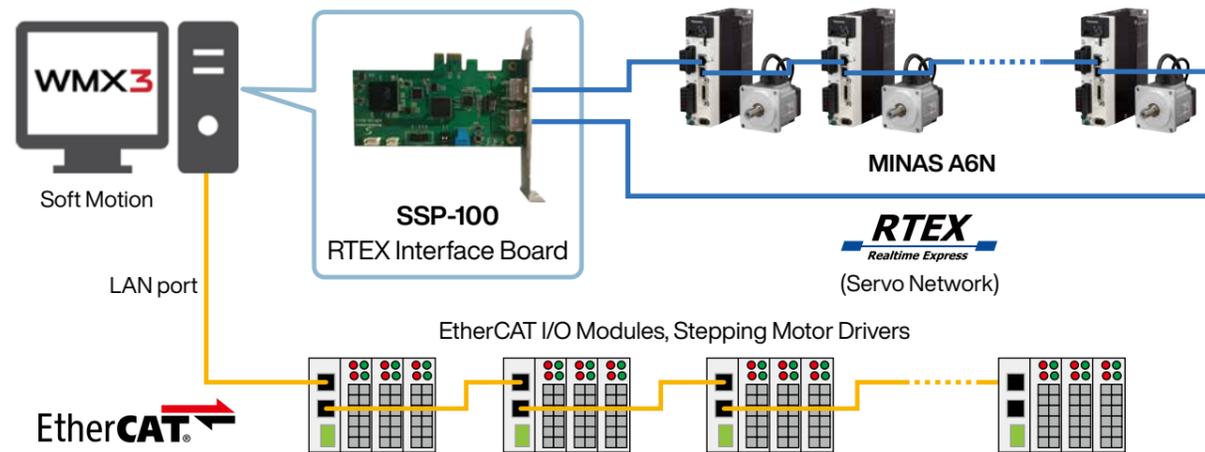
● Use a commercially available Windows PC: Users can freely choose between PCs for small embedded applications as well as high-spec industrial applications depending on the user's application and concept.

Specification (Motion)

Positioning	64-axis * Simultaneous override (Dynamic destination can be changed)
Acceleration / Deceleration Profiles	Speed curve: Trapezoid, S-Curve, Jerk, Two-Step Speed, Acceleration time specification trapezoid, Acceleration curve: S-Curve, Quadratic Curve, Sine Curve
Interpolation Types	Linear, Arc, 3D Arc, Helical, PVT
Continuous Trajectory	Combination of straight line and Arc, Spline interpolation, Automatic prefetch speed control, Linear / Circular continuous trajectory with rotating stage
Gantry Control	Complete synchronous gantry control
Event	Register triggers (reach axis target value, I / O input, etc.) and actions (start axis movement, I / O output, etc.) and execute real-time operations
API Buffer	Register the motion API in the buffer and perform real-time operation. Execution waits and branches can be made depending on conditions.
Position synchronization output (PSO)	Real-time output of I / O at the specified position (position comparison performance depends on the communication cycle). When more precise operation is required, position comparison at 1 pulse level is possible with a dedicated hardware option.
Synchronization Control	Simple synchronization, synchronous gear ratio / offset specification, synchronization deviation correction, dynamic synchronization axis setting / change / cancel. Multiple axes (up to 32 sets for EtherCAT and up to 32 sets for RTEX) can be defined for single-axis to multi-axis synchronization.
Electronic Cam	8 cam curves can be defined. Cam curve for each communication cycle. Phase manipulation. clutch.
Return to Origin	Index pulse, origin sensor, limit sensor, limit proximity sensor, external input signal, mechanical end, etc. It is possible to return to the origin of the gantry axis.
I/O	11600 inputs / 11600 outputs, Supports most commercial EtherCAT I/O modules
Compensation Function	Pitch error, Backlash, Straightness correction
API Supported Language	C Language (C/C++), .NET Languages (C#,VB), .NET Framework: 4.0 or later
Development Environment	Microsoft Visual Studio 2012, 2013, 2015, 2017, LabVIEW, Python 3.6
Recommended Operating Environment	OS: Windows 7(32-bit/64-bit), Windows 10 (64-bit), IoT Enterprise LTSC CPU: Min. ATOM 2 GHz (E3845, etc.) 2 cores or more, Memory: 4 GB or more

Sales area

● Asia   ● North America   ● Europe

Language

● Korean   ● Japanese
● English   ● Chinese

For more information

URL : http://www.movensys.com

● Contact: **Movensys, Inc. (formerly Soft Servo Systems,Inc.)**

Sunae Finance Tower 8F, 25, Hwangsaeul-ro 258 beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13595, Republic of Korea   TEL:+82-31-895-5066   FAX:+82-70-4015-5066

Manufacturer/
Distributor:

P.A.I.X **PAIX CO., LTD.**

ETHERNET to RTEX Motion Controller

NMC-XR Series

NMC-XR
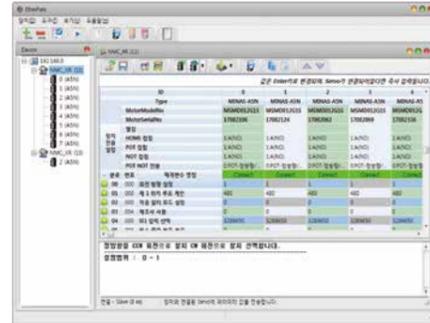
"EtherPara" software

Features

● **32 axes control is possible with one NMC-XR motion controller.**
● **It is possible to connect up to 255 NMC-XRs with one low-specification PC.**
● **Provide SDK in various languages**
  - Dynamic Linking Library (x32, x64), C, C++, Visual C
  - Labview DLL
● **Provide various motion function**
  - Multi axis, circular arc, helical, continuous interpolation, list motion, torque value monitoring, etc.
● **All 32 SERVO parameters connected to the NMC-XR**
  Editing is possible at once, You can check motor status information in real time
● **Provide a protocol for ModBus.**
● **Provide Mirror function**
  - Mirror function copies the motion motion of the main axis like a mirror, It is a special function developed to perform.
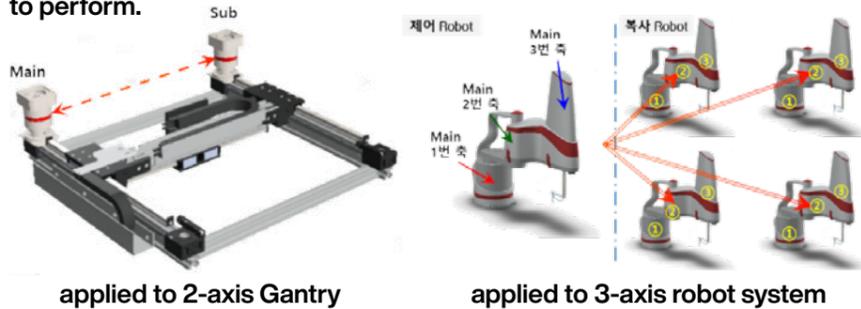
applied to 2-axis Gantry

applied to 3-axis robot system
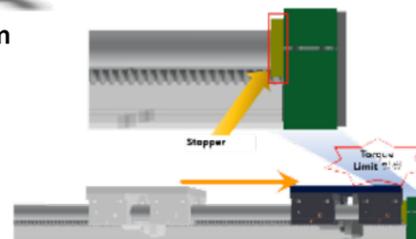
● **Real-time Torque Monitoring and Torque Limit**
  - You can set the limit range of the instrument as well as perform the origin with the stopper of the instrument.

Product Line-up

NMC-XR040
32 axes
(CP 4 axis + PP 28 axis)
digital 8 input + 8 output

NMC-XR080
32 axes
(CP 8 axis + PP 24 axis)
digital 8 input + 8 output

NMC-XR120
32 axes
(CP 12 axis + PP 20 axis)
digital 8 input + 8 output

NMC-XR160
32 axes
(CP 16 axis + PP 16 axis)
digital 8 input + 8 output

NMC-XRDI32
digital 32 input

NMC-XRDO32
digital 32 output

Products that can be used
with the NMC-XR
ETHERNET to PULSE

NMC2E
NMC2E-220 : 2 axis
NMC2E-420 : 4 axis
NMC2E-620 : 6 axis
NMC2E-820 : 8 axis

System Configuration

Ethernet

Ethernet

Control PC

Ethernet

RTEX Realtime Express   32 axis

RTEX Realtime Express   32 axis

NMC-XR

NMC-XR
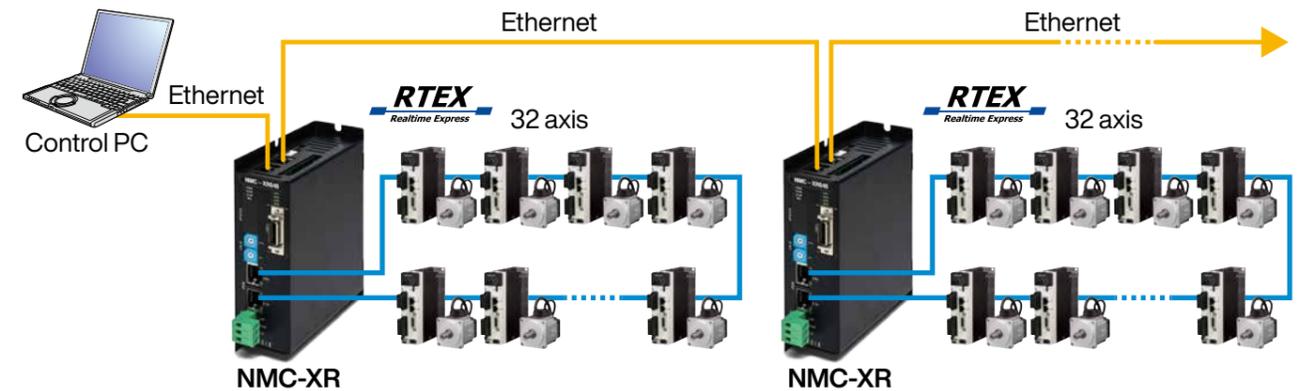
Sales area

● Korea

Language

● Korean

For more information

URL : http://www.paix.co.kr

● Contact: **PAIX CO., LTD.**

123, Digital-ro 26-gil, Guro-gu, Seoul, Republic of Korea
G PLUS KOLON DIGITAL TOWER #505

TEL : +02-833-6663   FAX : +02-833-6667

Multi PLC Direct Connection 40-axis Motion Controller

"InterMotion" Series JOY-AMXR-P8 Including PLC (Using a C-like Language)

Features

● Directly connectable to Mitsubishi PLC (CPU with Ethernet: e.g. Q03UDECPU).
  Reference to the CPU D register in accordance with MC Protocol.
● Directly connectable to Keyence PLC KV-5000.
  Reference to the CPU D register in accordance with MC Protocol.
● Directly connectable to OMRON PLC (CPU with Ethernet: e.g.CJ1M-CPU11-ETN).
  Reference to CPU the Data Memory in accordance with FINS commands.
● Can be directly connected to Panasonic PLC (FP7, GM1). See data memory in MC protocol.
● Real-time logging such as 1 ms sampling position field data is possible on a Windows PC.
● Control with the .NET Framework interface on a Windows PC with Ethernet is possible.
● Position command generation and DIN/DOUT scan controls with the cycle time of 1ms.
● Series model: RTEX64 axis "JOY-AMXG64". RTEX32 axis "JOY-AMXG32".
  RTEX 16 axis "JOY-AMX G16".
  RTEX 32-axis + pulse train 8-axis control "JOY-AMXG40P8". *
  RTEX 16-axis + pulse train 8-axis control "JOY-AMXG24P8". *

  * Scheduled to acquire the KC mark

Specification

Item	Description
No. of control axes	40 axes. 32-axis RTEX interface. 8-axis 10 Mpps pulse train position command.
Controlling method	Independent PTP control for each axis. Max. 8-axis synchronized PTP control. Linear interpolation, 2-axis arc interpolation, 3-axis spiral interpolation. 32-bit length.
Internal control program development	Control program can be developed using the C-like multiprocessing machine control language "MOS language." Motion control, IO control, communication control, and sequence control are possible. "MOS Bench AM" is required as a development environment.
Accessory IO	±CW/±CCW pulse output, ±A/±B/±Z input. Servo on, reset output. ±OT, alarm input. (The above-mentioned items are for 8 axes.) General-purpose IN 8 points. General-purpose OUT 8 points. Non-insulated RS232-1ch. Insulated RS485-1ch.
Optional functions	Camera trigger function using ±A/±B input counter and general-purpose OUT.
Optional devices	Non-insulated RS232-1ch. Insulated RS485-1ch. 192IN, 192OUT are available by adding 6 general-purpose 32/32 IO boards. Non-insulated RS232-6ch is available using a RS232C extender board.

PCIExpress-40-axis Motion Control Board, PCI-40-axis Motion Control Board

"RT40PRE", "RT40PR" Including PLC (Using a C-like Language)

Features

● Max. 40 axes: 32-axis RTEX Interface and 10Mpps pulse train position command for 8 axes.
● Synchronization of axes controlled by RTEX and those controlled by pulse train output is possible.
● Windows Real-time software PLC using the C-like multiprocessing machine control language "MOS language."
● Windows10 IoT Enterprise LTSB High End is supported.
● DIN, DOUT, AD, DA, RS232, and RS485 can be controlled in real time as well as motion control boards.

General Purpose 32/32 Input/Output Board

InterMotion Series JOY-RIO3232

Features

● Single board with 32 IN points and 32 OUT points
● 10 PIN connector for 8-point IN and 8-point OUT. Can be directly connected to terminal block PRS-DG10-O8 (TOYOGIKEN Co., Ltd).
● 24 V DC supply
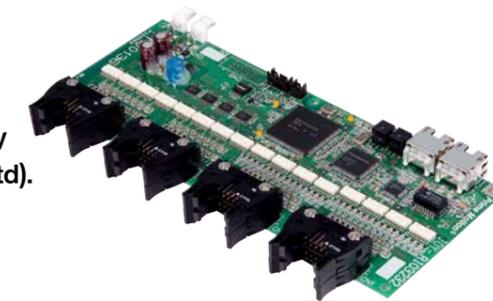
Specification

Item	Description
Input	32 points (8 points × 4 ports), 24 VDC, 4.7 kΩ
Output	32 points (8 points × 4 ports), 24 VDC, 100 mA
Max. No. of connectable boards	6 (IN 192 points, OUT 192 points)

System Configuration

Keyence PLC
Mitsubishi PLC
OMRON PLC
InterMotion
Pulse train input servo, step (max. 8 axes)
RIO3232 32/32 max. 6 sheets
Panasonic PLC (GM1)
Raspberry Pi
Pulse train
MINAS A6N (max.32 axes)
PC
Ethernet
RTEX
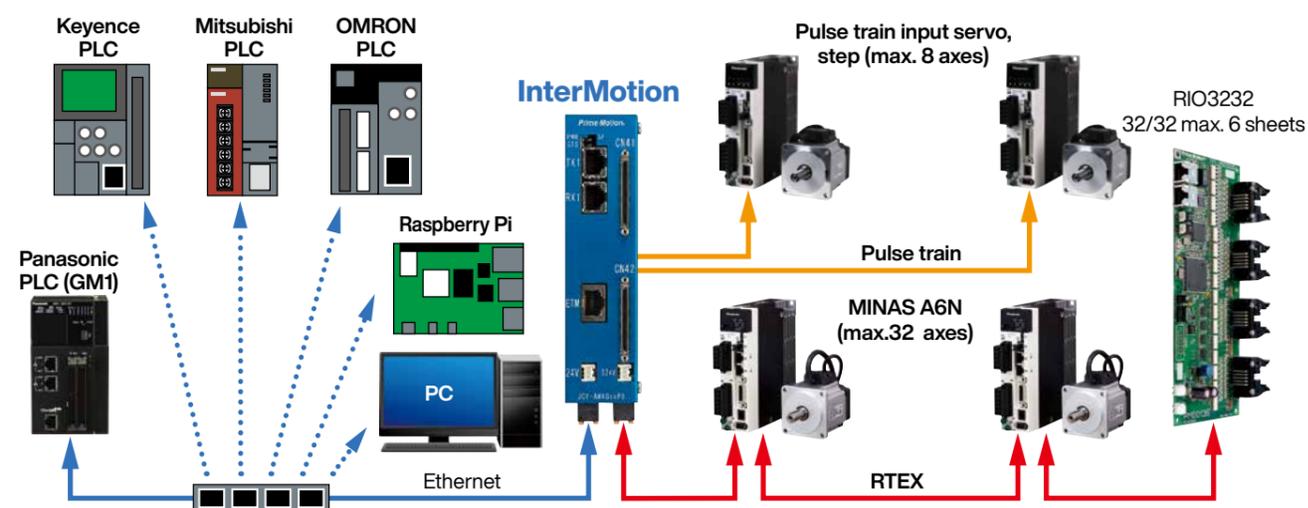
Sales area

● Japan   ● China   ● Taiwan   ● Korea

Language

● Japanese

For more information

URL : https://primemotion.com/

Manufacturer/Distributor: SYNTEC × LEANTEC **SYNTEC Technology Co., Ltd.**

SYNTEC Ethernet-base Controller

SYNTEC –E Controller
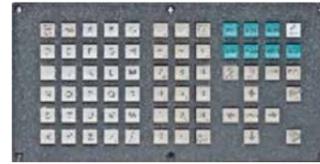
Keyboard

Control Panel for Mill

Control Panel for Lathe

Features

● Provide eHMI application for users to customize operation interface conveniently.

● Customized G/M code, dedicated machine can be used easily.

● Provide dipole architecture, users can integrate the customized software on PC.

● Provide optional vision system or pick-and-place equipment for highly automated integration solutions.

● Also supports EtherCAT communication

Application Sample

● **Standard Machine:**
Lathe, milling machining center, engraving and milling machine, mill-turn machine.

● **Dedicated machine:**
Tapping center, glass cutting machine, cutter grinding machine, PCB molding machine, spring machine, laser processing machine, flame cutting machine, stone processing machine...etc.
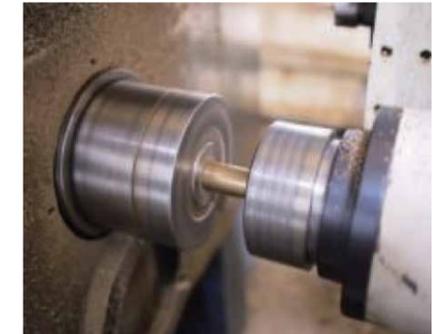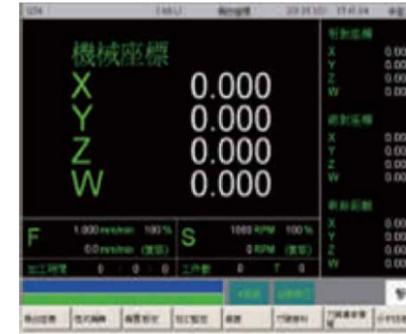
System Configuration
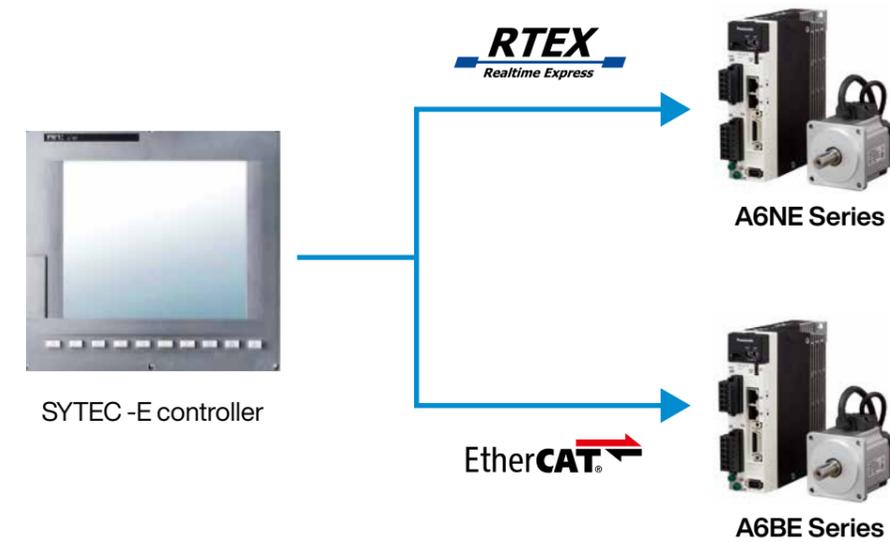
SYTEC -E controller

A6NE Series

A6BE Series

Sales area

● Taiwan　　● China
● United States of America　　● Malaysia
● Thailand　　● Vietnam　　● Turkey
● Indonesia

Language

● English　　● S/T Chinese

For more information

URL : https://www.syntecclub.com

● Contact: **SYNTEC Technology Co., Ltd.**

No.25, Yanfa 2nd Rd., East Dist., Hsinchu City 300, Taiwan (R.O.C.)　　TEL : +886-3-6663553　FAX : +886-3-6663505

Techno Horizon Co., Ltd.

PLC Motion Unit

B3632101-UNT-LE02

PLC motion unit best suited to build motion control system

A6N series Servo drive compatible

Yokogawa Electric e-RT3 2.0 series PLC compatible

Features

1 32 axes synchronous control

All servos sync to the host device assuring precise CP control.
Communication period is 1 ms over max. 32 axes allowing various control settings.

2 Software interface easily transportable from pulse train typesoftware

Command functions such as single axis PTP control, linear interpolation, arc interpolation, origin return and drive parameter change are provided. The unit will operate as the host controller sets the parameters and calls DLL functions. (DLL functions will be disclosed.)

3 Connection of Yokogawa PLC to Panasonic network servo

By connecting the unit to the host PLC via PCI bus and to the driving section via network interface, various monitoring operations can be performed without stress.
The combination of the unit and PLC expands functions such as to external signal interface.

Application Sample

● Semiconductor equipment
● Chip-Mounter
● Machine tool
● Industrial Robot

System Configuration

Sample 1 : In case that the customer develops the motion software

Operation panel

Motion control board

Motion software by the customer

Device driver for Windows
We supply the PCB and servo communication library

Motion software developed by the customer

PC for upper control
RTOS: VxWORKS, QNX, LINUX, etc.

Max. 32-axis
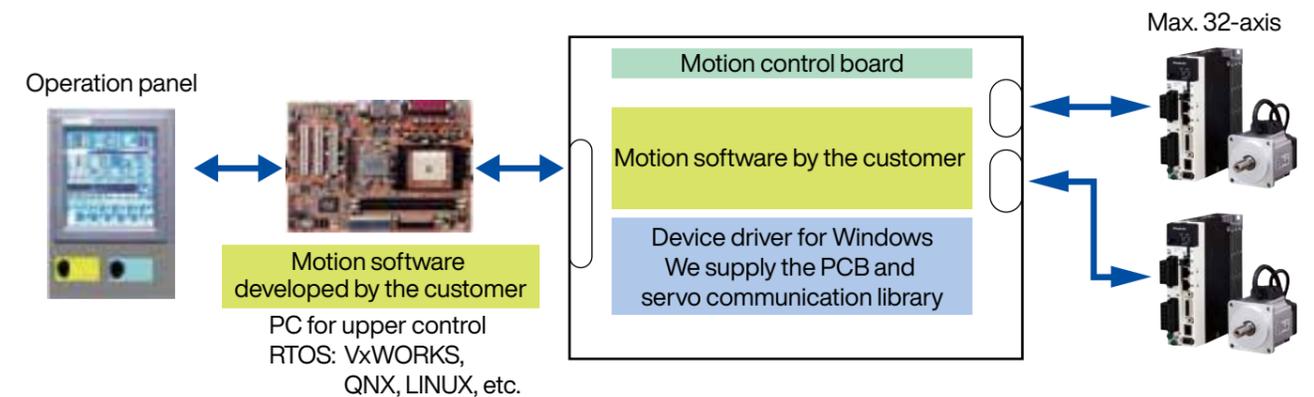
Sample 2 : In case that the customer uses installed software and develops the upper application.
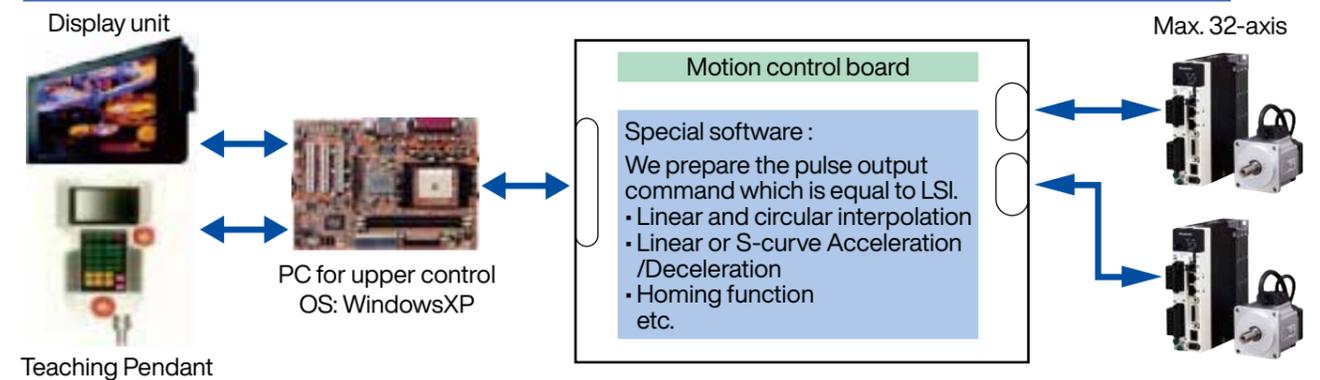
Display unit

Motion control board

Special software :
We prepare the pulse output command which is equal to LSI.
· Linear and circular interpolation
· Linear or S-curve Acceleration /Deceleration
· Homing function
  etc.

PC for upper control
OS: WindowsXP

Teaching Pendant

Max. 32-axis

Sales area

● Japan   ● China

Language

● English   ● Japanese

For more information

URL : https://www.technohorizon.co.jp/

● Contact: **Techno Horizon Co., Ltd.**

1-3-4 Shioya-cho, Minami-ku, Nagoya 457-0078, Japan   TEL : +81-52-824-7375   FAX : +81-52-811-4737

Manufacturer/Distributor:

TRIO MOTION TECHNOLOGY

Trio Motion Technology Ltd.

Motion Coordinator and RTEX Interface Module

MC664 / MC664-X / MC4N-RTEX

Features

- Up to 128 Axes
- Servo period 50 µsec minimum (8 axes)
- Precise 64 Bit Motion Calculations with Quad Core Cortex A9 1 GHz Processor (P862)
- Dedicated Communications Core (P862)
- Built-in EtherCAT Port
- EtherCAT, Sercos, SLM and RTEX Digital Drive Interfaces
- Linear, Circular, Helical and Spherical Interpolation
- Flexible CAM shapes, Linked Motion
- EnDAT, BISS and SSI Absolute Encoder Supported
- Hardware Linked Outputs for Camera / Laser Control
- Ethernet-IP / Modbus TCP / Ethernet Interface Built-In
- Anybus-CC Module for Flexible Factory Comms Including ProfiNet/Profibus
- IEC 61131-3 Programming
- Multi-tasking BASIC Programming
- Text File Handling
- Robotic Transformations
- SD Memory Card Slot
- CANopen + EtherCAT I/O Expansion
- Backlit LCD Display
- RoHS and CE Approved

MC664 / MC664-X

System Configuration

UNIPLAY HMI

MC664

Up to 32 Axes

MINAS A6N

Application Sample

URL : Sample applications
http://www.triomotion.uk/public/applications/applications.php
Please refer to the sample and typical applications for the MC464 with A6N as shown above URL.

Features

- Up to 32 RTEX Digital Drive Axes
- Supports Position, Speed and Torque Drive Modes
- Up to 1024 I/O
- Linear, Circular, Helical and Spherical Interpolation
- Flexible CAM shapes, Linked Motion
- Isolated Encoder Port
- EnDAT and SSI Absolute Encoder Supported
- Hardware Linked Output for Camera / Laser Control
- Ethernet-IP / Modbus TCP / Trio ActiveX /TCIP / Uniplay HMI / UDP / Ethernet Interface Built-In
- Precise 64 Bit Motion Calculations with 532 MHz ARM 11 Processor
- IEC 61131-3 Programming
- Multi-tasking BASIC Programming
- Text File Handling
- Robotic Transformations
- 4 high speed registration inputs
- Isolated RS232 and RS485 ports
- SD Memory Card Slot
- CANopen I/O Expansion
- Backlit LCD Display
- RoHS and CE Approved

MC4N-RTEX

System Configuration

UNIPLAY HMI

MC4N-Mini

Up to 32 Axes

MINAS A6N

Sales area

- United Kingdom
- China
- United States of America
- India

Language

- English

For more information

URL : Panasonic Expansion Module
http://www.triomotion.uk/public/products/clipOnExpansion.php?tabno=1

URL : The specifications for the MC664
http://www.triomotion.uk/public/products/p862.php

URL : Specification for the MC4-N RTEX Mini Master
http://www.triomotion.uk/public/products/p906.php

● Contact: **Trio Motion Technology Ltd.**

Shannon Way, Tewkesbury, Gloucestershire, GL20 8ND, United Kingdom   TEL : +44-1684-292333   FAX : +44-1684-297929

RTEX/AnyWire Gateway
AG42-R1

Connect a wiring-saving system to RTEX

Features

1 AnyWire Wiring and connection

AnyWire wiring saving adopts the Dual-Bus function that can transmit DI / O and AI / O independently on one transmission line.

2 Cable-free, topology-free

It can be connected with a general-purpose electric wire, and there are no branch restrictions.
Layout-free such as T-branch, multi-drop, tree wiring.

3 basic specifications

The maximum number of I / O points is 2560, the maximum number of I / O terminals connected is 128, and the maximum connection distance is 1000 m.

Sales area

● Japan

Language

● English   ● Japanese

For more information

URL : http://www.anywire.jp/

● Contact: **Anywire corporation Headquarters**

1 Babazusho, Nagaokakyo-city, Kyoto 617-8550, Japan   TEL: +81-75-956-4911(Japanese only)   FAX: +81-75-356-1613
* Only Japanese is used for inquiry over the phone. When making an inquiry in English, send it to: info_e@anywire.jp.

RTEX corresponding table and ASIC information

RTEX partner products

【Corresponding table】

Partner	Master				Slave							
	PCI	PCI-e	Stand Alone	PLC	Digital I/O	Analog I/O	Pulse Output	Stepper Driver	Counter	Gateway	Motor Driver	Servo
Panasonic Industry Co., Ltd.				●								●
ACE Automation Co., Ltd.												
AJINTEK CO., LTD.	●	●			●	●	●		●			
Anywire Corporation										●		
Asahi Engineering Co., Ltd.			●					●				
Aurotek Corporation	●				●		●					
BDF DIGITAL											●	
COSMOTECHS	●	●	●	●	●	●	●		●			
eMotionTek Co., Ltd.				●								
Leadshine Technology Co., Ltd.								●				
MOVNSYS Inc.	●											
PAIX CO., LTD.				●								
Prime Motion Inc.	●	●	●		●							
SYNTEC Technology Co., Ltd.				●								
Techno Horizon Co., Ltd.	●			●								
Trio Motion Technology Ltd.				●								

Communication ASIC MNM1221

For developing RTEX product, this ASIC is necessary. (See note)

	Specification
Part No. for ordering	DV0P444-9
Packing quantities	90
Power supply voltage	3.3 V
Current consumption	Max. approx. 100 mA (for reference)
Operating ambient temperature	−40 °C to +85 °C
Package	LQFP100pin 14 mm × 14 mm Lead pitch 0.5 mm
RoHS	Compliant
Operation mode	Master/slave

Note: As long as the target is noncompetitive to Panasonic products.

MINAS A6B series

Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

EtherCAT®

High-Performance

- Frequency response: **3200 Hz**
- Supports network communication "**EtherCAT**".
- High-Speed **100 Mbps**
- Real-time auto tuning function, Anti-vibration filters are available.

High-functions

- **EtherCAT** with many supported applications
  <7 control modes, 32 hm methods, DC(Synch), SM2(Synch), FreeRUN (Non-synch)>
- System-up possible with various slaves.
- Supports PC-based controller.
- A6BL/A6BM (for Linear Motor) will be available soon.

Standards

EtherCAT®

- Official **EtherCAT Conformance Tested** model available.
- IEC safety I/F model available.*1
  *1:Supported by multifunction type. EN61800-5-2 STO, EN61508 SIL3.

Operability

- Smallest **EtherCAT** drive in market.
- Supports pc setup software "**PANATERM**"

System configuration example

Controller

EtherCAT®

| A6B | A6BL | A6BE | Stepping Drive | I/O | Pulse out |

Rotary motor / Linear motor / Rotary motor / Motor

EtherCAT specification for A6B series

Device profile	CoE (CANOpen over EtherCAT)
Control mode	csp, pp, hm, csv, cst, pv, tq
hm method (homing mode)	1 to 14, 17 to 30, 33, 34, 35, 37
Synchronized mode	DC (Synch.), SM2 (Synch.), FreeRun (Non-synch.)
Supported cycle time	125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms

Compliance

CE UKCA cRUus cULus LISTED TÜV SÜD (Type E) TÜV SÜD (Type F) KC RoHS

Drive list

Drive power supply		Motor rated output													
		50 W	100 W	200 W	400 W	750 W	1 kW	1.5 kW	2 kW	3 kW	4 kW to 5 kW	7.5 kW	11 kW to 15 kW	22 kW
1-phase 100 to 120 VAC	Frame	A	A	B	C									
	Driver Part No.	MADL□ 01B☆	MADL□ 11B☆	MBDL□ 21B☆	MCDL□ 31B☆									
1 or 3-phase 200 to 240 VAC	Frame	A		A	B	C	D	D						
	Driver Part No.	MADL□ 05B☆		MADL□ 15B☆	MBDL□ 25B☆	MCDL□ 35B☆	MDDL□ 45B☆	MDDL□ 55B☆						
3-phase 200 to 230 VAC	Frame								E	F	F	G	H	H
	Driver Part No.								MEDL□ 83B☆	MFDL□ A3B☆	MFDL□ B3B☆	MGDLT C3BF	MHDLT E3BF	MHDLT F3BF
3-phase 380 to 480 VAC	Frame				D	D	D		E	F	F	G	H	H
	Driver Part No.				MDDLT 44BF	MDDLT 54BF	MDDLT 64BF		MEDLT 84BF	MFDLT A4BF	MFDLT B4BF	MGDLT C4BF under development	MHDLT E4BF under development	MHDLT F4BF under development

- Because there is the case that is different from the part number in the table by the motor, please check the combination in the catalog of the A6 series always.
- □ : Drivers specification..... N: Without safety function   T : With safety function
- ☆ : Drivers specification..... E : For rotary motor (standard)   F : For rotary motor (multifunction)
  L : For linear/DD motor (standard)   M: For linear/DD motor (multifunction)*
  * 400 V specification, G frame and H frame are only multi-function type

EtherCAT communication driver

MINAS A6B series
Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

EtherCAT®

Drive appearance

A6B size A

* This photo shows multi-functional type. Standard type does not have X3 and X5 connectors.

7-seg LED (2-digit)
Servo status display

EtherCAT Indicator
RUN......... EMS status (Green)
ERR......... Ararm status(Red)

L/A IN
L/A OUT } Indication of LINK state and operation state L/A OUT of each port physical layer

Connector X7 for analog monitor
For monitoring speed, torque, etc.

Rotary switch
for Station alias (ID) setting

Main circuit charge lamp

Panasonic EtherCAT®
RUN L/A IN
ERR L/A OUT
X7
ECAT ID
CHARGE MADLT01BF 100 V
X1

Connector XA
for power input connection

L1
L2
L3
Main power

L1C
L2C
Control power

USB connector X1 for connection to PC
For PANATERM, mini-B 5 pin

X3
Connecter (X3)* for safty function

X2A
Connector X2A: IN for EtherCAT
Connection to TX of upstream node

X2B
Connector X2B: OUT for EtherCAT
Connection to RX of downstream node

XA

XB X4

Regenerative-R &
motor connector (XB)

P
N
B
Regenerative-R

U
V
W
Motor

Connector X4 for I/O
Connection to sensor inputs and alarm outputs
Half pitch 26-pin

X5
Connector X5 for feedback scale (not available)*
For full closed control

Earth terminals

X6
Connector X6 for encoder
For Panasonic serial data

Dimensions (mm): W40 × H150 × D130

Low voltage small servo MINAS A6BE sizeV (DC24 V/48 V 100 W to 400 W)

Drive appearance

A6BE size V

EtherCAT connector
CN10：OUT   CN9：IN

Encoder connector (X6)

USB connector (X1)

I/O connector (X4)

SRVON (Green) LED
ALM (Red) LED

Charge lamp (Red) LED

Motor connector (XB)

Power input connector (XA-1)
Control power connector (XA-2)

Panasonic AC SERVO DRIVER

EtherCAT connector

Dimensions (mm): W81, H180, D30

List of drivers

Driver power		Rated output of motor		
		100 W	200 W	400 W
DC 24 V	Frame symbol	V		
	Driver model number	MVDLN5CBE		
DC 48 V	Frame symbol	V		
	Driver model number	MVDLN5BBE		

・Depending on the motor series, there may be a combination different from the model number in the table, so be sure to check the specifications.

EtherCAT® Product Family

EtherCAT® Master Stack software, available for real-time OS as well as Windows

EtherCAT® Product Family

- EC → Engineer — Configuration and Diagnosis
- EC → Master — Master for Embedded OS
- EC → Win — Real-time Master for Windows
- Engineering System
- TCP/IP
- Control System
- HMI and Control System
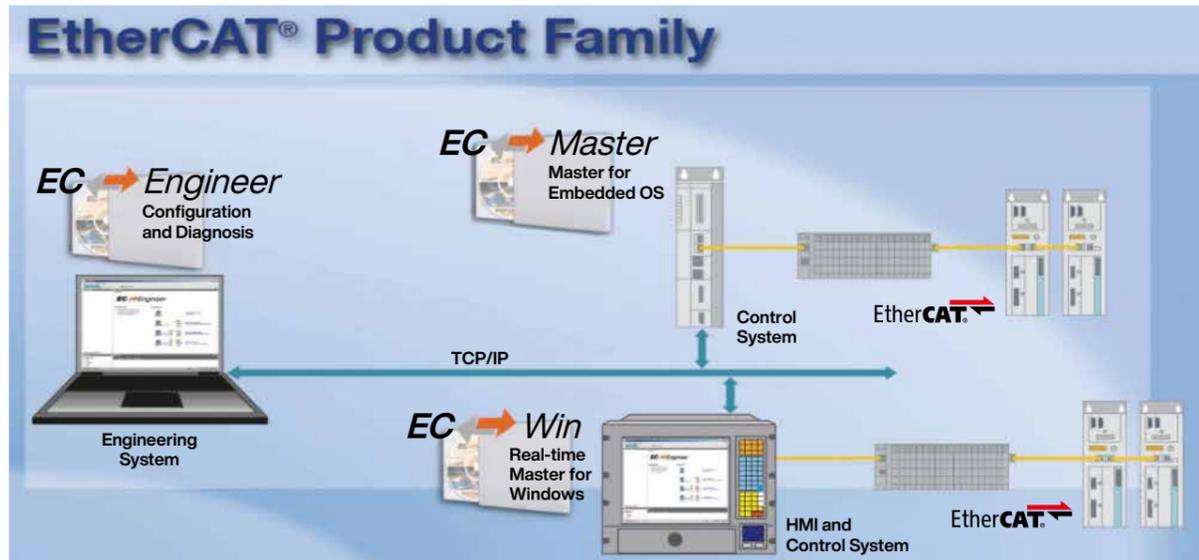
Features

- ● EtherCAT® Master Stack software, available for real-time OS as well as Windows
- ● Ready-to-run implementations for many embedded operating systems
- ● EC-Win: high performance Windows Real-time extension included to achieve up to 50 µsec cycle time on Windows!
- ● Use multiple CPU cores on Windows for distributed EtherCAT applications
- ● CPU architectures: x86, ARM, PowerPC, SH, MIPS
- ● Reliable and well proven in many customer applications worldwide. Market leading companies in the Semiconductor, Robotics, PLC/Motion, Measurement and other industries rely on this software.

EC-Master according to ETG.1500 Master Classes Directive

Class A Core	Class B Core
· Compare network configuration	· Compare network configuration
· Cyclic process data exchange	· Cyclic process data exchange
· All mailbox protocols: CoE, SoE, EoE, FoE, AoE, VoE	· Mailbox protocol CoE
· Slave to slave communication	· Mailbox protocol SoE
· **Distributed Clocks with master synchronization**	· Mailbox protocol EoE
	· Slave to slave communication

Feature Pack Cable Redundancy	Feature Pack Hot Connect	Feature Pack Remote Access
Feature Pack Superset ENI	Feature Pack EoE Endpoint	Feature Pack Master Obj. Dict.

The ETG (EtherCAT Technology Group) has defined EtherCAT Master Classes (ETG.1500) with a well defined set of Master functionalities. 2 Master Classes are defined:
- · Class A: Standard EtherCAT Master Device
- · Class B: Minimum EtherCAT Master Device

Additional functionality is described by Feature Packs. Acontis supports all Feature Packs in industry proven quality.

Application Sample

On Windows

| Robotics | Semiconductor | CNC |

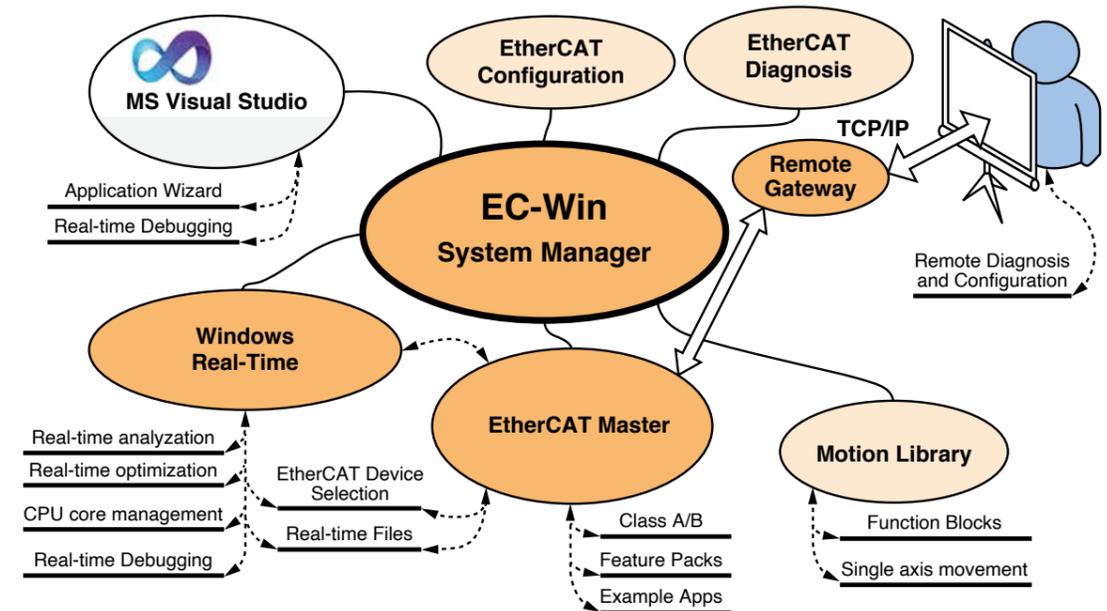On Embedded Systems

| Industrial Automation | CNC | Test & Measurement |

System Configuration

MS Visual Studio — EtherCAT Configuration — EtherCAT Diagnosis
- Application Wizard
- Real-time Debugging
- TCP/IP — Remote Gateway
- EC-Win System Manager
- Remote Diagnosis and Configuration
- Windows Real-Time
- Real-time analyzation
- Real-time optimization
- EtherCAT Device Selection
- CPU core management
- Real-time Files
- Real-time Debugging
- EtherCAT Master
  - Class A/B
  - Feature Packs
  - Example Apps
- Motion Library
  - Function Blocks
  - Single axis movement

Sales area

- ● United States of America ● Japan
- ● Taiwan ● Korea ● China

Language

- ● English ● Japanese

For more information

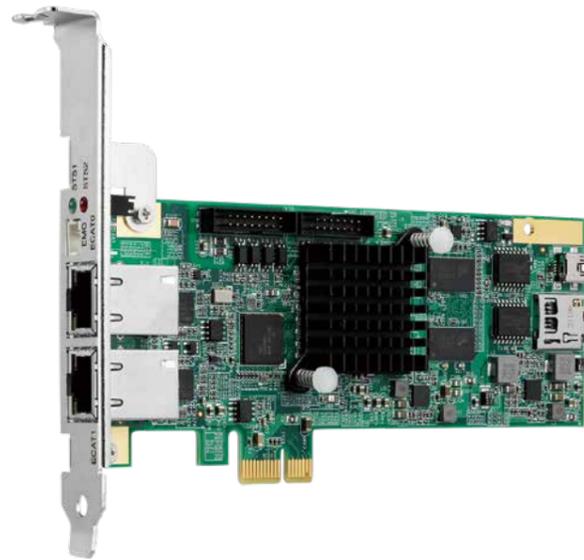URL : http://www.acontis.com/int/jp/index.php

● Contact: **acontis technologies GmbH**

Gartenstr. 46, 88212 Ravensburg /Germany   TEL : +49-751-560-3030

EtherCAT

EtherCAT Master Controller
PCIe-8332/8334/8338

Features

- PCI Express® x 1 compliant
- Up to 64-axis motion control & 10,000 I/O point control
- EtherCAT cycle times up to 250 µs
- Broad range of compatible EtherCAT slaves
- Dedicated emergency stop input
- 4CH isolated digital input/4CH isolated digital output
- 1CH pulsar input
- Point-table functions for contouring application

Software Support

APS Solution Development Kit—A single platform for easy configuration and faster secondary development

- Powerful motion kernel for smart manufacturing
- Rich built-in function with 15+ motion and 30+ I/O products
- Easy configuration with one library, One UI for no-code testing developer

EtherCAT

EtherCAT Slave System and Module
EU Series

Features

- Compliance with EtherCAT standard
- Optimization with ADLINK EtherCAT master (250 us cycle time)
- Comprehensive slave modules including digital I/O, analog I/O, coupler, power supply and terminal shield
- Compliance with industrial IEC standard
- Excellent scalability powered by modularized and slice-type design
- Compact Size: 100 mm　69 mm　63 mm (each module)

Sales area

- Worldwide response

Language

- English
- S/T Chinese

For more information

URL : https://www.adlinktech.com/en/Motion_Control_EtherCAT_Solution.aspx

EtherCAT

Intelligent EtherCAT® Master Board

Low CPU load EtherCAT® Master Communication

Features

Low CPU load EtherCAT® Master Communication

EtherCAT® environment is enabled typically by implementing the master stack on Ethernet hardware. Advanet provides EtherCAT® master communications on-board by implementing the Xilinx Zynq® with ARM® Cortex®-A9 on a board to minimize the impact for the host CPU as bus master.
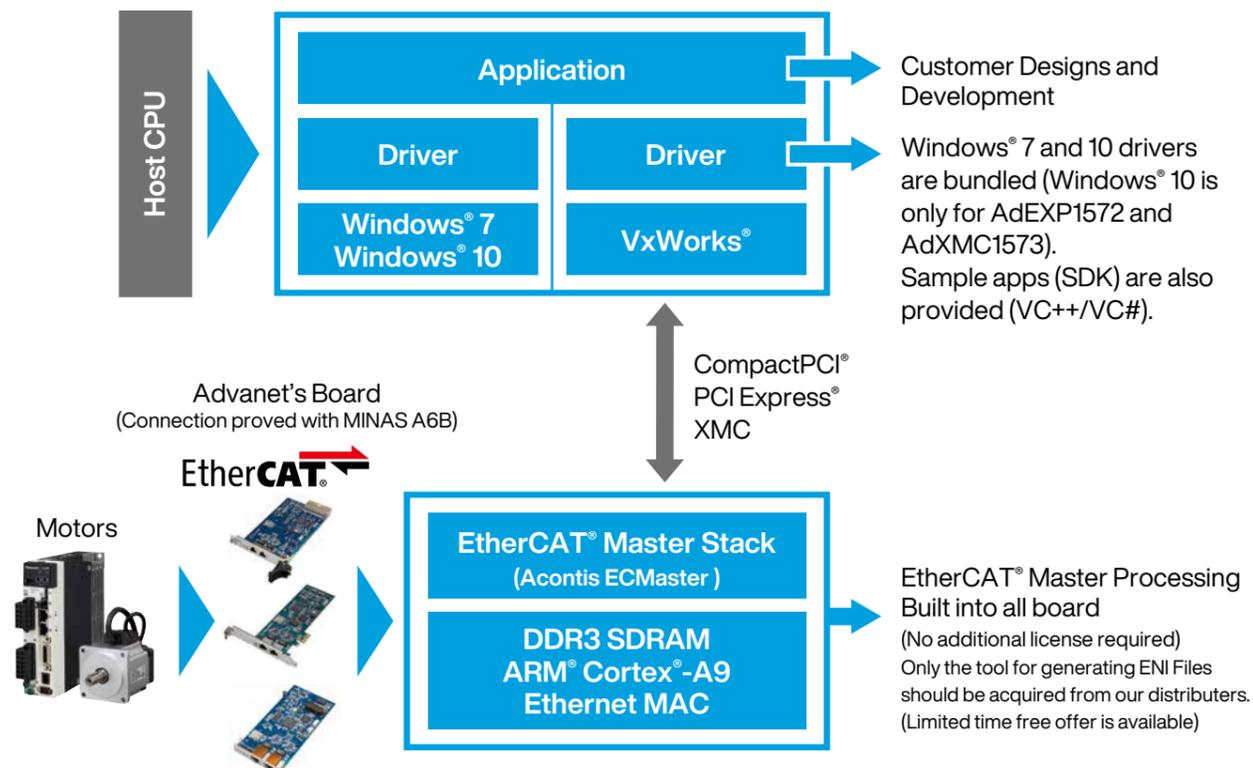
Secure Cable Redundancy

The redundant cable configuration adopting ring topology which recovers the communication cable failure in the EtherCAT® system allows the communications to reach any branch even in case of cable fracturing happened at any point.

Hot Connect Responds to Unexpected Replacement

The protocol of the EtherCAT® system utilizing a hot connect capability provides flexible and responsive functionalities to change the system configuration which allows you to connect/disconnect or reconfigure any part of the network "on-the-fly".

System Configuration

Host CPU

Application → Customer Designs and Development

Driver | Driver

Windows® 7 Windows® 10 | VxWorks® → Windows® 7 and 10 drivers are bundled (Windows® 10 is only for AdEXP1572 and AdXMC1573). Sample apps (SDK) are also provided (VC++/VC#).

CompactPCI® PCI Express® XMC

Advanet's Board (Connection proved with MINAS A6B)

Motors

EtherCAT® Master Stack (Acontis ECMaster)

DDR3 SDRAM ARM® Cortex®-A9 Ethernet MAC

→ EtherCAT® Master Processing Built into all board (No additional license required) Only the tool for generating ENI Files should be acquired from our distributers. (Limited time free offer is available)

Features of Advanet EtherCAT Slave

● Simultaneous measurement of 24ch in 1 slave
● Connectable 4-wire Pt100 or JPt100
● Temperature conversion on module
● Measurement overall precision at±0.1 °C
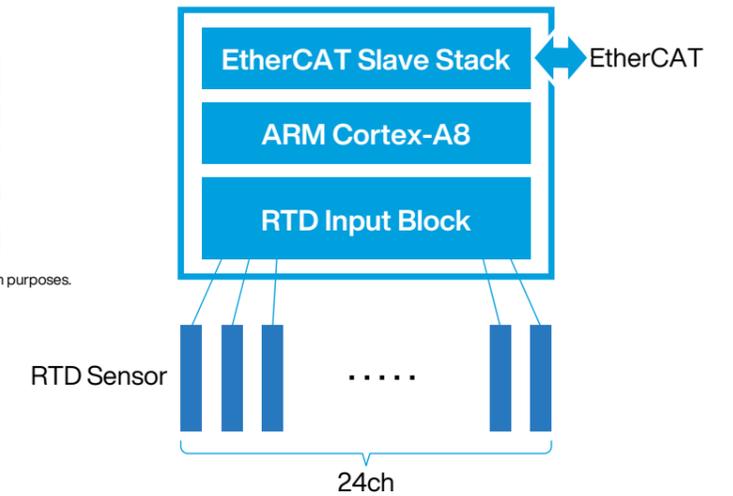   (*Measurement range: -20 °C to 80 °C)

24-Channel RTD EtherCAT Sensor Module
E-070

Available Customization of EtherCAT Slave!

Intelligent EtherCAT Slave Module **AdiNS1576**

* This image is for illustration purposes.

EtherCAT Slave Stack ↔ EtherCAT

ARM Cortex-A8

RTD Input Block

RTD Sensor · · · · · 24ch

Language

● Japanese   ● English

For more information

URL : https://www.advanet.co.jp/ethercat/

EtherCAT

2-Port EtherCAT PCI/PCIe Motion Control Master Card
PCI-1203/PCIE-1203/PCIE-1203L

PCI-1203/PCIE-1203/PCIE-1203L
EtherCAT Master Card

EtherCAT.

- Integration
- Simplicity
- Precision
- Real Time

AMAX-3285IO
Pluse Command Module

AMAX-4830/33/34
I/O Module

**AMAX-3245**
Pulse Command Module
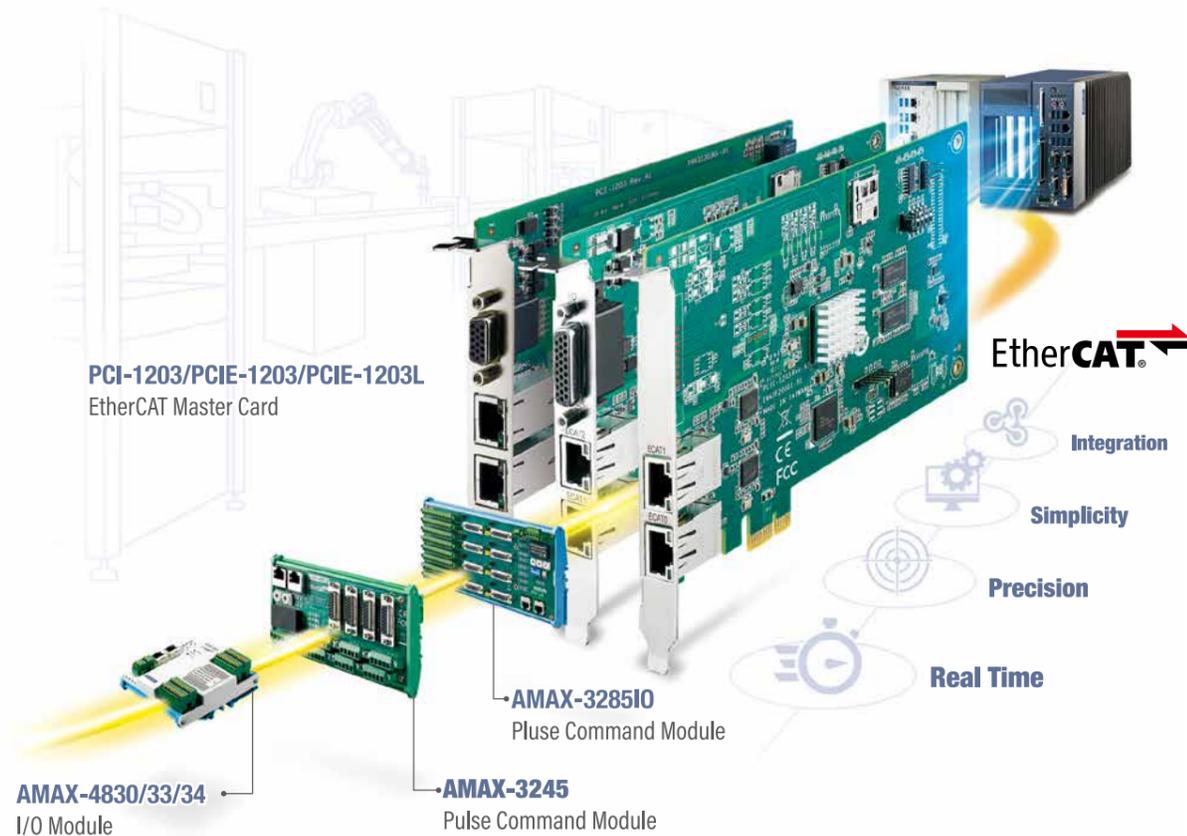
Features

- Dual EtherCAT ports for high-performance of Motion and I/O applications
- Up to 64 axes support for motion control
- Motion cycle time: 32 axes = 500 µs; 64 axes = 1 ms; I/O cycle time=200 µs
- Supports ready-to-use API for rapid application development
- Multi-axis synchronous motion
- Trace logger for fast error diagnostics
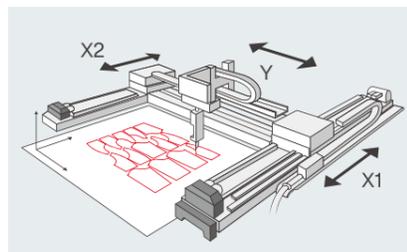- Easy to wire, saving wiring working-hour

Application Sample
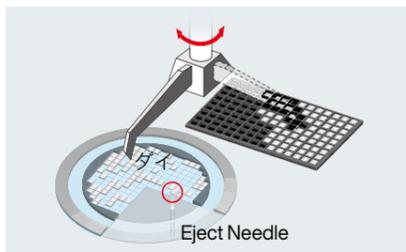
Torque Limit Table
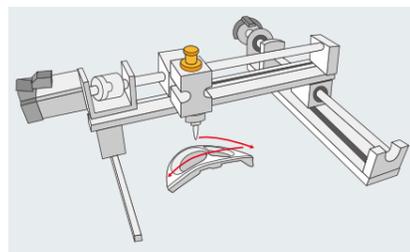
3D Arc Interpolation

Gantry

Real-time PC-based SoftLogic Edge Controller
AMAX-658, AMAX-637

CODESYS
Cabinet Controller
AMAX-637 / AMAX-648

CODESYS
Modular Controller
AMAX-658

CODESYS
Panel Controller
AMAX-667 (Visualization)

HMINavi
Integrated HMI
WOP-200 Series

Industrial Fieldbus I/O
PCM-2600 Series
CANopen EtherNet/IP

Industrial I/O & Peripheral
PCM-2700 & PCM-2400 Series
MRAM AI/O DIO PoE

Industrial Slices I/Os
AMAX-5000 Series

Industrial Distributed I/Os
AMAX-4800 & ADAM-6100 Series

Features

Easy Data Access & Self-Management
- Self-diagnosis for controller hardware information
- OPC UA, MQTT & various database connection by ODBC

Flexible Expansion & Connection
- Easy expansion for PC peripheral by AMAX-5000 & iDoor Module
- Slice I/O & Distributed I/O provide 100 µs real-time EtherCAT control
- iDoor fieldbus module support CANOpen & Profibus communication

Real-Time Industry Ethernet Control Protocol
- CODESYS RTE with Visualization (Target & Web) ready for control
- EtherCAT, ProfiNet, Ethernet/IP ready for real-time communication
- Support remote upgrade SoftMotion or CNC Robotic function
- Soft PLC can reach a 50 µs program processing cycle
- Motion control achieve 64-axis with 1ms cycle time

Application Sample

- Machine maker
- Equipment
- Factory automation
- Building automation
- Public interest company
- Oil and gas

Sales area
- Worldwide response
Please contact the following address for details.

Language
- Chinese
- English
- Japanese

For more information

URL :
https://www.advantech.co.jp/products/machine-automation/sub_machine_automation

URL :
www.advantech.com/products/automation-controllers-i-os/sub_1-2mlf31

- Contact: **Advantech Co., Ltd.**
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan
TEL : +886-2-2792-7818 FAX : +886-2-2794-7327

EtherCAT Master Board

PCIe-RxxIF-ECAT, PCIe-Rxx05-ECAT

[PCIe-RxxIF-ECAT]

[PCIe-Rxx05-ECAT]

Features

● EtherCAT communication board (EtherCAT distributed network standard, S/W Type - requires separate RTOS installation), H/W Type - no separate RTOS installation required)

● S/W Type - Support max 128-axis, H/W Type - Support Maxo 32-axis

● S/W Type - Support max 128 IO, H/W Type - Support Max 32 IO

● Servo and step driver support for CiA-402 (DS-402) Device profile

● Up to 64 nodes can be updated from 0.5 ms to 4 ms (Default 1 msec)

● Support firmware upgrade

● Provide EzSoftware UC software

System configuration

Sales area

● China   ● Japan   ● Korea
● Vietnam   ● Singapore   ● Taiwan
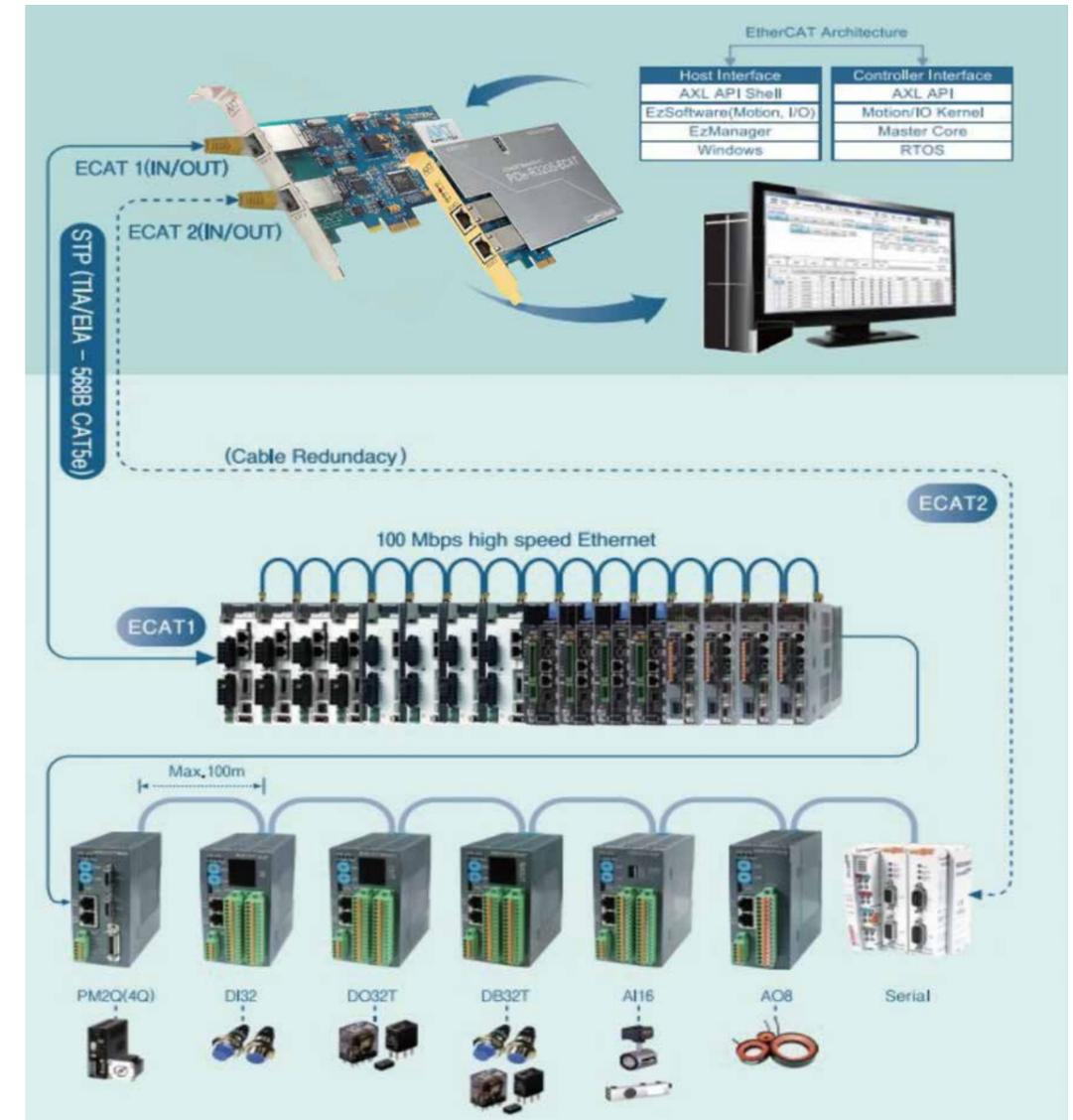
Language

● English   ● Chinese   ● Korean

For more information

URL : **http://eng.ajinextek.com/**

● Contact: **AJINEXTEK Co.Ltd.**

27, Seongseogongdan-ro11-gil, Dalseo-gu, Daegu, 42714, Rep. of KOREA
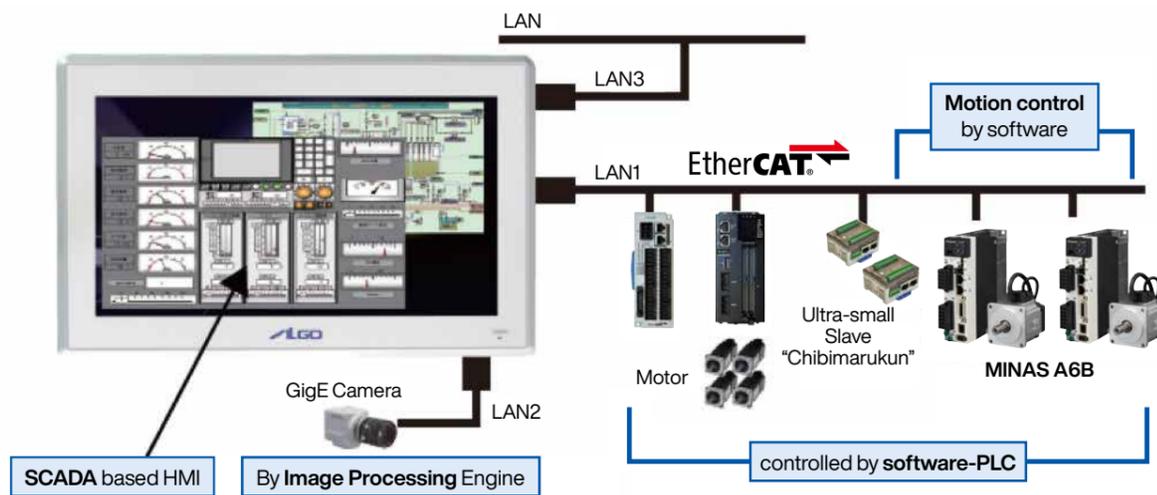
TEL : +82-53-593-3700   FAX : +82-53-593-3703

EtherCAT master

"All-in-one Controller", based on the Industrial PC equipped with EtherCAT master stack

Features

All-in-one controller can execute SCADA, synchronous motion control and image processing just by itself.

● International standard (IEC 61131-3) compliant software PLC
● PLCopen compliant positioning/synchronous motion control software
● OpenCV, OpenVX compliant image processing engine (option)
● SCADA-based HMI software

LAN
LAN3
LAN1
EtherCAT
Motion control by software
Ultra-small Slave "Chibimarukun"
MINAS A6B
Motor
GigE Camera
LAN2
SCADA based HMI   By **Image Processing** Engine
controlled by **software-PLC**

Specification

● Intel® high-performance processor, Atom E3845 Quad Core 1.91GHz
● Real time OS (INtime). High-speed 28000 steps/50 μs processing.
● Windows10 IoT Enterprise allows effective utilization of various software
● Top-class ultra-thin compact design and lower power consumption allow for installing in small space for new, expanded use. Free switch off. Multi-touch panel. Multilingual
● Fanless, diskless, completely spindleless. 2 storage, mini m-SATA, slots. support.

| UPS equipped standardly | GPIO, 6 IN / 4 OUT, equipped standardly |
| LTE equipped, can access directly to Cloud | Suitable for dedicated controller |

Application Sample

ALGOSYSTEM's All-in-one Controller had replaced PLC and has been adopted as de facto standard controller of the minimalfab for processing a half-inch wafer to make semiconductors in high-mix low-volume production. Minimalfab is the national project carried out by the National Institute of Advanced Industrial Science and Technology (AIST). The key to adoption of the All-in-one Controller is its high performance and space saving, it can support multi-vendors' products and encrypt, it can be programmed by either C or software PLC compliant to IEC61131-3 Standard which provides 5 languages: LD, FBD, IL, ST and SFC.

EtherCAT slaves

Features

Digital input/output (NPN/PNP)
● 16-point input unit
● 16-point output unit
● 32-point input unit
● 32-point output unit
● 16-point input/16-point output unit

Analog input/output
● 4ch analog input unit
● 4ch analog output unit

<"Chibimarukun" series>

e-CON connector
● 8-point input unit
● 8-point output unit
● 4-point input/4-point output unit

MIL connector terminal block
● 16-point input unit
● 16-point output unit
● 8-point input/8-point output unit

Relay output (terminal block)
● 4-point relay output unit

IO-Link, Modbus, 4ch SIO Gateway
to EtherCAT
Barcode reader
Thermometer, etc.
RS232C device
Label printer

* IO-Link, Modbus, Serially controlled devices such as RS-232C and RS-485 devices are converted to EtherCAT. EtherCAT can be installed without putting old assets to waste.

Motion controller
● Up to 4-axis control Execute from high-order PC, etc. via restricted EtherCAT connection

Encoder input
● Line receiver input
● Open collector input

Contract-based Development

Interface board example

Sales area
● Japan   ● United States of America
● Korea   ● China

Language
● Japanese   ● English

For more information

URL : http://www.algosystem.co.jp/

●Contact: **ALGO SYSTEM Co.,Ltd.**

656 Kobirao Mihara-ku, Sakai, Osaka, 587-0021 Japan   TEL : +81-72-362-5067   FAX : +81-72-362-4856

Software PLC/ NC/ CNC/ Vision/ Machine Learning
TwinCAT 3

EtherCAT

Real-time control system in PC base system
Software PLC/ NC/ CNC/Vision/Machine Learning

TwinCAT 3

TwinCAT CNC | CX5100 series controller + EtherCAT Terminals

MINAS A6B

Features

1 IEC 61131-3 3rd edition

Intergration of Microsoft Visual Studio Support for IEC61131-3 (IL, ST, FBD, LD, SFC) +CFC and object-oriented extension of the 3rd edition

Supports simultaneous editing of IEC61131 and C/C++ language

2 Development environment

Support for C/C++, real-time environment in MATLAB®/ Simulink®, programing in .NET/C#.

3 Link to MATLAB®/Simulink®

Link to MATLAB®/Simulink® optimizes development and simulation

4 Supports advanced technologies such as real-time Vision and Machine Learning (ML)

We support the implementation of advanced technologies such as TwinCAT Vision, which realizes real-time control using image data taken by a camera, and TwinCAT ML, which can import machine learning results as a real-time execution function.

5 Multi-core CPU support

By assigning different functions to each core, you can maximize the performance of the multi-core CPU.

- PC base controller with TwinCAT supporting multicore maximizes EtherCAT performance
- Compact controller on DIN rail (CX5100 series)
- TwinCAT PLC processes minimum 50 μs real-time task, and controls motion system in minimum 125 μs
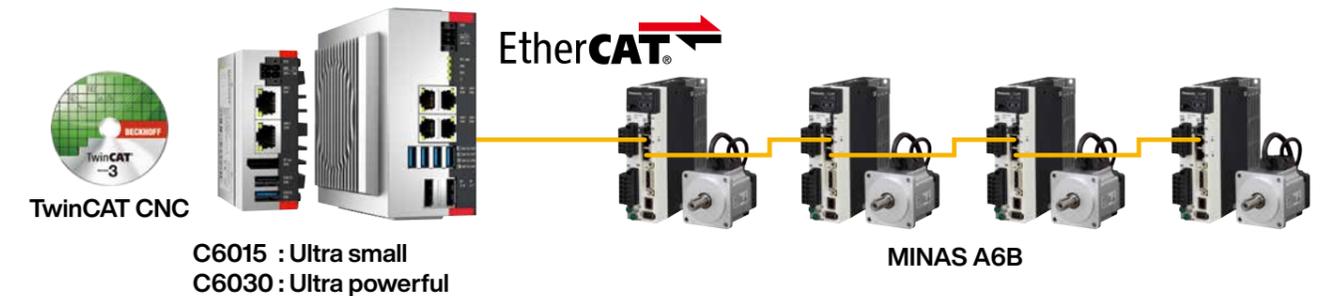

Industrial PC
C6015 / C6030

EtherCAT

The Ultra Compact IPC Generation

Ultra small | Ultra powerful

C6015 | C6030

Features

C6015: Ultra small

C6030: Ultra powerful

System Configuration

TwinCAT CNC

C6015 : Ultra small
C6030 : Ultra powerful

MINAS A6B

Sales area

Local support: Japan, China, Korea, south-eastern Asia, Europe, the Americas, etc. More than 75 contries
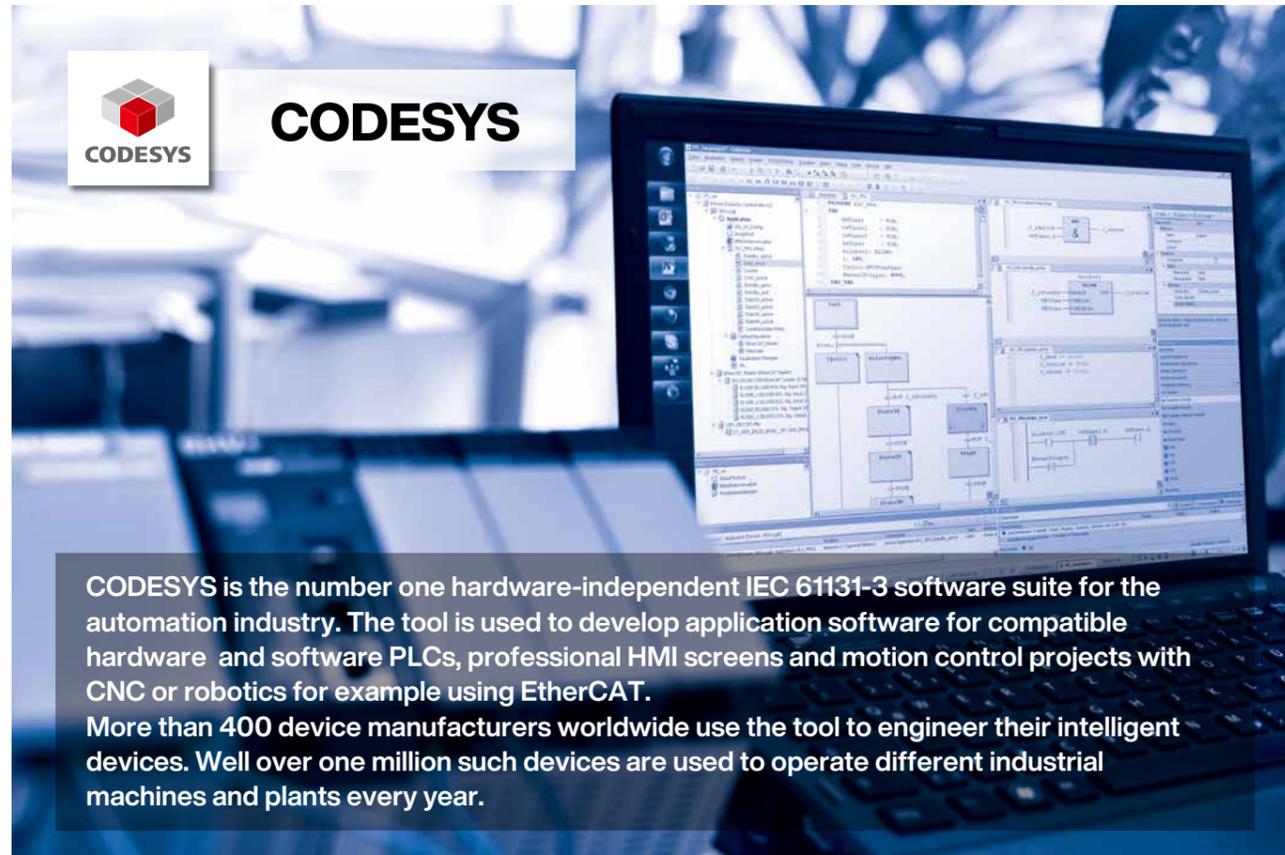
For more information

URL : http://www.beckhoff.co.jp

● Contact: **Beckhoff Automation GmbH & Co. KG**

TEL：+49 5246 963-0
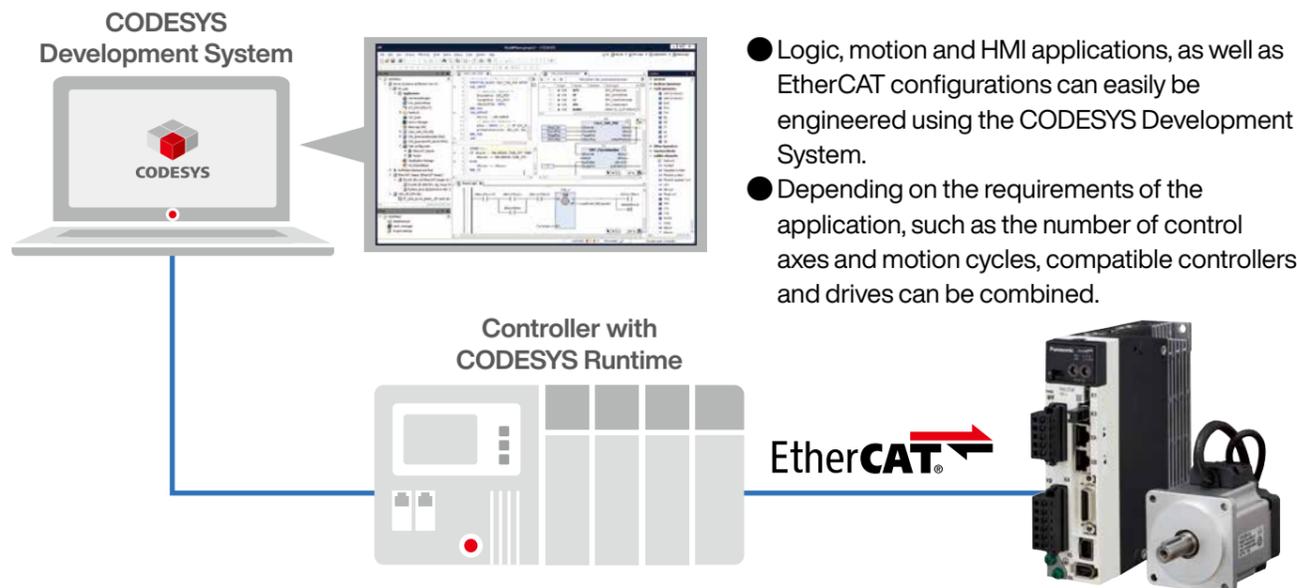
CODESYS Group

CODESYS

IEC 61131-3 Engineering / Software PLC / Motion / CNC / HMI

Features

CODESYS

CODESYS is the number one hardware-independent IEC 61131-3 software suite for the automation industry. The tool is used to develop application software for compatible hardware and software PLCs, professional HMI screens and motion control projects with CNC or robotics for example using EtherCAT.
More than 400 device manufacturers worldwide use the tool to engineer their intelligent devices. Well over one million such devices are used to operate different industrial machines and plants every year.
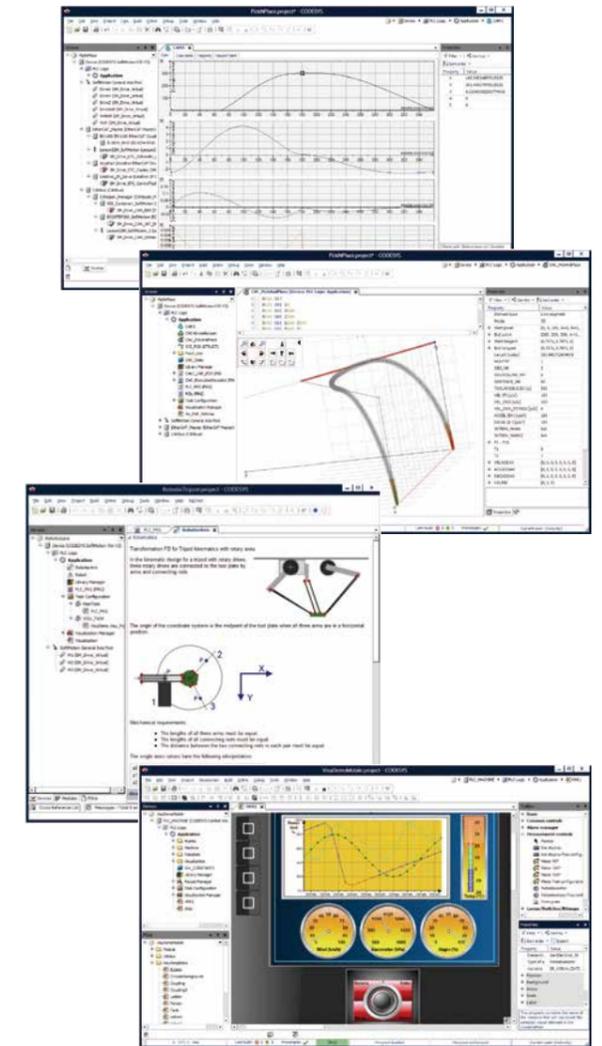
System Configuration

CODESYS Development System

CODESYS

Controller with CODESYS Runtime

EtherCAT

● Logic, motion and HMI applications, as well as EtherCAT configurations can easily be engineered using the CODESYS Development System.
● Depending on the requirements of the application, such as the number of control axes and motion cycles, compatible controllers and drives can be combined.

Specification

Fully integrated: Realize PLC, Motion and HMI functions on a single device with CODESYS.

Engineering

PLC Programming
IEC 61131-3-compliant, all languages (ST, Ladder, FBD, SFC, CFC) supported, plus real object oriented programming

Motion + CNC

SoftMotion
For single axis control, electric cam and gear, using the integrated FBs (PLCopen Motion Control part 1, 2 compliant)

Motion + CNC

SoftMotion CNC+Robotics
For complex coordinated motion control tasks such as robotics/CNC applications using the integrated FBs (PLCopen Motion Control part 4); linear / circular interpolation, various kinematics, G-code programming, comfortable axis configuration etc.

Visualization

HMI, Visualization
Integrated visualization editor in the CODESYS Development System: easy creation of modern operation screens and linking to IEC 61131-3 variables; display of the generated screens on IPCs, on panel PLCs with CODESYS TargetVisu, on standard Web browsers with CODESYS WebVisu (via HTML5) or in the engineering tool

Fieldbus

Fieldbus
Integrated fieldbus configurators and protocol stacks as CODESYS libraries seamlessly integrated in the CODESYS Development System for numerous fieldbus systems, such as EtherCAT, PROFINET, Ethernet/IP

EtherCAT **EtherNet/IP** **PROFINET** **Modbus** **CANopen**

Sales area

● Japan   ● Germany   ● China   ● Korea
● Russia   ● EU   ● United Kingdom
● Italy   ● France   ● Netherlands

Language

● Japanese   ● English   ● Chinese
● German   ● Italian   ● Russian
● Spanish   ● French

For more information

URL : https://www.codesys.com

● Contact: **CODESYS Group**

Memminger Str. 151, 87439 Kempten, Germany   TEL : +49-831-54031-0 FAX : -50

Hard- and Software: PLC, Motion and CNC Controller

EXC89: CNC and Motion Controller

EXC89 Controller + UBM-I/O-Modules

Features

The EXC89 Controller and its UBM I/O System are the result of **over 40 years of experience** in the automation of CNC and Motion applications. Staying in close contact with our partners and customers, Eckelmann has built up experience in various industries and different fields of application. That expertise flows into the Eckelmann CNC Kernel and the EXC89 CNC controller.

● Suitable for PLC, Motion and CNC
● Up to 64 Axes
● Up to 8 NC Channels
● CODESYS V3 runtime system
● Motion according to PLC open
● PLC freely programmable

Your Advantages:
● Customer specific solutions and software extensions possible
● Experienced application engineers will support you
● Standardized Motion according to PLC open
● CNC with powerful Eckelmann CNC kernel
● Compact Controllers available

● Wide range of fast I/O´s with the UBM-I/O-Module family
● Wide range of technology specific functionality and kinematics
● HMI and GUI´s available
● OPC-UA for Industrie 4.0

Application Sample

CNC Application Examples:
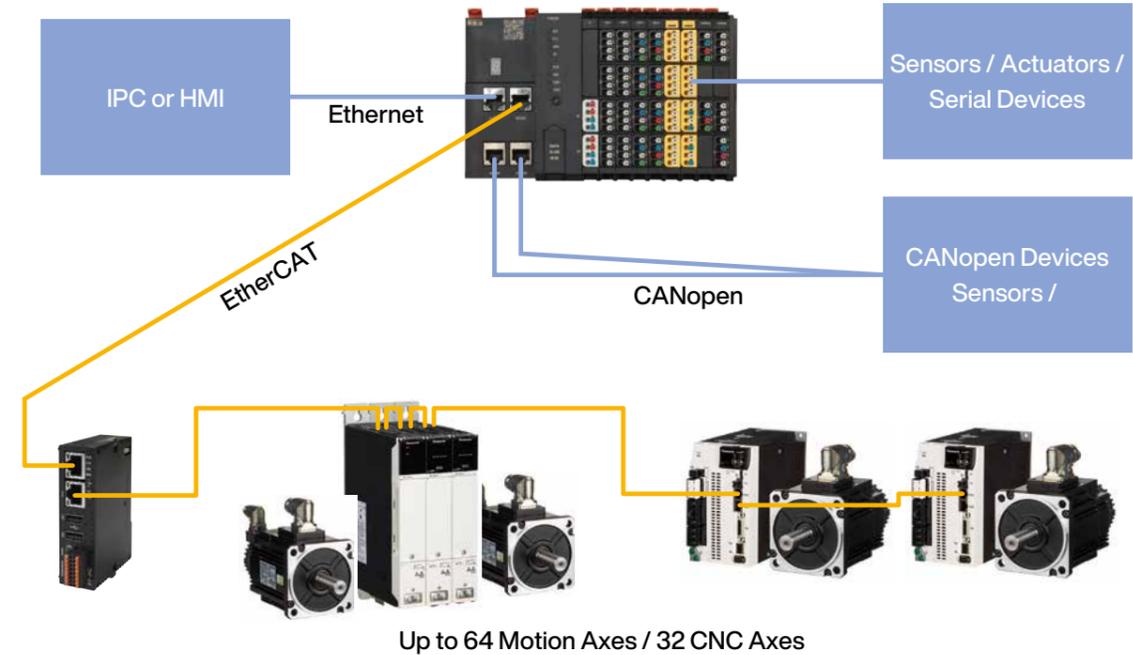
● Cutting
● Tooling
● Drilling
● Sewing
● ...

Motion Application Examples:

● Handling
● Logistics
● Battery production
● Wafer production
● ...

System Configuration

IPC or HMI — Ethernet — Sensors / Actuators / Serial Devices

EtherCAT

CANopen — CANopen Devices Sensors /

Up to 64 Motion Axes / 32 CNC Axes

Sales area
● Germany ● EU ● China ● India

Language
● English ● German

For more information

URL : https://www.eckelmann.de/en/products-solutions/machine-automation/

● Contact: **ECKELMANN**

ECKELMANN	TEL : +49 611 7103-0
Eckelmann AG Sales Team :	TEL : +49 611 7103-200
Eckelmann AG Service Team :	TEL : +49 611 7103-500

Manufacturer/Distributor: **FAGOR** FAGOR AUTOMATION

FAGOR AUTOMATION

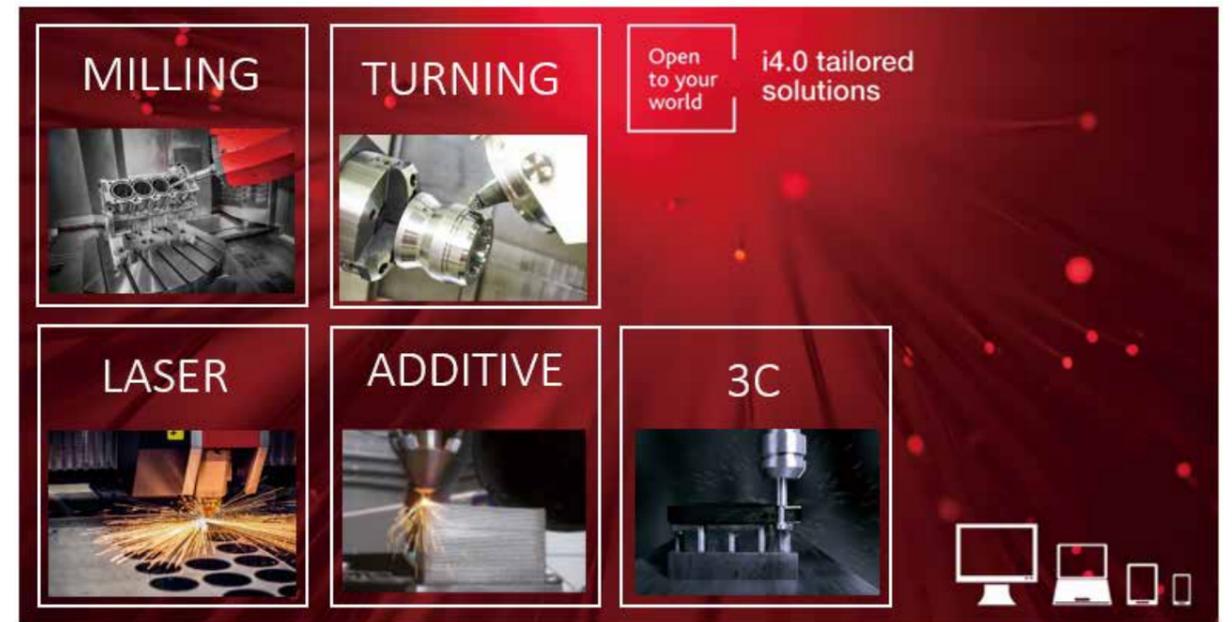# CNC with EtherCAT Master integrated
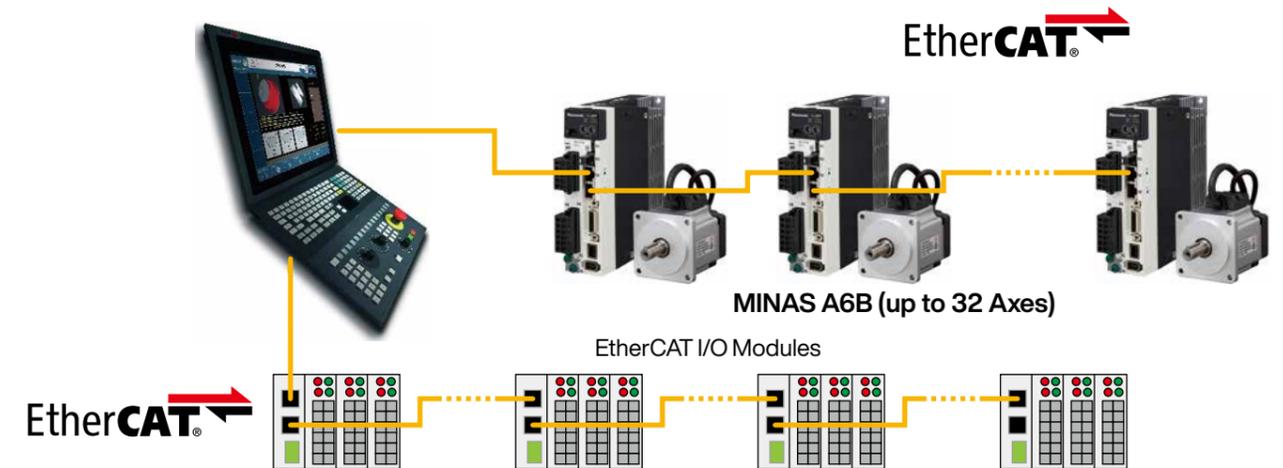
CNC 8060/65/70 families

Features

● Easy programming. There is no need to know ISO programming language.

● Algorithm that provides the best performance, speed and accuracy in the machining process.

● Ergonomic and functional design (touch-screen, easy navigation, integrated manuals, sms communication, high-resolution graphics, keyboards and monitors with the highest level of sealing protection, etc.)

● Interface customizing tools.

● Free software download with no time limit to work at any PC.

● Axis position control (position loop) every 250 μs.

● High Speed Machining and Look-Ahead up to 2400 blocks and block processing time of 0.25 ms.

● EtherCAT master integrated in the CNC, with the following operation modes implemented: interpolated position mode, cyclic sync position mode, cyclic sync velocity mode, cyclic sync torque mode, homing mode.

● "KPA Studio" EtherCAT configurator, from Koening-pa GmbH, supplied under license.

Application Sample

System Configuration

MINAS A6B (up to 32 Axes)

EtherCAT I/O Modules

Sales area

● Japan	● China	● Korea	● Taiwan
● Singapore	● India		
● United States of America		● EU	
● Worldwide response			

Language

● English	● Spanish	● Italian	● German
● French	● Basque	● Portuguese	
● Chinese	● Russian	● Czech	● Korean
● Dutch			

For more information

URL : https://www.fagorautomation.com/en/

● Contact: **Fagor Automation, S. Coop.**

Bo San Andr s No19 E-20500 – Arrasate/Mondrag n, Spain   TEL : +34 943 039 800   FAX : +34 943 791 712
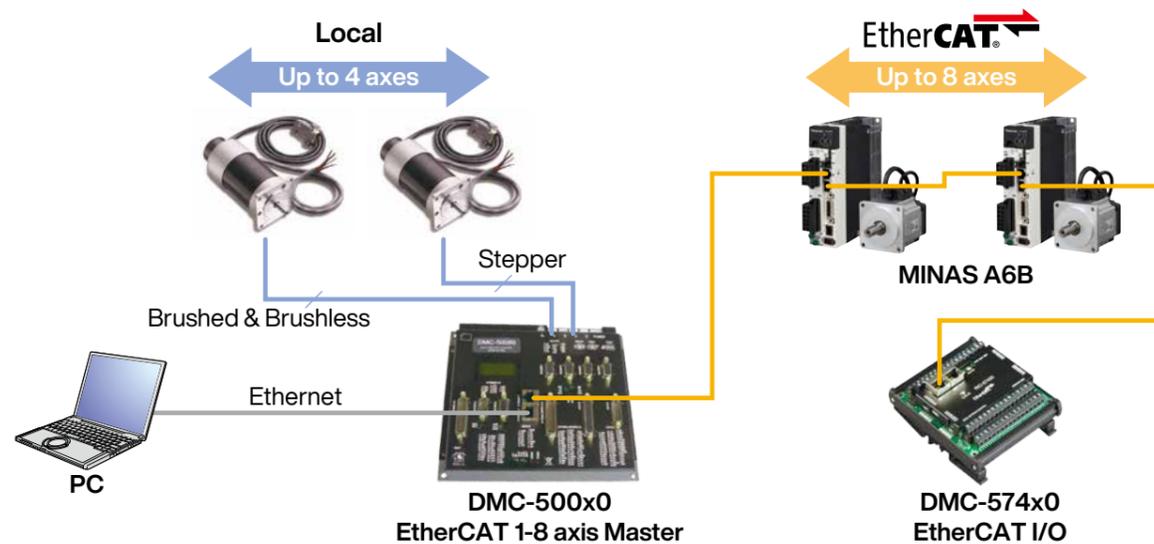
EtherCATMaster Controller

Model DMC-50000

Features

- Configurable controller for up to 8 axes of EtherCAT Master with any of the first 4 axes for local control or EtherCAT Master
- 10/100BASE-T Ethernet port; (1) EtherCAT Port; (2) RS232 ports up to 115 kbaud
- Available with internal, multi-axis servo or stepper drives. Or, connect to conventional external drives (only first four axes)
- For local axes, accepts up to 22 million counts per second of quadrature encoder for servos; Outputs up to 6 MHz for steppers; EtherCAT command speed up to 1 billion counts per second
- Sample times as low as 375 microseconds for 1-4 axes and 750 microseconds for 5-8 axes
- First four axes, advanced PID compensation with velocity and acceleration feedforward, integration limits, notch filter and low-pass filter
- Modes of motion include jogging, point-to-point positioning, position tracking, contouring, linear and circular interpolation, electronic gearing, ECAM and PVT
- Ellipse scaling, slow-down around corners, infinite segment feed and feed rate override
- Multitasking for concurrent execution of up to eight application programs
- Non-volatile memory for application programs (4000 Lines), variables and arrays (2400)
- Dual encoders for every local servo axis
- Optically isolated home input and forward and reverse limits for every local axis; Uses EtherCAT drive for home and limit switches
- Uncommitted, I/O: • 8 optically isolated inputs and 8 optically isolated outputs
  - Isolated, high-power outputs for driving brakes or relays (local axis only)
  - 8 uncommitted analog inputs
  - High speed position latch and output compare
  - 32 additional 3.3 V TTL I/O (5 V option)
  - More I/O available with RIO PLC
- 2 line x 8 character LCD
- Accepts single 20 - 80 VDC input
- Communication drivers for Windows and Linux
- Custom hardware and firmware options available

System Configuration

Local
Up to 4 axes

Stepper

Brushed & Brushless

Ethernet

PC

EtherCAT Up to 8 axes

MINAS A6B

DMC-500x0
EtherCAT 1-8 axis Master

DMC-574x0
EtherCAT I/O

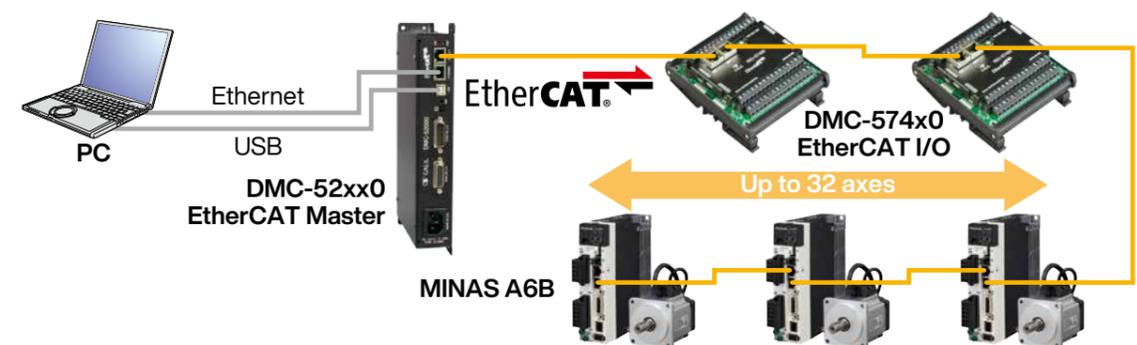
EtherCAT Master Controller

Model DMC-52000

Features

- Available in 2, 4, 8, 16, and 32 axis configurations
- 10/100BASE-T Ethernet port; (1) EtherCAT Port; (1)
- USB port
- EtherCAT cycle time 1000 microseconds
- Cyclic Synchronous Position mode (CSP)
- Modes of motion include jogging, point-to-point positioning, position tracking, contouring, linear and circular interpolation, electronic gearing, ECAM and PVT
- Ellipse scaling, slow-down around corners, infinite segment feed and feed rate override
- Multitasking for concurrent execution of up to eight application programs
- Non-volatile memory for application programs (4000 Lines), variables and arrays (2400)
- Inputs including forward limits, reverse limits, and homing inputs are located on drives that support these inputs
- Uncommitted, I/O: • 8 optically isolated inputs
  - 8 optically isolated high powered outputs
  - 8 uncommitted analog inputs
  - 8 uncommitted analog outputs
  - More I/O available with the RIO-47xxx or RIO-574x0
- Accepts single 120 - 240 VAC input
- Communication drivers for Windows and Linux

Application Sample

Customer Stories   URL: http://www.galil.com/learn/customer-stories
Sample DMC Code URL: http://www.galil.com/learn/sample-dmc-code

System Configuration

Ethernet

PC

USB

EtherCAT

DMC-52xx0
EtherCAT Master

MINAS A6B

DMC-574x0
EtherCAT I/O

Up to 32 axes

Sales area

- **United States of America**

Galil Headquarters in California
World-wide sales network
Please see our rep finder tool or contact us for more details.
URL :
http://www.galil.com/order/find-reps-and-distributors

Language

- **English**

For more information

URL : http://www.galil.com/

EtherCAT (left sidebar)

Motion Control Software · Software Modules

HLS-ECAT02xx/Win, HLS-ECMC02xx/RSI (xx: represents the number of axes)

Features

HLS-ECMC/RSI	HLS-ECAT · Win
EtherCAT multi-axis positioning software module	**EtherCAT that can be developed with VC ++, VC #, VB**
●The software module that performs motion control on real time OS ●Controling servo driver with EtherCAT communication (CiA 402 drive profile) ●Control axes will be from 6 up to 64 axes (can be handled in by 1 axis unit) ●The program is written in C language ●API functions conforming to international standard specifications ●Development environment: Visual Studio + INtime SDK ※The cycle time will depend on the PC (PDO cycle: 125 µs possible)	●EtherCAT motion control software by Windows PC ●Execute real-time processing on the RTOS with Windows as the interface. Easy developing the EtherCAT system ●Control axes will be 32 axes ●Motion control can be embedded into Windows application development ●Development environment: Visual Studio 2008 or later (VC++, VC#, VB ※The cycle time will depend on the PC (PDO cycle: 125 µs possible)

HLS-ECMC/RSI
Hivertec,inc.

| EtherCAT Master Software RSI-ECAT |
| Real-Time OS INTime |

Windows
PC Platform

EtherCAT

EtherCAT compatible slaves   MINAS A6B

HLS-ECAT/Win
Motion Control
EtherCAT Communication
RTOS
Hivertec,inc.

Windows
PC Platform

EtherCAT

EtherCAT compatible slaves   MINAS A6B

EtherCAT (right sidebar)
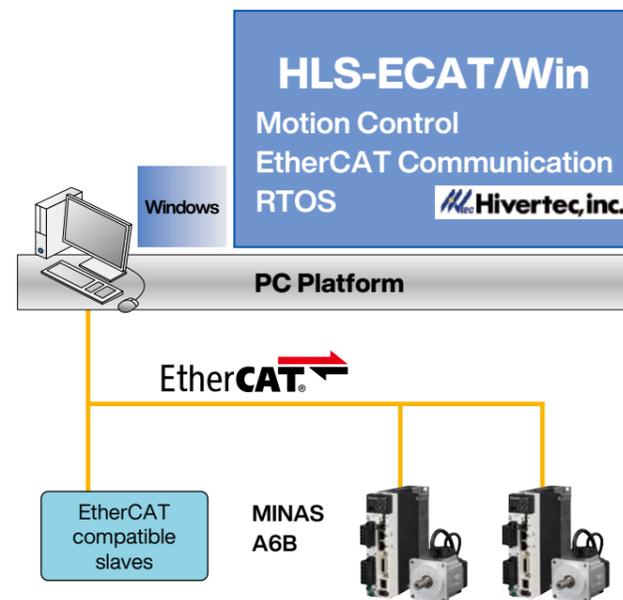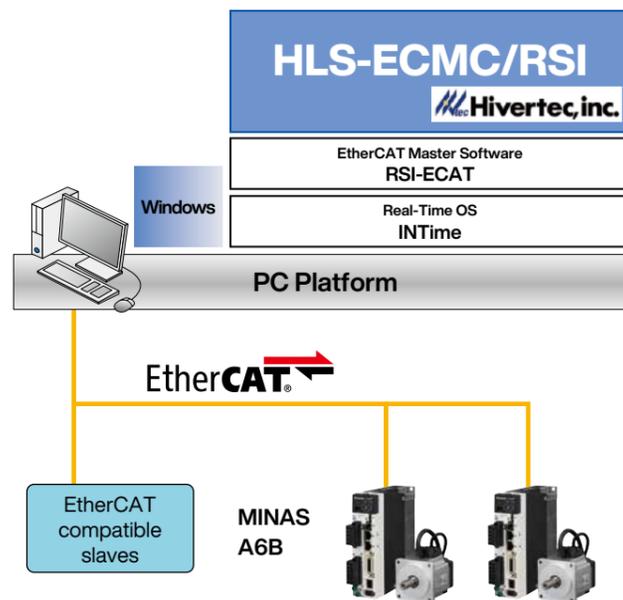
IPC base PAC (Programmable Automation Controller)

HCOS series

Features

● **Easy to use**
→ The open international standard IEC 61131-3

● **Stable supply**
→ Cooperated with IPC manufacturers

● **Benefits of using a PC**
→ Huge memory, storage, connectivity with the network, Windows

● **Real time**
→ PLC operating on RTOS

Programmable Automation Controller to realize the above

Windows PC

PLC integrated development environment
PLC program creation/debugging

Download program

Windows Application such as Image processing, HMI etc.

Platforms that can be chosen

HCOS
Hivertec Control System

| Windows | | | RTOS PLC |
| Core1 | Core2 | Core3 | Core4 |

EtherCAT

EtherCAT compatible slaves

MINAS A6B
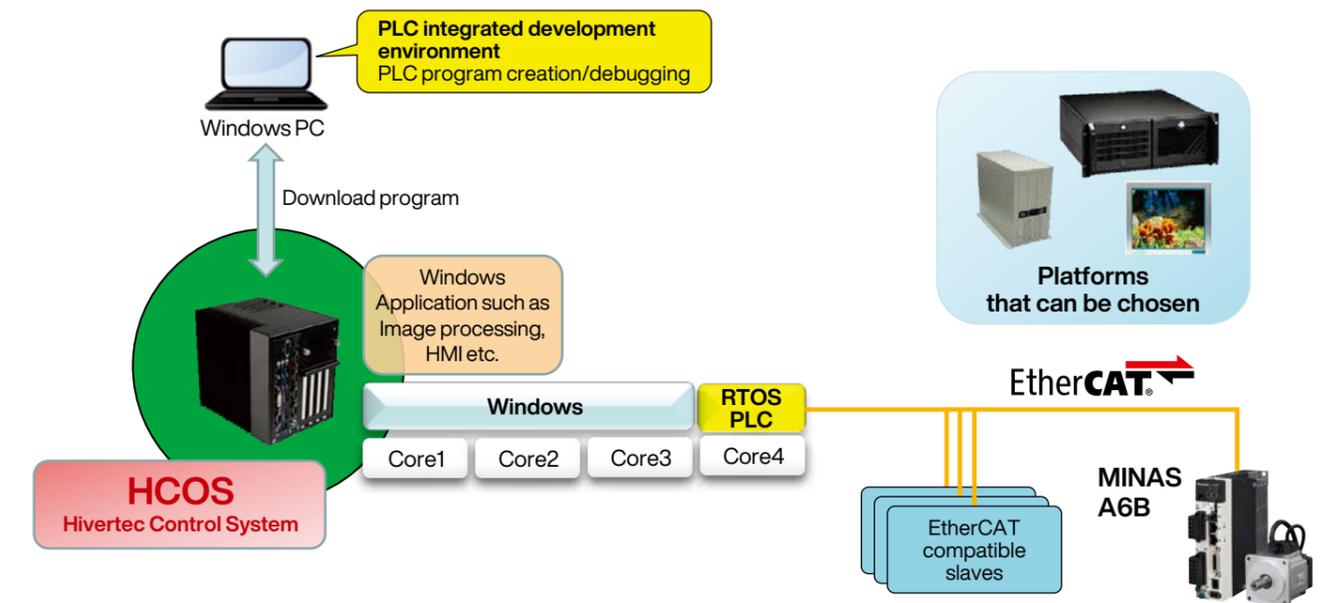
Sales area

● Japan   ● Korea   ● Taiwan

Language

● English   ● Japanese

For more information

URL : http://www.hivertec.co.jp/

● Contact: **Hivertec, Inc.**

Taijuseimei shin-ohashi Bldg., 1-8-11 Shin-ohashi Koto-ku, Tokyo, 135-0007, Japan
TEL：+81-3-3846-3801 FAX：+81-3-3846-3773

Manufacturer/Distributor: **Hypertherm** **Hypertherm, Inc.**

Industrial plate, sheet, and pipe/tube cutting CNC

EDGE® Connect CNC

Companion products available

● ProNest® CAD/ CAM Software
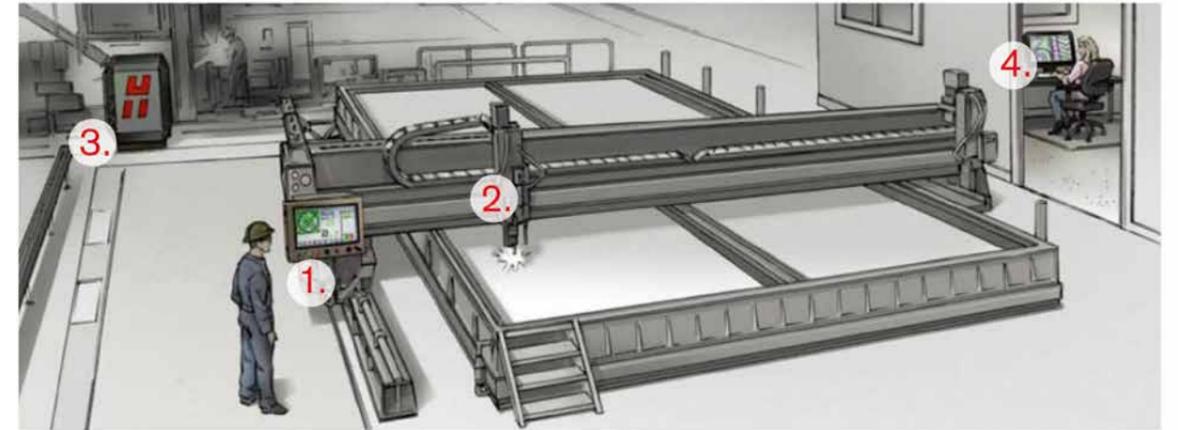● Conventional Plasma Systems
● HyPerformance® Plasma Systems
● Plasma Consumables
● Torch Height Controls
● HyPrecison™® WaterJet Pumps
● Waterjet Consumables

Features

● Industrial PC-based CNC for X/Y gantry machines.
● Built-in motion control logic for straight "I", Bevel, & Pipe/Tube cutting.
● Two hardware configurations
  • 495 mm (19.5" in) touchscreen display with integrated hardware operator's panel.
  • Compact PC for integration of custom operator's panel and display.
● A proprietary graphical User Interface (GUI) for intuitive machine operation.
● Integrated torch height control (positioner) for plasma cutting.
● Real-time operating system for precise motion and process control.
● Embedded process control for oxyfuel, plasma, and waterjet.
● On-screen operator's console for station and process control.
● Optional PLC available to add custom functionality (IEC 61131 compliant).
● ProNest® CNC nesting software for optimal plate utilization and embedded process control.
● SureCut™ technologies (True Hole®, Rapid Part™ and True Bevel™) for improved cut quality, productivity, and operating cost.
● Remote Help™ for system diagnostics and troubleshooting via the internet.
● Global sales and service.

Application Sample

1. CNC control   2. THC lifter   3. Plasma cutting tool   4. Office CAM

System Configuration

EtherCAT Servos   Max 12 Axes

LAN port

EDGE Connect CNC

MINAS A5B/A6B

EtherCAT I/O Modules
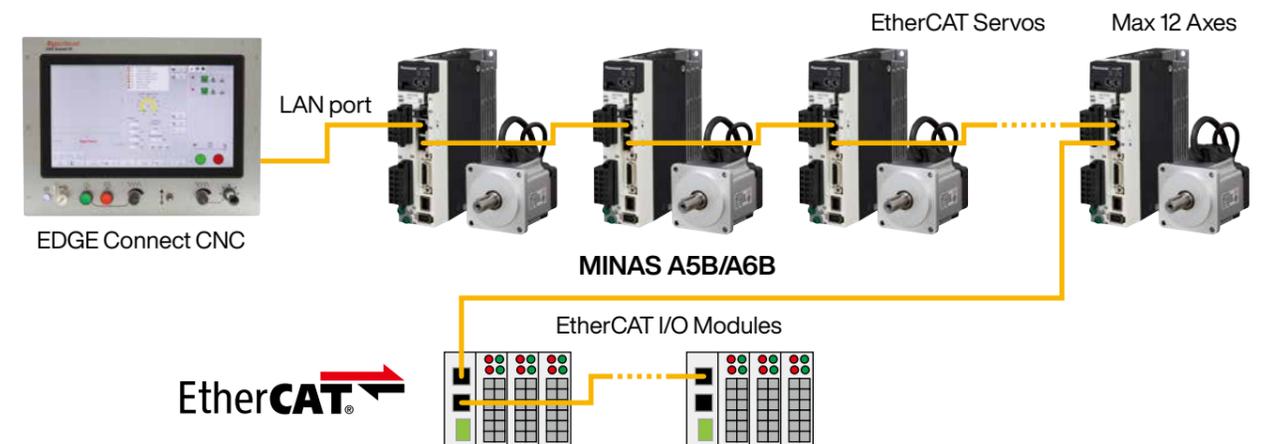
Sales area

● Worldwide response

Language

For more information

URL : www.Hypertherm.com

● Contact : **Hypertherm, Inc.**

21 Great Hollow Road Hanover, NH 03755 USA   TEL : +1-603-643-0030

EtherCAT

Software CNC
COSTANTINO CNC
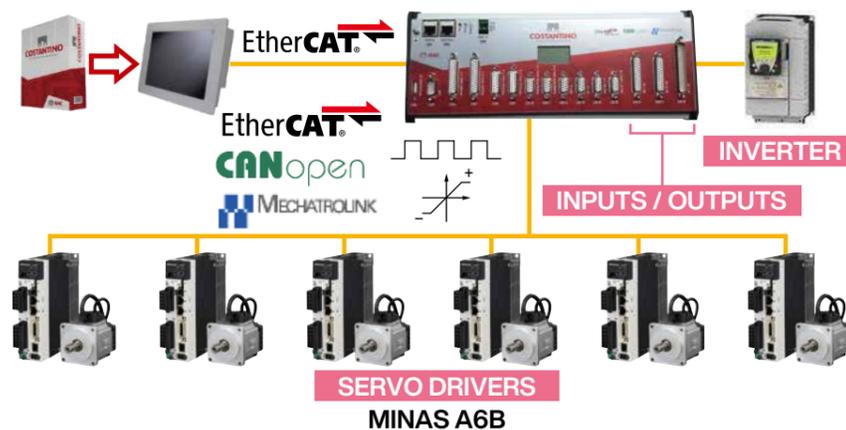
System Configuration
- Software CNC Costantino
- Panel PC or Industrial PC
- EtherCAT Bridge for connecting servodrivers and I/Os

INVERTER

INPUTS / OUTPUTS

SERVO DRIVERS
MINAS A6B

Features

Costantino is a **SoftCNC** that can be completely customized by OEM customer to create their own CNC solution, using proven and robust components.

Costantino **runs on any** IPC so you can choose your favorite brand that can guarantee international support on hardware components. It runs completely independent on Windows using its dedicated CPU processors in a multicore environment using its dedicated memory amount and its Ethernet controller.

Costantino connects with servo and IO devices of any brand using its integrated **EtherCAT master and configurator**. If customer wishes to use different fieldbus such as **Mechatrolink or CANopen**, Costantino can interface an ISAC-provided EtherCAT slave device that provides compatibility with all of these interfaces, and more. In addition to the natively supported fieldbuses, OEM customers can add support to any other fieldbus using an SDK that allow to easily develop by themselves or using ISAC engineering help.

Costantino comes with a PLC environment that is compatible **IEC61131-3**, so you can program it with any of the languages that are part of the standard: ST, IL, LD, FBD, SCD. In addition, you can create FBs in C language and thus reuse components written for different hardware solutions.

Costantino CNC interprets **G-codes** (ISO6983) with some features that are important in many application; with 25000 blocks/sec and more than 250 blocks of look ahead, it is one of the fastest CNC in the market.

- All movements are under **Jerk** control for tooltip and joints, this guarantees the best mechanics lifetime and performance;
- It runs up to 8 different interpolation programs at the same time, and handle auxiliary axes for clams, loaders and unloaders, or tool change, for a total of 128 axes;
- It supports **High Speed Machining**, that keeps cutting feedrate constant, reduces machining timing, and reduces machine vibrations;
- It comes with high accurate vibration suppression algorithms, following error compensation, velocity feed forward and many other tools to achieve the best cutting results;
- It compensates **tool length and radius**;
- It can handle online tool measures, tool wearing and life, and complex tool change procedure;
- It includes **5 axis machining interpolator** to program tool tip in machines equipped with bi-rotative heads, tilting tables, and even robots.
- It comes with a powerful **simulation engine** capable of showing results on the material before machining takes part.

Application Sample

- Stone Cutting
- Metal Milling
- Thermal Cutting (Plasma, Laser, Oxi)
- Waterjet
- Glass Cutting
- Glass Engraving
- Wood Working
- Dental Applications

EtherCAT

Programmable Automation Control
PAC ILIUM

Features

Ilium is a newly developed PAC (Programmable Automation Controller) based on more than 10 years of ISAC experience in the field. It includes all main functionalities needed to build an Industrial Automation application, all in one device: **PLC Logic Execution + Motion Control + Communication and integration with other software components + HMI.**

Those functionalities **do not interfere between each other**, as it is possible to use more than one core of the processor; all of the tasks are executed with **high precision** and with **defined execution times**. Ilium interfaces with other devices through an Ethernet port that supports **EtherCAT** or **Powerlink**. Using the ISAC Bridge, Ilium supports many other fieldbuses (**CANopen, Mechatrolink, Analog interface** with position reading through **Encoder, SSI or ENDAT, Pulse/Direction** or **Stepper** interface). Ilium offers complete diagnostic tools for faults and anomalies detected on the I/Os peripherals and on the servo drivers. All of the errors are stored, allowing to analyze them at a later time, even in the case of unattended operation.

Ilium is available in **two formats**: the application is **portable** between different formats, the development tools are the same, as well as the application libraries.

Ilium Embedded is a compact device, powerful enough to drive **up to 11 EtherCAT axes**. It is available with **touch screen**, it supports **USB**, **COM** ports, external **HDMI** video, one **Ethernet** port for programming and Web interfaces. It does not contain moving parts, all of the components are non-removable, few Watts are enough to allow it to run.

Ilium soft-Motion is a **real-time software** that runs on an IPC; it uses exclusively **a part of the hardware resources**: one or more cores of the CPU, a portion of RAM, one Ethernet port; communication and HMI is managed by Windows. **You can choose the PC**: choose the ISAC model that suits your needs, or your preferred IPC supplier.

Ilium soft-Motion comes with no performance compromises, and offers the flexibility and the power of the PC to realize a customized user interface, using ISAC tools or alternative ones.

Ilium offers powerful and integrated development tools in order to make easier the PLC logic development and its debug, the start-up of the machine or of the plant, and its maintenance. You can develop the application in the IEC61131 standard languages (ST, IL, LD, FBD, SCD). Program the PLC logic with Multiprog, from Phoenix Contact Software. You can also use ANSI C, and compile in native code, in order to obtain the maximum performance and reliability, to create whole tasks with this language, or to create FBs to be used inside Multiprog. Ilium supports PLCopen MC part 1 and 2, version 2.0. The supplied FBs includes Cams (programmable from PLC logic or to be created from sampling), Gears, Electric Shafts, Phasing, Slave Synchronous Movement (referred on more Masters), all movements based on space or speed control, with speed, acceleration and Jerk control to assure fluid movements and the dampening of the resonances. The servo drivers can be tuned using the integrated diagnostic tools, as the oscilloscope, and all of the parameters will be stored and sent to the servo drivers by Ilium itself, making the replacing of servo drivers very easy.

ISAC ILIUM: TRY TO STOP IT!

Application Sample

- Packaging
- Material Handling
- Printing machines
- Building Automation
- Textile machines
- Paper processing machines

Sales area		Language		
● EU	● United States of America	● English	● Italian	● Turkish
● China	● Korea	● Chinese	● Portuguese	

For more information

URL : **www.costantinocnc.com**

URL : **www.isacsrl.it**

● Contact: **ISAC s.r.l.**

ISAC s.r.l.
Via Maestri del Lavoro, 30, 56021 CASCINA (PI) - Italy   TEL : +39 (0)50 711131   FAX : +39 (0)50 711472

GTT co. LTD (Stone Market representative for China)
Mr. Jason Ou   TEL : +86 139 5951 0697

EtherCAT

EtherCATClosed Loop Stepper Drives
CS3E Series

Features

- No loss of step, Smooth, Quick, Accurate, Low heating
- Support CANopen over EtherCAT (CoE) control and CiA 402
- Operation modes: Cyclic Synchronous Position (CSP), Profile Position (PP), Profile Velocity (PV) and Homing (HM)
- Compatible with major EtherCAT masters and slaves
- Stepper motors with 1000, 2500, 5000, and 10000 PPR encoders

Application Sample

- Packing machines
- Electronic equipment
- Stage entertainment equipment
- CNC Machines

System Configuration

Controller/PLC/Control Card...

Slave ID Setting

Micro USB

LED Display

EtherCAT Communication Outputs

EtherCAT Communication Inputs

Input / Output Interface

Encoder Input

Motor Output

Power Supply
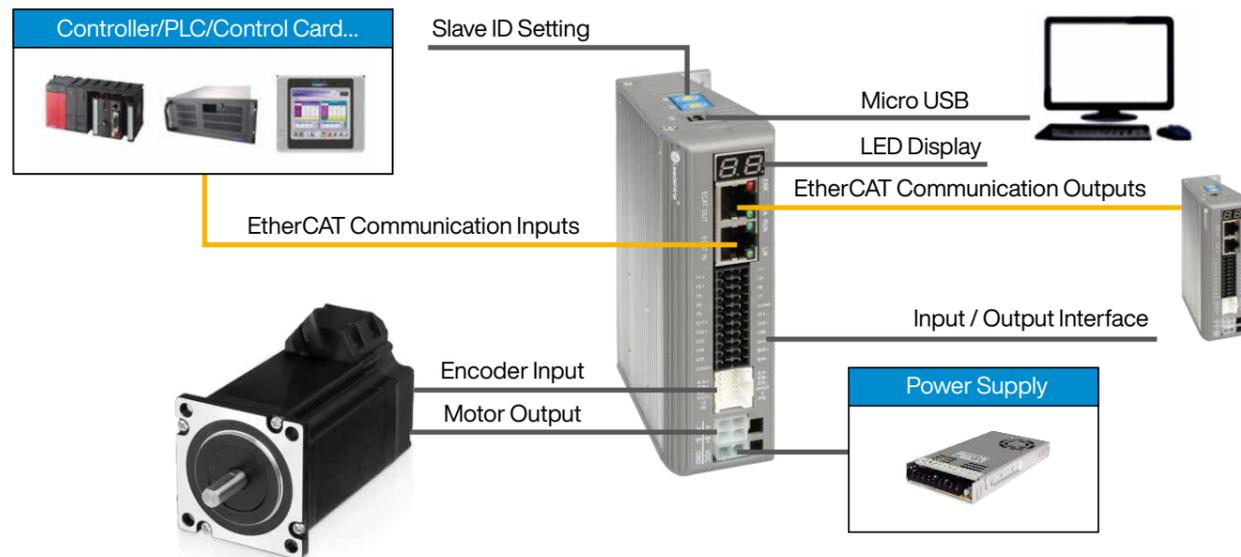
EtherCAT

EtherCAT Stepper Drives
EM3E Serie

Features

- Low noise and vibration, smooth motion
- CANopen over EtherCAT (CoE) with full support of CiA402, 100 Mbps full-duplex
- Support operation modes: Profile Position, Profile Velocity, Cyclic Synchronous Position, Homing
- 5 digital inputs, 2 optically isolated digital outputs for EM3E-522 / 556 / 870
  7 digital inputs, 7 optically isolated digital outputs for EM3E-A882
- Operation modes: Cyclic Synchronous Position (CSP), Profile Position (PP), Profile Velocity (PV) and Homing (HM)
- Compatible with major EtherCAT masters and slaves

Application Sample

- Packing machines
- Electronic equipment
- Stage entertainment equipment
- CNC Machines

System Configuration

Slave ID Setting

Controller/PLC/Control Card...

Power Supply

EtherCAT Communication Output

EtherCAT Communication Input

Input / Output Interface

Motor Output

Sales area	Language
● China ● Worldwide response	● English ● Chinese

For more information

URL : **http://www.leadshine.com**
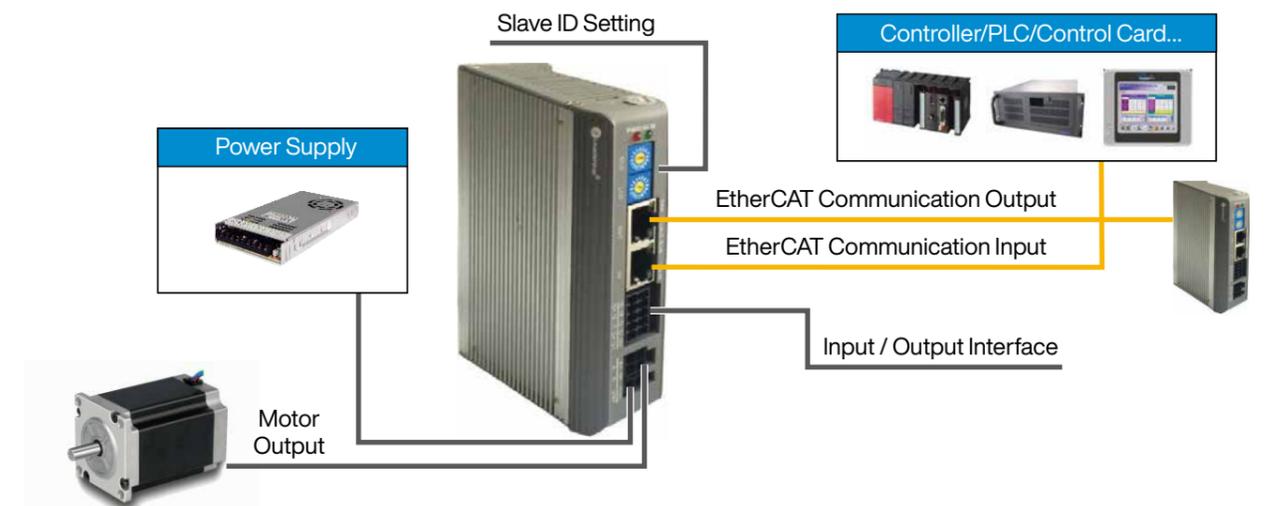
PC Based Controller

RT-C Language Controller

Cooperate with Windows / Multi-core CPU support / Developed with Visual Studio

Windows-based HMI
Windows®
INtime®
GOBSnet
INtime®
INtime®
Robot
Camera

Features

● **RT-C Language Controller** for Windows can give determinism to ensure predictable behaviors and can support real-time tasks to standard Windows platforms.
● Though Windows is a global standard on human machine interfaces (HMI) and on other general purpose operating system (GPOS) functions, but only Windows cannot provide deterministic supports for real-time application needs.
● **RT-C Language Controller** is a controller which can achieve 100 μs period high-speed real time control. You can realize both real time instrument control function and multi-purpose Windows function on 1 PC platform. since it can also run on Windows.
● **RT-C Language Controller** which makes use of PC platfrom can offer unmatched performance since it uses latest Intel CPU.
● In developing control program, since it adopts the integrated development environment "Visual Studio" which is the most popular all over the world, if you have experienced Windows programs with C# language, you can smoothly introduce it to your systems.

System Configuration

User Application | Motion Library | EtherCAT | MINAS A6B series
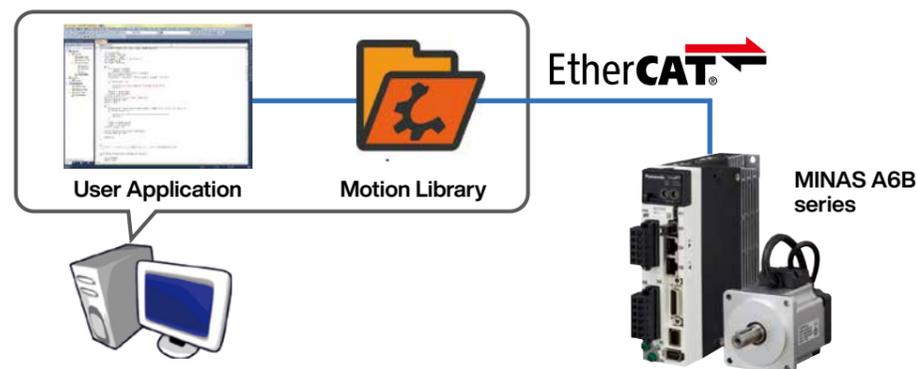
PC Based Controller

INplc PLC based on IEC61131-3

Development Tool INplc-SDK
· IEC 61131-3 Conforming
· Motion Function Block
· Supports language mix

INplc-Controller
· Real-time sequence control
· Network communication function
· High functionality human interface
· Motion Control function

EtherCAT

MINAS A6B series

Features

INplc-Controller with "INplc Runtime License"

The most advantageous point of INplc is that it can be used with Windows together.
It is a multifunctional controller equipped with not only PLC applications but also C language applications / HMI applications.
You can use add-in boards or field buses as I/O interfaces of INplc.
EtherCAT is also contained in the field bus category which INplc supports.
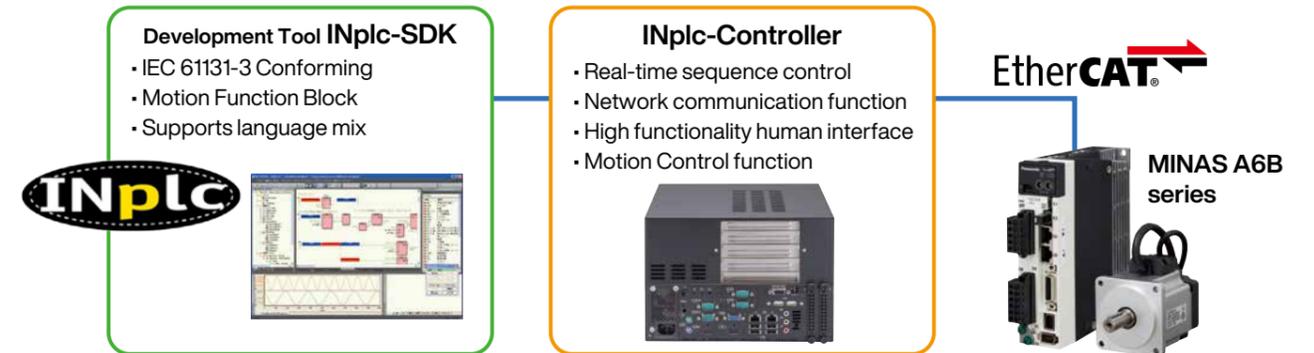
You can develop and maintain PLC programs on standard Windows PC platforms using it. The created PLC programs can be downloaded to PLC controllers via network.
· INplc has corresponded to 5 languages in accordance with IEC61131-3 that IEC (International-Electrotechnical Commission) provides.
· You can code different languages together in INplc-SDK environment.
· INplc-SDK also allows you to convert across languages.

INplc is a real software-PLC in accordance with IEC61131-3.
INplc adopts MULTIPROG & ProConOS (by PHOENIX CONTACT Software, Germany) which have achieved a lot of satisfactory results in the world. And INplc-Controller adopts INtime and a standard Windows computer as its basic structure.
Therefore,
· No specialized hardware is needed.
· Efficient hardware can be selected from among marketed commodities. From high-end systems to embedded-systems, you can construct various systems with a high-flexibility.

Sales area

● Japan ● Korea ● China ● Taiwan

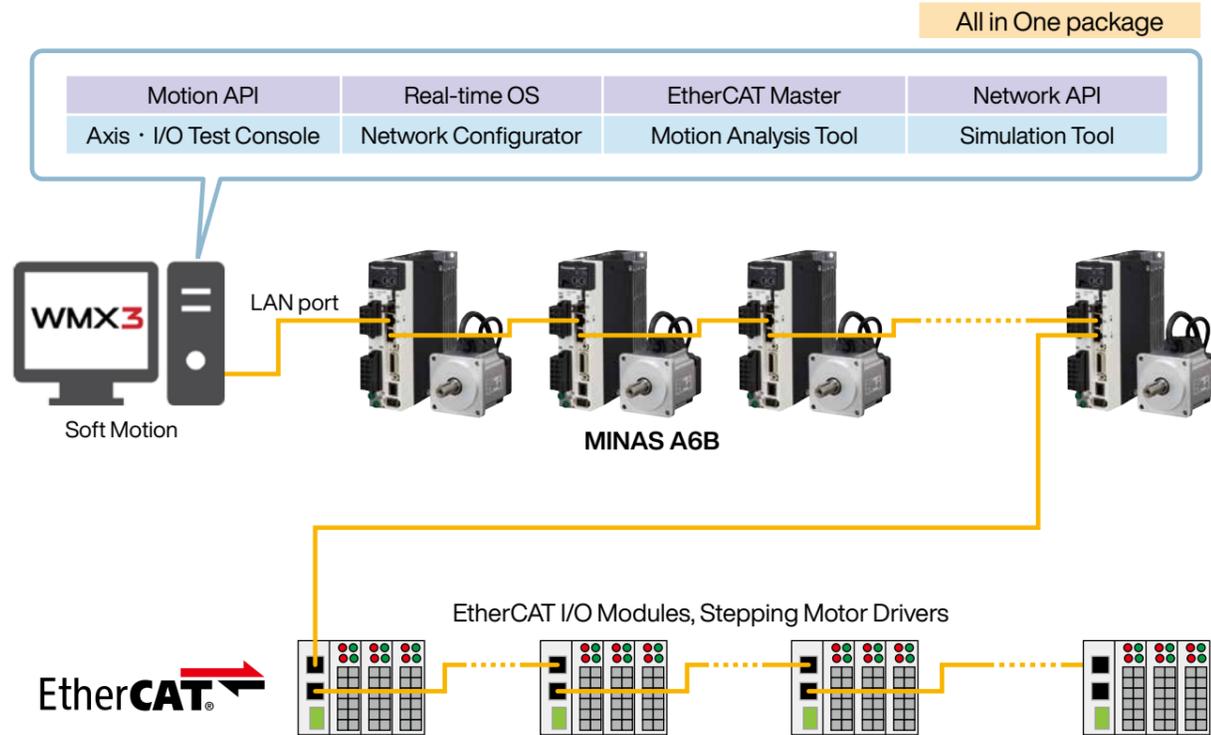### Language

● English ● Japanese

For more information

URL : http://www.mnc.co.jp/

EtherCAT

PC-Based, Advanced Soft Motion Controller

WMX3 with EtherCAT

All in One package

Motion API	Real-time OS	EtherCAT Master	Network API
Axis · I/O Test Console	Network Configurator	Motion Analysis Tool	Simulation Tool

WMX3

LAN port

Soft Motion

MINAS A6B

EtherCAT I/O Modules, Stepping Motor Drivers

EtherCAT

Features

● Soft Motion Controller WMX3 is a patented software which turns any Windows PC with multi-core CPU a high-speed real time controller for intricated industrial machines. No additional proprietary hardware interface modules or components are necessary.

● WMX3 streamlines its operation systems; it integrates operation screens, image processing and device control applications up to 128-axis.

● Wiring can be reduced by networking. Furthermore, wiring man-hours and material reduction can be realized. Contributes to noise immunity.

● Small cost effective Windows PC enables real time logging simultaneously with controlling various industrial devices. Allows the accumulation of data in the edge PC and instantly retrieves it whenever necessary for its host systems.

● Over 500 API functions for C/C++and .NET functions for EitherCAT communications, motion control, and I/O control are available to develop original user motion applications.

● Exclusively developed EtherCAT SoftMaster is highly compatible with other slave machines on the market. Allows 32-axis high-speed synchronous communication at 250 μs. Full customer support for transmission and connection problems.

● SDK installed with WMX3 allows for customized motion control systems for various operation needs.

Open Innovation

● Allow customers implement own algorithm as Real-Time engine based on opened architecture of WMX3.

● Provide Wizard and Add-on in Visual Studio for convenient development using WMX3 SDK.
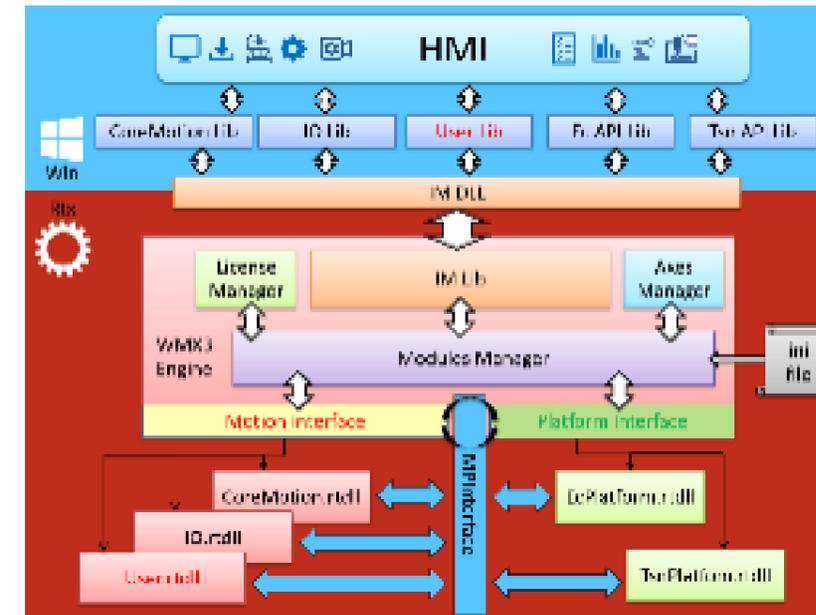
Robot Control Package (Option)

● Real-time synchronization control is possible with only one computer with up to 128 axes, including robots and general-purpose axes.

● Control application can be independently developed through APIs of robot option.

● Provide kinematics, reverse kinematics and closed linkage machines for various industrial robots.

   (6-axis vertical poly joints, SCARA, delta, etc.)

● Support structure and link offset.

Sales area

● Asia   ● North America   ● Europe

Language

● Korean   ● Japanese
● English   ● Chinese

For more information

URL : http://www.movensys.com

● Contact: **Movensys, Inc. (formerly Soft Servo Systems, Inc.)**

Sunae Finance Tower 8F, 25, Hwangsaeul-ro 258 beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13595, Republic of Korea   TEL : +82-31-895-5066 FAX : +82-70-4015-5066

Manufacturer/Distributor: NEXCOM **NEXCOM International Co., Ltd.**

GMC-110F

EtherCAT General Motion Controller

16-axis EtherCAT-based Motion Controller

GMC-110F

nexMotion Studio

NexMotion Studio
– Utility for NexGMC

Offline Edit Network Topology   Axis Parameters Edit

Single Axis Configurator   Motion Group Configurator
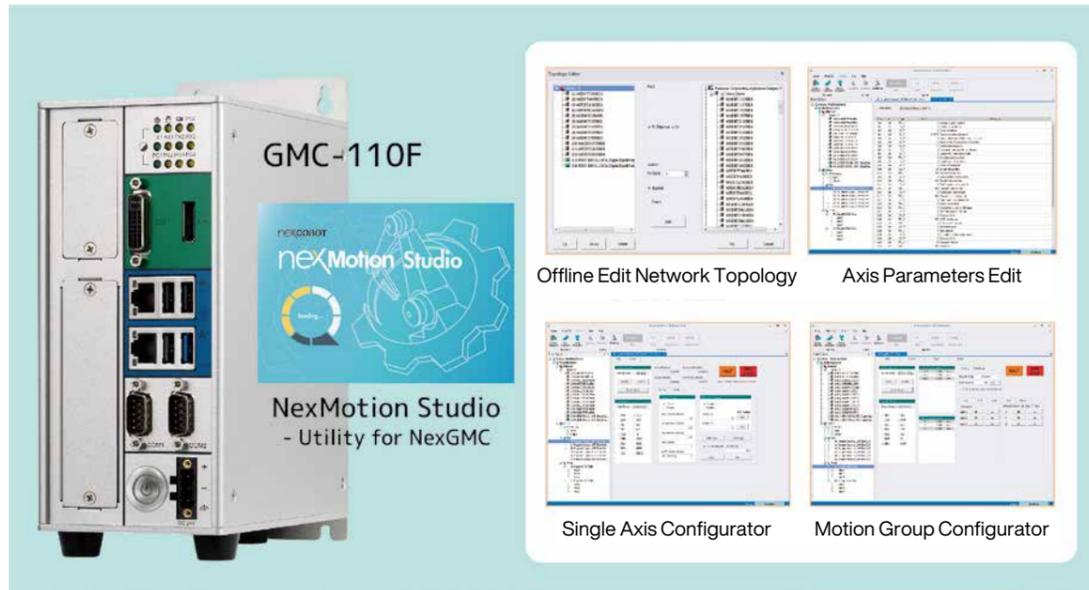
Features

1 Intelligent PC-based motion controller : GMC-110F

GMC-110F presents intelligent PC-Based motion controller for machine automation. It integrates NexCOBOT's general motion control software, NexGMC, to perform real-time motion control and supports standard EtherCAT slaves. GMC-110F also provides windows APIs for general motion control application and an integrated development environment to speed up development time for automation users.

2 Motion Control Functions

- Single-axis motion control up to 16axes
- Group motion control up to 2 groups
- Single-axis control: PTP, Jog, Halt, Stop, Speed/ACC/DEC override, blending
- Axes group control: PTP, Linear, Circular, Speed/ACC/DEC override, blending
- Supported Group Types: Cartesian coordinates machine (XY, XYZ table, XYZ& Θ)
- Support standard EtherCAT slaves
- Support C/C++,C# , VB.Net and Python for user programming
- Provide motion configuration tool - NexMotion Studio

3 Platform Information

- Intel® Celeron® processor J1900 Quad Core
- 1 x EtherCAT port, 1 x Intel I210IT GbE LAN port
- 1 x USB 3.0, 3 x USB 2.0
- Dual display: DVI-I, DP
- Operation system: WES7P + Realtime OS

System Configuration

Application story

Automatic Screw Fastening Machine
https://nexcobot.com/en/casestudy/screw-fastening

OK

Automatic Screw Fastening Machine

Motion Controller

Ethernet   EtherCAT.

Robot Arm   Camera   Servo Drives   NEIO-1812

Sensor   Relay   Conveyor   Motor   Cylinder
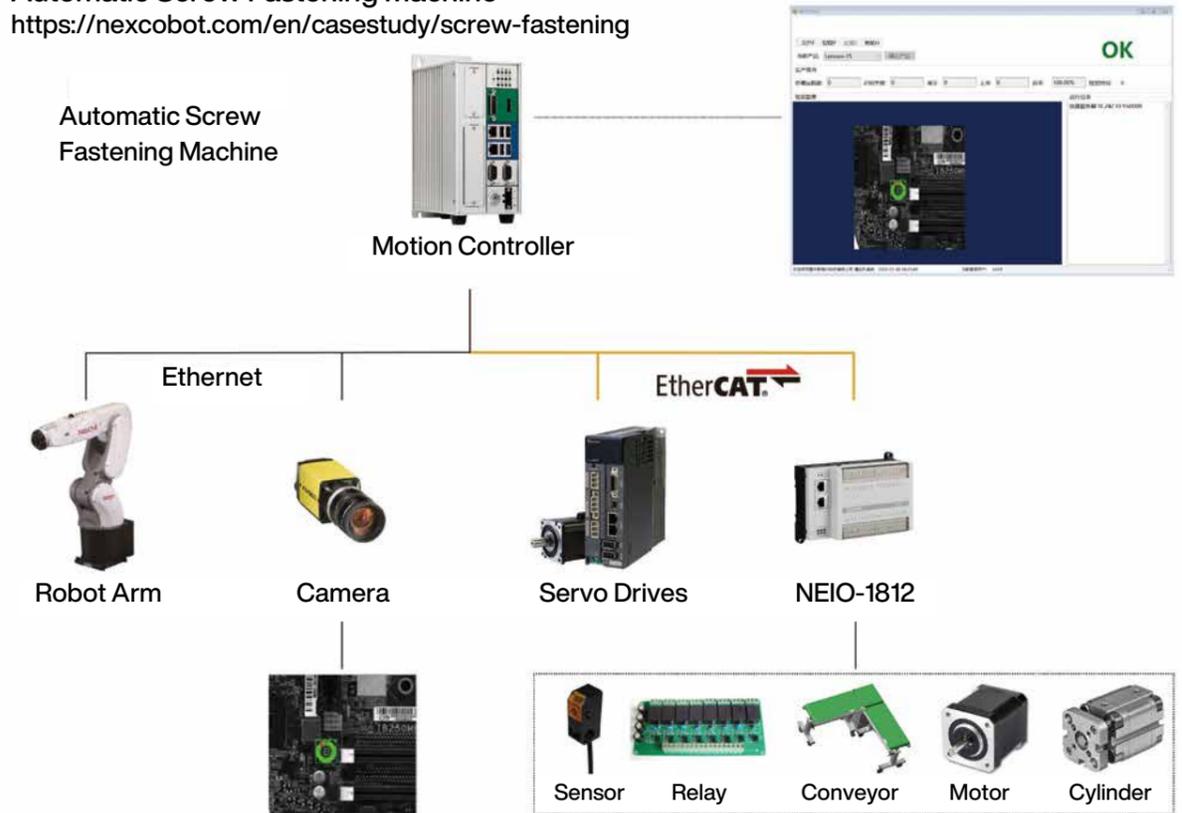
その他

Powerful Motion Configuration tool - NexMotion Studio

- EtherCAT devices offline edit and online scan
- EtherCAT master configuration
- PDO mapping edit
- Online SDO edit
- Export ENI

- CiA 402 device operation : PP/ PV/ PT/ CSP
- Single axis edit and operation
- Group axes edit and operation
- I/O mapping edit and operation
- Provide simulation operation mode

Sales area	Language
● Taiwan ● China ● Japan	● English ● Chinese ● Japanese

For more information

URL : https://www.nexcobot.com/

● Contact: NexCOBOT Taiwan Co., Ltd

13F, No.916, Chung-Cheng Rd., ZhongHe District, New Taipei City, Taiwan 23586, R.O.C.   TEL : +886-2-8226-7786

EtherCAT

PC Based Fine Motion/ PC Based Motion Library
RTMC64-EC/ RTPL-EC

PC Based Fine Motion is a controller software for EtherCAT.

PC Based Fine Motion

FAPC (Factory Automation PC)

PC applications

C Language

Software PLC ProConOS

PC Based Fine Motion
Automatic machine control
Precision cutting・Winding
Rollcontrol・Film control
Robot・Injection Molding
EtherCAT Master Stack

Core i7   Windows   INtime

EtherCAT

I/O DA/AD

Multi axis servo driver/motor
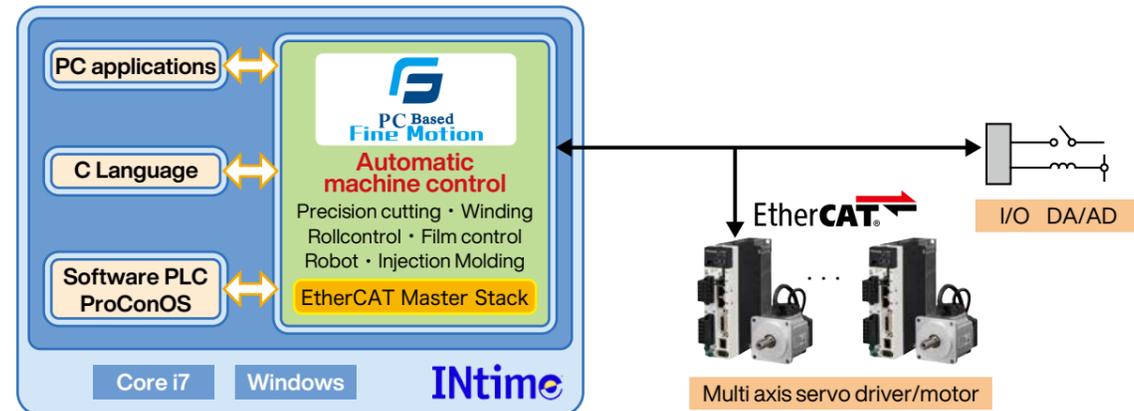
Features

Your PC becomes a high performance motion controller. PC Based Fine Motion whose ability is several hold higher than that of a general NC or a robot controller controls at most eight precise machines by one PC. The reliability of your controller can be improved by "INtime" and FAPC(Factory Automation PC).

Motion Library

Customized PC application
Techno DLL

User control software **In-House development for motion**

Win-IF   C Language IF

Techno sample operation software
Techno DLL

Motion Library

EtherCAT Master Stack

Windows   INtime

FAPC

EtherCAT

Servo Motor
Servo Driver
I/O

| User development | Techno | Purchase separately | Purchase Hardware separately |
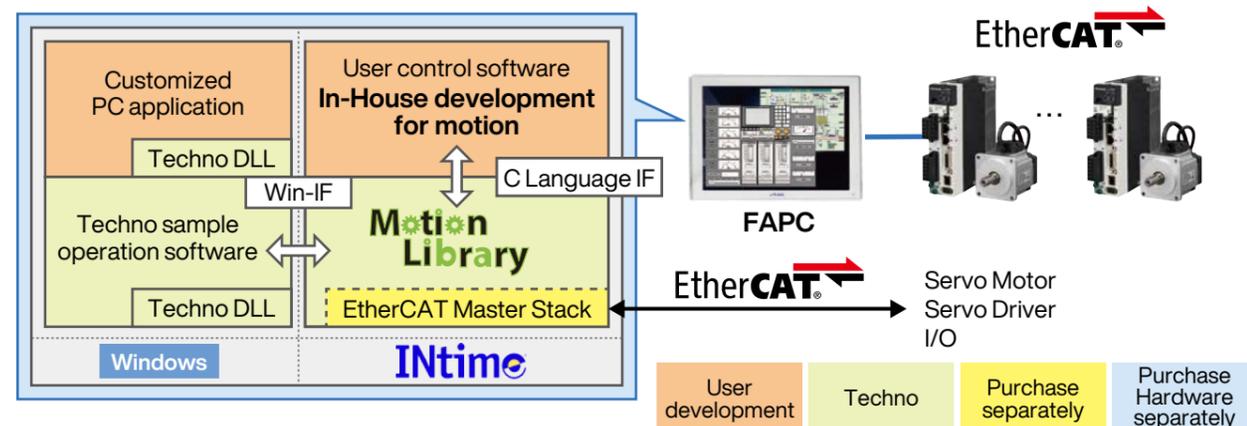
Features

● Semiconductor-fabrication equipment
● Electronic equipment production line
● Printing System
● Other multi axis control devices

Specification

PC Based Fine Motion

High-speed
0.25 msec / 32-Axis
0.5 msec / 64-Axis

Reliability
Not depend on Windows

Multi Axis Control
64-Axis / 8 task

8 task controlled simultaneously
One PC controls 8 machines

PC Based Fine Motion

EtherCAT

Batch control
Control multiple machines such as precision cutting, robot, molding, injection, deburring.

G code / Techno code
Simple operating program

Abundant motions
Fully equipped motion functions
Operate immediately

PLC/Image processing
Easily cooperate with various software

Precision cutting   Bending Robot   Jointed Robot

Coordinate Measuring Machine   Servo Press   SCARA Robot

・ High reliability by INtime, not depending on Windows
・ Make user enable to control precise machines without special knowledge

Application Sample

PC Based Fine Motion

● Precision cutting   ● Injection Molding   ● Winding machine
● Robot
● Laser cutting
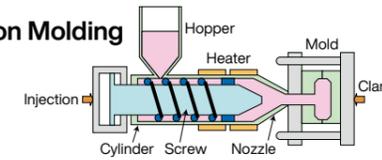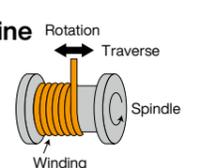
Motion Library

● Semiconductor-fabrication equipment   ● Electronic equipment production line
● Printing System   ● Other multi axis control devices

| **Sales area** | **Language** |

● Japan   ● All over the world   ● English   ● Japanese

For more information

PC Based Fine Motion URL :
http://www.open-mc.com/products/pdt05.html

PC Based Motion Library URL :
http://www.open-mc.com/products/pdt06.html

INtime URL :
http://www.mnc.co.jp/INtime/

● Contact: **TECHNO Co., Ltd.**

1304-5, Shimo-fujisawa, Iruma-shi, Saitama, 358-0011, Japan   TEL : +81-4-2964-3677   FAX : +81-4-2964-3322

TexComputer systems & solutions

Tex Computer srl

Programmable Automation Controllers

Power Family
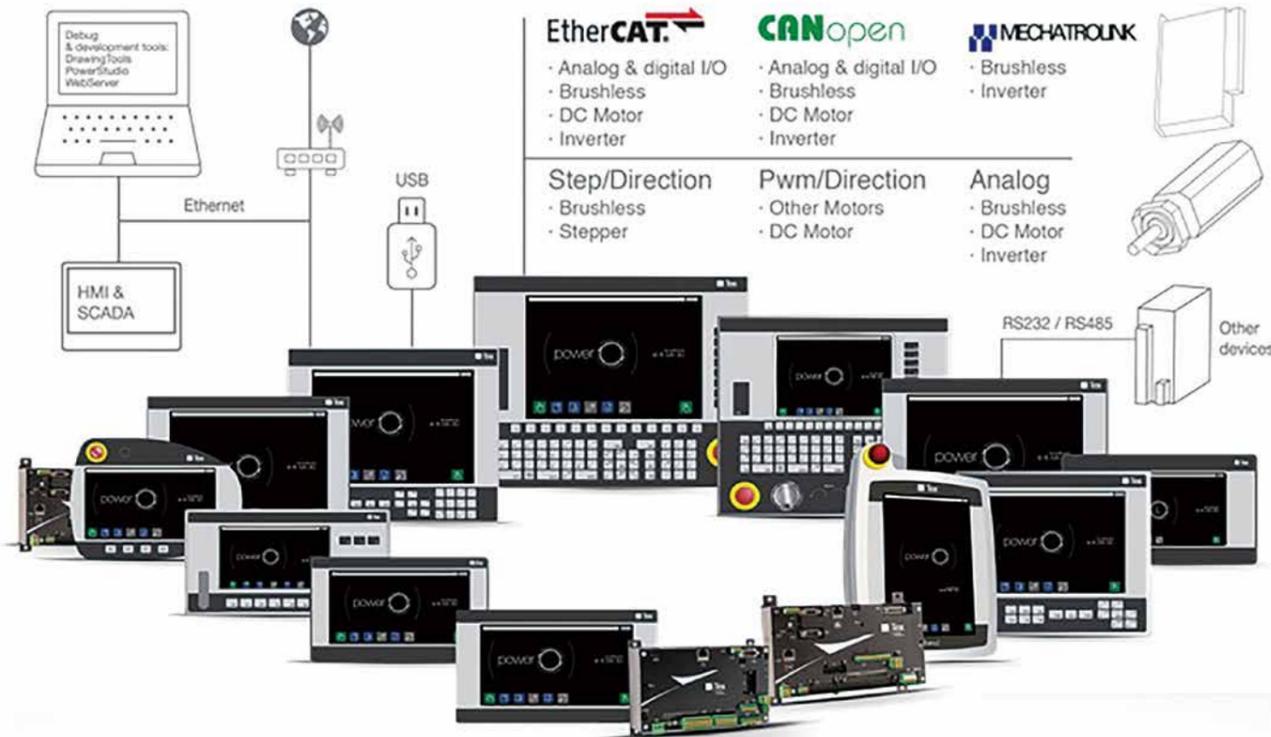
Application Sample

- Plane cutting machines (Plasma, Laser, Oxy, Waterjet, Diamond disk)
- Stone working machines (Bridge saws, Polishing, CNC contouring)
- Woodworking machines (CNC for drilling, routing, tenoning, sawing)
- Metal machining (3-5 axes milling, parallel & automatic lathe turning)
- Textile (Cutting, Sewing, Labelling, Finishing & Washing)
- Pick & Place with Articulated, Cartesian, SCARA or DELTA robots
- Packaging and all sort of automatic machines

Features

All controllers of the **Power family** are equipped with 32 bit Risc (Reduced Instruction Set Computer) CPU to allow use of a sole **Real Time Multitasking Operative System (OS)** to manage PLC, CNC, HMI and IT tasks. The scale between the different models depends on:
- CPU with different clock (132 or 264 MHz) and cores (1 or 2)
- Memory architectures with different parallelism (16 or 32 bit)

The **compiler**, which generates the executable code, is integrated in the firmware of the controller so the system becomes completely autonomous and independent from the evolutions of the consumer world (PC) and **unaffected by computer viruses**.
There are two main executors, each one with its set of instructions:
- **PLC executor** which cycles continuously between the first and the last instruction of the PLC program
- **CNC executor** which starts only on request, it can be put on hold or deleted and it ends after the last instruction of the CNC program

CNC executor can process up to **5 CNC** task at the same time. Their execution are transfered in a buffer (**Look Ahead**) where they are processed to obtain effective trajectories of the interpolated axes. The commands inserted in ISO editor (the user program written in **G-code**) are interpreted and executed launching the execution of different blocks present in the BLC editor.

The OS manages many types of communication ports:
- **Ethernet** with the support of TCP/IP, FTP and ModbusTCP protocols; **OPC server** and **WEB server** are also available
- **RS232/RS485** serials with **Modbus** protocol (ASCII and RTU)
- **USB** which can connect **MSD** (Mass Storage Device) of different types and with more memory volumes, **HID** (Human Interface Device) like keypads / mouse and tracking devices like Gamepad

It can manage up to **28 axes** in point to point, gearing, camming and interpolation mode. Their trajectory can be shaped via many different levels of **Jerk** in order to reduce the inertial effect of load without great loses in performances.

Sales area

- China
- India
- Brazil
- Europe

Language

- Italian
- English

For more information

URL : www.texcomputer.com

TRIO MOTION TECHNOLOGY

Trio Motion Technology Ltd.

Motion Coordinator and EtherCAT Interface Modul

Motion Coordinator MC664 /MC664-X Panasonic EtherCAT Interface Module

Features

- Up to 128 Axes
- Servo period 50 µsec minimum (8 axes)
- Precise 64 Bit Motion Calculations with Quad Core Cortex A9 1 GHz Processor (P862)
- Dedicated Communications Core (P862)
- Built-in EtherCAT Port
- EtherCAT, Sercos, SLM and RTEX Digital Drive Interfaces
- Linear, Circular, Helical and Spherical Interpolation
- Flexible CAM shapes, Linked Motion
- EnDAT, BISS and SSI Absolute Encoder Supported
- Hardware Linked Outputs for Camera / Laser Contro

- Ethernet-IP / Modbus TCP / Ethernet Interface Built-In
- Anybus-CC Module for Flexible Factory Comms Including ProfiNet/Profibus
- IEC 61131-3 Programming
- Multi-tasking BASIC Programming
- Text File Handling
- Robotic Transformations
- SD Memory Card Slot
- CANopen + EtherCAT I/O Expansion
- Backlit LCD Display
- RoHS and CE Approved

Motion Coordinator and EtherCAT Interface Module

Motion Coordinator MC6N-ECAT

Features

- Up to 64 EtherCAT Digital Drive Axes
- Supports Position, Speed and Torque Drive Modes
- Up to 1024 EtherCAT I/O
- EtherCAT CoE, SoE, FoE
- Linear, Circular, Helical and Spherical Interpolation
- Flexible CAM shapes, Linked Motion
- Isolated Encoder Port
- EnDAT and SSI Absolute Encoder Supported
- Hardware Linked Output for Camera / Laser Control
- Ethernet-IP / Modbus TCP / Trio ActiveX / TCIP/ Uniplay HMI / UDP / Ethernet Interface Built-In
- 1GHz i.MX7 Dual ARM Cortex A7 Core Process

- IEC 61131-3 Programming
- Multi-tasking BASIC Programming
- Text File Handling
- Robotic Transformations
- 4 high speed registration inputs
- Isolated RS232 and RS485 ports
- SD Memory Card Slot
- EtherCAT I/O Expansion
- CANopen I/O Expansion
- Backlit LCD Display
- RoHS and CE Approved

Motion Coordinator and EtherCAT Interface Module

Motion Coordinator PC-MCAT Ethercat Master

Features

- Motion + PC Solution for Automation Machinery
- Fanless compact PC with E3845 Quad Core Atom Processor at 1.91 GHz
- Powerful up to 64 Axis EtherCAT Based Trio Motion Coordinator
- RTX64 Real Time Extension to allow Motion + Windows Running Directly on Their Own Processor Cores
- Plug and Play EtherCAT Configuration Expandable Support for Servo Drives, I/O and Devices From Over 100 Manufacturers
- Programmable In Easy Trio BASIC, built-in IEC 61131 or PC based Programming Languages Such As 'C'
- 4 GByte RAM + 64 GByte Upgradable SSD
- Windows Operating System
- Built-in Additional GBit Ethernet Port For Vision Cameras

Application Sample

URL : Sample applications
http://www.triomotion.uk/public/applications/applications.php

Sales area		Language
● United Kingdom	● United States of America	● English
● China	● India	

For more information

URL: Specification for the MC664 / MC664-X
http://www.triomotion.uk/public/products/p862.php

URL: Specification for the MC4-N ECAT Mini Master
http://www.triomotion.uk/public/products/p900.php

URL: Specification for the PC-MCAT Ethercat Master
http://www.triomotion.uk/public/products/p760.php

● Contact: **Trio Motion Technology Ltd.**

Shannon Way, Tewkesbury, Gloucestershire, GL20 8ND, United Kingdom   TEL : +44-1684-292333   FAX : +44-1684-297929

IEC61131-3 Standard Industrial IoT Controller

CONPROSYS PAC (Programmable Automation Controller) Solution

Configurable Type

EtherCAT Module
CPS-PCS341EC-DS1-1201

Modbus Module
CPS-PCS341MB-DS1-1201

Features

IEC 61131-3 Standard
CODESYS Programming
Equipped with the PLC engine "CODESYS," which continues to be used more and more commonly in the global market. Applications can be developed in programming languages, such as Ladder/SFC/Function Block etc., that comply with international standard IEC 61131-3.

Integrated Development Environment Provided free of charge
An integrated development environment for developing applications is provided free of charge. This makes it possible to seamlessly perform all the required development such as control logic and field bus I/O.

Supported integrated development environment: V3.5 SP7 Patch 2 or later
Supported languages: LD / SFC / FBD / ST / IL / CFC

Integrated Type

EtherCAT Module
CPS-PC341EC1-9201

Modbus Module
CPS-PC341MB-ADSC1-9201

Features

Equipped with Field-Bus Master Functions
EtherCAT / Modbus Supported
Equipped with an open-field network EtherCAT / Modbus master function. In the CODESYS integrated development environment, fieldbus I/O can be directly assigned to variables in the same manner as the built-in I/O and the stack I/O.

SCADA / MES / ERP Linking
Built-in OPC-UA Server
OPC-UA is essential for the M2M communication. The controller has a built-in server function. This enables the safe and stable exchange of data with SCADA software and MES/ERP systems.

Equipped with a Web HMI Engine
Web Monitor Function
The controller has a built-in web server function and tools for creating screens for use on the web. This makes it possible to easily view equipment information without using a cloud server or a similar device.

Sales area

● Japan ● China ● Korea ● Taiwan
● Singapore ● India

Language

● Japanese ● English

For more information

URL : https://www.contec.com

● Contact : **CONTEC CO., LTD.**

13-9-31 Himesato, Nishiyodogawa-ku, Osaka 555-0025 JAPAN   TEL : +81-6-6477-5219

EtherCAT partner products

Corresponding table

Partner	Master					
	Software	PC Board	IPC	Panel PC	Stand Alone	PLC
Panasonic Industry Co., Ltd.						●
acontls technologles GmbH	●					
ADLINK Technology, Inc.			●			
Advanet Inc.		●				
Advantech Co., Ltd.		●				
ALGO System Co.,Ltd			●	●		
Beckhoff Automation GmbH & Co.KG	●		●	●		●
CODESYS	●					
CONTEC Co., Ltd.			●			
FAGOR AUTOMATIO					●	
Galil Motion Control, Inc.		●				
Hivertec, Inc.	●					
Hypertherm, Inc.					●	
ISAC	●					
Leadshine Technology Co., Ltd.						
Micronet Company	●		●	●		●
MOVNSYS Inc.	●					
National Instruments Corporation					●	
NEXCOM International Co., Ltd.			●			
TECHNO Co., Ltd.	●					
Tex Computer srl					●	
Trio Motion Technology Ltd.					●	

MINAS A6L series

Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

A6SL, A6SM

High-precision and high-speed advancement of linear motor / direct drive motor control driver inheriting the basic control performance of the A6 series

Motor
- Various motors such as 3-phase cored/coreless, shaft motor and DD motor

Scale
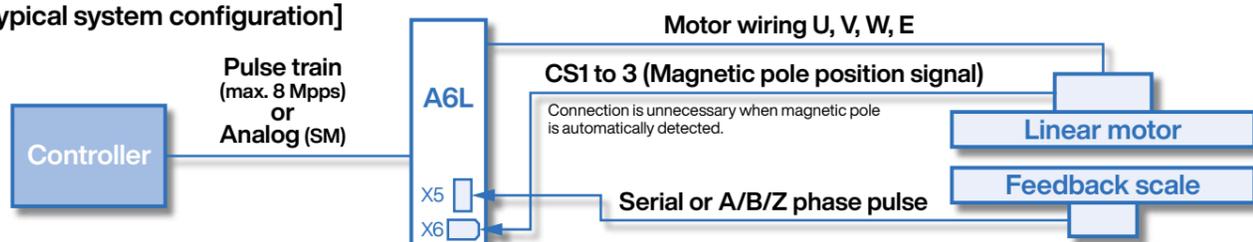- Serial communication incremental/absolute and A/B/Z phase pulse scale

Magnetic pole detection
- Both with and without hole sensor signal (automatic detection)

Setup
- Automatic setup of magnetic pole, scale direction, gain, etc.

[Typical system configuration]

Controller — Pulse train (max. 8 Mpps) or Analog (SM) → A6L

Motor wiring U, V, W, E → Linear motor

CS1 to 3 (Magnetic pole position signal)
Connection is unnecessary when magnetic pole is automatically detected.

X5 / X6 — Serial or A/B/Z phase pulse → Feedback scale

[Setup] · Please ask us to get this software.

Automatic Setup

Automatically sets various parameters such as magnetic pole, scale orientation and gain accordingly to the motor specification.

Drastically reduced setup time.

Automatic Magnetic Pole Detection

When CS signal is not available, the automatic magnetic pole detection function will detect the magnetic pole position of the linear motor.

Short adjustment time without magenetic pole sensor

Simple setup for easy and speedy adjustment

Input specifications of the linear motor. → Current gain, scale installation conditions, etc. are automatically detected. → Driving parameters are automatically set.
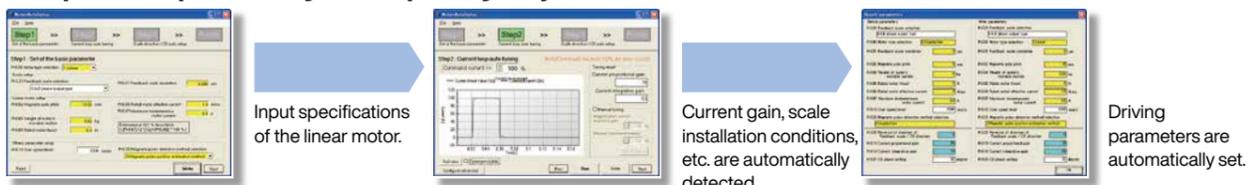
[Lineup]

SM [Standard]	Specifications	SL [Pulse and I/O input only]
Position, speed and thrust command, Block operation	Instruction	Position command, Block operation
Capable	Two-degree-of-freedom control	Capable
Capable	RS232, RS485	Capable
Compliant	Safety function (STO)	N/A
Capable	Analog input	N/A

A6NL — RTEX compatible linear control driver

· Two-axis integrated type is also available. For details, refer to the specifications.

[Typical system configuration] For linear motor

Controller — RTEX → A6NL

U, V, W, E — CS1 to 3 → Linear motor

X5 / X6 → Feedback scale

Serial or A/B/Z phase pulse

A6N → M Rotating motor
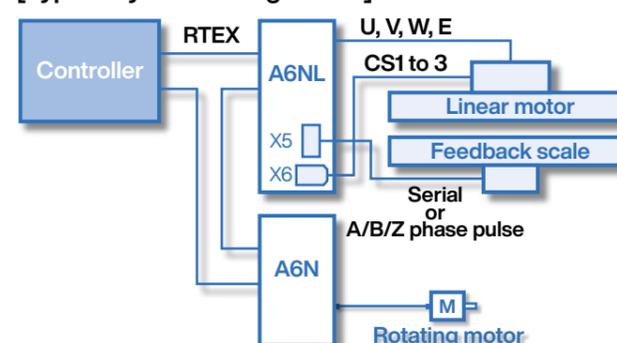
A6BL — EtherCAT compatible linear control driver

[Typical system configuration] For linear motor

Controller — EtherCAT → A6BL

U, V, W, E — CS1 to 3 → Linear motor

X5 / X6 → Feedback scale

Serial or A/B/Z phase pulse
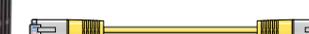
A6B → M Rotating motor
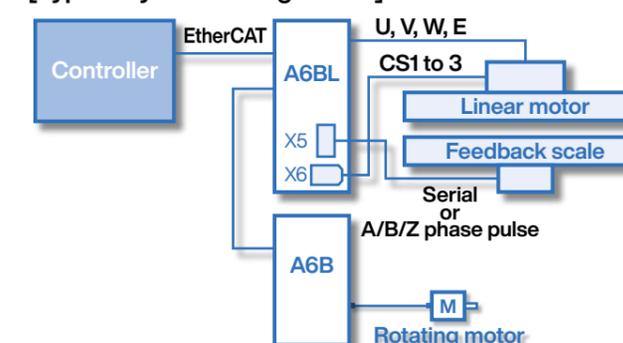
Drive List

Power supply	Drive Part No. (Note 1)	Motor rated current [Arms] (Note 2)	Motor max. current [Arms] (Note 2)
1-phase 100 to 120 VAC	MADL□01△△	1.2	3.7
	MADL□11△△	1.6	5.5
	MBDL□21△△	2.5	7.4
	MCDL□31△△	4.6	14.3
1-phase or 3-phase 200 to 240 VAC	MADL□05△△	1.2	3.8
	MADL□15△△	1.6	4.8
	MBDL□25△△	2.6	7.3
	MCDL□35△△	4.1	13.2
	MDDL□45△△	5.2	15.5
	MDDL□55△△	9.4	26.1
3-phase 200 to 240 VAC	MEDL□83△△	13.4	37.4
	MEDL□93△△	17.0	48.0
	MFDL□A3△△	18.7	54.4
	MFDL□B3△△	33.0	72.1
	MGDLTC3△△	44.0	116.6
	MHDLTE3△△	66.1	167.2
	MHDLTF3△△	82.0	207.9
3-phase 380 to 480 VAC	MDDLT44△△	1.5	4.5
	MDDLT54△△	2.9	8.7
	MDDLT64△△	4.7	14.1
	MEDLT84△△	6.7	19.7
	MFDLTA4△△	9.4	28.2
	MFDLTB4△△	16.5	42.4
	MGDLTC4△△ (During development)	22.0	58.7
	MHDLTE4△△ (During development)	33.1	83.7
	MHDLTF4△△ (During development)	40.1	103.9

Note 1: Please refer to "□" and "△△" as per below ;
- □ Common — N : Without Safety / T : With Safety STO
- △△ A6L — SM : Full Version / SL : Only Pulse control
- A6NL — NM : Multi-function type / NL : Standard type
- A6BL — BM : Multi-function type / BL : Standard type

There are restrictions on combinations. Multi-function type (M suffix is M) has safety function (T in the 5th digit of model number), Position control type, standard type (L at the end of the model number) No safety function (5th digit in the model number is N).

Note 2: According to the setting value of carrier frequency, we have the possibility of derating. In detail, please refer to the A6L driver specification.

Linear and direct drive (DD) motor control

MINAS A6L series

Manufacturer/Distributor: **Panasonic Industry Co., Ltd.**

Drive appearance

A6SM size A

* This photo shows multi-functional type. The position control type does not have an X3 connector.

Charge lamp of main circuit

USB connector (X1)
For PANATERM, mini-B 5-pin

Power input connector (XA)

Main power — L1 / L2 / L3

Control power — L1C / L2C

Serial bus connector (X2)
Connect TX of the previous node

Safety STO I/F connector (X3)*

Regenerative-R & motor connector (XB)

Regenerative-R — P / N / B

Motor — U / V / W

I/O connector (X4)
Sensor inputs, alarm output ... etc.
Half pitch 50-pin

Feedback scale connector (X5)*
For full-closed control

Earth terminals

Encoder connector (X6)
Panasonic serial

Dimensions (mm): W40, H150, D130

Low voltage small servo MINAS A6NL size V, A6BL size V
(DC24 V/48 V)

Drive appearance

A6NL size V

RTEX connector
CN10 (RX) CN11 (TX)

Encoder connector (X6)

I/O connector (X4)

USB connector (X1)

SRVON (Green) LED
ALM (Red) LED

Charge lamp (Red) LED

Motor connector (XB)

Power input connector (XA-1)
Control power connector (XA-2)

RTEX connector

Node address setting
RSW (2-digit)

Dimensions (mm): W81, H180, D30
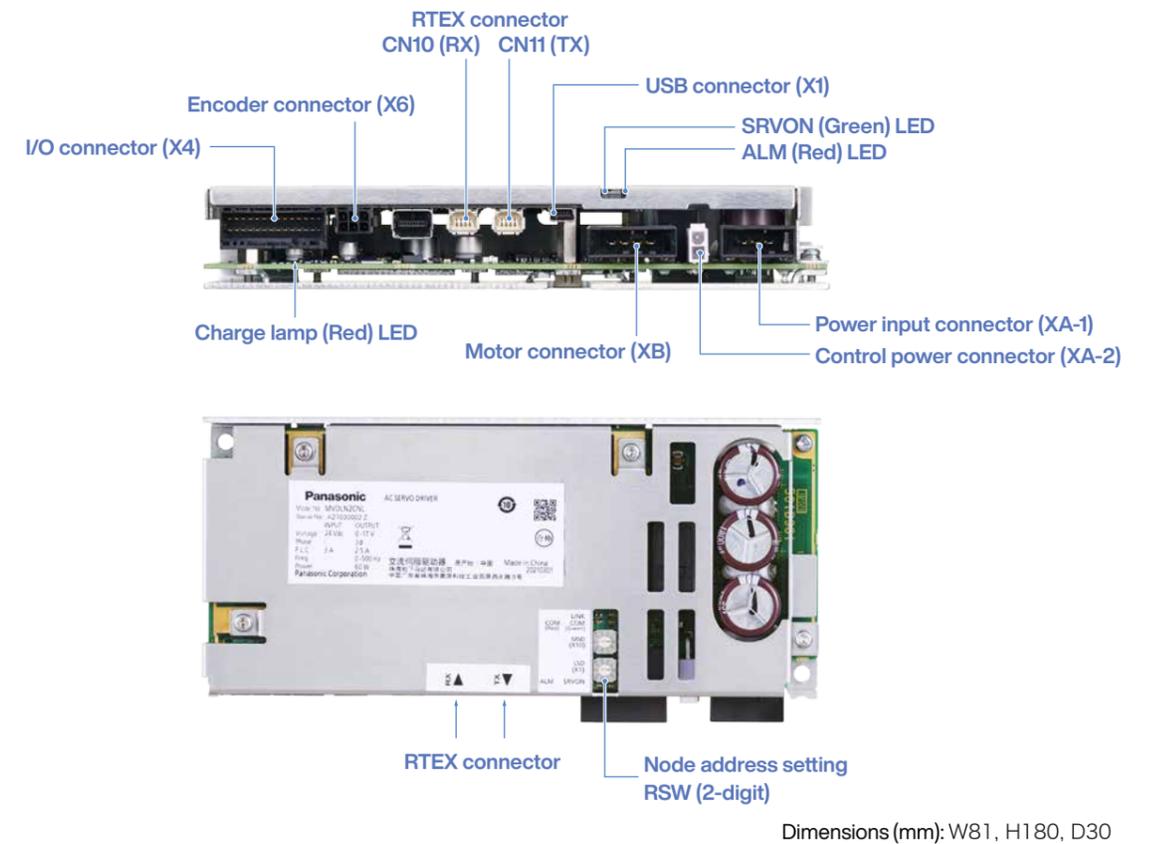
List of drivers

Driver power	I/F	Series	Driver model number	Motor rated current [Arms]*1	Motor maximum current [Arms]*1
DC 24 V	RTEX	A6NL	MVDLN5CNL	9.4	33.3
	EtherCAT	A6BL	MVDLN5CBL		
DC 48 V	RTEX	A6NL	MVDLN5BNL	8.6	30.4
	EtherCAT	A6BL	MVDLN5BBL		

*1 According to the setting value of carrier frequency, we have the possibility of derating.
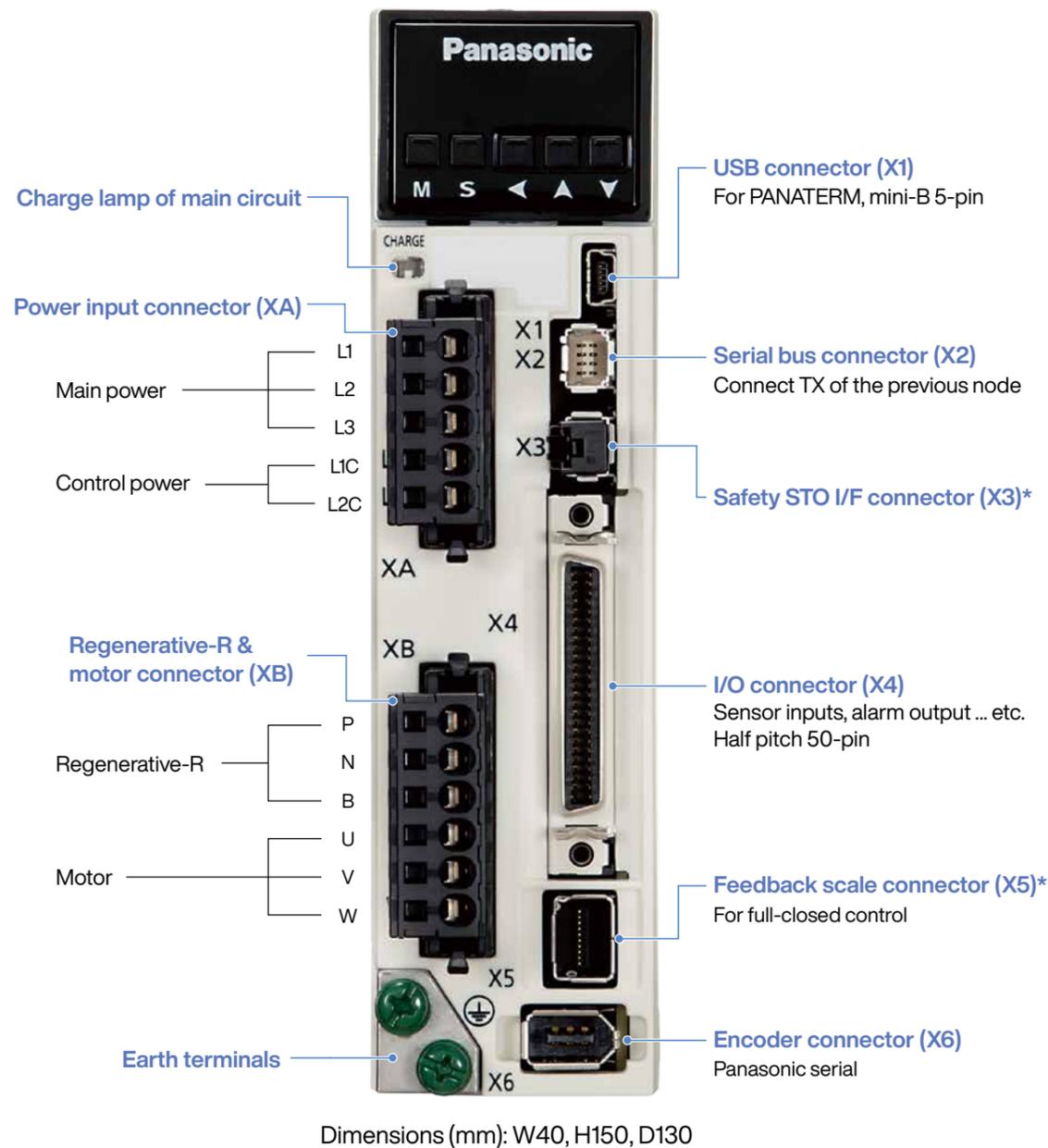In detail, please refer to the A6L driver specification.

Linear motor comparison table

Driver power (V)	Driver*	Akribis Systems Pte Ltd — Voice Coil Motor — AVM AVA	Akribis — Curved — ACR	Akribis — Coreless — AUM	Akribis — Core — AJM AQM AKM	ETEL — Coreless — ILF ILM	ETEL — Core — LMA LMG LMS	KOVERY — Core — 1SL 2L 3L	LinMot — Tubrlar Linear — P10-54	Mirae — Coreless — ULT ULS ULM ULL ULX	Mirae — Core — TCT TCM	Mirae — Flat core — PCT PCS PCL	NIPPON THOMPSON — Nano Linear — NT	Nippon Pulse — Shaft Motor — S L	Nippon Pulse — Stage — SLP	Nippon Pulse — Stage — SCR	SEWOO — Core — SWL-P	SEWOO — Cased-Core — SWL-eP	SEWOO — Coreless — SWL-D
AC 100	MADL□○1△△												●	●	●	●			
	MBDL□○1△△													●					
	MCDL□○1△△													●					
AC 200	MADL□○5△△		●			●		●					●	●	●		●	●	●
	MBDL□○5△△		●	●			●	●	●				●	●	●		●	●	●
	MCDL□○5△△			●	●		●	●	●	●	●	●		●			●	●	●
	MDDL□○5△△			●	●		●	●		●	●	●		●	●		●	●	
	MEDL□○3△△			●			●			●	●	●		●				●	●
	MFDL□○3△△			●		●													●
	MGDL□○3△△			●		●													
	MHDL□○3△△																		
AC 400	MDDL□○4△△																		
	MEDL□○4△△																		
	MFDL□○4△△																		
DC24	MVDLN○C▲L	●												●		●			
DC48	MVDLN○B▲L	●																	

Driver power (V)	Driver*	Sodick — Coreless — CAV3 CA CB CG	Sodick — Core — CM CE(M) CE(L)	SINADRIVES — Core — MLE MCE3	SINADRIVES — Coreless — MLU	Tecnotion — Coreless — UM3 UM6 UM9 UM12	Tecnotion — Core — TM TL TB TBW	TPC — Core — F	TPC — Coreless — G
AC 100	MADL□○1△△								
	MBDL□○1△△								
	MCDL□○1△△								
AC 200	MADL□○5△△	●		●	●		●	●	
	MBDL□○5△△		●	●	●	●	●	●	
	MCDL□○5△△			●	●	●	●	●	●
	MDDL□○5△△			●	●	●	●	●	●
	MEDL□○3△△			●	●		●	●	
	MFDL□○3△△	●	●	●			●		
	MGDL□○3△△	●	●				●		
	MHDL□○3△△		●						
AC 400	MDDL□○4△△			●					
	MEDL□○4△△			●					
	MFDL□○4△△			●					
DC24	MVDLN○C▲L								
DC48	MVDLN○B▲L								

* Please refer to "□" and "○" and "▲" and "△△" as per below ;

- ● □ N : Without Safety   T : With Safety STO
- ● ○ Maximum current rating
- ● ▲ N : RTEX   B : EtherCAT
- ● △△ A6L SM : Full Version   SL : Only Pulse control
- A6NL NM: Multi-function type   NL : Standard type
- A6BL BM : Multi-function type   BL : Standard type

Direct drive motor comparison table

Driver power (V)	Driver*	Akribis — ADR	Akribis — ACD	Akribis — AXM	Akribis — ACW	Akribis — AXD	ETEL — TMK	ETEL — TMB+	Justek — JTR	SINFONIA — ZMD	SINFONIA — ZM
AC 100	MADL□○1△△								●		
	MBDL□○1△△								●		
	MCDL□○1△△								●		
AC 200	MADL□○5△△			●		●			●	●	
	MBDL□○5△△					●			●	●	
	MCDL□○5△△	●	●	●		●			●	●	
	MDDL□○5△△	●	●		●	●	●	●	●		
	MEDL□○3△△	●					●	●	●		●
	MFDL□○3△△	●			●		●	●			
	MGDL□○3△△						●	●			
	MHDL□○3△△						●	●	●		
AC 400	MDDL□○4△△										
	MEDL□○4△△								●		
	MFDL□○4△△						●	●			
DC24	MVDLN○C▲L										
DC48	MVDLN○B▲L										

There are restrictions on combinations.
Multi-function type (M suffix is M) has safety function (T in the 5th digit of model number), Position control type, standard type (L at the end of the model number) No safety function (5th digit in the model number is N).

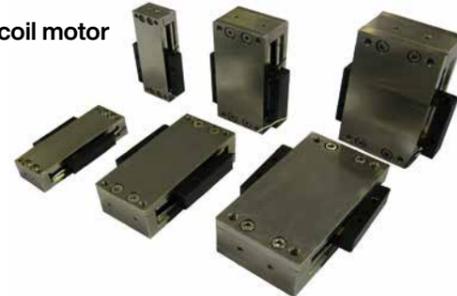LINEAR MOTOR and DIRECT DRIVE MOTOR

Voice Coil Motor

AVM Series / AVA Series

High-precision, high-response, small-stroke linear compact motor ideal for the tip of mechanical devices

Cylindrical Type
Voice Coil Motor
AVM Series

Square voice coil motor
AVA series

Features

● Two types are available to suit your needs
● Ideal for small linear drive (small stroke, small thrust)
● Usage
   Ideal for linear drive of the tip of a mechanical device

Linear Motor

AUM Series / AJM, AQM, AKM Series / ACR Series

Achieves compactness of the motor by increasing thrust with our unique winding technology

Iron Core Type Linear Motor
AJM, AQM, AKM Series

Ironless Type Linear Motor
AUM Series

Arc type linear motor
ACR Series

Features

● Various types are available according to the application
● Achieves small to maximum thrust
● Two types are available: a low-speed type with series winding and a high-speed type with parallel winding.
● For coreless type, compactness is realized by coil mounting technology.
   AUM, AWM and ALM series
● For the core type, the magnetic flux density is increased to increase the thrust.
   AJM, AQM and AKM series
● Arc-shaped type realizes rotary drive
   ACR series

Dead zone
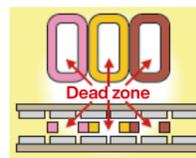
Common products
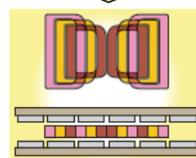
Made by Acrivis
By wrapping around
Compact coil

Direct Drive Rotary Motor

ADR Series / ACW Series

Achieves compact motor with original winding technology and cogging-less with original stator technology

ADR-A series

ACW series

ADR-F series

Features

● 5 types are available to suit your needs
   ADR, AXD, ACW, ACD, AXM series
● Achieves extremely small to large torque
● Low speed type with series winding and parallel winding
   Two types of high-speed type are available
● Compact and cogging-less type with core
   ADR series and AXD series
● Achieves low-speed stable operation with the coreless type
   ACW series and ACD series

Conventional
coil   gap   ADR coil

Tooth tip

Conventional DDR   ADR-A series
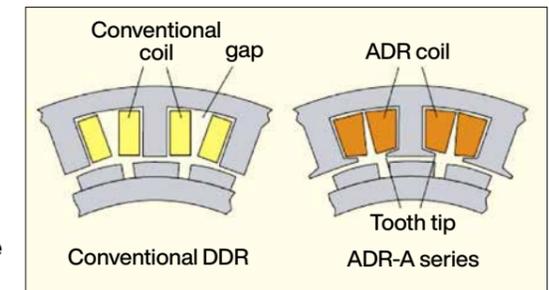
Various stages

DGL Series / Gantry Stage

Various stages based on voice coils, linears, and direct drive motors are also available.

Sales area

● Singapore   ● China   ● Taiwan   ● Korea
● Thailand   ● Japan   ● USA (Silicon Valley)
● USA (Boston) ● Malaysia   ● Germany   ● Israel

Language

● English   ● Japanese   ● Chinese
● Korean   ● Thai

For more information

URL : http://akribis-sys.co.jp/

LINEAR MOTOR and DIRECT DRIVE MOTOR

Linear motor with core, coreless linear motor
LMA, LMG, LMS, ILF+, ILM+

Linear motor with high propulsion
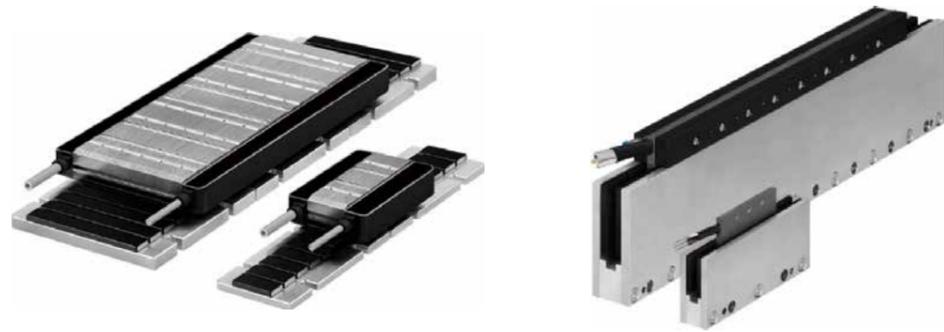
Features

1 Linear motor series with LMA core

High rated thrust

2 Linear motor series with LMG core

Compact and high instant maximum thrust

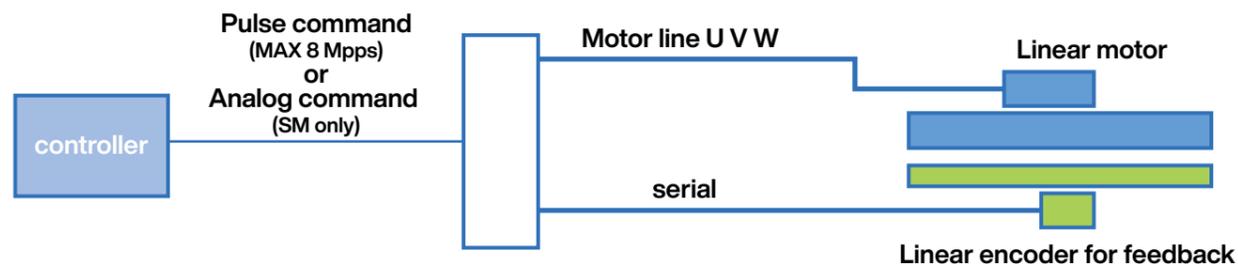**3** Linear motor series with LMS core

Compact and high continuous thrust

4 ILF + Coreless Linear Motor Series

Movable child with reduced weight

5 ILM + coreless linear motor series

Compact and high thrust

System Configuration

controller
Pulse command
(MAX 8 Mpps)
or
Analog command
(SM only)
Motor line U V W
Linear motor
serial
Linear encoder for feedback

Others

● Widely used in machine tools, semiconductor manufacturing equipment, FPD manufacturing equipment, etc.

Built-in direct motor
TMB + series, TMK series

Built-in direct motor with maximum propulsion at high moments

Features

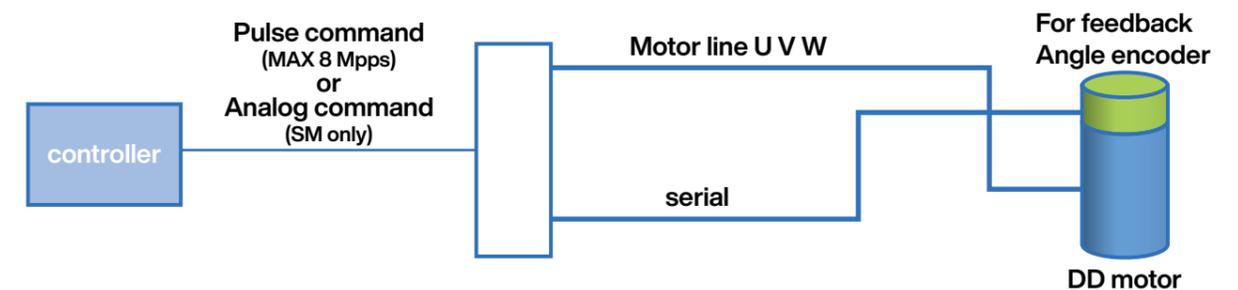**1** TMB + Built-in Direct Motor series

Supports up to 800 mm caliber
Instantaneous maximum torque up to 20800 N·m
Maximum rotation speed 5450 r/min
Water cooling available

2 TMK Built-in Direct Motor series

Supports diameters up to 1070 mm
Instantaneous maximum torque up to 42900 N·m
Maximum rotation speed 4590 r/min
Water cooling available

System Configuration

controller
Pulse command
(MAX 8 Mpps)
or
Analog command
(SM only)
Motor line U V W
For feedback
Angle encoder
serial
DD motor

Others

● Widely used in machine tools, semiconductor manufacturing equipment, FPD manufacturing equipment, etc.

Sales area
● Japan   ● 49 countries around the world

Language
● English ● Japanese ● German
● Chinese

For more information

URL : https://www.etel.ch/

URL : https://www.heidenhain.com

● Contact: **Heidenhain Co., Ltd.**

9F, Hulic Kojimachi Building, 3-2 Kojimachi, Chiyoda-ku, Tokyo 102-0083   TEL : +81-3-3234-7781 FAX : +81-3-3262-2539

Direct Drive Rotary Motor

JTR series

LINEAR MOTOR and DIRECT DRIVE MOTOR

Features

1 High precision indexing rotary table

2 Minimal cogging design

3 High resolution and high torque

4 Flexibility in division of angles and control of rotating direction and speed

JTR series Lineup

JTR15T	JTR25T	JTR11 series		JTR15 series			
		JTR1106	JTR1112	JTR1501E	JTR1503E	JTR1505E	JTR1508E

JTR16 series		JTR24 series			JTR30 series		
JTR1604	JTR1608	JTR2403	JTR2408	JTR2413	JTR3015	JTR3030	JTR3045

JTR49 series			JTR66 series	
JTR4960	JTR4990	JTR49C0	JTR6625	JTR6637

Sales area

● China ● Taiwan ● Korea
● United States of America ● Japan

Language

● Chinese ● Korean
● English ● Japanese

For more information

URL : http://www.justek.com
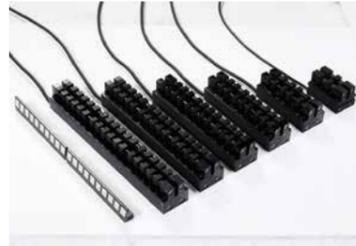
Linear motor with core

1SL type, 2L type, 3L type

Due to the existing double-sided structure and KOVERY's original core design
New concept Linear Motor development

KOVERY's Linear MOTOR

Core
Coil
Magnet
Stator
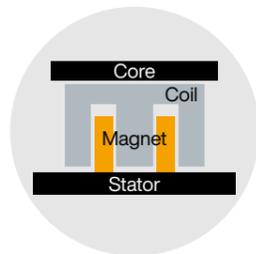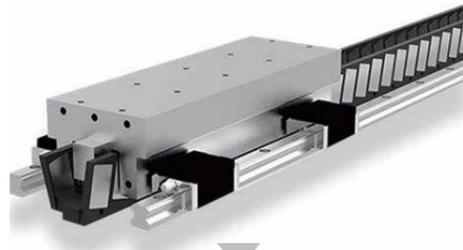
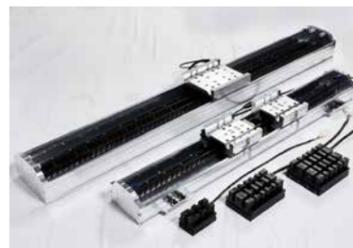Vertical arrangement of permanent magnets > Magnetic attraction cancellation

1SL-PP type

2L-PP type

3L-PP type

Linear robot

Features

1 ### Optimal for ultra-precision positioning linear drive with core

By canceling the magnetic attraction with the vertical arrangement of the permanent magnets, the burden on the support mechanism is reduced and nanometer-class ultra-precision positioning is possible.

2 ### Providing customers with easy-to-use linear motors

By canceling the magnetic attraction force, the deformation of the device due to the magnetic attraction force is small, the degree of freedom in structural design of the XY stage is high, and the assembly work and handling are easy and convenient.
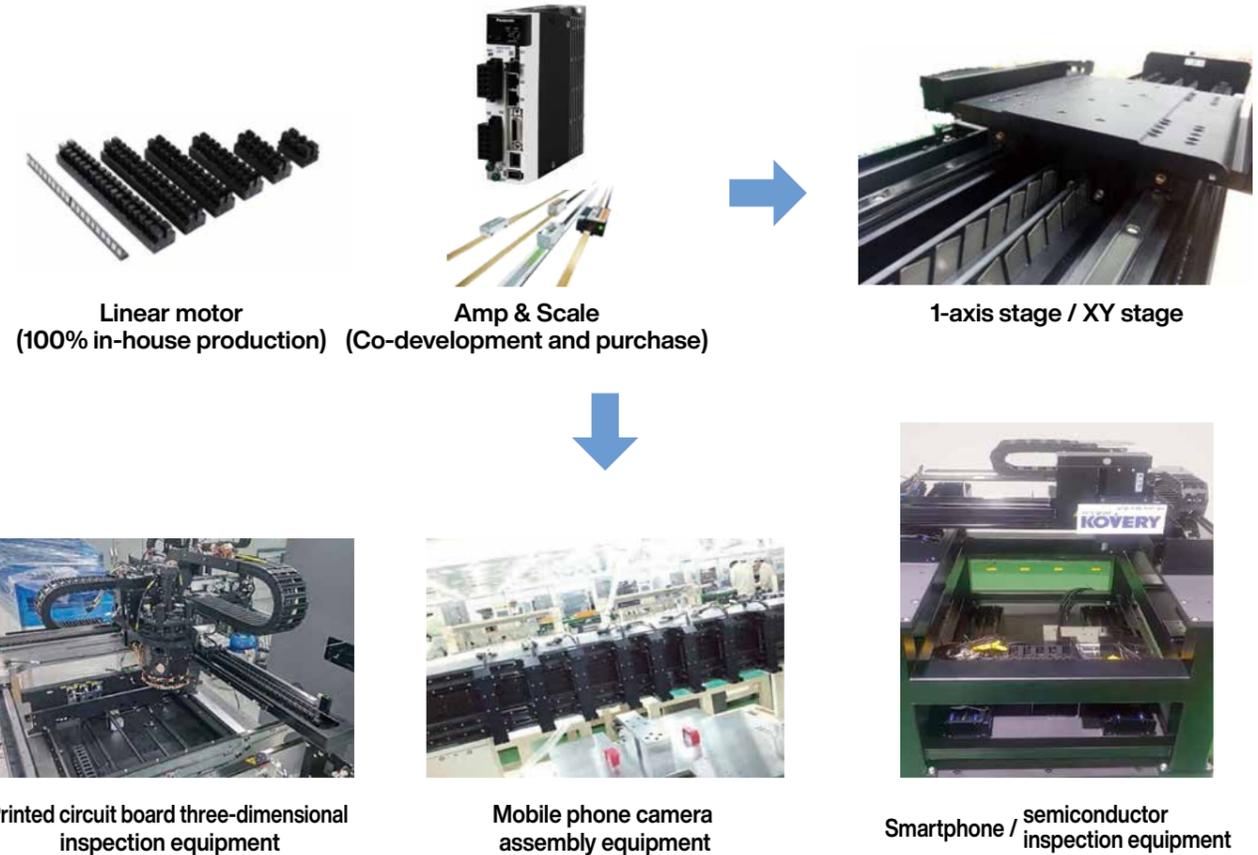
3 ### High degree of freedom in motor capacity selection

Our unique motor design combination supports from 30 N to 20000 N. Securing the number of world-class motor models (more than 50 models, custom models can be handled promptly)

4 ### Easy realization of ultra-high speed drive

By canceling the magnetic attraction force, the noise and vibration of the LM Guide is small, and ultra-high speed drive (5 m / sec, or more is possible) can be easily realized.

Application Sample

Linear motor
(100% in-house production)

Amp & Scale
(Co-development and purchase)

1-axis stage / XY stage

Printed circuit board three-dimensional inspection equipment

Mobile phone camera assembly equipment

Smartphone / semiconductor inspection equipment

Others

● We can design and manufacture up to XY stages equipped with KOVERY motors.
● We can design and manufacture various linear servo system configurations.
● Promptly responds to required specifications not found in standard motor models

Sales area

● Japan   ● United States of America
● Canada

Language

● English   ● Japanese

For more information

URL : http://www.kovery.com/

● Contact: **KOVERY Co., Ltd.**

〒18338 101, Gian-gil, Hwaseong-si, Gyeonggi-do, 18338, Republic of Korea
TEL : +82-31-221-7311   FAX : +82-31-222-7321

LINEAR MOTOR and DIRECT DRIVE MOTOR

Tubular Linear Motor

Series P10-54
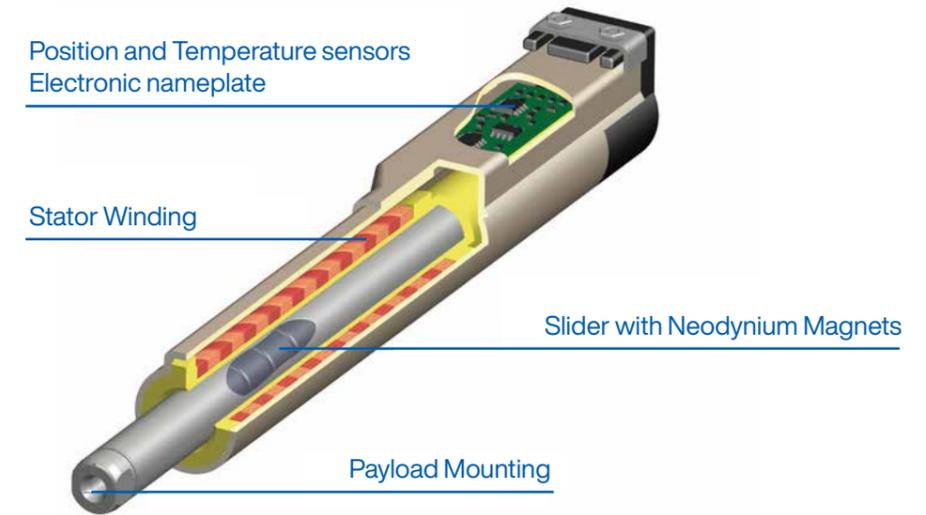
Features

- ● Controlled by standard third-party servo drives
- ● 230 VAC and 3x400 VAC Technology
- ● Forces up to 900 N
- ● Speed up to 11 m/s
- ● Stroke range up to 2'000 mm
- ● A/B incremental encoder 1 μm
- ● Extremely high dynamics
- ● Rotating push-pull TWIN connector for power and encoder cables
- ● One-piece clamping flange

Principle

Position and Temperature sensors
Electronic nameplate

Stator Winding

Slider with Neodynium Magnets

Payload Mounting

Sales area

- ● Germany
- ● United States of America
- ● Italy
- ● Rest of the world

Headquarter in Europe and USA. Worldwide representatives.

Language

- ● German
- ● English
- ● Italian

For more information

NTI AG   URL : www.linmot.com

LinMot USA, Inc.   URL: www.linmot-usa.com/

● Contact: **NTI AG**

NTI AG
Bodenaeckerstrasse 2 CH-8957 Spreitenbach Switzerland   TEL : +41 (0)56 419 91 91   FAX : +41 (0)56 419 91 92
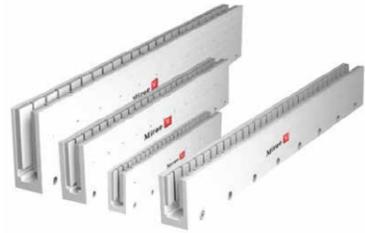**LinMot USA, Inc.**
204 E Morrissey Dr. Elkhorn, WI 53121 USA   TEL : 877 546 3270   FAX : 800 463 8708

Coreless and Core Linear Motor

U-Coreless / T-Core / Platen-Core Type

U-Coreless Type

T-Core Type

Platen-Core Type

Features

U-Coreless Type
① No Cogging
② No Magnetic Attraction Force
③ Fast Setting-time Response
④ Easy to install

Features

T-Core Type
① Cogging Optimization
② High-density Force & Attraction Force
③ No normal Force
④ Easy to install

Features

Platen-Core Type
① Cogging Optimization
② High-density Force & Attraction Force
③ Most economic design solution
④ Easy to install

Selection Guide

Mover	The moving parts are made up of the coil, Frame, and Epoxy Mold

ML - PCL - 2S2PE
① ② ③   ④ ⑤ ⑥

① Shape	② Core	③ Magnet size	④ Number of Serial Coil	⑤ Number of Parallel Coil	⑥ Design oder
U : U shape	C : Core type	T : Tiny	1S : 1 serial	1P : 1parallel	A, B, C, D, E, ...
T : T shape	L : Core-less	S : Small	2S : 2 serial	2P : 2parallel	
P : Platen		M : Medium	3S : 3 serial	3P : 3parallel	
		L : Large	...	...	
		X : X-Large			

Stator	The fixed parts are made up of the Magnet and the Back llon

ML - PCL - SE - 540
① ② ③   ④   ⑤

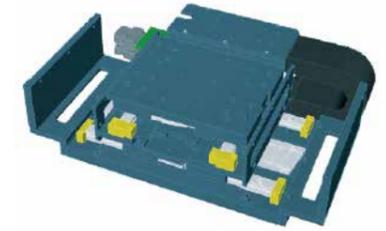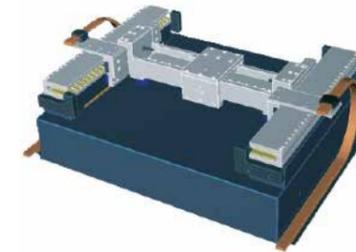| ① Shape	② Core	③ Magnet size	④ Startor Desgin Oderl	⑤ Stator Length	
U : U shape	C : Core type	T : Tiny	SA, AB, SC, ...	270 : 270 mm	
T : T shape	L : Core-less	S : Small		330 : 330 mm	
P : Platen		M : Medium		540 : 540 mm	
		L : Large			

Application Sample

X-Y Gantry

For Heavy duty Industrial Equipment

Compact X-Y Table

Has enough stroke even in a small area

High Precision Air-Bearing Stage

Air Bearing is applied for nontouching moving structure

Multi-Mover Linear Stage

4sets of independent driving Linear Motor applied in a single line

LINEAR MOTOR and DIRECT DRIVE MOTOR

Linear Shaft Motor / Linear Shaft Motor Stage
S series・L series / SLP series

Coreless technology with linear shaft motors

S series・L series

Slider
Coil Unit
Shaft
Linear Encoder
Linear Guide

SLP series
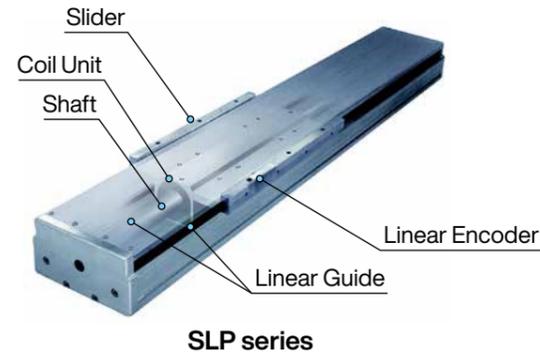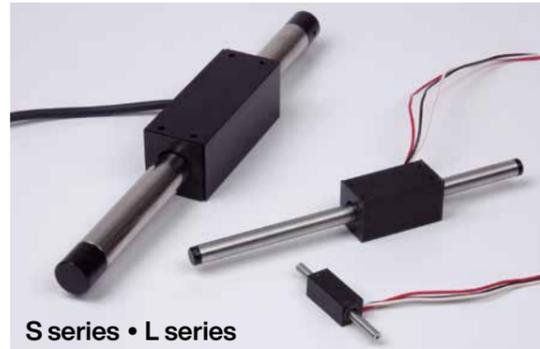
Constuction

Operating principle

Movable child
Coil
N N S S N N
Shaft
Magnet
Coil
Magnet
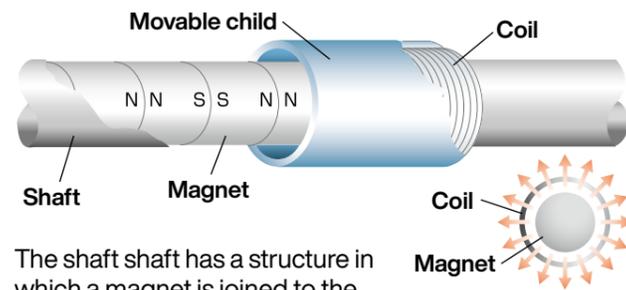
The shaft shaft has a structure in which a magnet is joined to the north and south poles, and when a current flows through the coil, a magnetic field is generated and thrust is generated.

Specification configuration

Shaft fixing bracket
Shaft motor
Movable fixing bracket
Cable Bear
LM Guide
Base
Linear encoder head
Linear encoder scale
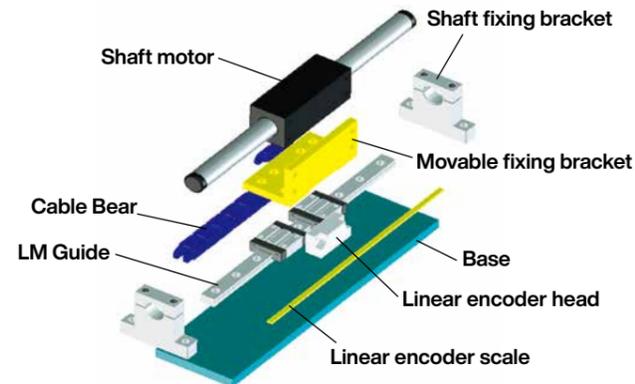
Features

● **Coreless Technology**

● **Zero Cogging**

● **High Force and High Precision**

● **Energy Efficient**

● **Simple Design and Easy Integration**

Application Sample

S series・L series

Single   Multi   Tandem   Parallel
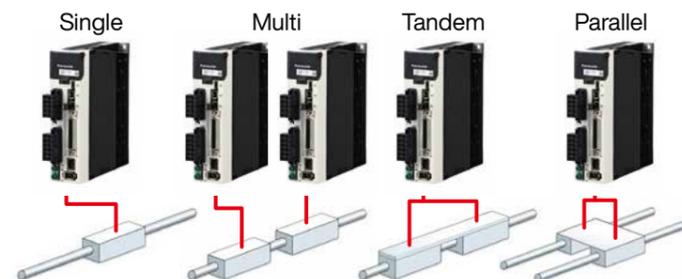
SLP series

Linear Shaft Motor Nano Positioning Stage
SPS series
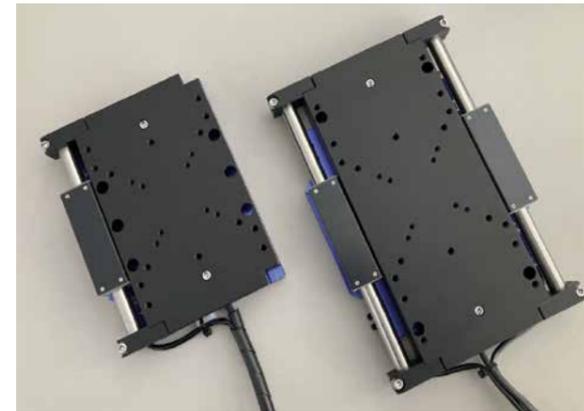
Features

● **Uses ultra-low vibration, high-performance linear shaft motor**

● **High rigidity and high accuracy, using cross roller guide**

● **Zero cable resistance and high durability due to the moving shaft structure**

● **Thrust can be doubled by selecting the parallel option of the motor.**

● **Can be stacked and used as an XY stage**

● **Abundant encoder options (resolution 1 μm to 0.002 μm, AB phase incremental / absolute serial selection)**

● **50 mm / 100 mm / 150 mm strokes are available**

Application Sample

Used as an image processing inspection device, analysis equipment, micromachining machine, life science equipment such as precision laser processing cell analysis, optical equipment, replacement from ball screws and piezo XY stages
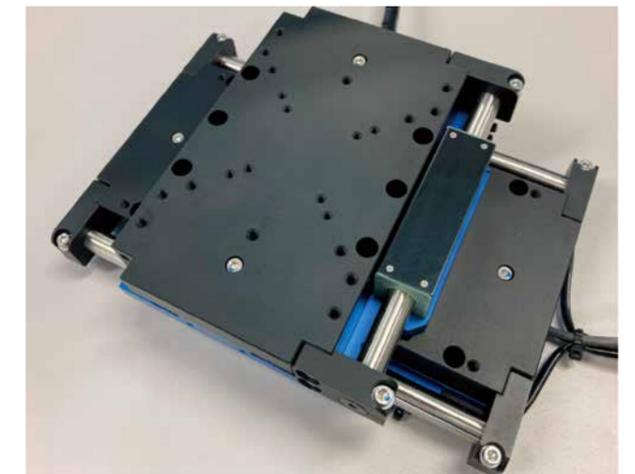
Sales area

● **Japan**

Language

● **Japanese**

For more information

URL : https://www.pulsemotor.com/products/linearservo/index.html

URL : https://www.pulsemotor.com/index.html

● Contact: **Nippon Pulse America., Inc.**

4 Corporate Drive, Radford, Virginia 24141 U.S.A.

TEL : +1-540-633-1677 / +1-540-633-1674

Linear Motor Table

Nano Linear NT Series

Ultra-Compact, State-of-the-Art Linear Motor Table!

Standard Type NT · · · V

How It Works

Table travel direction

Magnet yoke (rotator)
Magnet (rotator)
Coil (stator)
Magnetic flux
Coil yoke
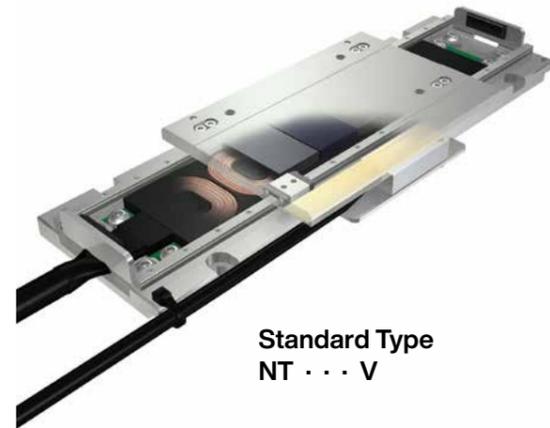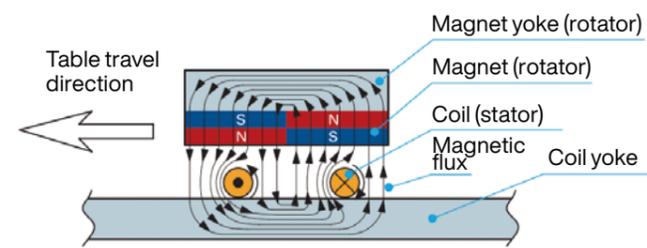
In the Nano Linear NT, the coil is subject to horizontal force due to magnetic flux constantly working vertically through the magnet and coil yoke, and rotational flux generated around the coil by the coil current (Fleming's left-hand rule).
By switching the coil current direction relative to the magnetic flux direction, continuous thrust force in a single direction can be obtained, and linear motion of the rotator is maintained.

Features

1 Ultra-Low Profile

Since an IKO miniature linear motion rolling guide is used for the moving table guidance, the compact size of this part results in an ultra-low profile, unique to IKO.

2 Large Thrust Force

A high-performance neodymium magnet is used, providing high-speed and highly responsive positioning.

3 High Level of Cleanliness

By using a driving method without moving cables and minimal mechanical contact parts, less dust is generated which results in a high level of cleanliness.

4 Ultra-Compact Design

A relentless emphasis on compact design has resulted in sectional height of 14 mm for NT55V and 16 mm for NT80V.

5 Vertical Mounting

The integration of an individual spring system balance mechanism enables a vertical mounting structure with table fall prevention.

6 Compatible Amplifiers

Servo amplifier A6 family: MADL*****
(Contact IKO for combination details)

Example of Use (Medical Equipment: Reagent Application Machine)

Products Used • Standard Type NT · · · V
• High Thrust Pick & Place Unit NT90XZH
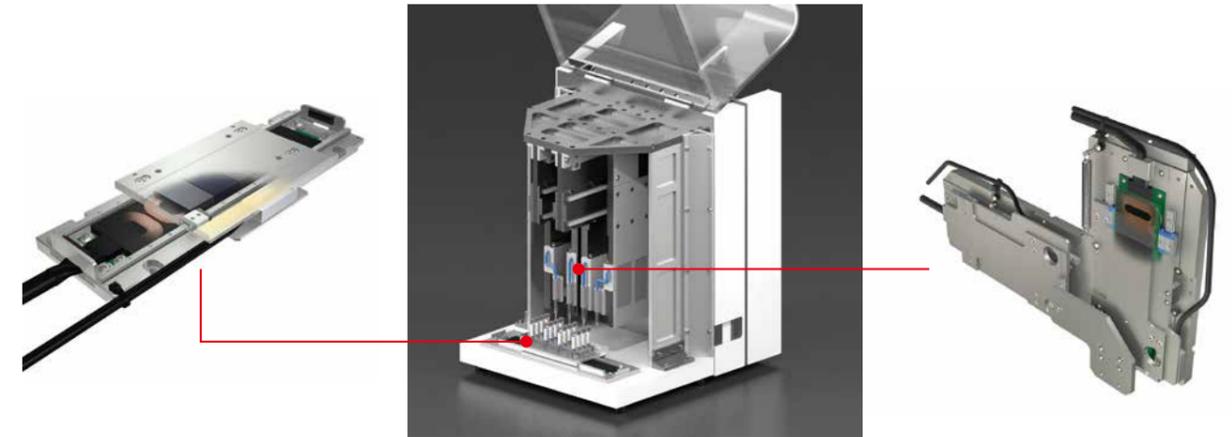
Product Introduction

Standard Type NT · · · V

Optimized component parts result in a Linear Motor Table which offers superb cost-performance while remaining ultra-compact.

High Accuracy Type NT · · · H

With positioning accuracy and running straightness within 1 μm, smooth, high-accuracy operation is achieved at a level comparable to air static pressure bearings.

High Thrust Pick & Place Unit NT90XZH

By using a link mechanism to drive the moving table, tact time is reduced with a balance of higher thrust force and lighter moving parts.

Sales area

● Japan   ● China

Language

● Japanese   ● English   ● Chinese

For more information

URL : https://www.me-iko.com/mecha-tool/product/en/mecha_NT-V_en.php

Core and Coreless Linear Motor

Core / Cased-Core / Coreless Type
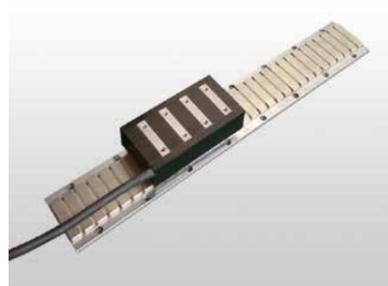
Core Type

Cased-Core Type

Coreless Type

Features

● High Force
● Optimization Attraction Force

Features

● Low Heat
● Cogging Minimization

Features

● Zero Cogging
● Zero Attraction Force

Type	Model
Iron Core	SWL-PMI10~40C
	SWL-PS10~40C
	SWL-PM10~40C
	SWL-PL10~40C
	SWL-PE10~40C

Type	Model
Cased-Iron Core	SWL-ePMI10~40C
	SWL-ePS10~40C
	SWL-ePM10~40C
	SWL-ePL20~40C
	SWL-ePE20~40C

Type	Model
Core less	SWL-DMI20~50
	SWL-DS20~50
	SWL-DM20~50
	SWL-DL20~50
	SWL-DE10~40
	SWL-DU20~40

LINEAR MOTOR and DIRECT DRIVE MOTOR

Application Sample

Linear Stage	Multi-Head Stage	Gantry

Selection Guide

① SL 000 -   ② 2   ③ ePMI10C -   ④ S1000   ⑤ B -   ⑥ 100   ⑦ A

⑦ DESIGN Rev.

① MODEL
SL-160
SL-190
SL-250

② SLIDE Q'ty

③ MOTOR

④ STROKE

⑤ BODY COLOR
B : BLACK
W : WHITE

⑥ ENCODER
010 : 0.1 μm
050 : 0.5 μm
100 : 1 μm
500 : 5 μm
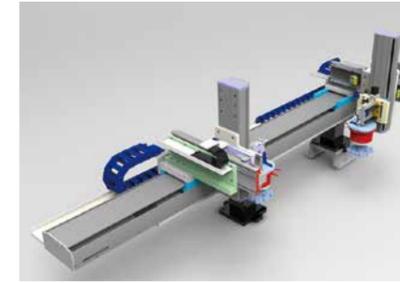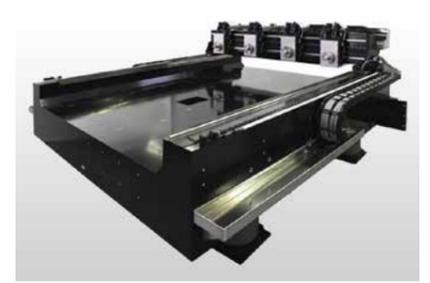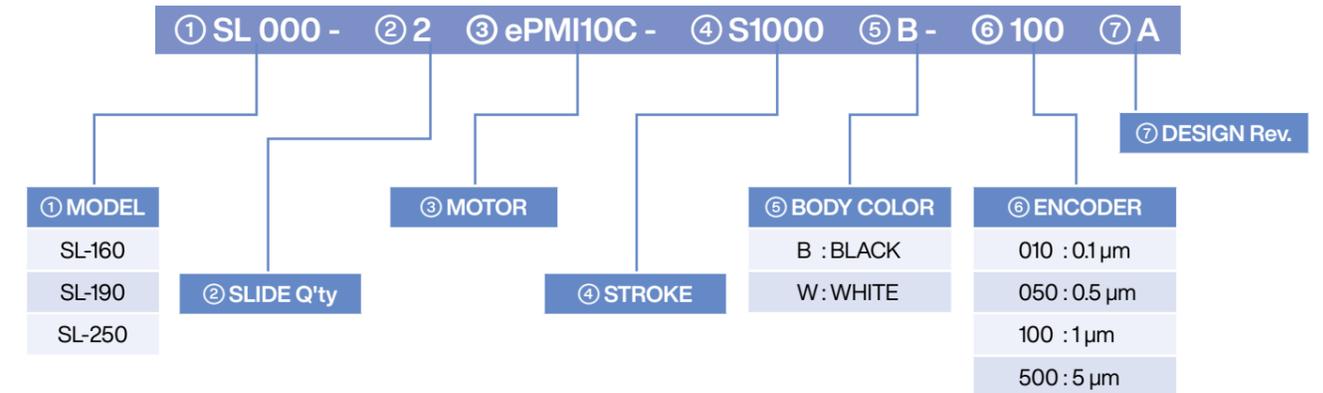
Sales area

● Korea ● Japan ● China ● Vietnam

Language

● Korean ● English

For more information

URL : http://www.sewoomotor.com

Coreless Linaer Motor

Sodick V series

Features

In linear motors that will be assembled at the internal of machine tools, the generated heat must not influence the machine. Sodick linear motors have special cooling structure internal. And, In servo motors that will be assembled at the side of machine tools, the generated heat influence the machine a little.

Internal cooling structure * Patented in JAPAN, USA, CHINA ↑

CA 144N-576N CAV3 220N-660N
CB SERIES 1200N-2133N
CG SERIES 3432N-4800N

Ironcore Linear Motor

Sodick V series

Features

In linear motors that will be assembled at the internal of machine tools, the generated heat must not influence the machine. Sodick linear motors have special cooling structure internal. And, In servo motors that will be assembled at the side of machine tools, the generated heat influence the machine a little.

↑ Internal cooling structure * Patented in JAPAN, USA, CHINA

CM SERIES 190N-1172N
CE (M) 800N-1600N CE (L) 1600N-6400N
CE (W) 4800N-7200N CE (W2) 6400N-9600N

Special

Sodick performs the design of a special motor according to a customer's demand.

← Circular Arc Motors
DD motor and the circlar arc motor of ironcore and coreless motors are designed by Sodick.

Ultra Vacuum Linear Motors →
The linear motor corresponding to the vacuum of Sodick is equipped with the system which can be efficiently cooled also in a vacuum.

The configuration example of a linear motor system

Network Servo System by RTEX
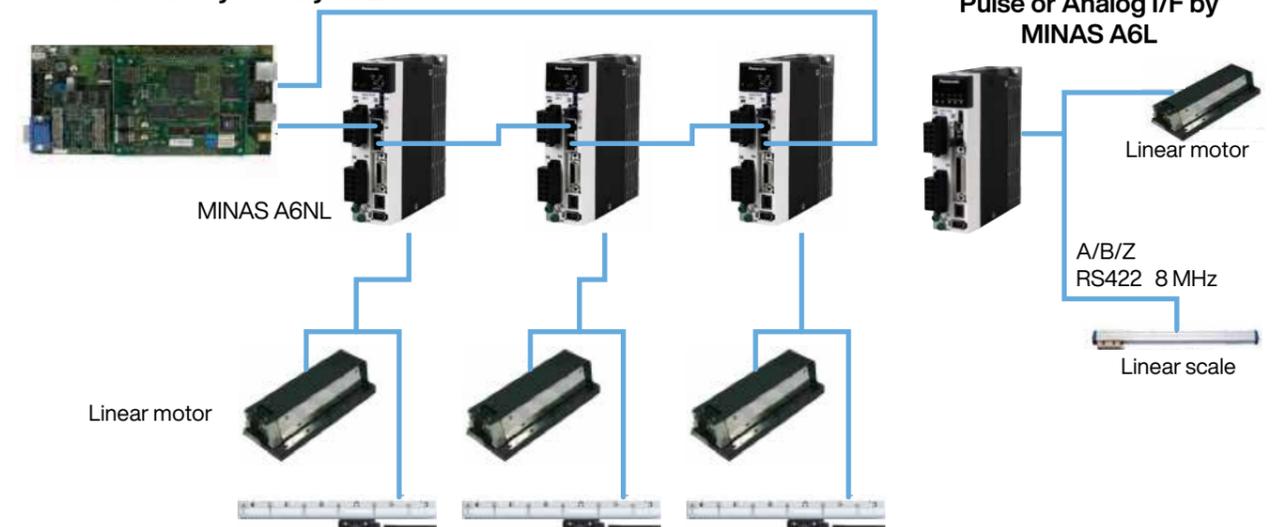
Pulse or Analog I/F by MINAS A6L

MINAS A6NL

Linear motor

Linear motor

A/B/Z
RS422   8 MHz

Linear scale

Sales area

● Japan   ● China

Language

● English   ● Chinese   ● Japanese

For more information

URL : http//www.sodick.co.jp/

● Contact: **Sodick Co., Ltd.**

3-12-1 Nakamachidai,Tsuzuki-ku,Yokohama-city, Kanagawa-Pref. 224-8522, Japan

TEL : +81-45-948-1403 FAX : +81-45-941-5271

Servo actuator
DD Motor (ZMD series)

Realizing outstanding high speed and precision performances thanks to its small and compact design

Features

1 Outer rotor mechanism

The outer diameter's compact design enables to drive directly the roller, making it suitable for indexing rotation

2 High-resistance bearings

Simple and rigid structure for a higher load resistance

3 Hollow diameter φ50 mm

Wiring and piping can be easily stored in the hollow space of the motor, reducing the istallation space.

4 Low price

Model's size reduction leads to a more competitive price matching today's markets needs

5 Short lead time/ quick delivery

The reduction of the components and a smarter stock arrangement critically reduce the production lead time

● **What is a Direct Drive Motor?**

A DD Motor can transmit the torque of the electric motor directly to the driving objects, without the use of any reductions such as belts, pulleys or reduction drives.

High efficiency   Low noise   Outstandig precision   High reliability   Maintenance-free

Application Sample

The installation of the DD Motor enables more efficient operations and it doesn't require any maintenance

Roller-drive application e.g.
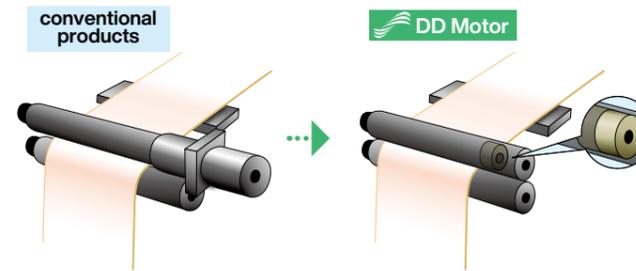
■ Thanks to the outer motor, it's possible to build the motor inside the roller, saving space
■ I works smoothly, avoiding uneven operations or movements

<Other possible applications>
● Printing equipment
● Coating machines
● Film-manufacturing machinery
● Roll-feeders

Indexing rotation application e.g.
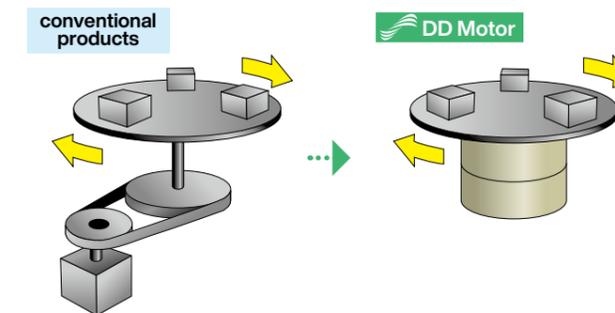
■ Space-saving design for a more compac structure
■ As no reduction device is needed, it's possibile to avoid complex installations, improving its efficiency and reliability with no back-lash

<Other possible applications>
● Semiconductor making equipment
● Devices for manufacturing
● liquid crystal display panels
● Assembling robots
● All kind of indexing applications

Sales area
● Japan ● China ● Korea
● Taiwan ● United States of America

Language
● Japanese ● English

For more information
URL : http://www.sinfo-t.jp/servo

● Contact: **SINFONIA TECHNOLOGY CO., LTD.** Motion-Control Products Sales Dept.
Shiba NBF Tower, 1-30, Shibadaimon 1-chome, Minato-ku, Tokyo, 105-8564, Japan
TEL : +81-3-5473-1827 FAX : +81-3-5473-1845

Ironcore and ironless linear motors

T- and U-Series
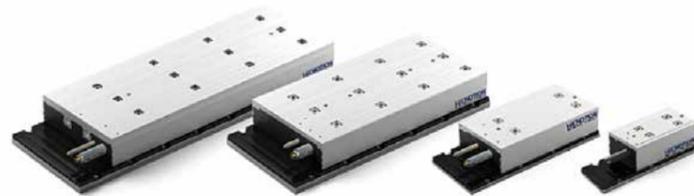
Ironcore T-Series

Ironless U-Series

Features

1 ## High force density

More force in a smaller packing means lowering footprint

2 ## Low thermal resistance

Allowing good heat transfer

3 ## Ironcore linear motors

Low cogging for smooth motion and position accuracy
Approved for CSA, CE, and RoHS
Optional watercooling for TL- and TBW-series

4 ## Ironless linear motors

High acceleration and dynamics
No cogging, extremely low force ripple
Approved for CE and RoHS
Also available as vacuum-rated motors

T- and U-Series Lineup

	Series	Lineup			
Core type	T-Series	TM	TL	TB	TBW
Coreless type	U-Series	UM3	UM6	UM9	UM12

Appearance T-Series

4 SERIES

FP 120 ...6750N

ENCLOSED IN CASTING

NDFEB MAGNETS

ENHANCED THERMAL MANAGEMENT

FC 60... 3000N

HIGH FORCE DENSITY

ALUMINIUM HOUSING
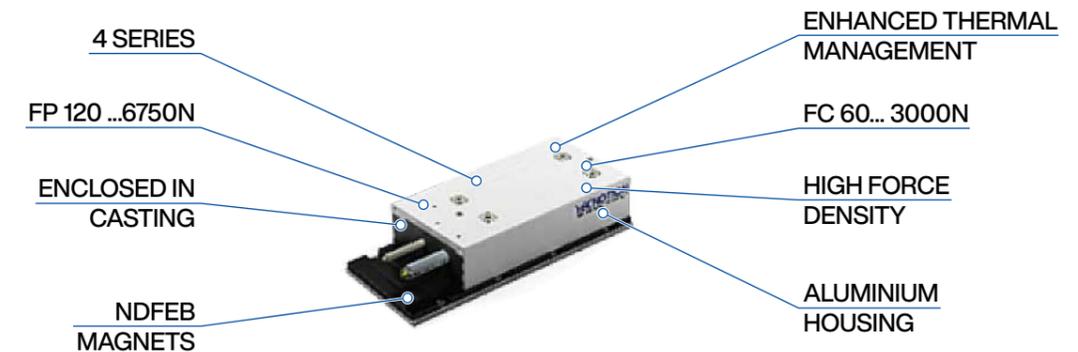
Sales area

● Netherland   ● Germany   ● Korea
● Rest of the world

Language

● English   ● German   ● Korean

TTecnotion has worldwide subsidiaries and representatives:
Please contact the following addresses for details

For more information

URL : www.tecnotion.com/

Core and Coreless Linear Motor

Core / Coreless Type

Core Type

Features

● Rigid Structure
● Low cogging
● High-density Force
● Low thermal resistance
● Approved for CE

Coreless Type

Features

● No cogging, low force ripple
● High-density Force
● Low thermal resistance
● Approved for CE

Application Sample

Single-Axis Stage
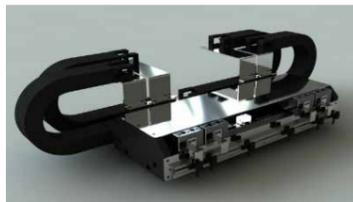
Multi-Mover Stage

Linear Desk-Top

Gantry Stage

Selection Guide

Mover | F | SM | 60 | A | - | 110 | S | - ✱✱

- Customize Code
- Mover

Motor Type
F : Core
G : Coreless

Max. Current
40 : 4.0 Amp
60 : 6.0 Amp

Mover Length
50 : 50 mm
80 : 80 mm

Motor Size
MIC	: Micro	LA	: Large
MI	: Mini	LB	: Large-II
SM	: Small	EX	: Extra-Large
MD	: Middle		

Mounting
A : Standard
C : Customize

Stator | F | SM | - | 240 | M | - ✱✱

- Customize Code
- Stator

Motor Type
F : Core
G : Coreless

Stator Length
144 : 144 mm
240 : 240 mm

Motor Size
MIC	: Micro	LA	: Large
MI	: Mini	LB	: Large-II
SM	: Small	EX	: Extra-Large
MD	: Middle		

Item	Model	Item	Model	Item	Model	Item	Model
Core Type	FMIC-72M	Core Type	FSM-144M	Core Type	FLB-192M	Coreless Type	GMD-180M
	FMIC-99M		FSM-240M		FLB-288M		GMD-240M
	FMIC-144M		FSM-336M		FLB-384M		GMD-360M
	FMIC-216M		FMD-180M		FEX-264M		GLA-192M
	FMIC-288M		FMD-240M		FEX-396M		GLA-288M
	FMI-144M		FMD-360M		FEX-528M		GLA-384M
	FMI-252M		FLA-192M				
	FMI-324M		FLA-288M				
			FLA-384M				

Sales area

● United States of America   ● China
● Vietnam

Language

● Korean   : +82-1588-5982
● English   : +82-2-2691-8888
● Chinese   : +86-21-6727-7733
● Vietnamese : +84-9-0123-6795

For more information

URL Korean :   http://www.tpcpage.co.kr/

English :   http://www.tpcpage.com/

Chinese : http://www.tpcpage.cn/

● Contact: **TPC Mechatronics Co., Ltd.**

39, Gammun 2-ro, Seo-gu, Incheon, Korea   TEL : +82-32-580-0018

Linear stages with integrated linear motors

MLE-, MLL-and MLU-Series

Features

● Compact and smart design
● Low carriage weight for high dynamic
● High force density
● High resolution encoder
● Long axis up to 10000 mm stroke
● Big range of sizes and options

Competent partner in electromechanical solutions
Standard Plug & Play linear units
Customized and flexible solutions

Sales area

● Germany   ● Spain   ● Russia
● EU

Language

● English   ● German
● Spanish   ● Russian

For more information

URL : http://www.sinadrives.com/

●Contact: **SINADRIVES**

SINADRIVES Germany:
Uns ldstrasse 2 880538 München Germany   TEL : +49 (0) 89 255 575 898   FAX : +49 (0) 89 255 575 899
SINADRIVES Spain:
Avinguda Mas Pins, 164 Nave 6
17457 Riudellots de la Selva - Girona Spain   TEL : +34 972 442 452   FAX : +34 972 442 317

Feed back scale selection

Feed back scale table for serial communication

Scale Type	Partner	Series	Resolution*1 [µm]	Max. rate*1 [m/s]
Parallel Type (A/B/Z phase)	General	—	Maximum speed after4× multiplication : 4 Mpps	
Serial communication (Incremental)				
	Magnescale Co., Ltd.	SL700-PL101RP/RHP SL710-PL101RP/RHP	0.1	10
		SR75/SR85	0.01 to 1	3.3
		BF1	0.001/0.01	0.4/1.8
		SQ10	0.05/0.1/0.5/1	3
	NIDEC MACHINE TOOL CORPORATION	MPLIN	0.1	30
	Nidec Sankyo Corporation	PSLH041+PSLG	0.1	6
Serial communication (Absolute)				
	FAGOR AUTOMATION	S3BP/G3BP	0.01/0.05	3
		LAP	0.01/0.05	3
		EXA/ EXG/ EXT	0.01/0.05	8
		H2AP-D200/H2AP-D90	29 bit/23 bit	750 r/min/1500 r/min
		S2AP-D90	23 bit	1500 rpm
	HEIDENHAIN	LIC 2197P/LIC 2199P	0.05/0.1	10
		LIC 4193P/LIC 4195P LIC 4197P/LIC 4199P	0.001/0.005/0.01	10
		LC 195P/LC 495P	0.001/0.01	3
		ECA 4490P	27 bits to 29 bits	7000 r/min~550 r/min (Depends on drum size)
		RCN 2x90P/RCN 5x90P	26 bits/28 bits	1500 r/min
		RCN 8x90P	29 bit	500 r/min
	Magnescale Co.,Ltd.	SR77/SR87	0.01 to 1	3.3
	Mitutoyo Corporation	AT573-SC/H	0.05	2.5
		ST700	0.1	5
		ST1300	0.001/0.01	8
	NIDEC MACHINE TOOL CORPORATION	MPZA/MPRZ	23 bits	10000 r/min, 5000 r/min
	Renishaw plc	RESOLUTE	0.001	4
			0.05	100
			0.1	100
	RSF Electronik	MC 15P MP/MC 15P MK	0.05/0.1	10
		MCR 15P	22 bits~25 bits	—

*1 There is the difference of resolution and maximum rate from the specification by original supplier as per the servo driver limitation of maximum pulse frequency. The maximum pulse frequency is 4 Gppsfor A6 series. We show the value of A6 family on this table.

Feed back scale application example

Full Closed Control Linear type

MINAS A6

Panasonic Rotary motor

Rotary Encoder

X5: Panasonic Serial A/B/Z Differential Signal

Feedback Linear Scale

X6: Panasonic Serial
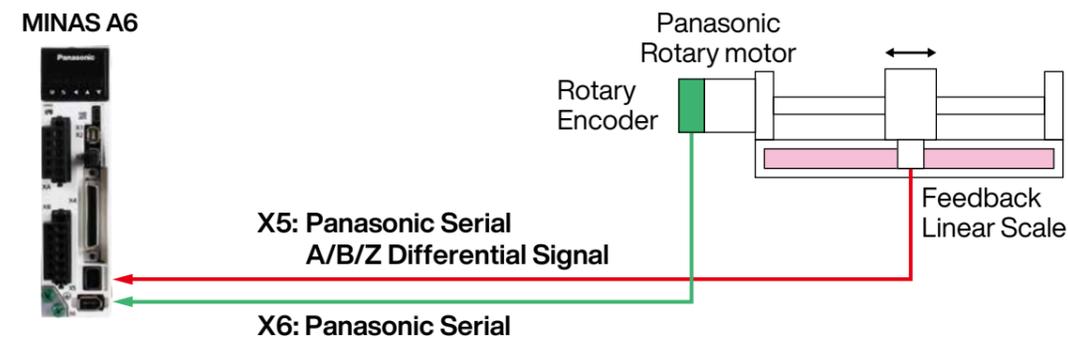
Full Closed Control Rotary type

MINAS A6

Panasonic Rotary motor

Rotary Encoder

Rotary Feedback scale

X5: Panasonic Serial A/B/Z Differential Signal

X6: Panasonic Serial
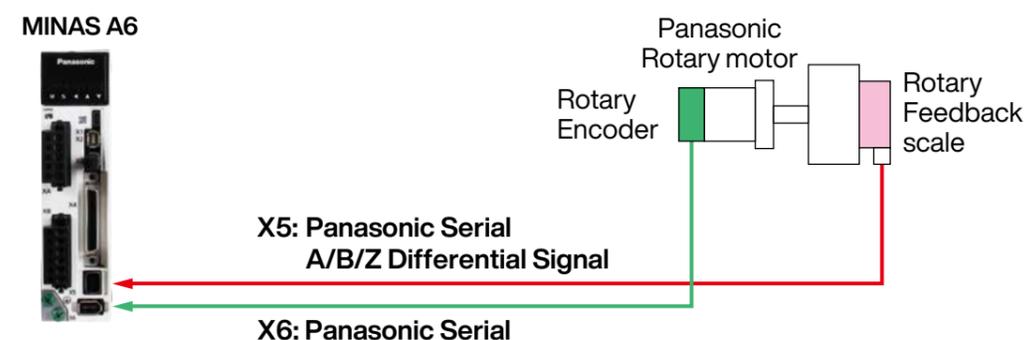
Linear Motor Control Linear Type

MINAS A6

Linear Motor

Feedback Linear Scale

X5: Panasonic Serial A/B/Z Differential Signal

X6: CS1 to 3 (if necessary)
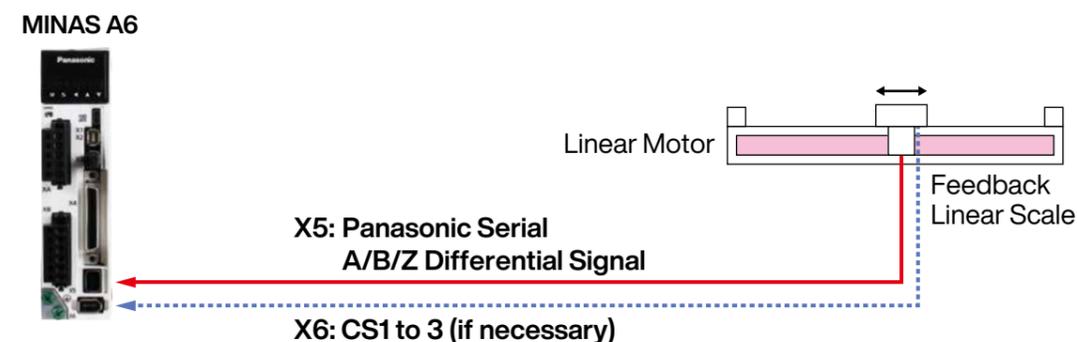
DD Motor Control Rotary type

MINAS A6

Direct Drive Motor

Rotary Scale

X5: Panasonic Serial A/B/Z Differential Signal

X6: CS1 to 3 (if necessary)
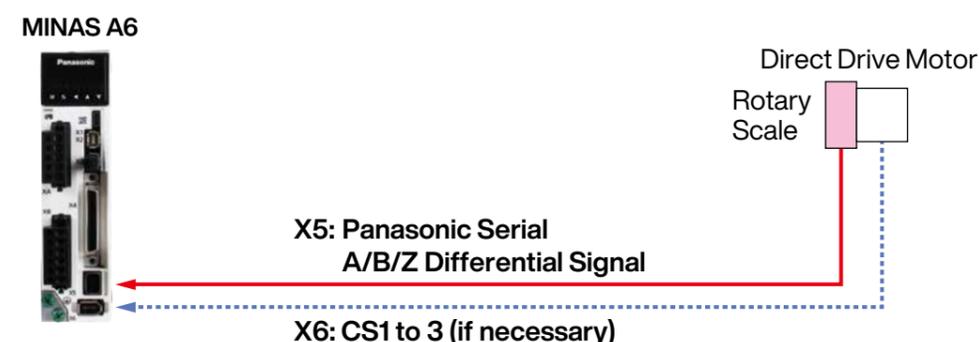
*2 Please contact us when you study the system with a scale because the driver and the scale combination has restriction as per the feedback system between full closed control system and linear system.

ENCLOSED ENCODERS

3Statech Technology

ENCLOSED LINEAR ENCODERS

NEW S3 / G3 / L3 SERIES

ABSOLUTE GLASS	ABSOLUTE STEEL TAPE

S3BP - G3BP SERIES
(MINAS A6)

L3BP SERIES
(MINAS A6)

Features

- The most robust optical encoder
- 3STATECH Technology
- Connectivity to MINAS series

- Vibration resistance of 30 G
- Longest absolute solution
- Linear Resolution up to 1 nm

ANGULAR ENCODERS

S2 / H2 SERIES

ABSOLUTE GLASS

Features

- The most robust optical encoder
- 3STATECH Technology
- Connectivity to MINAS series
- Great accuracy at high speeds
- Angular Resolution up to 29 bits

S2 – H2 SERIES
(MINAS A6)

EXPOSED LINEAR ENCODERS

L2 SERIES

ABSOLUTE TYPE/INCREMENTAL TYPE
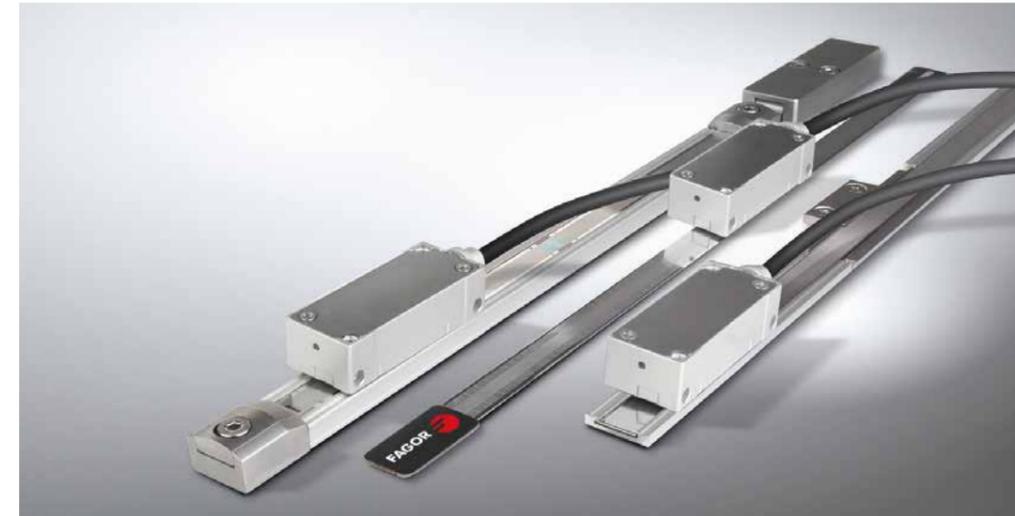
EXA, EXG & EXT SERIES
(MINAS A6)

Features

- The most robust optical encoder
- Connectivity to MINAS series
- All mechanical type solutions
- Longest absolute solution

Sales area

- Japan
- China
- Taiwan
- Worldwide response

Please contact the following address for details.

Language

- Japanese
- English
- Chinese
- Spanish

For more information

URL : http://www.fagorautomation.com/en/

● Contact: **Fagor Automation, S. Coop.**

Bo San Andr s No19 E-20500 – Arrasate/Mondrag n, Spain   TEL : +34-943-719200   FAX : +34-943-791712

FEED BACK SCALE

Absolute Exposed Linear Encoder / Absolute Linear Encoder with Scale Housing
LIC 419☐P series · LIC 319☐P series / LC 195P series · LC495P series

LIC 4195P

LIC 4197P

LIC 4193P/4199P

LIC 317

LIC 319

LC 195P

LC 495P
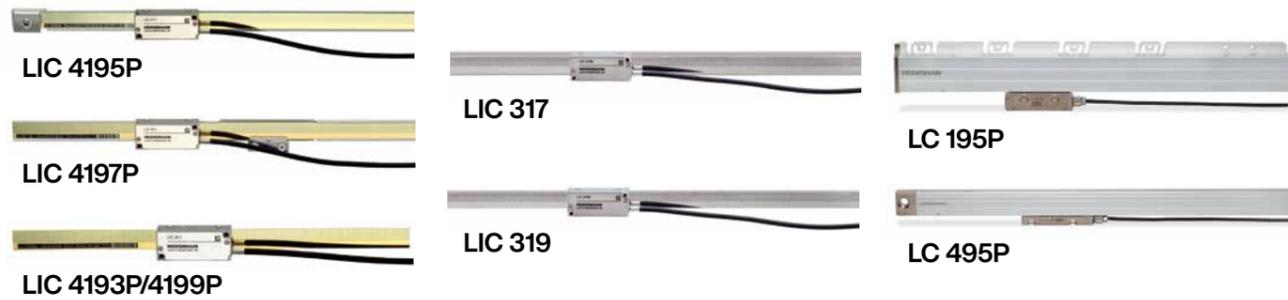
Features

1 **High interpolation accuracy**

Linear encoder with absolute and incremental tracks

2 **Fast scanning speed and high resolution**

● Selectable resolution of 10 nm, 5 nm or 1 nm
Up to 10 m/sec possible .... **LIC 419☐P series**

● 10 nm resolution
Up to 10 m/sec possible .... **LIC 319☐P series**

● Selectable resolution of 1 nm or 10 nm
Up to 3 m/sec possible .... **LC 195P series / LC495P series**

3 **Resistant to dirt and easy to install**

● Mounting gap tolerance LIC4199P ± 0.25 mm .... **LIC 419☐P series**

● Mounting gap tolerance LIC3199P ± 0.25 mm .... **LIC 319☐P series**

● High reliability with double sealing lip
IP64 is possible by injecting clean compressed air .... **LC 195Pseries / LC495P series**

System Configuration

Target position command or Position command

Higher level controller

Speed detection

Encoder

Position detection

LIC419☐P
LIC319☐P
LC495P/LC195P

Pulse command (MAX 8 Mpps) or Analog command (SM only)

Controller

Motor line U V W

Linear motor

Serial

Linear encoder for feedback

ECA series / RCN series

ECA 4490P

RCN 8x90P

Features

1 **High absolute accuracy**

● Angle encoder that guarantees up to ± 1.5 seconds (depending on the encoder diameter)..... **ECA series**
● Angle encoder that guarantees up to ± 1 second... **RCN series**

2 **Large hollow diameter**

● Supports hollow diameters up to 512 mm .... **ECA series**
● Supports hollow diameters up to 100 mm .... **RCN series**

3 **Dirt resistant design** .... **RCN series**

IP64 is possible

4 **Built-in stator coupling** .... **RCN series**

5 **Easy mounting** .... **ECA series**
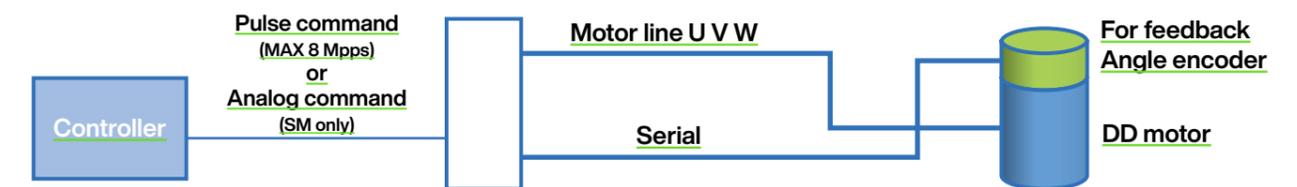
Centering with 3 points (centering)

System Configuration

Pulse command (MAX 8 Mpps) or Analog command (SM only)

Controller

Motor line U V W

For feedback Angle encoder

Serial

DD motor

Sales area

● Japan   ● 49 countries around the world

Language

● English ● Japanese ● German ● Chinese

For more information

Feedback Scale

SR70, SR80 series / SL700 series / SmartSCALE / BF1 series

Slim type / Magnetic detection system Absolute scale	Slim type / Magnetic detection system Incremental scale	Robust type / Magnetic detection system Absolute scale	Robust type / Magnetic detection system Incremental scale
SR77 series (A6 family)	SR75 series (A6 family)	SR87 series (A6 family)	SR85 series (A6 family)

Features

● Magnetic detection system with excellent resistance to dust, oil and water

● Magnetic absolute scales (SR77/SR87) up to 10 nm resolution with 200 m/min response speed

● Slim type allows installation in narrow space (SR77/SR75)

● High rigidity provide resistance to shock and vibration (SR87/85 series)

Separate type / Magnetic detection system Incremental scale Digiruler
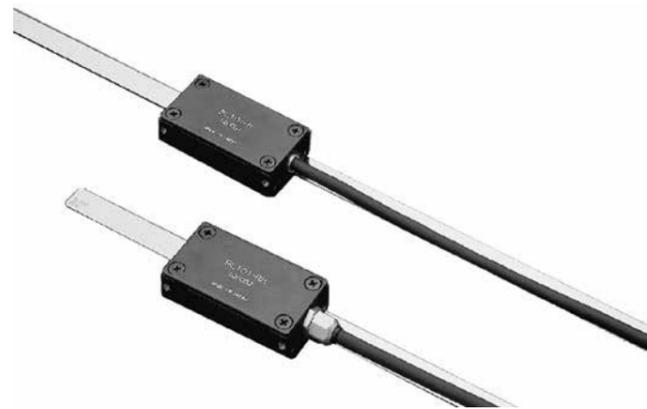
SL700 + PL101RP/RHP
SL710 + PL101RP/RHP
SL720 + PL101RP/RHP (Special model)
(A6 family)

Features

● High speed response with serial interface for MINAS series

● High speed response (10 m/s) and high resolution (0.1 μm)

● Magnetic digital scale technology produces real-time measurement data

● Magnetic detection system with excellent resistance to dust, oil and water (Maintenance free, IP67 grade model available)

● Wide variety of measurement length available from 50 mm to 100000 mm

---

Separate type / Magnetic detection system Incremental scale

SQ10 + PQ11
SQ10 + PQ10 + MQ10
(A6 family)

Features

● Maximum response speed 3 m/s, Maximum resolution 0.05 μm, and 5 μm accuracy

● Individual non-contact component design

● Space-saving small head (W 33 mm × D 16 mm × H 8 mm)

● Signal LED display for ease of installation

High-resolution reflective type Laserscale

BF1 series
(A6 family)

Features

● High-resolution reflective Laserscale with signal wavelength of 250 nm

● Easy to check signal with LED

● Increase mounting tolerance enable easy installation. (Pitching/Rollin/Yawing : ±20 min)

Sales area

● Japan　　● United States of America
● Germany

Language

● Japanese　● German　● English

For more information

URL : http://www.magnescale.com/

● Contact: **Magnescale Co., Ltd.**

3-1-4, Edagawa, Koto-ku, Tokyo, 135-0051, Japan　　TEL : +81-3-6632-7923

Linear Scale

ABS AT500 series / ST700 series / ST1300 series

ABS AT500 series

High Rigid SC type

High Resolution H type

ST700 series/ ST1300 series

Small size head

Conventional product

**ABS ST700 series
Electromagnetic induction type**

**ABS ST1300 series
Photoelectric type**

Features

● Many years of experience that has opened up the absolute system solution in the world with collaboration of MINAS series originally.
● By changing from the Incremental scale system to the absolute scale, machine homing becomes unnecessary for AT500 and ST700 series.
● Absolute use, Photoelectric, Electromagnetic detection method, High resolution, High accuracy, non-contact type and so on support various applications widely.

FEED BACK SCALE

Application Sample

ABS AT500 series

● Machining Center
● Lathe Machine
● Grinding Machine

ST700 series/ ST1300 series

● Semiconductor machine
● LCD manufacturing machine

Sales area and Language

North America area: **Mitutoyo America Corporation**
  965 Corporate Blvd., Aurora, IL 60502, U.S.A.
  TEL: +1-630-820-9666 Toll Free No.: +1-888-648-8869

Europe area: **Mitutoyo Europe GmbH**
  Borsigstrasse 8-10, 41469 Neuss, GERMANY TEL: +49-2137-102-0

Other area: Please contact the following address for details. Or Please contact Mitutoyo JAPAN.

For more information

URL : http://www.mitutoyo.co.jp/index.html

● Contact: **Mitutoyo Corporation Overseas Sensing Business Promotion Section**

20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa 213-8533, Japan   TEL : +81-44-813-8234

FEED BACK SCALE

Rotary Scale

MPZA series   MPRZ series

Absolute open type Rotary scale
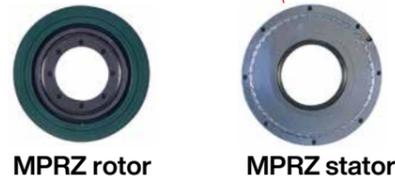
MPRZ rotor   MPRZ stator

Features

1 Can be used without worrying about the usage environment

Since it is an electromagnetically coupled scale, even if dust, oil, condensation, etc. adhere to the scale, it will not interfere with position detection. No dust cover is required. Also, there is no need to worry about deterioration over time.

2 High resolution and accuracy

Both the MPZA series and MPRZ series have a resolution of 0.043 x 10-3 degrees and an accuracy of 2 seconds (MPRZ-18072A).

3 Excellent responsiveness

It can respond even at high speed rotation of 10000 rpm. (MPRZ-18072A only, 5000 rpm)

4 High repeatability

Since it is read by the detection pattern on the entire circumference instead of reading by the detection head, the error due to misalignment can be canceled and high repeatability can be obtained.

Linear scale

MPFA series

Open tape type low price scale

Absolute

Incremental
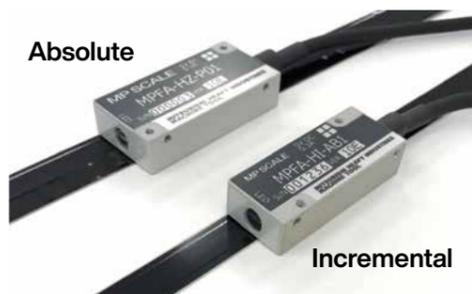
The scale is 0.4 mm thick (Including double-sided tape)

The scale can be cut to any length and used

Features

1 Can be used without worrying about the usage environment

Since it is an electromagnetically coupled scale, even if dust, oil, condensation, etc. adhere to the scale, it will not interfere with position detection. No dust cover is required. Also, there is no need to worry about deterioration over time.

2 Scale can be cut to any length

Both absolute and incremental scales are tape type with a thickness of 0.4 mm. The scale can be cut and used at any position.

3 The scale is easy to install with double-sided tape

The scale can be easily attached with the included double-sided tape. If you attach the scale to an iron plate etc., it can be attached and detached with bolts.

4 Supports adjustment and operation check when mounting the head

Software: MP-View can be used to easily adjust the head mounting and check the operation.

System Configuration

Rotary Scale

MPRZ series   A/D converter
MINAS A6/A6L   Stator   Rotor

MPZA series
MINAS A6/A6L   Stator   Rotor

Rotor   Direct drive motor   Rotor
Stator   Hollow   Stator

Direct drive motor table   **High-precision indexing table**
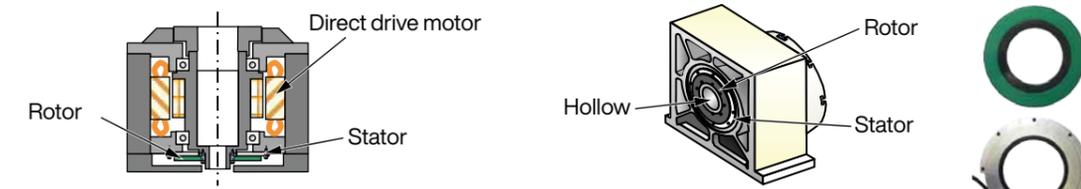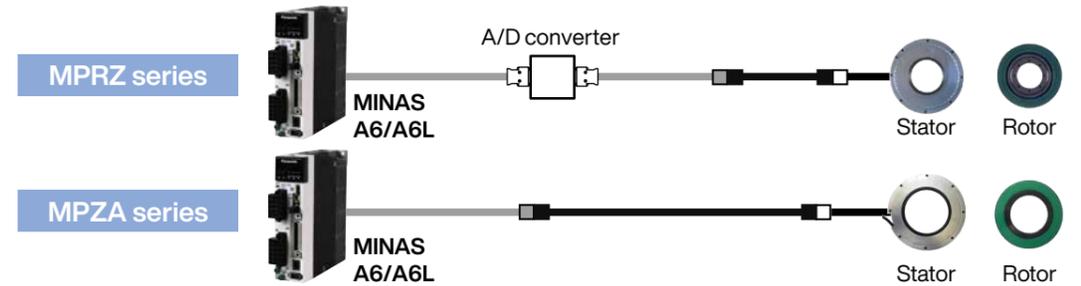
Attach the stator to the fixed part and the rotor to the rotating part.

Linear scale

Linear motor   <Software: MP-VIEW screen>   Mounter

MINAS   MPFA head   MPFA   -0.1879 mm   Position information

MPFA scale   DPM: 194   0.0   Scale   Scale

Machinery

DPM : Communication status according to GAP (gap) between head and scale   Scale
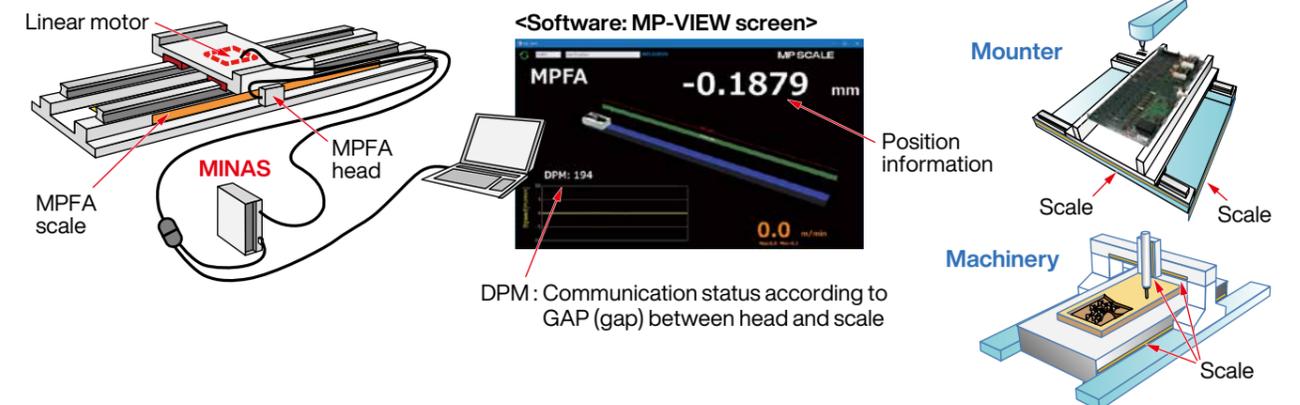
Sales area

● Japan   ● Korea   ● Taiwan   ● China

Language

● Japanese   ● Korean   ● Chinese   ● English

For more information

MPZA series   URL : https://www.nidec.com/jp/nidec-machinetool/product/search/category/B104/M107/S102/NMTJ-mpza_series/

MPRZ series   URL : https://www.nidec.com/jp/nidec-machinetool/product/search/category/B104/M107/S102/NMTJ-mprz_series/

MPFA series   URL : https://www.nidec.com/jp/nidec-machinetool/product/search/category/B104/M107/S101/

● Contact: **NIDEC MACHINE TOOL CORPORATION**

1 Uzumasa Tatsumi-cho, Ukyo-ku, Kyoto-shi, Kyoto 616-8114   TEL : +81-75-861-3313   FAX : +81-75-861-3327

FEED BACK SCALE

Optical linear scale
RESOLUTE™ series, EVOLUTE™ series, FORTiS series

Optical open absolute linear scale

RESOLUTE™ series
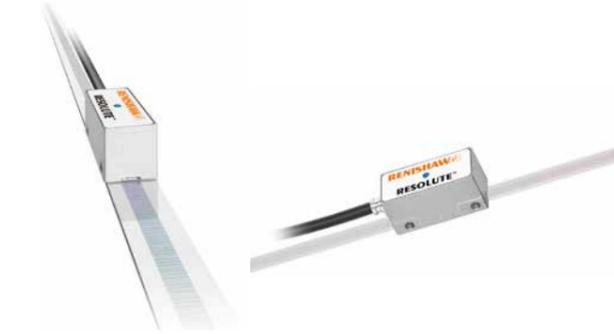
RESOLUTE™ RELA, RSLA

RESOLUTE™ RTLA30-S

RESOLUTE™ FASTRACK/ RTLA30

RESOLUTE™ RKLA30-S

Features

- The industry's first unique signal-track scale
- Determines absolute position upon power-up
- Range of scales for a variety of applications
- Low SDE for smooth velocity control
- Worldwide subsidiary support network

Optical open ring scale

RESOLUTE™ series

Vacuum compatible lead head and RESA ring

Atmospheric lead head and REXA ring

Features

- Large-diameter hollow ring scale allows angle measurement even in systems that require cable wiring, etc.
- High-precision type RESA ring scale and ultra-high-precision * type REXA ring scale are available.   * When using 2 heads
- The RESA ring scale can be easily and accurately mounted by fixing the patented taper.
- The REXA ring scale achieves ultra-high accuracy by suppressing deformation of the ring with a ring that is difficult to deform and suppressing eccentricity with two lead heads.
- Supports ultra-high vacuum applications by using a vacuum-compatible lead head

Optical open absolute linear scale

EVOLUTE™ series

**EVOLUTE™   FASTRACK/RTLA50
EVOLUTE™   RTLA50-S**

Features

- Based on RESOLUTE™ technology, which has already been proven in many industries
- Mounting height tolerance is 500 µm, which is 2.5 times that of general optical encoders.
- Wide tolerance allows for short installation time and improved resistance to dirt.
- RTLA50 scale with two fixing methods (gluing / track) can be used

Optical closed linear scale

FORTiS series

Features

- FORTiS is made for use in harsh environments such as machine tools, and two scales with different shapes are available.
- No need to change the design to replace from the most used competing manufacturer in machine tools
- Excellent sealing performance can significantly reduce the flow rate of blow air, making it possible to build a high-performance sustainable system.
- Since the inside of the main body is a non-contact structure, it is possible to acquire accurate position information, and since there are no mechanical parts inside, easy installation is realized.
- Has class-leading 30 G vibration resistance and can be incorporated into applications such as heavy cutting.
- Improved reliability by adopting the same optical system as RESOLUTE and EVOLUTE, which have high resistance to grain stains and grease stains.

Sales area

- Japan
- United Kingdom
- Worldwide response

Language

For more information

URL : http://www.renishaw.jp/ (Japanese)

http://www.renishaw.com/ (English)

- Contact: **Renishaw plc**

New Mills Wotton-under-Edge Gloucestershire GL12 8JR, United Kingdom   TEL : +44-1453-524524

FEED BACK SCALE

Absolute Exposed Linear encoder
MC 15P series

MC 15P MP :
Steel scale tape is drawn into the aluminum extrusions and fixed at center

MC 15P MK :
Steel scale tape cemented on mounting surface

Features

1 ### Maximum measurement length

Optical absolute linear encoder that can handle up to 6 m

2 ### Small and lightweight design

Scanning head size 36 mm x 13.5 mm x 14.8 mm head mass 18 g or less * (* cable not included)

3 ### High speed and high resolution

Supports up to 10 m / sec with 50 nm resolution

4 ### Easy to mount

Mounting gap tolerance ± 0.25 mm

System Configuration

Higher level controller

Target position command or Position command

Speed detection

Encoder

Position detection

MC15P

Controller

Pulse command (MAX 8 Mpps) or Analog command (SM only)

Motor line U V W

Linear motor

Serial

Linear encoder for feedback
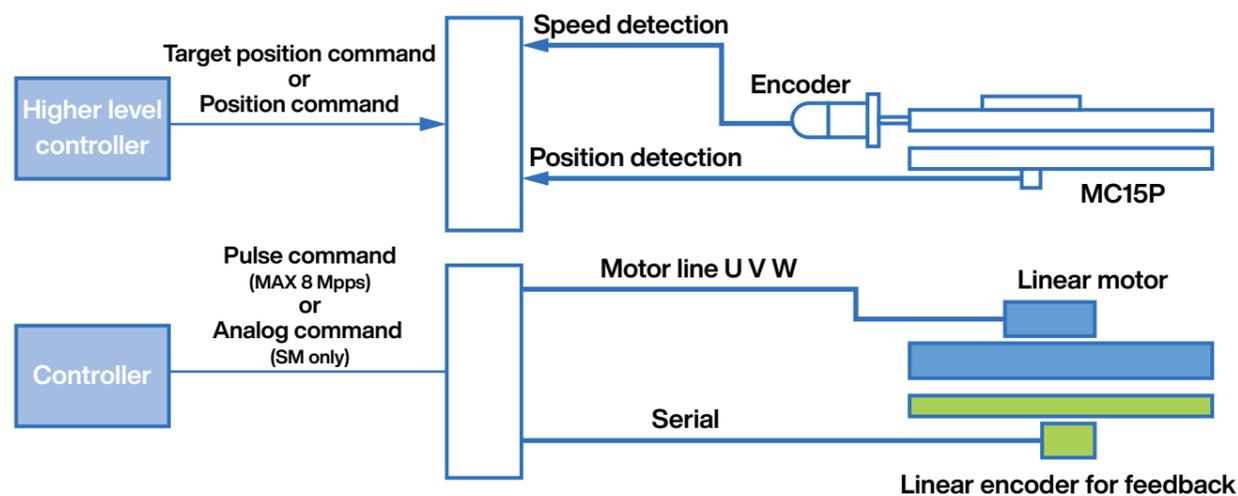
Others

● Type to insert the scale into the holder (MP) and type to paste it directly (MK)
● Widely used in high-speed, high-precision semiconductor manufacturing equipment and FPD manufacturing equipment, secondary battery manufacturing equipment

FEED BACK SCALE

FEED BACK SCALE

Absolute Angle Encoder without Integral Bearing
MCR15P series

High positioning accuracy, high interpolation accuracy, absolute angle encoder

MCR 15P

Features

1 ### High absolute accuracy

Angle encoder that guarantees up to ± 10 seconds (Depending on the diameter of the encoder)

2 ### Large hollow diameter

Supports hollow diameters up to 330 mm

3 ### Easy mounting

Centering with 3 points (centering)

System Configuration

Controller

Pulse command (MAX 8 Mpps) or Analog command (SM only)

Motor line U V W

Angle encoder for feedback

Serial

DD motor
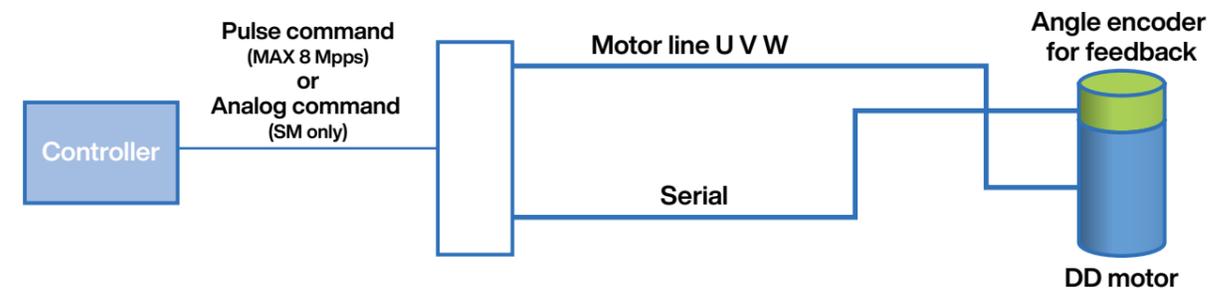
Others

● Machine tools (head shafts, tool shafts) Glass processing machines Widely used in case processing machines such as smartphones

Sales area

● Japan ● United States of America
● German ● China ● All over the world

Language

● English ● Japanese ● German ● Chinese

For more information

URL : http://www.rsf.at/

URL : https://www.heidenhain.com

● Contact: **RSF Elektronik Ges. m.b.H**

A-5121 Tarsdorf 93, Austria   TEL : +43-6278-8192-0   FAX : +43-6278-8192-79

Magnetsensor

MSK200/1
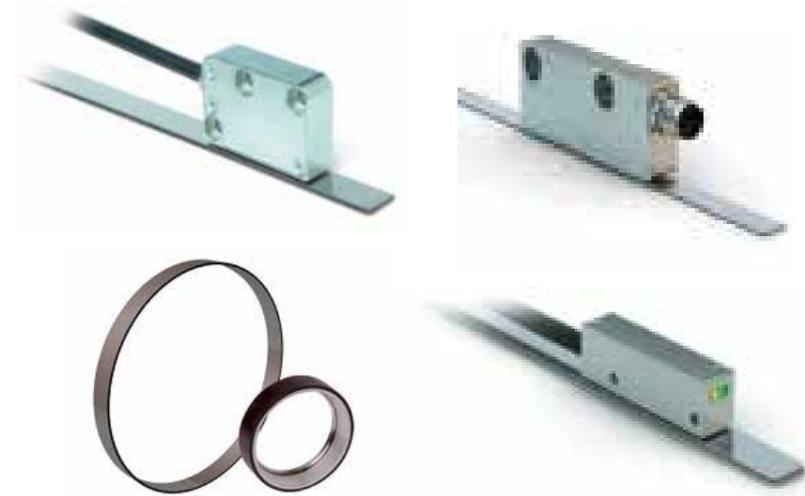
Features

● Small, compact designs
● Wear-free and maintenance-free
● Insensitive to dirt, humidity and condensation
● Provides personalized options for the customer
● High repeat accuracy and high resolution of Measurement for high-speed position feedback

Application Sample

design ZM

35
28
17   3.6
10
2.5
elongated hole (3x):
(enlarged Illustration)
3.3

9.5
16.5
25

$\varnothing 5_{-0.4}$ (6.8-core)
4.5
5.7
1

active measurement area   magnetic band

cover strip **A** = 0.176 mm
magnetic band **M** = 1.0 mm
carrier strip **T** = 0.3 mm
adhesive strip **K** = 0.1 mm
max. thickness = 1.576 mm

length L

10

Application Sample
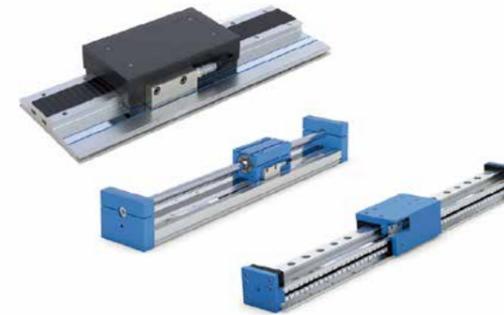
Linearmotors
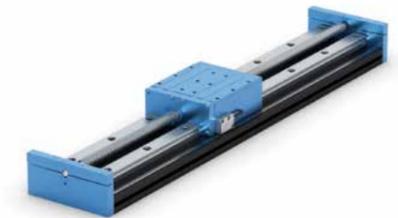
Position feedback of screw drive system

Gantry Axes

Torque motors
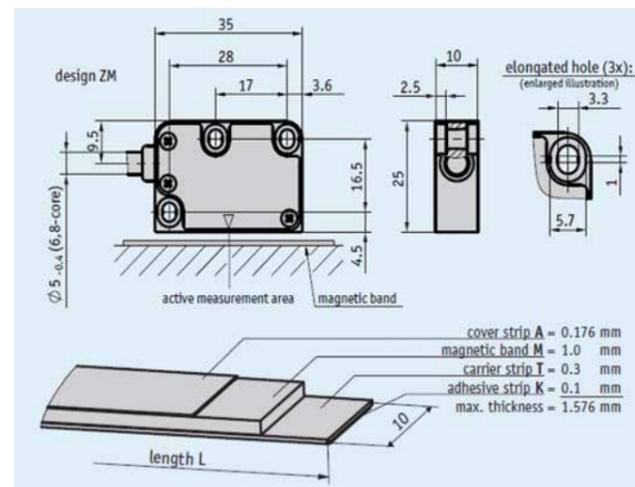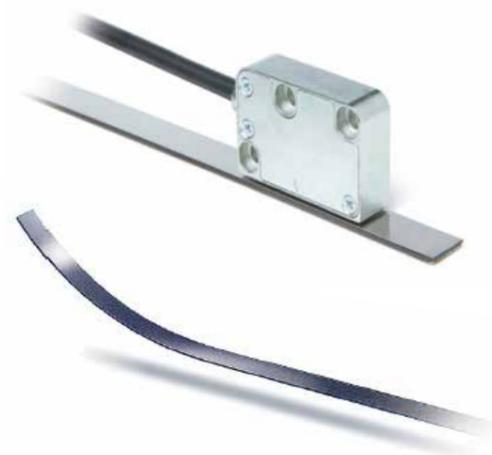
FEED BACK SCALE

FEED BACK SCALE

Manufacturer/
Distributor:

A **Nidec** Group Company

Sankyo

NIDEC SANKYO CORPORATION

The incremental linear encoder of a magnetic type

SENSOR / PSLH Series, SCALE / PSLG Series

This encoder has achieved an excellent total performance.

Features

1 It is high-speed serial communications corresponding to the MINAS series.

2 This encoder is strong in the environment of the magnetic noise, oil, and dust.

3 A miniaturization and an excellent cost performance are achieved by the internal manufacturing of the MR element.

4 Accuracy is improved by an original magnetization pattern. It is a tough encoder structure in the extrinsic noise.

Sales area		Language
● Japan	● Worldwide response	● Japanese

For more information

URL : http://www.nidec-sankyo.co.jp/

● Contact: **EC SANKYO CORPORATION**

Tokyo Office, Nidec Tokyo Bldg., 1-20-13, Osaki, Shinagawa-ku, Tokyo 141-0032, Japan
TEL : +81-3-5740-3006 FAX : +81-3-6843-3123

SURUGA SEIKI CO.,LTD.

Precision Positioning Stage

PG Series / KX Series / KXS Series.

● **PG Series**

Item		Description
Travel length		13 / 15 / 30 / 50 mm
Table size		40×40 mm ～ 70×110 mm
Ball screw	Shaft diameter	φ6 mm
	Lead	1 mm
Main materials		Stainless
Finishing		Electroless nickel plating
Resolution (Pulse)		23 bit encoder (8388608 P/R)
Accuracy	Uni-directional positioning accuracy	6 μm/13 mm ～ 12 μm/50 mm
	Repeatablity	±0.5 μm
	Max Speed	50 mm/sec
	Load capacity	10 kgf (98 N)

(Note) Accuracy specifications are for reference only.

● **KXL Series**

Item		Description	
Travel length		30/50/75/100/150/200/300 mm	
Table size		60×60 mm	
Ball screw	Shaft diameter	φ6 mm	
	Lead	1 mm (TL: 30 mm ～ 75 mm)	2 mm (TL: 30 mm ～ 300 mm)
Main materials		Stainless	
Finishing		Electroless nickel plating	
Resolution (Pulse)		23 bit encoder (8388608 P/R)	
Cover		Covered / Uncovered	
Accuracy	Uni-directional positioning accuracy	5 μm/30 mm ～ 25 μm/300 mm	
	Repeatablity	±0.5 μm	
	Max Speed	50 mm/sec	100 mm/sec
	Load capacity	12 kgf (117.6 N)	

(Note) Accuracy specifications are for reference only.

● **KXS Series**

Item		Description	
Travel length		100/200/300/400/500 mm	
Table size		180×180 mm	
Ball screw	Shaft diameter	φ 15 mm	
	Lead	5 mm	10 mm
Main materials		Aluminum	
Finishing		Anodic oxide coating	
Resolution (Pulse)		23 bit encoder (8388608 P/R)	
Cover		Covered / Uncovered	
Accuracy	Uni-directional positioning accuracy	5 μm/100 mm ～ 40 μm/500 mm	
	Repeatablity	±1 μm	
	Max Speed	200 mm/sec	400 mm/sec
	Load capacity	30 kgf (294 N)	

(Note) Accuracy specifications are for reference only.

【Applicable drive / motor type】 A6 family Drive：M＊DL＊＊＊＊＊ Motor：M＊MF＊＊＊L＊＊＊
Please contact the following address for the details of the combination.

Nabtesco Corporation

Compact Actuator AF series

AF017N/042N/080N/125N/380N/500N/050C/120C/200C/320C

● **Motor series: MINAS A6**

Item	Model		Solid type				
		AF017N	AF042N	AF080N	AF125N		AF500N
Actuator							
Motor model		MHMF042	MDMF102	MDMF102	MDMF152	MDMF202	MHMF302	MDMF402
Motor rated capacity	kW	0.4	1.0	1.0	1.5	2.0	3.0	4.0
Speed ratio		81	126	126	126	129	102.18 (1737/17)	252.33 (757/3)
Rated torque	Nm	82 *2	415	481	722	986	1169	3856
Momentary max. torque	Nm	289	415	1029	1029	1960	3062	11567
Rated ouput speed	min⁻¹	37.0	15.9	15.9	15.9	15.5	19.6	7.9
Momentary max. speed	min⁻¹	80.2	31.7	31.7	31.7	31.0	39.1	15.1
Allowable load inertia moment	kgm²	11	117	117	164	221	473	3311
Backlash	arc.min.	≦ 1	≦ 1	≦ 1	≦ 1	≦ 1	≦ 1	≦ 1
Motor brake		With / Without	With	With	With	With	With	With
Allowable moment	Nm	784	784	1660	1660	2150	3430	11000
mass	kg	7.2/6.8	15	16	17	26	39.7	91.1
Motor torque limit *1	%	350	86	214	142	198	261	300
Compatible servo driver								
A6SE : Basic type		MBDLN25SE✱✱✱	MDDLN45SE✱✱✱	MDDLN45SE✱✱✱	MDDLN55SE✱✱✱	MEDLN83SE✱✱✱	MFDLNA3SE✱✱✱	MFDLNB3SE✱✱✱
A6SG : RS485 communication type		MBDLN25SG✱✱✱	MDDLN45SG✱✱✱	MDDLN45SG✱✱✱	MDDLN55SG✱✱✱	MEDLN83SG✱✱✱	MFDLNA3SG✱✱✱	MFDLNB3SG✱✱✱
A6SF : Multifunction type		MBDLT25SF✱✱✱	MDDLT45SF✱✱✱	MDDLT45SF✱✱✱	MDDLT55SF✱✱✱	MEDLT83SF✱✱✱	MFDLTA3SF✱✱✱	MFDLTB3SF✱✱✱
A6NE : RTEX network standard type		MBDLN25NE✱✱✱	MDDLN45NE✱✱✱	MDDLN45NE✱✱✱	MDDLN55NE✱✱✱	MEDLN83NE✱✱✱	MFDLNA3NE✱✱✱	MFDLNB3NE✱✱✱
A6NF : RTEX network multi function		MBDLT25NF✱✱✱	MDDLT45NF✱✱✱	MDDLT45NF✱✱✱	MDDLT55NF✱✱✱	MEDLT83NF✱✱✱	MFDLTA3NF✱✱✱	MFDLTB3NF✱✱✱
A6BE : EtherCAT network standard type		MBDLN25BE✱✱✱	MDDLN45BE✱✱✱	MDDLN45BE✱✱✱	MDDLN55BE✱✱✱	MEDLN83BE✱✱✱	MFDLNA3BE✱✱✱	MFDLNB3BE✱✱✱
A6BF : EtherCAT network multi function		MBDLT25BF✱✱✱	MDDLT45BF✱✱✱	MDDLT45BF✱✱✱	MDDLT55BF✱✱✱	MEDLT83BF✱✱✱	MFDLTA3BF✱✱✱	MFDLTB3BF✱✱✱

*1 Set the torque limit of the servo amplifier so that the torques does not exceed the momentary maximum torque of the compact actuator.
*2 Value calculated from the rated torque of the motor where the ambient temperature is 20 ºC.
When the ambient temperature is 40 ºC, the torque will be 75 % of the rated torque.

● **Motor series: MINAS A6**

Item	Model	Hollow shaft type		
		AF050C	AF120C	AF320C
Actuator				
Motor model		MDMF102	MDMF202	MHMF502
Motor rated capacity	kW	1.0	2.0	5.0
Speed ratio		120.47(2289/19)	120	157
Rated torque	Nm	460	917	3002
Momentary max. torque	Nm	1225	2746	7840
Rated ouput speed	min⁻¹	16.6	16.7	12.7
Momentary max. speed	min⁻¹	33.2	33.3	22.3
Allowable load inertia moment	kgm²	84	158	1763
Backlash	arc.min.	≦ 1	≦ 1	≦ 1
Motor brake		Without	Without	With
Allowable moment	Nm	1764	3920	20580
mass	kg	32	43	164
Motor torque limit *1	%	266	299	261
Compatible servo driver				
A6SE : Basic type		MDDLN45SE✱✱✱	MEDLN83SE✱✱✱	MFDLNB3SE✱✱✱
A6SG : RS485 communication type		MDDLN45SG✱✱✱	MEDLN83SG✱✱✱	MFDLNB3SG✱✱✱
A6SF : Multifunction type		MDDLT45SF✱✱✱	MEDLT83SF✱✱✱	MFDLTB3SF✱✱✱
A6NE : RTEX network standard type		MDDLN45NE✱✱✱	MEDLN83NE✱✱✱	MFDLNB3NE✱✱✱
A6NF : RTEX network multi function		MDDLT45NF✱✱✱	MEDLT83NF✱✱✱	MFDLTB3NF✱✱✱
A6BE : EtherCAT network standard type		MDDLN45BE✱✱✱	MEDLN83BE✱✱✱	MFDLNB3BE✱✱✱
A6BF : EtherCAT network multi function		MDDLT45BF✱✱✱	MEDLT83BF✱✱✱	MFDLTB3BF✱✱✱

*1 Set the torque limit of the servo amplifier so that the torques does not exceed the momentary maximum torque of the compact actuator.

Harmonic Drive Systems Inc.

Harmonic Drive® AC Servo Actuator

SHA-P Series / FHA-Cmini Series

● SHA-P Series：SHA-SG Type

Item		Model	SHA20P					SHA25P					SHA32P					SHA40P				
			51	81	101	121	161	51	81	101	121	161	51	81	101	121	161	51	81	101	121	161
Recommended Amplifier *1*2*3	A6N series		MBDL■25N□(All)					MBDL■25N□(161) MCDL■35N□(51~121)					MCDL■35N□(161) MDDL■45N□(121) MDDL■55N□(51~101)					MDDL■55N□(81~161) MEDL■83N□(51)				
	A6B series		MBDL■25B□(All)					MBDL■25B□(161) MCDL■35B□(51~121)					MCDL■35B□(161) MDDL■45B□(121) MDDL■55B□(51~101)					MDDL■55B□(81~161) MEDL■83B□(51)				
	A6S series		MBDL■25S□(All)					MBDL■25S□(161) MCDL■35S□(51~121)					MCDL■35S□(161) MDDL■45S□(121) MDDL■55S□(51~101)					MDDL■55S□(81~161) MEDL■83S□(51)				
Maximum Torque		N·m	73	96	107	113	120	127	178	204	217	229	281	395	433	459	484	523	675	738	802	841
Maximum Speed		r/min	117.6	74.1	59.4	49.6	37.3	109.8	69.1	55.4	46.3	34.8	94.1	59.3	47.5	39.7	29.8	78.4	49.4	39.6	33.1	24.8
Maximum Moment Load		N·m	187					258					580					849				
One-Way Positioning Accuracy		arc sec	60	50	50	50	50	50	40	40	40	40	50	40	40	40	40	50	40	40	40	40
Mass (without brake)		kg	2.0					2.95					5.9					9.9				

Item		Model	SHA45P					SHA58P				SHA65P			
			51	81	101	121	161	81	101	121	161	81	101	121	161
Recommended Amplifier *1*2*3	A6N series		MDDL■55N□(161) MEDL■83N□(51~121)					MEDL■93N□(161) MFDL■B3N□(81~121)				MFDL■A3N□(161) MFDL■B3N□(81~121)			
	A6B series		MDDL■55B□(161) MEDL■83B□(51~121)					MEDL■93B□(161) MFDL■B3B□(81~121)				MFDL■A3B□(161) MFDL■B3B□(81~121)			
	A6S series		MDDL■55S□(161) MEDL■83S□(51~121)					MEDL■93S□(161) MFDL■B3S□(81~121)				MFDL■A3S□(161) MFDL■B3S□(81~121)			
Maximum Torque		N·m	650	918	982	1070	1147	1924	2067	2236	2392	2743	2990	3263	3419
Maximum Speed		r/min	74.5	46.9	37.6	31.4	23.6	37.0	29.7	24.8	18.6	34.6	27.7	23.1	17.4
Maximum Moment Load		N·m	1127					2180				2740			
One-Way Positioning Accuracy		arc sec	50	40	40	40	40	40	40	40	40	40	40	40	40
Mass (without brake)		kg	12.4					29.5				37.5			

● SHA-P Series：SHA-CG Type

Item		Model	SHA20P					SHA25P					SHA32P					SHA40P				
			50	80	100	120	160	50	80	100	120	160	50	80	100	120	160	50	80	100	120	160
Recommended Amplifier *1*2*3	A6N series		MBDL■25N□(All)					MBDL■25N□(160) MCDL■35N□(50~120)					MCDL■35N□(160) MDDL■45N□(120) MDDL■55N□(50~100)					MDDL■55N□(80~160) MEDL■83N□(50)				
	A6B series		MBDL■25B□(All)					MBDL■25B□(160) MCDL■35B□(50~120)					MCDL■35B□(160) MDDL■45B□(120) MDDL■55B□(50~100)					MDDL■55B□(80~160) MEDL■83B□(50)				
	A6S series		MBDL■25S□(All)					MBDL■25S□(160) MCDL■35S□(50~120)					MCDL■35S□(160) MDDL■45S□(120) MDDL■55S□(50~100)					MDDL■55S□(80~160) MEDL■83S□(50)				
Maximum Torque		N·m	73	96	107	113	120	127	178	204	217	229	281	395	433	459	484	523	675	738	802	841
Maximum Speed		r/min	120	75	60	50	37.5	112	70	56	46.7	35	96	60	48	40	30	80	50	40	33.3	25
Maximum Moment Load		N·m	187					258					580					849				
One-Way Positioning Accuracy		arc sec	60	50	50	50	50	50	40	40	40	40	40	30	30	30	30	40	30	30	30	30
Repeatability		arc sec	±5					±5					±4					±4				
Bi-directional Repeatability		arc sec	75	30	30	30	30	60	25	25	25	25	60	25	25	25	25	50	20	20	20	20
Mass (without brake)		kg	2.6					3.95					7.7					13				

● FHA-Cmini Series

Item		Model	FHA-8C			FHA-11C			FHA-14C		
			30	50	100	30	50	100	30	50	100
Recommended Amplifier *1*2*3	A6N series		MADL■05N□(All)			MADL■05N□(All)			MADL■05N□(50,100) MADL■15N□(30)		
	A6B series		MADL■05B□(All)			MADL■05B□(All)			MADL■05B□(50,100) MADL■15B□(30)		
	A6S series		MADL■05S□(All)			MADL■05S□(All)			MADL■05S□(50,100) MADL■15S□(30)		
Maximum Torque		N·m	1.8	3.3	4.8	4.5	8.3	11	9	18	28
Maximum Speed		r/min	200	120	60	200	120	60	200	120	60
Maximum Moment Load		N·m	15			40			75		
One-Way Positioning Accuracy		arc sec	150	120	120	120	90	90	120	90	90
Mass (without brake)		kg	0.50			0.75			1.3		

The table shows typical output values of actuators.

*1 ■ in the amplifier code indicates the safety function.
　T : With safety function
　N : Without safety function
*2 □ in the amplifier code indicates driver specification.
　E : Standard type
　F : Multi-function type
　G : Communication type
*3 Numbers in ( ) indicates applicable reduction ratio.

Harmonic Drive® AC Servo Motor

PMA Series

Item		Model	PMAC08	PMAB09	PMAB12	PMAB15	PMAA21A
Recommended Amplifier *1*2	A6N series		MBDL■25N□	MCDL■35N□	MDDL■55N□	MEDL■83N□	MFDL■B3N□
	A6B series		MBDL■25B□	MCDL■35B□	MDDL■55B□	MEDL■83B□	MFDL■B3B□
	A6S series		MBDL■25S□	MCDL■35S□	MDDL■55S□	MEDL■83S□	MFDL■B3S□
Rated output		W	163	251	406	754	1320
Maximum Torque		N·m	1.8	3	7	13	45
Maximum Speed		r/min	6000	5600	4800	4000	3000
Mass (without brake)		kg	1.4	2.0	3.4	5.5	17.5

Yamaha Motor Co., Ltd.

Motorless single axis actuator Robonity series

Basic model "LBAS" Advanced model "LGXS"

● Basic model (LBAS)

Model	Adaptive motor (W)	Repeat position Determination accuracy (± mm) *1	Deceleration mechanism	Stroke (mm)	Maximum speed (mm/sec) *2	Ball screw lead (mm)	Maximum payload *3 (kg)		Rated thrust (N) *3	Body maximum Cross-sectional outline (mm)	Full length (mm)	Usage environment temperature humidity
							Horizontal	Vertical				
LBAS04	50		Rolled ball screw φ10 (C7 class)	50 ~ 800 (50 pitch)	800 400	12 6	12 20	2 5	71 141	W 44 × H 52	ST+214	
LBAS05	100	±0.01	Rolled ball screw φ12 (C7 class)		1333 666 333	20 10 5	12 24 40	3 6 12	84 169 339	W 54 × H 60	ST+220.5	0-40 ℃, 35-80% RH (No condensation)
LBAS08	200		Rolled ball screw φ16 (C7 class)	50 ~ 1100 (50 pitch)	1200 600 300	20 10 5	40 80 100	8 20 30	174 341 683	W 82 × H 78	ST+278	

* 1 : Repeated positioning accuracy with one swing
* 2 : The maximum speed may not be reached depending on the short travel distance or operating conditions.
* 3 : The rated thrust and maximum payload are values assuming that the installed motor outputs the rated torque.

● Advanced model (LGXS)

Model	Adaptive motor (W)	Repeat position Determination accuracy (± mm) *1	Deceleration mechanism	Stroke (mm)	Maximum speed (mm/sec) *2	Ball screw lead (mm)	Maximum payload *3 (kg)		Rated thrust (N) *3	Body maximum Cross-sectional outline (mm)	Full length (mm)	Clean degree *4	Amount of suction (Nℓ / min) air *5	Usage environment temperature humidity
							Horizontal	Vertical						
LGXS05	50		Grinding ball screw φ12 (C5 grade)	50 ~ 800 (50 pitch)	1333 666 333	20 10 5	5 8 13	2 4 8	41 69 138	W 48 × H 65	ST+131.5		30～100	
LGXS05L	100						12 24 32	3 6 12	84 169 339		ST+161.5			
LGXS07				50 ~ 1100 (50 pitch)	1800 1200 600 300	30 20 10 5	10 25 45 85	2 4 8 16	56 84 169 339	W 70 × H 76.5	ST+202		30～115	
LGXS10	200	±0.005	Grinding ball screw φ15 (C5 grade)	100 ~ 1250 (50 pitch)	1800 1200 600 300	30 20 10 5	25 40 80 100	4 8 20 30	113 170 341 683	W 100 × H 99.5	ST+175.5	ISO CLASS 3 (ISO14644-1) Equivalent		0-40 ° C, 35-80% RH (No condensation)
LGXS12	400						35 50 95 115	8 15 25 45	225 339 678 1360	W 125 × H 101	ST+211.5		30～90	
LGXS16	750		Grinding ball screw φ20 (C5 grade)	100 ~ 1450 (50 pitch)	2400 1200 600	40 20 10	45 95 130	12 28 55	320 640 1280	W 160 × H 130	ST+242.5			
LGXS20							65 130 160	15 35 65		W 200 × H 140	ST+288.5			

* 1 : Repeated positioning accuracy with one swing
* 2 : The maximum speed may not be reached depending on the short travel distance or operating conditions.
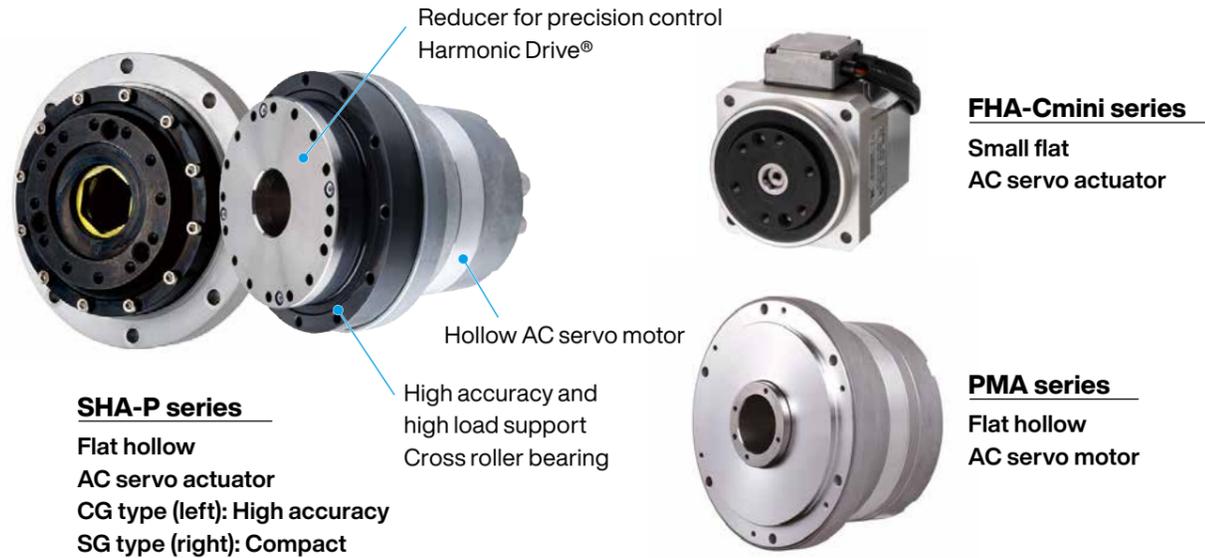* 3 : The rated thrust and maximum payload are values assuming that the installed motor outputs the rated torque.
* 4 : When using in a clean environment, attach a suction air-joint. The cleanliness is the degree of cleanliness when used at 1000 mm / sec or less.
* 5 : The required suction amount varies depending on the usage conditions and environment.

ACTUATOR

AC Servo Actuator / AC Servo Motor

SHA-P Series, FHA-Cmini Series / PMA Series

AC servo actuator docked with Harmonic Drive®, a speed reducer for precision control, and an AC servo motor

Reducer for precision control
Harmonic Drive®

FHA-Cmini series

Small flat
AC servo actuator

Hollow AC servo motor

High accuracy and
high load support
Cross roller bearing

PMA series

Flat hollow
AC servo motor

SHA-P series

Flat hollow
AC servo actuator
CG type (left): High accuracy
SG type (right): Compact

Features

1 ### SHA-SG Both compact shape and high output torque

The built-in Harmonic Drive® realizes high output torque in spite of its compact shape. You can choose the most suitable model from a wide variety of model numbers and reduction ratios.

2 ### SHA-CG Guarantees high output shaft runout accuracy and rotation accuracy

Although it has a built-in speed reducer, it guarantees high rotation accuracy and output shaft surface runout accuracy, and is equipped with a hollow shaft. It has achieved a torque volume ratio that is more than five times that of direct drive motors for the same application.

3 ### FHA-Cmini Small and flat shape like no other

The maximum torque can be selected from 4.8 Nm, 11 Nm, and 28 Nm in 3 sizes of □ 50 mm, □ 60 mm, and □ 75 mm. By combining Harmonic Drive ®, servo motor, and cross roller bearing, it can be used for small but high-end equipment.

4 ### Hollow hole structure that allows layout of PMA wiring and piping

This is our standard lineup of AC servo motors with a hollow hole structure for the motor shaft. You can lay out wiring and piping in the center of rotation without offsetting the motor.

System Configuration

RTEX, EtherCAT general-purpose
communication compatible controller

MINAS A6N/A6B/A6S series

MINAS A6 Servo motor

Flat hollow
AC Servo Actuator
SHA-P series

Flat hollow
AC servo motor
PMA series

Small flat
AC servo actuator
FHA-C mini series

System configuration image

MINAS A6
Servo motor

Flat hollow
AC servo actuator
SHA-P

MINAS A6
Servo motor

MINAS A6
Servo motor
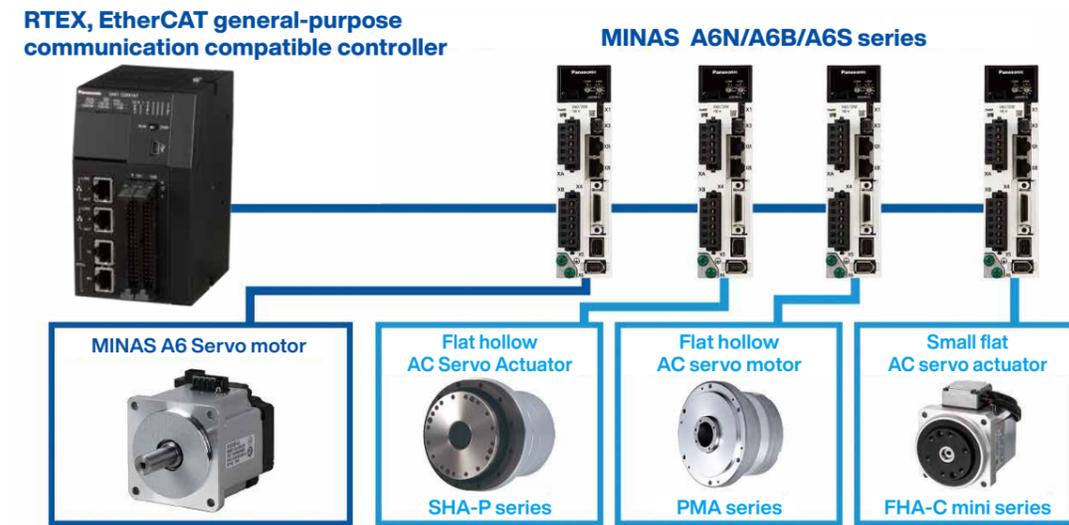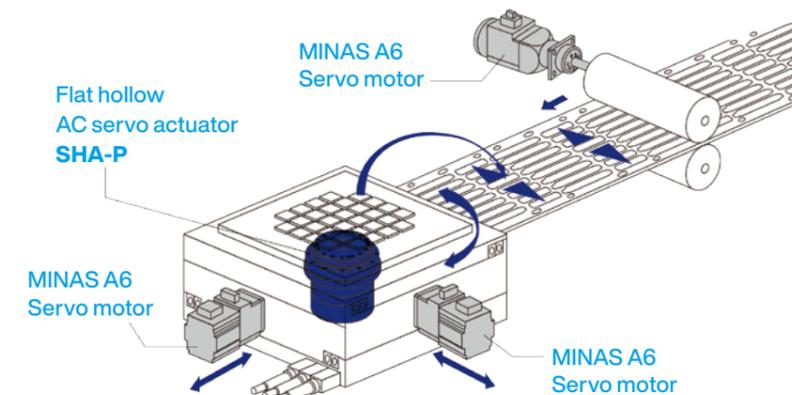
Others

● Application example: http://www.hds.co.jp/products/application/
● Product selection software: https://hds-tech.jp/tool/agreement.html

Sales area

● Japan   ● Global

Language

● English   ●Chinese   ● Japanese

For more information

URL : https://www.hds.co.jp/

●Contact: **Harmonic Drive Systems Inc. Overseas Division**

1856-1 Hotakamaki, Azumino-shi, Nagano, 399-8305, Japan   TEL : +81-263-83-6935   FAX : +81-263-83-6901

Compact Actuator AF series

AF017N/042N/080N/125N/380N/500N/050C/120C/200C/320C

Solid type
AF-N

Hollow shaft type
AF-C

Features

1 ### High precision, stiffness, quality

Integrating Panasonic servo motors with large industrial robot market share Precision Reduction Gear RV

2 ### Compact

Compact drive unit is made possible by machining gear directly onto motor shaft

3 ### High versatility

Compatible with the MINAS-A6 family of standard servo drivers

Merit 1 — Compact design

Before

The total length is extended due to the input gear and coupling.

After

The machining of gears onto the motorshaft results in a very compact design; **up to 23% shorter than conventional models.**

With the AF series...

Merit 2 — Greater reliability

Before

Machining is very difficult, resulting in axial runout, poor concentricity accuracy, and producing abnormal noise.

After

Shipped after machining and assembly, **no need to worry about abnormal noise.**

With the AF series...

Merit 3 — Greater quality

Before

Oil seal
O-ring

O-ring or liquid sealant

Greaseing can be troublesome, If seals are forgotten, grease can leak

After

Already contains grease; **no need to worry about leaking.**

With the AF series...

System Configuration

System configuration example

Nabtesco AF series

Made by Panasonic Corporation
AC servo amplifier

Brake line

External regenerative resistor

External regenerative resistance connection line

USB mini-B

Personal computer
Please download and use the setup support software "PANATERM" from the Panasonic Corporation website.

Control input / output signal line

Motor power line

Signal line for encoder

Brake power supply (DC24 V)

Higher level controller

Application Sample

| Machine Tool | Positioner | Index Table | Gantry Robot | Pick & Place Robot |

Sales area

● Japan   ● All over the world

Language

● Japanese   ● Chinese
● English   ● Korean

For more information

Solid type URL : https://precision.nabtesco.com/en/products/detail/AF-N

Hollow shaft type URL : https://precision.nabtesco.com/en/products/detail/AF-C

● Contact: **Nabtesco Corporation**

Europe and Africa: TEL: +49-211-173790	North and South America: TEL: +1-248-553-3020
China: TEL: +86-21-3363-2200	India: TEL: +91-80-4123-4901
Asia and others: TEL: +81-6-6341-7180	

Precision Positioning Stage

PG Series / KX Series / KXS Series.

PG Series

| Compact |
| High Rigidity |

KXL Series

| Broad Selection |
| High Rigidity |

KXS Series

| Long stroke |
| High load capacity |

【Applicable drive / motor type】
A6 family
Drive ：M＊DL＊＊＊＊＊
Motor：M＊MF＊＊＊L＊＊＊
Please contact the following
address for the details of the
combination.

Features

1 Combine MINAS A6 family (EtherCAT/RTEX supported) with Precision Positioning Stages.

2 Ideal for automation process which requires high precision.

3 Compact, high rigidity, broad range of travel length selection, weight multiplication accuracy ±0.5 μm.

4 Supporting long travel length (up to 500 mm) and high load capacity.

Application Sample

| Lens alignment device | XY Stage for microscope | Wafer inspection unit | Glass substrate evaluation unit |

| XY-axis custom | XYZ-axis custom | 6-axis custom | High rigidity 6-axis custom |
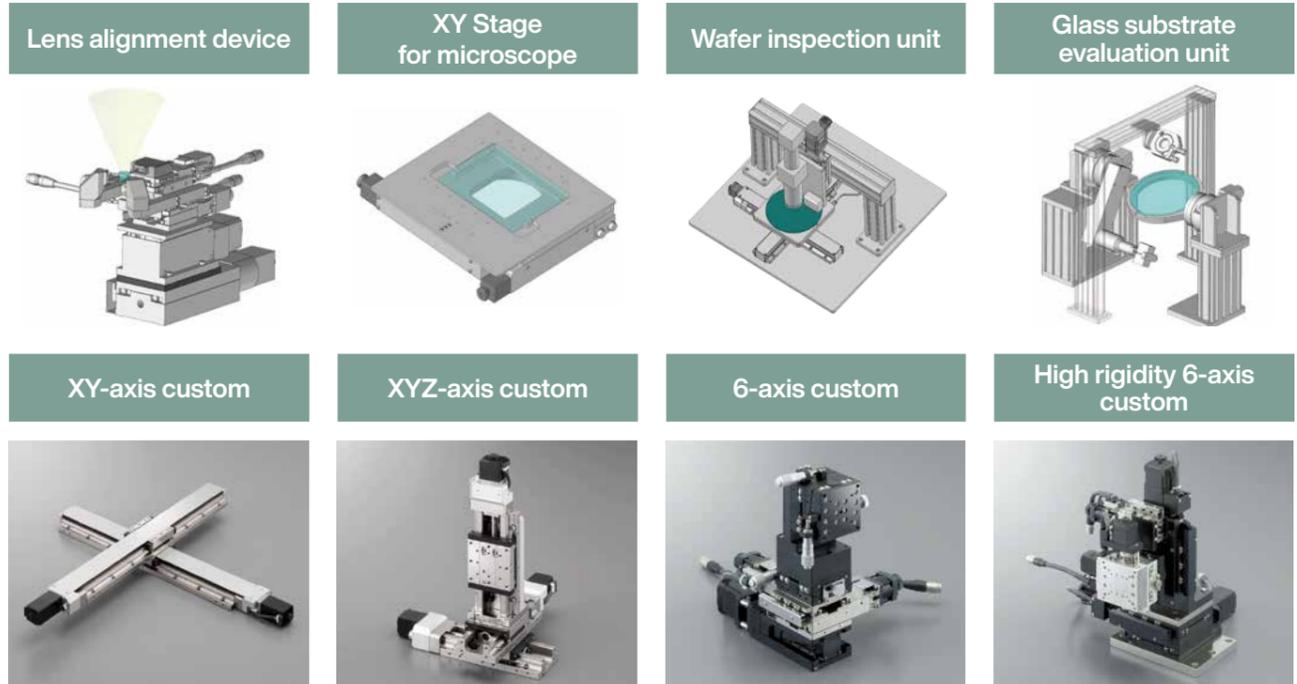
In addition to standard catalog products, we provide custom made stage products according to your requirement. Please feel free to contact us for details.

EtherCAT Master
MINAS A6B

Slave 2 — Slave 3 — · · · · · · · — Slave X

RTEX Realtime Express **Controller**
MINAS A6N

Slave 2 — Slave 3 — · · · · · · · — Slave X
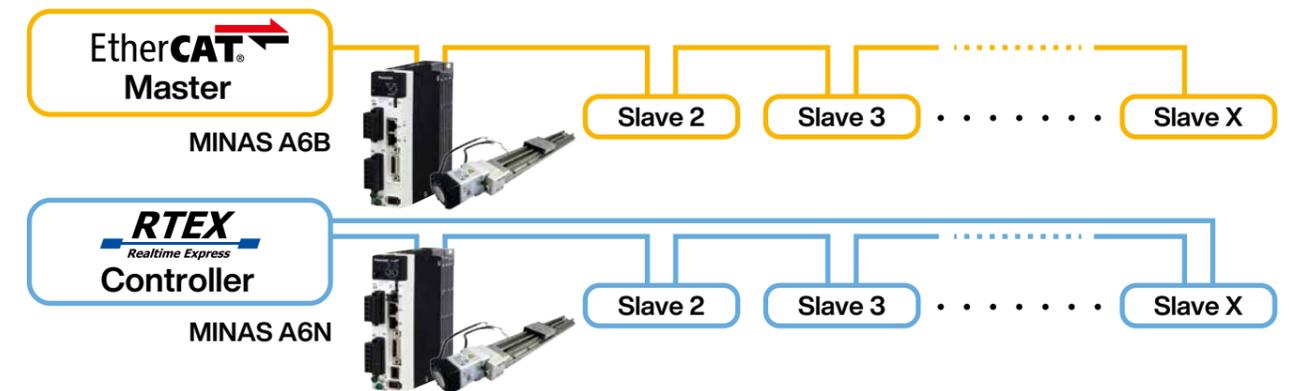
Sales area

● Japan   ● United States of America
● China   ● Korea   ● Taiwan

Language

● English   ● Japanese
● Chinese   ● Korean

For more information

URL : http://www.surugaseiki.com

● Contact: **SURUGA SEIKI CO.,LTD. SAN JOSE OFFICE**

2890 Zanker Road, Suite 204, San Jose, CA 95134, USA   TEL：+1-408-931-6210

ACTUATOR

Motorless single axis actuator Robonity series

Basic model "LBAS"   Advanced model "LGXS"

LBAS04
LBAS05
LBAS08
LGXS05
LGXS05L
LGXS07
LGXS10
LGXS12
LGXS16
LGXS20

Features

1 ## Abundant variations Find the perfect specifications right away

With a wide variety of lead lengths and strokes, you can choose the model of the size and specifications you want.

2 ## Long stroke Can also be used for long-distance transportation

The stroke can be selected from 50 mm to 1450 mm. It is also ideal for long-distance transportation.

3 ## Easy to select Immediately understand tact and life

You can calculate the cycle time, guide and ball screw life on the website.

LBAS │ Basic model | High rigidity | Compact | Low cost |

● **Easy change of motor mounting direction**

The motor mounting direction can be easily changed with dedicated parts.

Standard specifications	Motor bending specifications

Standard   Left mounting   Right mounting   Bottom mounting

● **Reduction of installation man-hours**

1 . The main body can be installed from the top and bottom without removing the exterior parts.
2 . There is a reference surface on the side of the main body and a knock hole on the bottom for easy installation.

● **Easy maintenance**

Grease nipples on the side of the slider can be used to lubricate drive parts.

LGXS │ Advanced model | High accuracy accuracy grade C5 | High durability | Clean specification standard support |

● **High precision**

· Uses a grinding ball screw
· Ball screw accuracy: Accuracy grade C5
· Repeated positioning accuracy: ± 5 µm

LM guide adopted
With ball retainer
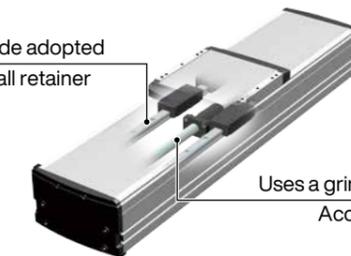
Uses a grinding ball screw
Accuracy grade C5

● **Clean specifications standard support**

Since a dustproof stainless steel sheet is used on the upper surface of the main body, it can be used in a clean environment simply by attaching a piping joint and sucking.

Sales area		Language	
● Japan ● Europe ● United States of America		● English	● Japanese
● China ● Southeast Asia		● Chinese	

For more information

URL : https://global.yamaha-motor.com/business/robot/

● Contact: **Yamaha Motor Co., Ltd.   Robotics Division FA Management Department Sales Department**

127 Toyooka-cho, Kita-ku, Hamamatsu-shi, Shizuoka 433-8103   TEL : +81-53-525-8350 FAX : +81-53-525-8378

Industrial Machinery / Processing Machinery Solutions

Work equipment

Servo drive
MINAS A6 series

Rotary motor/ Linear motor/ Direct drive motor
MINAS A6 series

Akribis
where precision matters

very good
KOVERY

置いてこそ技術
SINFONIA

Sodick
Sodick Co.,Ltd | Create Your Future

NPM

Actuator
Nabtesco
SYSTEMS

Feed Back Scale
HEIDENHAIN

FAGOR
FAGOR AUTOMATION

Mitutoyo

RENISHAW
apply innovation™

Nidec
–All for dreams
NIDEC MACHINE TOOL

Controller
RTEX
COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

MOVENSYS

EtherCAT
MOVENSYS
BECKHOFF

Techno
acontis
technologies
ALGO

Hivertec,inc.
Micronet

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

SYSTEM SOLUTIONS

Processing machine (metal / resin / wood processing machine)

Controller
RTEX
COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion
MOVENSYS

EtherCAT
MOVENSYS
BECKHOFF

Techno
acontis
technologies
ALGO

Hivertec,inc.
Micronet

Rotary motor/ Linear motor
MINAS A6 series

Akribis
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KOVERY

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NPM

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Servo drive
MINAS A6 series

Actuator
Nabtesco
SYSTEMS

Feed Back Scale
HEIDENHAIN

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NIDEC MACHINE TOOL

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Please refer to the page of each partner manufacturer for the specific combination.

Laser / Plasma processing machine

Servo drive
MINAS A6 series

Controller
RTEX
COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion
MOVENSYS

EtherCAT
MOVENSYS
BECKHOFF

Techno
acontis
technologies

Hivertec,inc.
Micronet

Rotary motor/ Linear motor/ Actuator
MINAS A6 series

Akribis
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very good
KOVERY

置いてこそ技術
SINFONIA
NPM

Sodick
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Nabtesco
SYSTEMS

YAMAHA

Feed Back Scale
HEIDENHAIN

FAGOR
FAGOR AUTOMATION

Magnescale
SPEED & PRECISION

Mitutoyo

RENISHAW
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NIDEC MACHINE TOOL

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SYSTEM SOLUTIONS

Industrial robot solution

6-axis robot
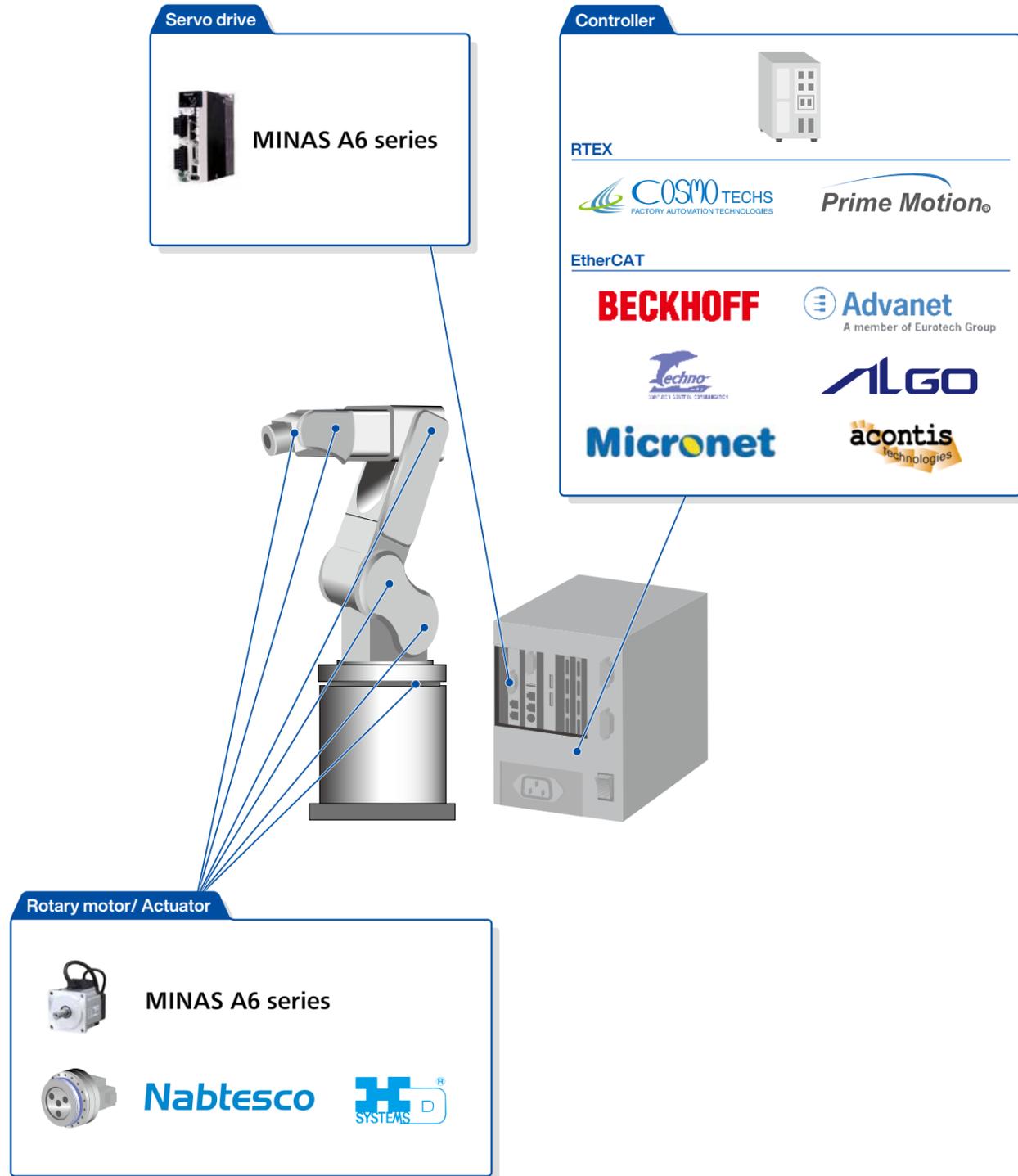
Servo drive

MINAS A6 series

Controller

RTEX

COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

EtherCAT

BECKHOFF

Advanet
A member of Eurotech Group

Techno

ALGO

Micronet

acontis
technologies

Rotary motor/ Actuator

MINAS A6 series

Nabtesco

SYSTEMS HD R

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

Horizontal articulated robot

Servo drive

MINAS A6 series

Controller

RTEX

COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

EtherCAT

BECKHOFF

Advanet
A member of Eurotech Group

Techno

ALGO

Micronet

acontis
technologies

Rotary motorr/ Actuator

MINAS A6 series

Nabtesco

SYSTEMS HD D

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

Extraction robot

Rotary motor/ Actuator

MINAS A6 series

Nabtesco

SYSTEMS HD D

Controller

RTEX

COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

EtherCAT

BECKHOFF

Advanet
A member of Eurotech Group

Techno

ALGO

Micronet

acontis
technologies

Servo drive

MINAS A6 series

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

Production equipment machine solution

Semiconductor / FPD / LED manufacturing equipment

Rotary motor/ Linear motor/ Direct drive motor

MINAS A6 series

Akribis
where precision matters

very good
KOVERY

響いてこそ技術
SINFONIA

Sodick
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Servo drive

MINAS A6 series

Feed Back Scale

HEIDENHAIN

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FAGOR AUTOMATION

Magnescale
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NIDEC MACHINE TOOL

Actuator

Nabtesco

HD SYSTEMS

YAMAHA

Controller

RTEX

COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

MOVENSYS

EtherCAT

MOVENSYS

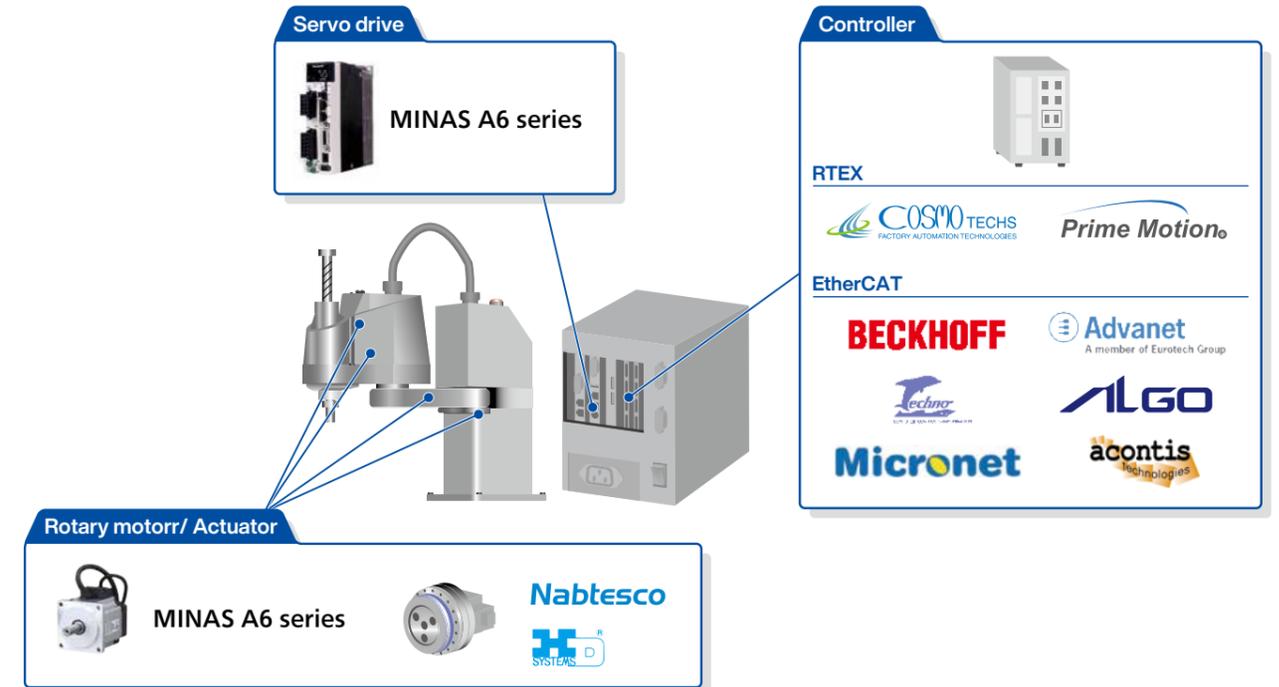BECKHOFF

Techno
acontis
technologies

ALGO

Hivertec,inc.

Micronet

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
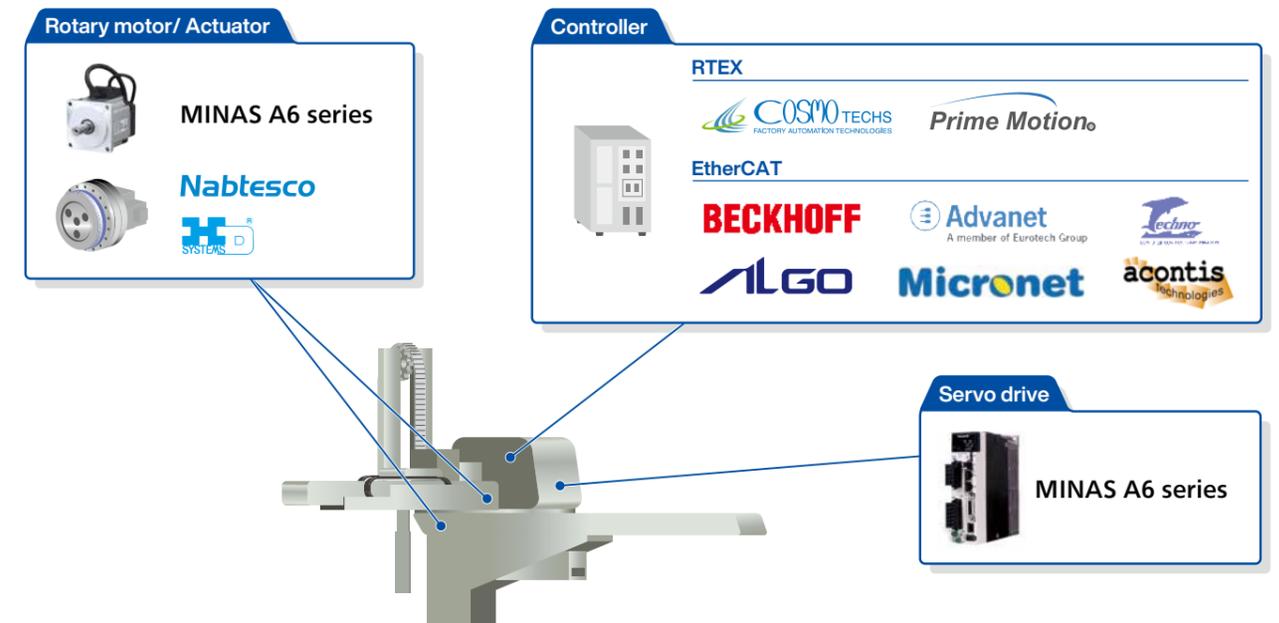Please refer to the page of each partner manufacturer for the specific combination.

Battery / electronic component manufacturing equipment

Actuator

Nabtesco

HD SYSTEMS

YAMAHA

Controller

RTEX

COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

Prime Motion

MOVENSYS

EtherCAT

MOVENSYS

BECKHOFF

Techno
acontis
technologies

ALGO

Hivertec,inc.

Micronet

Servo drive

MINAS A6 series

Rotary motor/ Linear motor

MINAS A6 series

Akribis
where precision matters

very good
KOVERY

響いてこそ技術
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NPM

Feed Back Scale

HEIDENHAIN

FAGOR
FAGOR AUTOMATION

Magnescale
SPEED × PRECISION

Mitutoyo

RENISHAW
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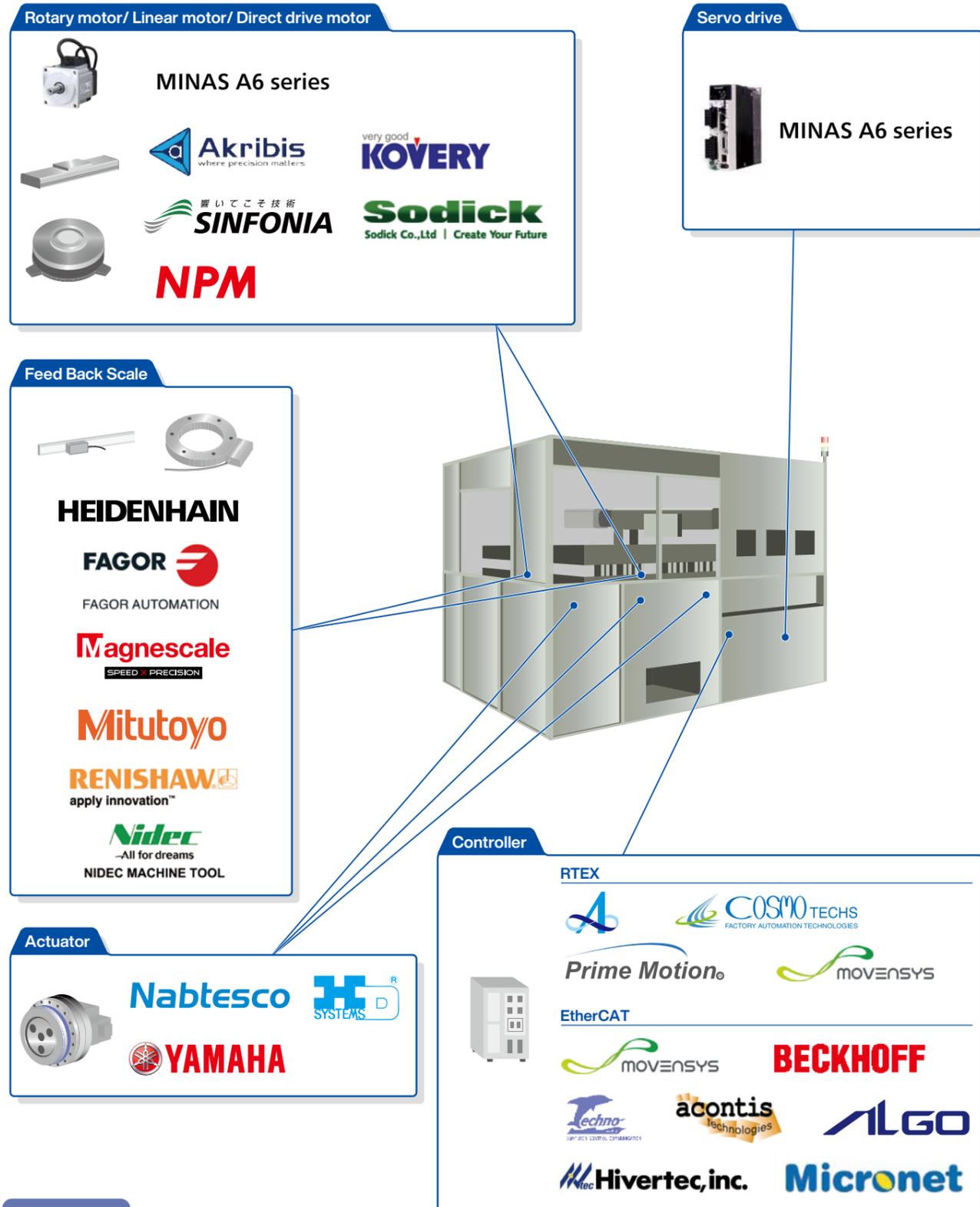Nidec
–All for dreams
NIDEC MACHINE TOOL

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

SYSTEM SOLUTIONS

SYSTEM SOLUTIONS

General equipment machine solution

Textile machine

Controller

RTEX
COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES

EtherCAT
BECKHOFF
ALGO
Techno
Micronet

Rotary motor/ Actuator

MINAS A6 series

Nabtesco
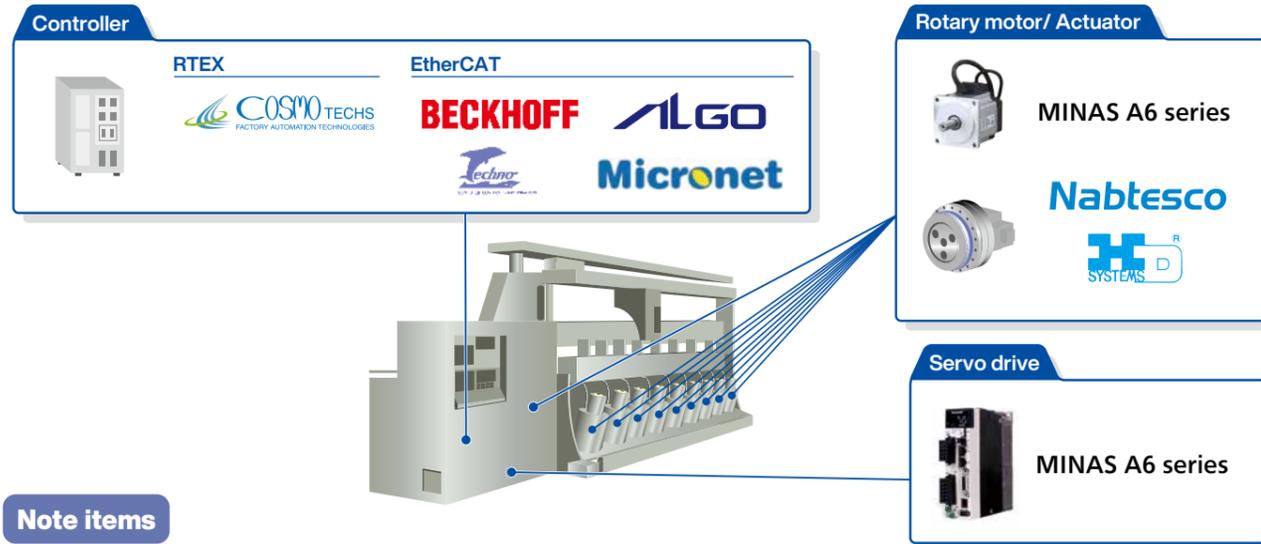HD SYSTEMS

Servo drive

MINAS A6 series

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

Medical device

Linear motor

Akribis
where precision matters

very good
KOVERY

磨いてこそ技術
SINFONIA

Sodick
Sodick Co.,Ltd | Create Your Future

NPM

Controller

RTEX
Prime Motion

EtherCAT
BECKHOFF

Servo drive

MINAS A6 series

Rotary motor/ Actuator/ Feed Back Scale

MINAS A6 series

HEIDENHAIN

FAGOR
FAGOR AUTOMATION

Nabtesco
HD SYSTEMS

Magnescale
SPEED + PRECISION

Mitutoyo

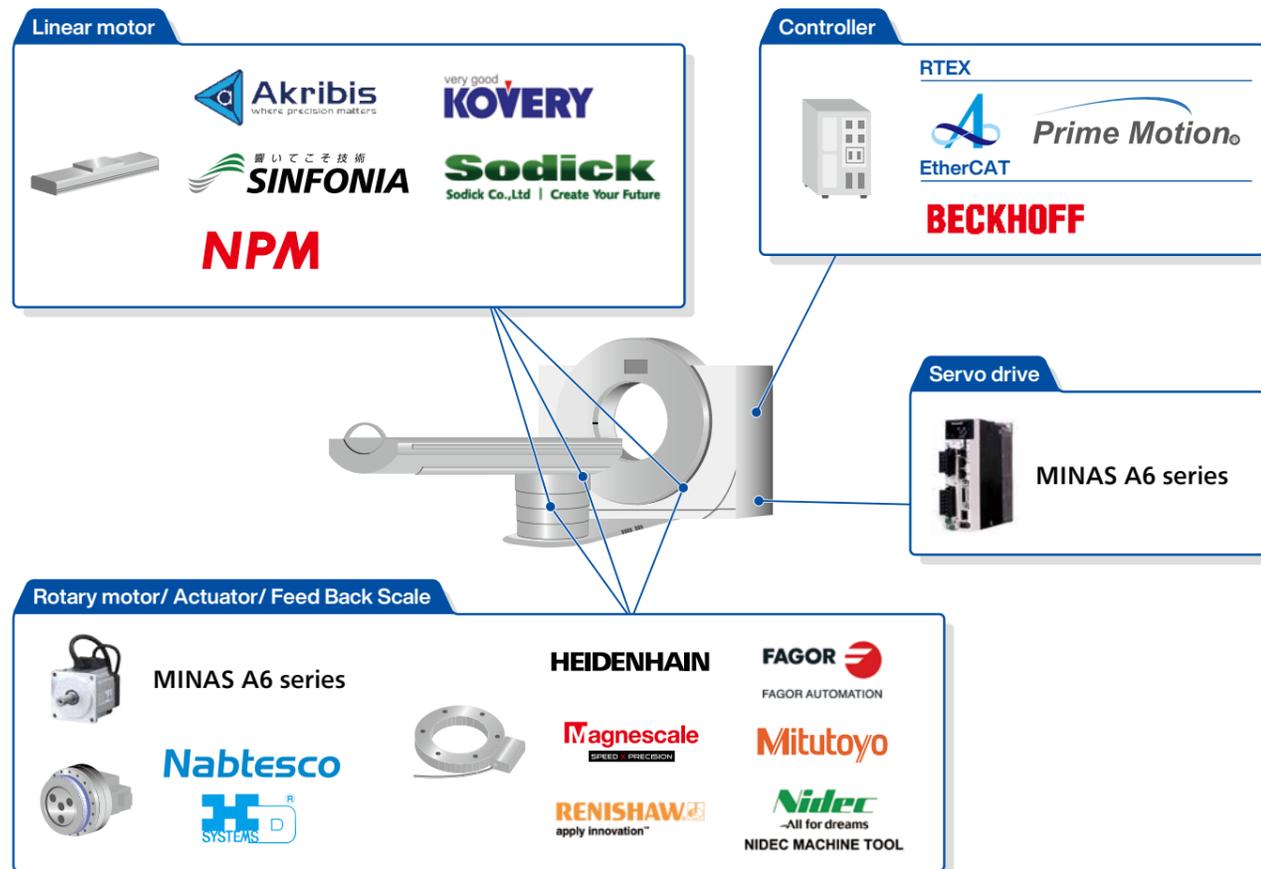RENISHAW
apply innovation™

Nidec
~All for dreams
NIDEC MACHINE TOOL

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
Please refer to the page of each partner manufacturer for the specific combination.

Logistics equipment (AGV, etc.)

Rotary motor/ Actuator

MINAS A6 series

Nabtesco
HD SYSTEMS

Controller

EtherCAT
BECKHOFF

Servo drive

MINAS A6 series

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
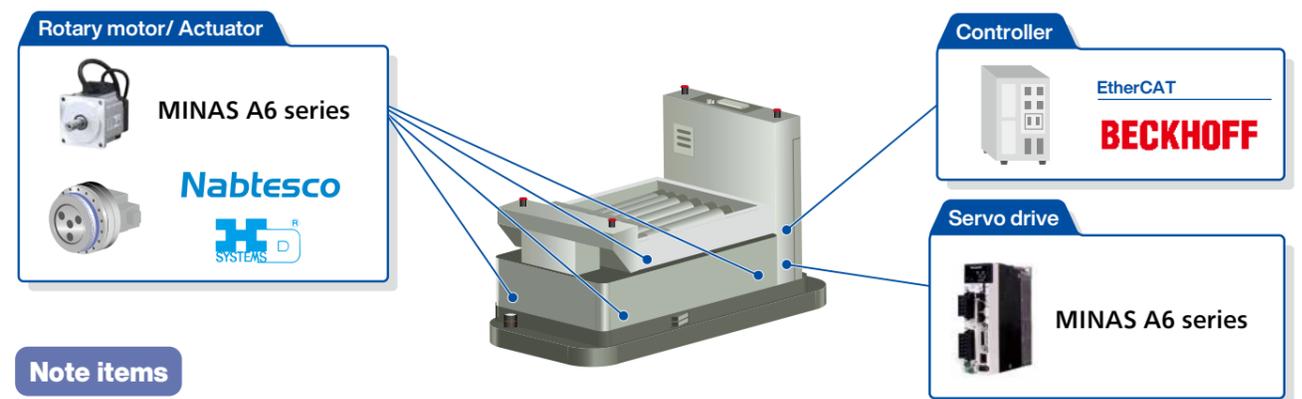Please refer to the page of each partner manufacturer for the specific combination.

Automation device

Feed Back Scale

JUSTEK
Linear Motion Technology

A Nidec Group Company
Sankyo

FAGOR
FAGOR AUTOMATION

Magnescale
SPEED + PRECISION

Mitutoyo

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Controller

RTEX
COSMO TECHS
FACTORY AUTOMATION TECHNOLOGIES
Prime Motion
MOVENSYS
TECHNO HORIZON

EtherCAT
MOVENSYS
BECKHOFF
NEXCOM
Techno
ALGO
ADVANTECH
Advanet
A member of Eurotech Group
acontis
Hivertec, inc.
Micronet
LINX
CONTEC

Rotary motor/ Linear motor/ Actuator

MINAS A6 series

Akribis
ETEL
very good
KOVERY

JUSTEK
Linear Motion Technology
磨いてこそ技術
SINFONIA
IKO

Sodick
Sodick Co.,Ltd | Create Your Future
TECNOTION
THE LINEAR MOTOR COMPANY
NPM

Mirae M

Nabtesco
SURUGA SEIKI
HD SYSTEMS
YAMAHA

Servo drive

MINAS A6 series

Note items

The combinations listed here are for reference only between Panasonic and partner manufacturers.
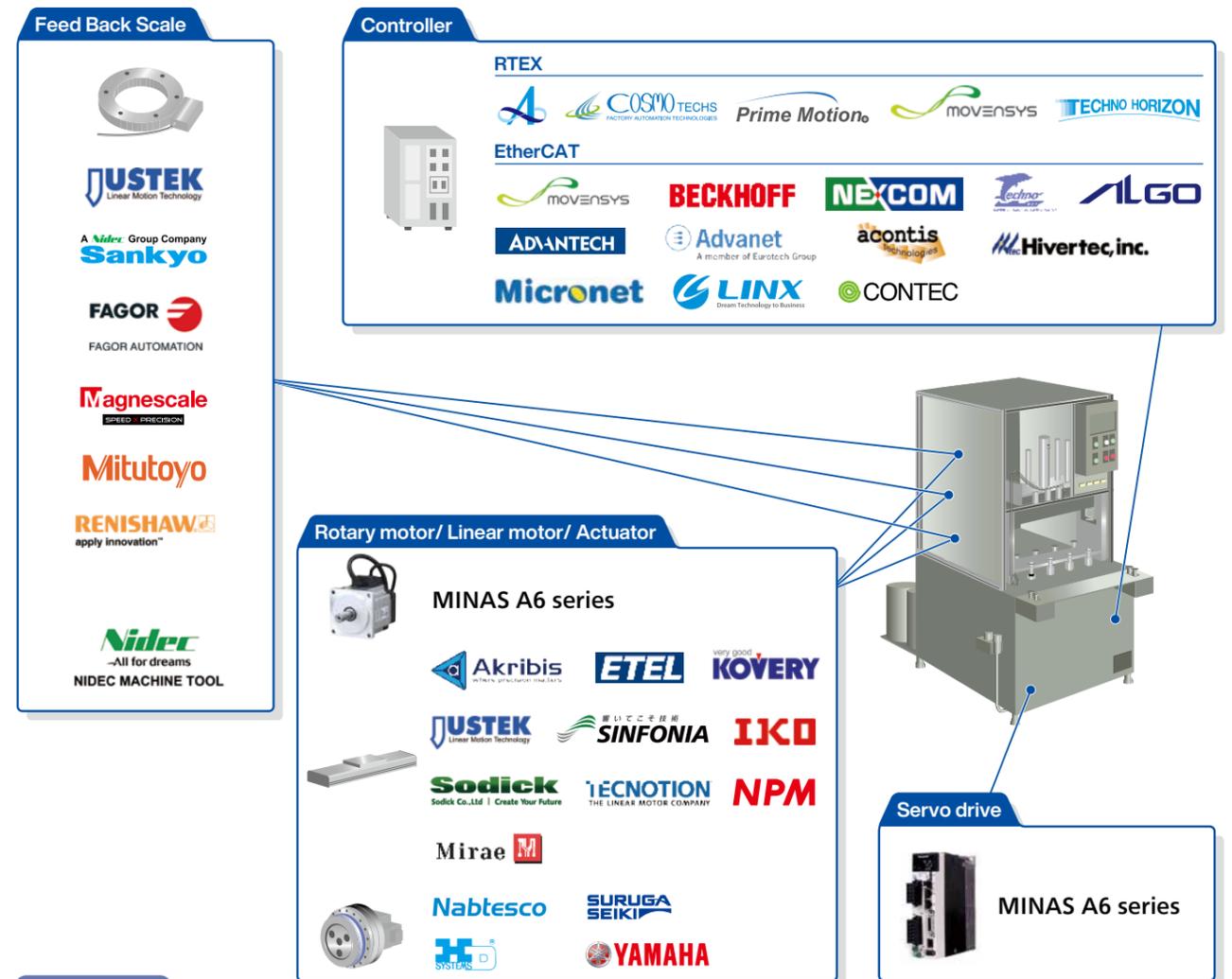Please refer to the page of each partner manufacturer for the specific combination.