Automation for a Changing World

Delta Extended Motion Controller
DXMC Series

www.deltaww.com

DELTA
Smarter. Greener. Together.

Standard Type DXMC-S

Synchronous multi-axis motion control, built-in 16 DI & 16 DO terminals, EtherCAT bus, simple wiring

Panel Type DXMC-P

Built-in 7" & 10" LED monitor for display and operation

Delta Extended Motion Controller DXMC Series

The DXMC Series is an advanced synchronous multi-axis motion controller with max. 32 real axes and 64 virtual axes control. It provides tension control, rotary cut, flying shear and E-CAM function blocks with user-friendly program editing for a wide range of industry applications, including packaging machines, printing machines, winding machines and industrial robots. In addition, the DXMC Series features optional Multiprog PLC or Delta Motion Kernel to provide a flexible and customized motion control platform for machine upgrades and smart equipment.

To meet various user requirements, the DXMC Series includes **Standard Type DXMC-S** and **Panel Type DXMC-P:**

Standard Type DXMC-S supports various communication modes to connect the host controllers and field devices with high immediacy, speed, precision and flexibility:

- Ethernet: for connection with computers or host controllers
- EtherCAT: for communication with the Delta Servo Drive ASDA Series
- CANopen: offers expandable I/O modules
- Built-in 16 DI / 16 DO terminals
- SSI encoder signal and 2 sets of differential encoder signals
- Built-in 1 RS-485 COM port

Panel Type DXMC-P features high brightness and contrast built-in LED monitor as operation interface. It integrates motion control functions and supports various communications:

- Ethernet: for connection with computers or host controllers
- EtherCAT: for high-speed communication with the Delta Servo Drive ASDA Series
- RS-232 / RS-422 / RS-485 COM ports: for connection with peripheral devices

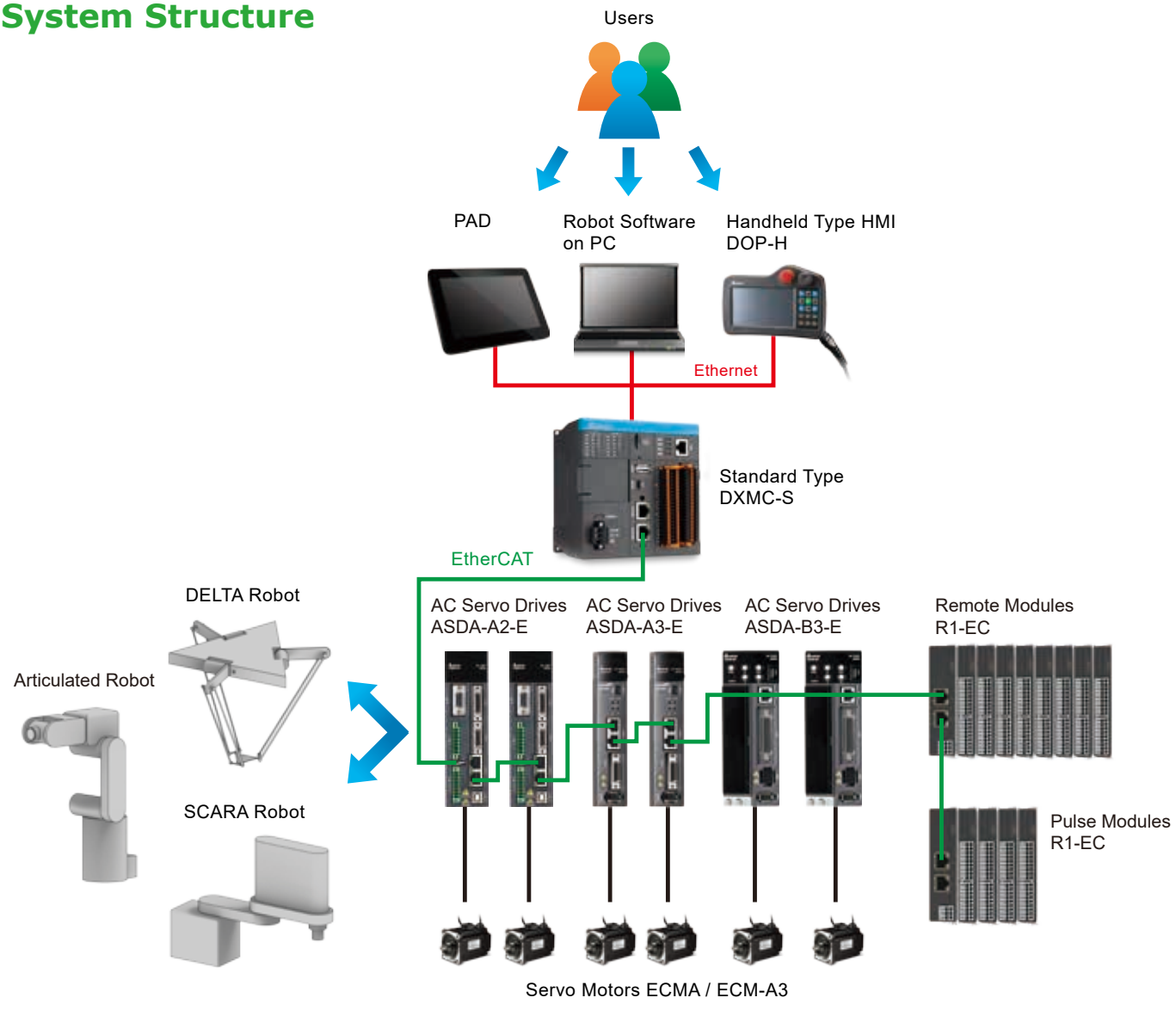
Table of Contents

Standard Type DXMC-S

Features

- Max. 32 servo axes control (execution cycle 1 ms)
- Supports EtherCAT, Modbus TCP and user-defined protocol
- Built-in 16 DI / 16 DO terminals and RS-485 serial port
- Supports A / B / Z and SSI encoder signal input
- Various robot modules to control multiple robots simultaneously
- Function blocks available: tension control, rotary cut, flying shear, E-CAM
- IEC-61131-3 compliant PLC programming and advanced robot languages

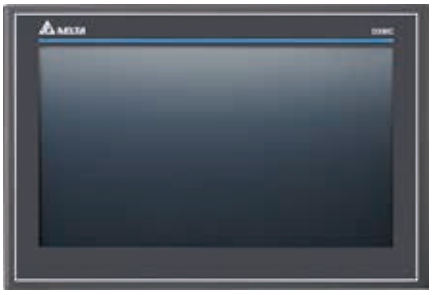
System Structure



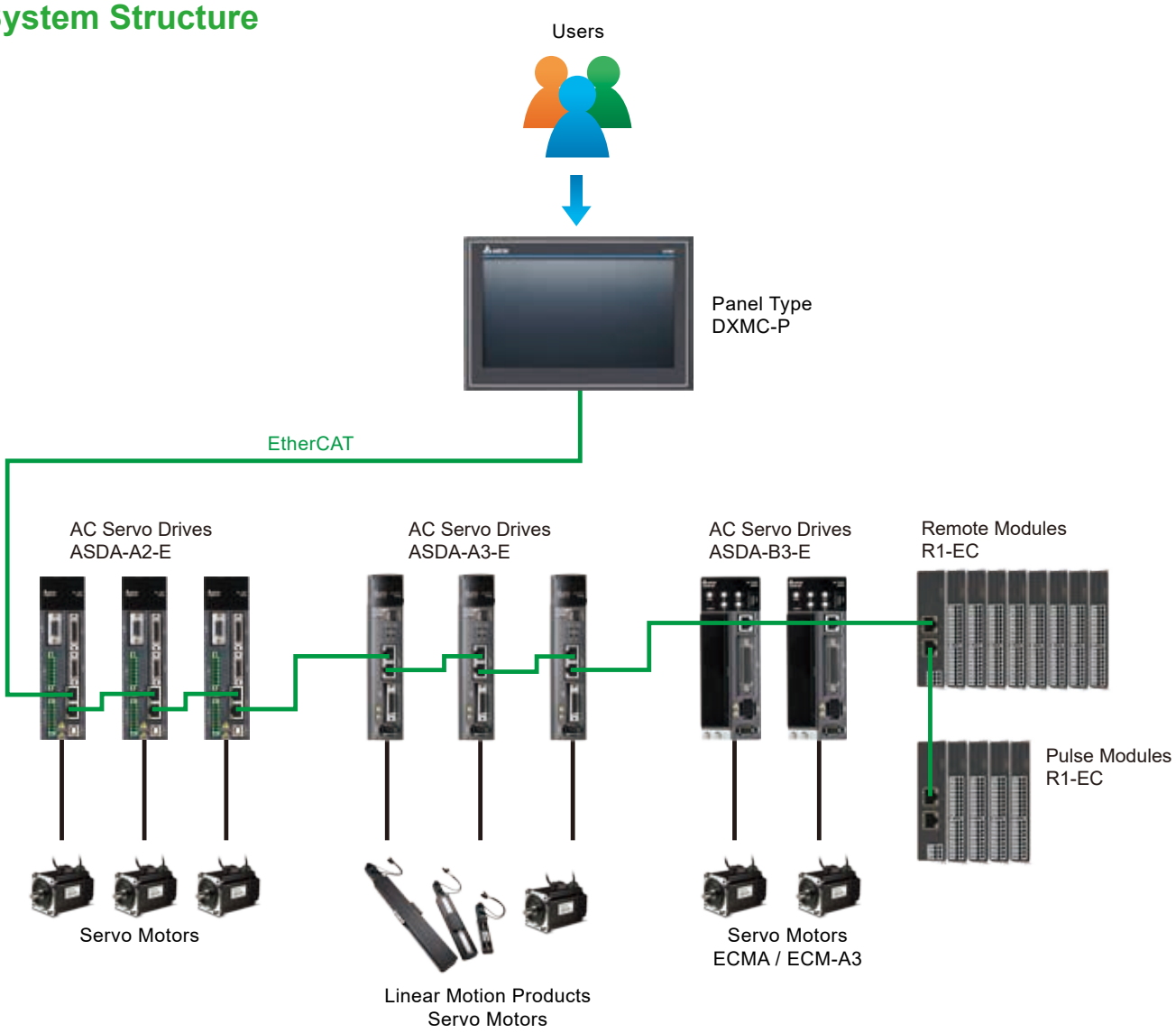
Panel Type DXMC-P

Features

- Motion controller integrated with HMI
- Max. 8 servo axes control (execution cycle: 2 ms)
- Supports EtherCAT, Modbus TCP, and user-defined protocol
- Built in RS-232 / RS-422 / RS-485 COM ports
- IEC-61131-3 compliant PLC programming and advanced robot languages



System Structure



Motion Control Function Blocks – Delta Motion Kernel

E-CAM

Multiple Engagement Timing and Shearing Mode Settings

- CAM function and shearing action start simultaneously to ensure the phase is not offset due to position deviation

Offset & Scale Setting

- Sets up the offset value and scale ratio between master axis and slave axis flexibly

Master / Slave Axis Relative & Absolute Mode Setting

- Sets up the targeted master / slave axis engaging position based different motion applications

■ **Absolute Master / Relative Slave**
The starting speed of slave axis is based on the absolute position of master axis

■ **Relative Master / Absolute Slave**
Slave axis starts with the fixed position in reference to the master axis, such as flying shear mode

■ **Relative Master / Relative Slave**
For applications concerning master / slave speed only

■ **Absolute Master / Relative Slave**
For applications concerning master / slave position, such as rotary cut packaging machines

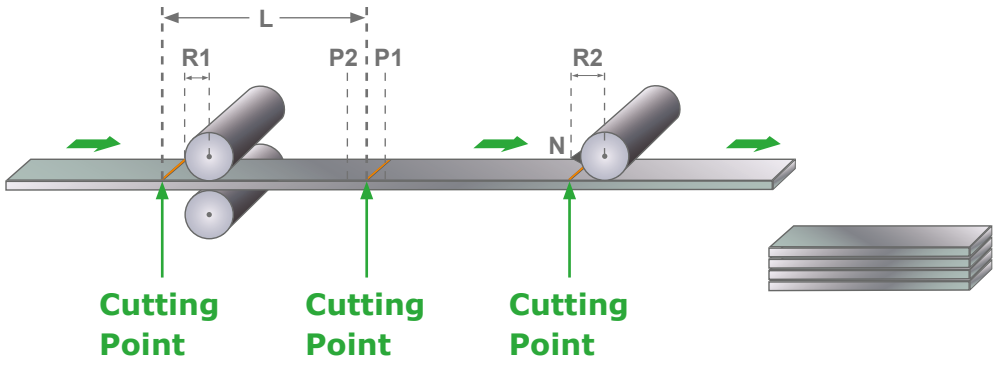
On-line CAM Table Function Block Adjustment

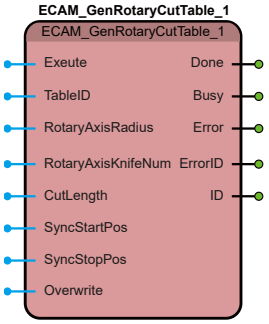
- Provides adding, deleting, and adjusting functions
- Adjusts switch timing via function blocks
- Reads and writes in CAM table function blocks online

Rotary Cut and Flying Shear

Rotary Cut

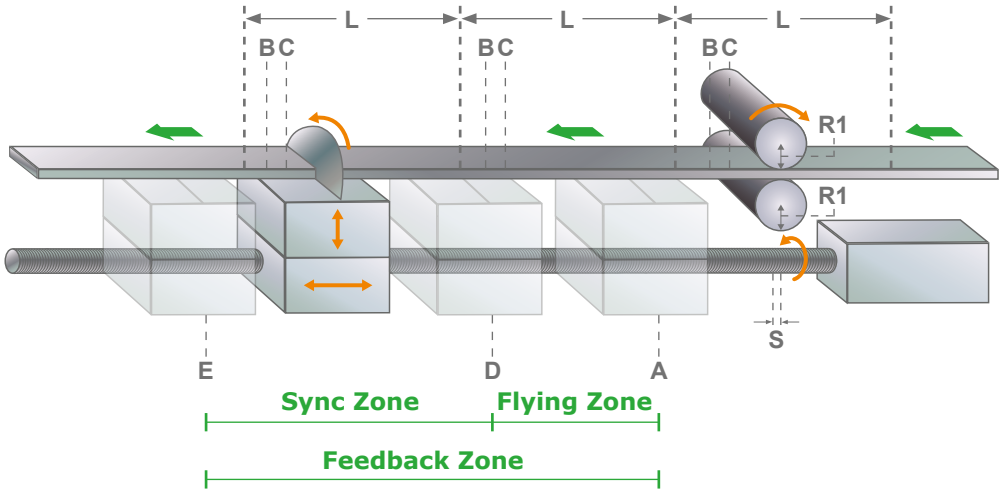
- Sets up cutting length, tool quantity, sync. zone data with application parameters to build up rotary cut CAM table
- Feeding axis and rotary axis rotate with the same speed ratio in sync. zone (same speed in general)
- Users are able to adjust rotary speed in sync. zone online to fix the deviation between theory and reality, no need to build up a new table

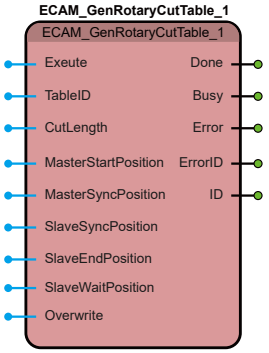




Flying Shear

- Suitable for motion control of cutting or filling machines
- Sets up cutting length, wait position, flying zone, sync. zone, and feedback zone data with application parameters to build up flying shear CAM table
- Master axis and slave axis rotate with the same speed ratio in sync. zone (same speed in general) and cut the workpiece in sync. zone

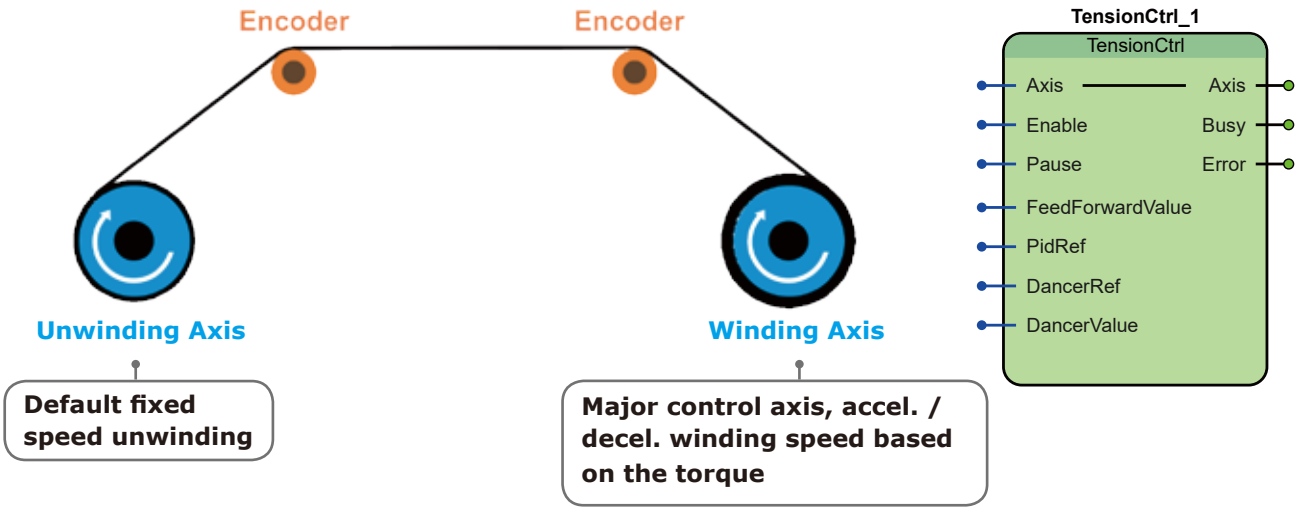




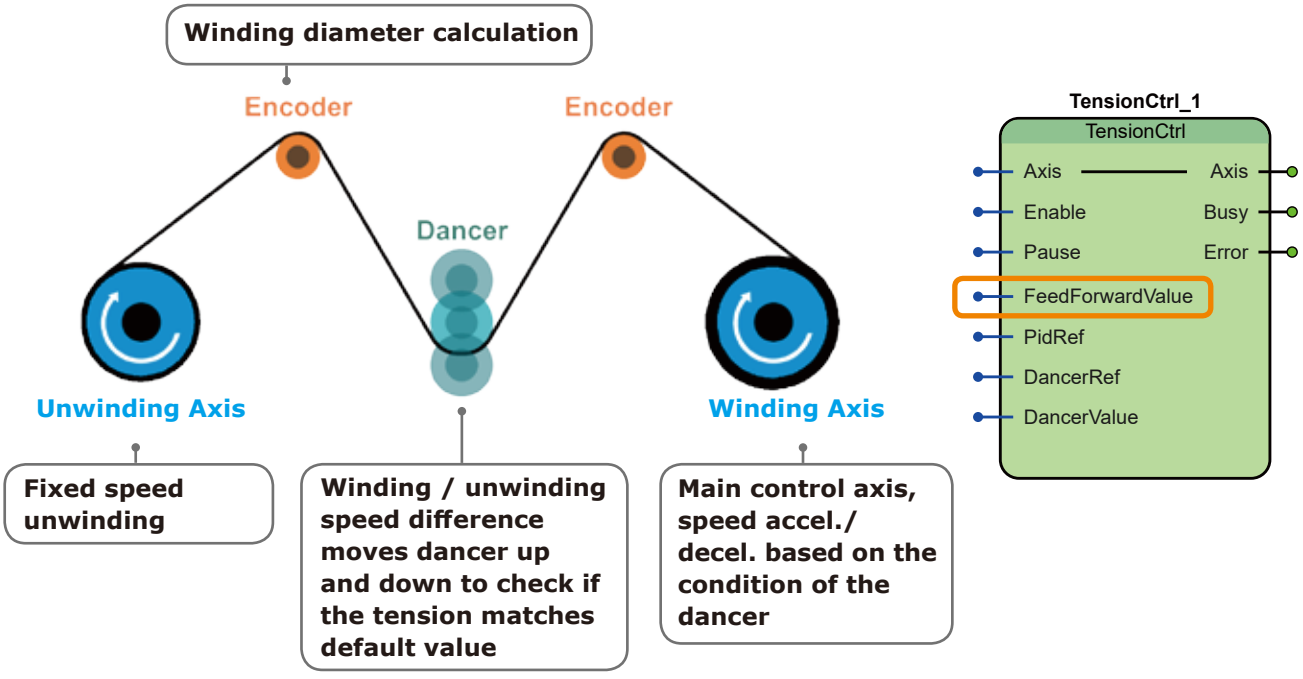
Tension Control

- Speed Mode control for quicker response
- Dancer Mode: feedforward input to accelerate response

Without Dance Mode



With Dance Mode



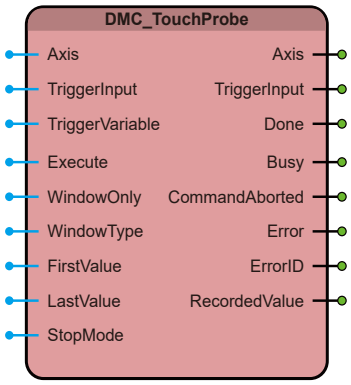
Distributed Control – Touch Probe

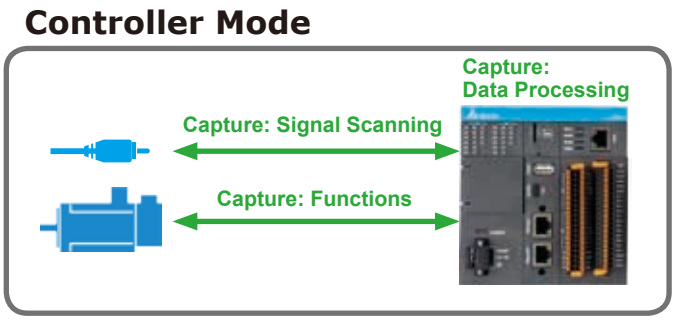
Features

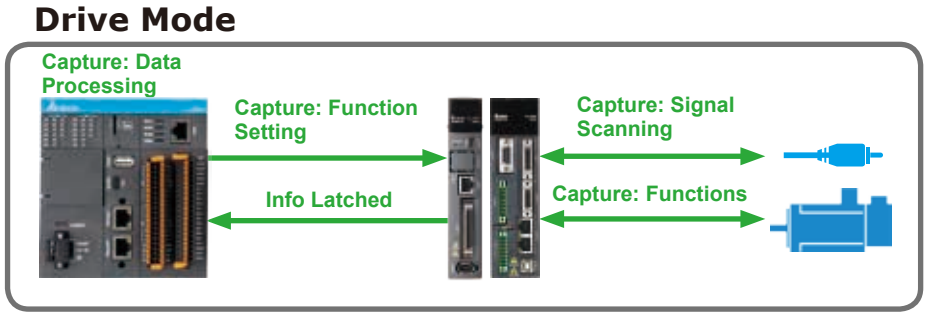
- Triggers events with axis number and Trigger ID
- Stops triggering events with axis number and Trigger ID
- 6 Probes for one axis (One axis captures 6 types of data synchronously)
  - Drive Mode : 2 Probes (depends on the servo drive models)
  - Controller Mode : 4 Probes
- Drive Mode and Controller Mode available:
  - Drive Mode : High-speed capture with the Capture function of servo drives
  - Controller Mode : Captures by the controller, supports high-speed axis and low-speed multiple data (speed, acceleration) capture

Benefits

- Reduces control operation loading
- Capture accuracy is not affected by the fieldbus communication cycle
- Two modes in one function block







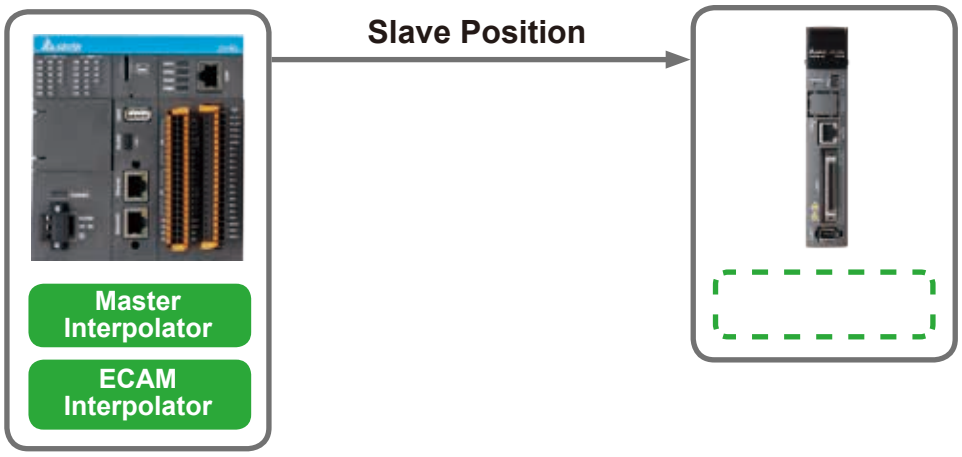
Distributed Control - E-CAM

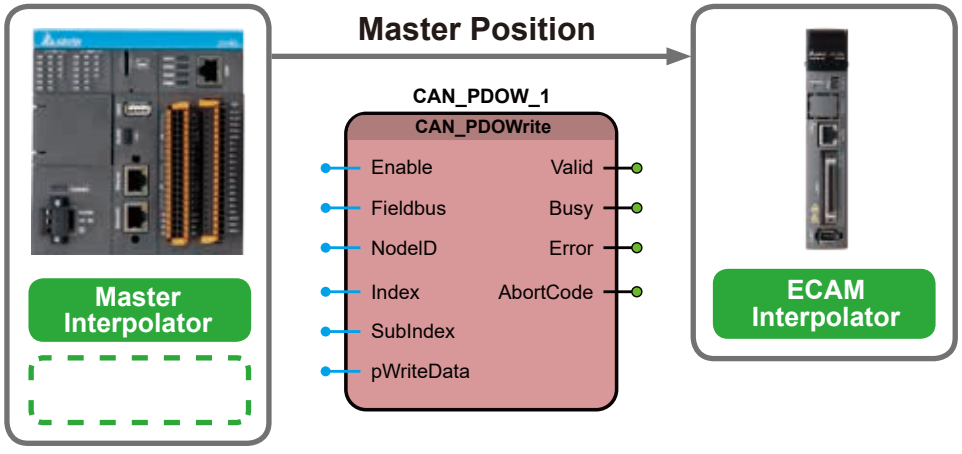
Features

- Transmits master axis position data via PDO
- E-CAM function of the servo drives enhances control efficiency

Benefits

- Reduces control operation loading
- Compact motion controller for multi-axis E-CAM algorithm

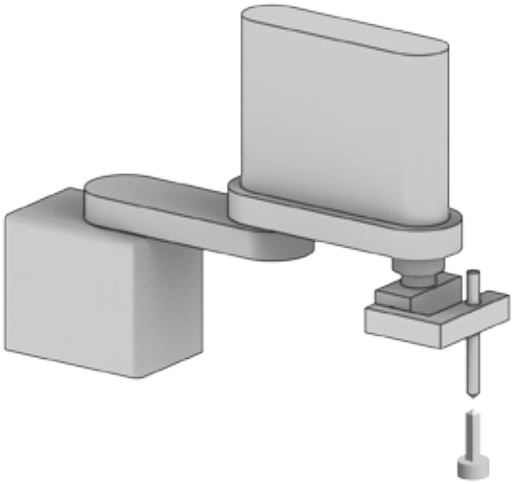


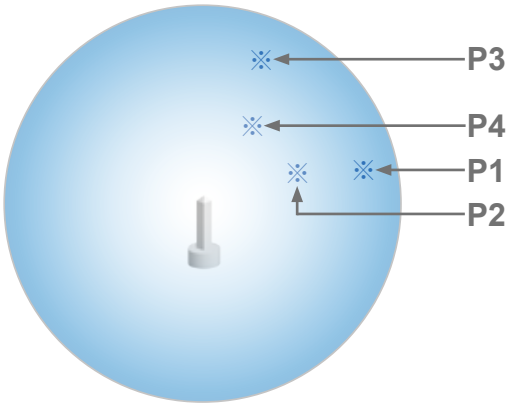


Robotic Function Library

Calibration

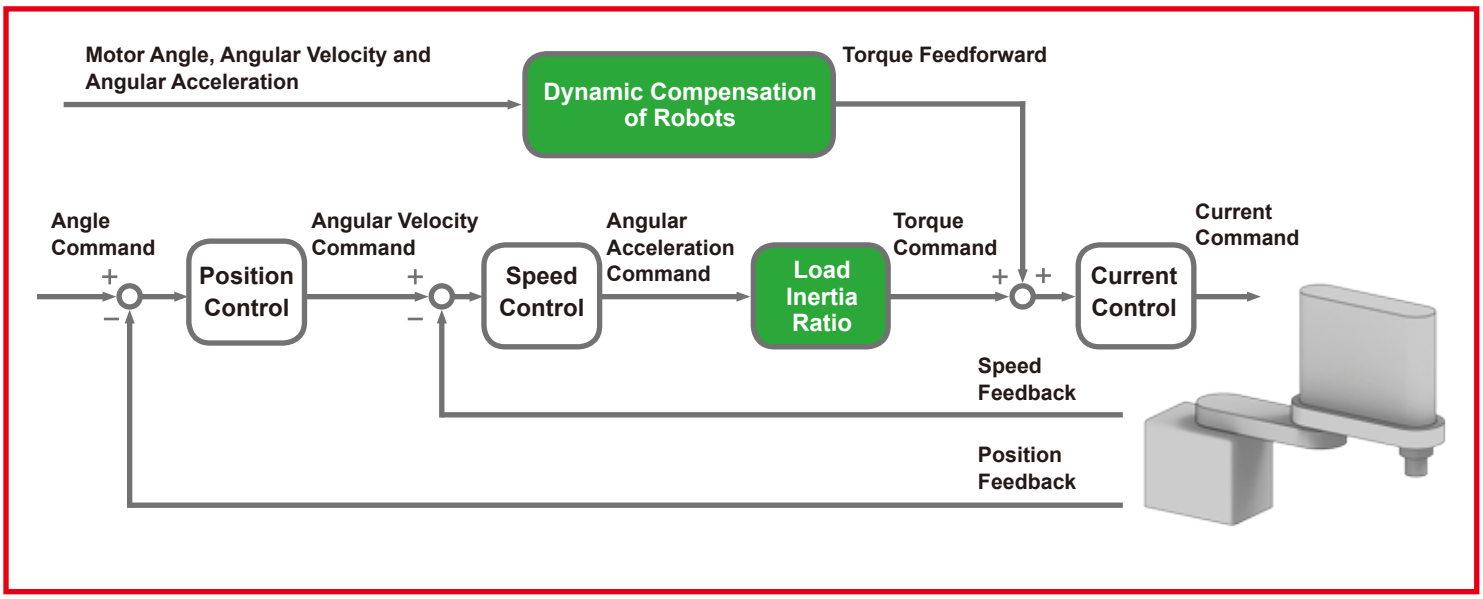
- Tool, arm length, quick calibration
- 5 axes / 6 axes calibration accuracy: 1mm





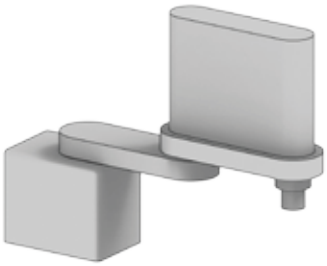
Dynamic Compensation

- Real-time load inertia ratio optimizes operation smoothness of robots
- Real-time dynamic compensation improves transient response

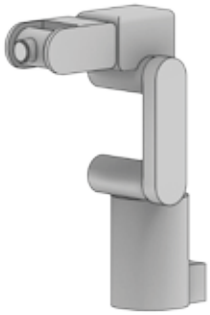


Various Models Supported

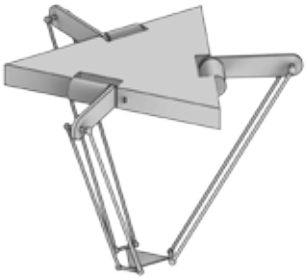
- More than 35 types of robot modules
- Supports standard and non-standard robots



SCARA Robot

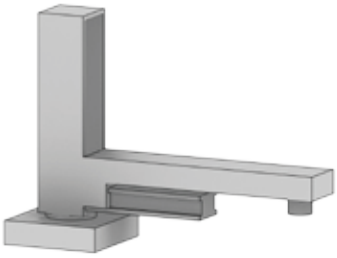


Articulated Robot



DELTA Robot

Top-mounted Robot



Cylindrical Coordinates Robot

Applicable Industries

- Welding, food pick-and-place, palleting

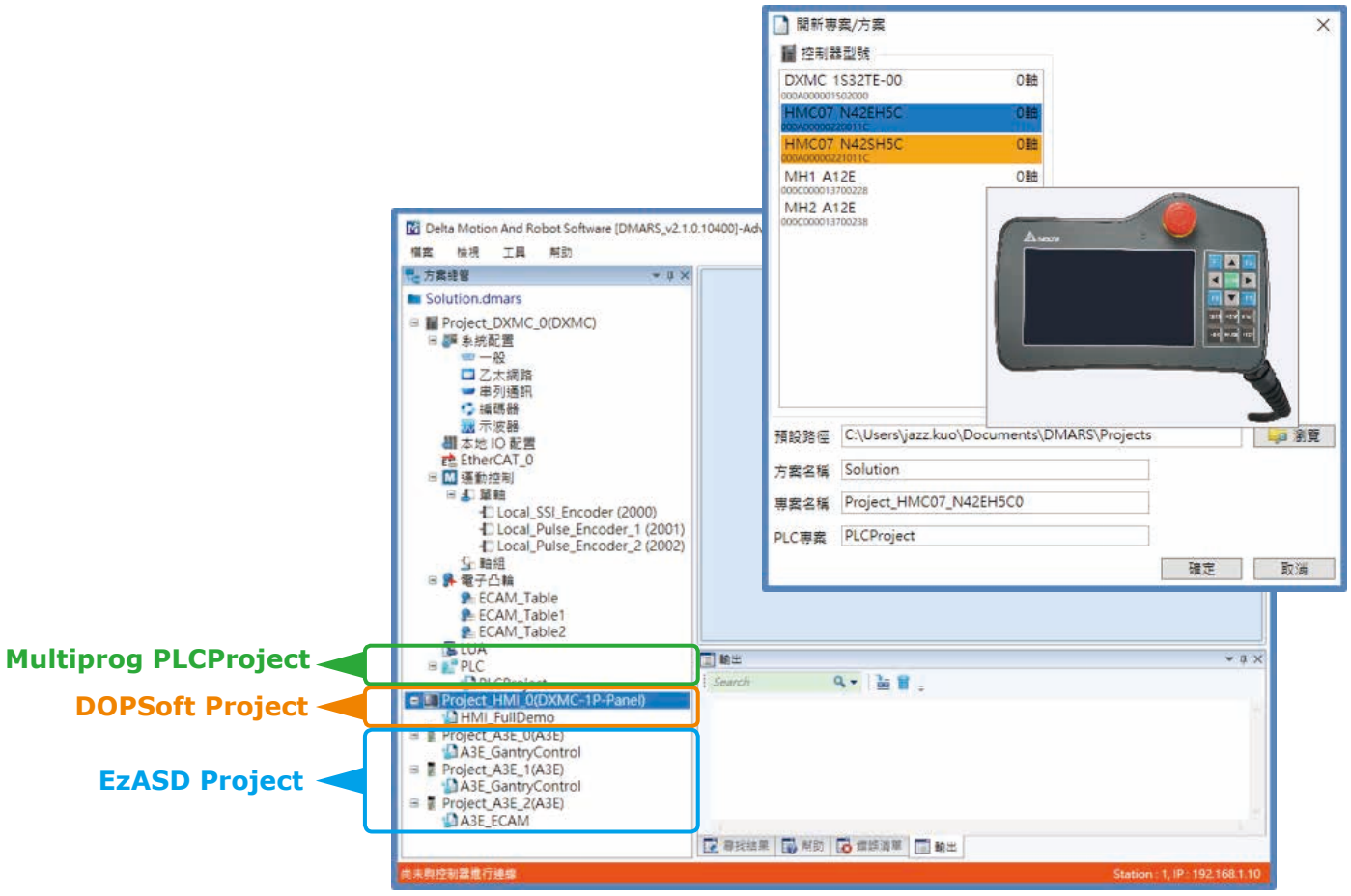
Delta Motion and Robot Software DMARS

Features

- Supports: DXMC-S / DXMC-P / 2nd HMC
- PLC editing program: Multiprog (IEC-61131-3 compliant)
- Standard PLCopen motion function block – Part 1, 2, 4(Robot)
- Supports Delta robotic programming language
- Integrated software project management (Multiprog / DOPSoft / EzASD)
- Automated PLC variables adding and HMI variable tags exchange
- DOPSoft uses PLC variable names to edit the interface
- Real-time oscilloscope: Max. 16 channels, 8 / 16 kHz frequency, LREAL variable supported
- Oscilloscope monitors axis variable, axis group variable, address, PLC memory, PLC variable, CANopen OD
- User-friendly ECAM editing interface

Project Management

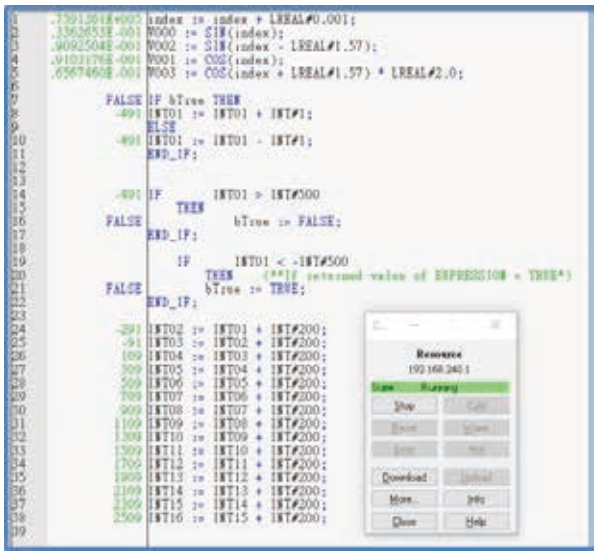
- Supports DXMC-S / DXMC-P / 2nd HMC
- Multi-product project management
- Manages Multiprog / DOPSoft / (EzASD) software projects simultaneously



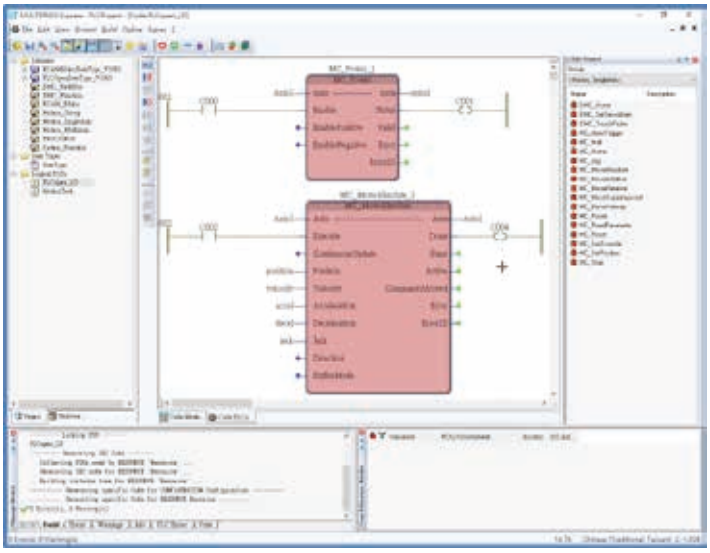
Multiprog / PLCopen

- PLC programming: Multiprog (Compliant with IEC-61131-3)
- Standard PLCopen motion function blocks
- PLCopen Part-4 Robot motion function supported

ST Editor

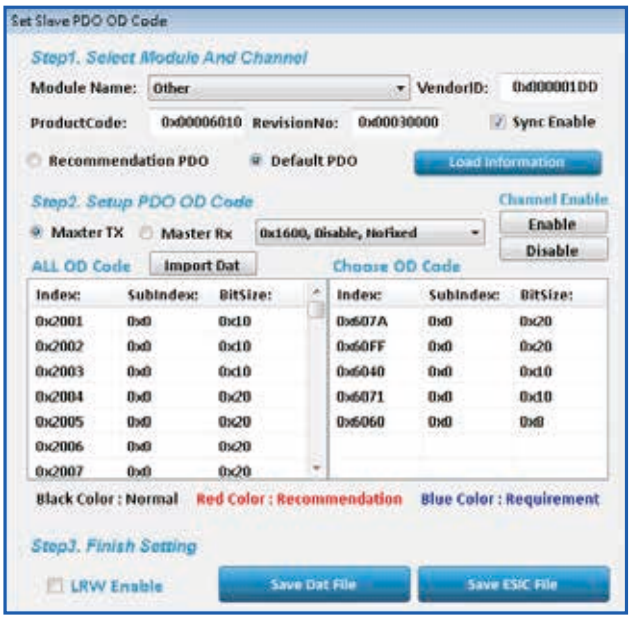


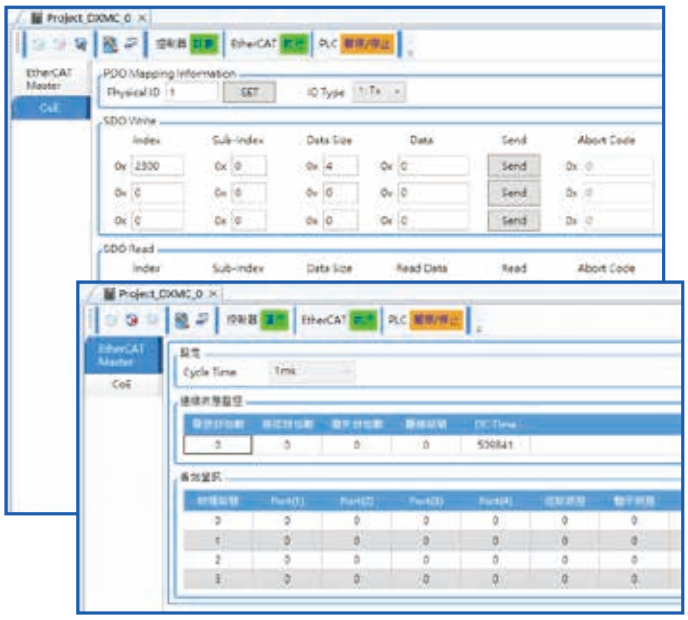
Ladder Diagram / Function Block Editor



EtherCAT

- Complete EtherCAT setting tool
- EtherCAT debug tool

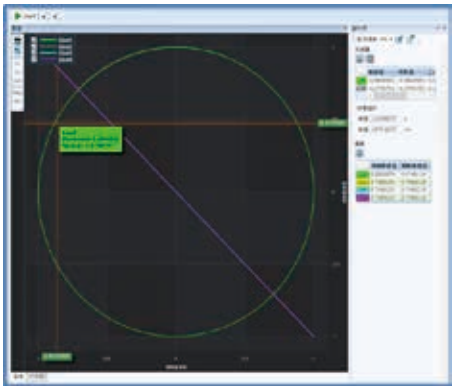


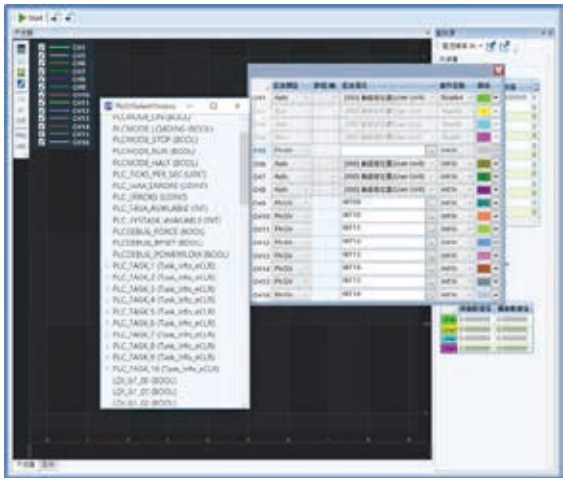


DMARS Oscilloscope

- Max. 16 channels
- Frequency: 8/16 kHz
- LREAL variable supported
- Oscilloscope monitoring: axis variable / axis group variable / address / PLC memory / PLC variable

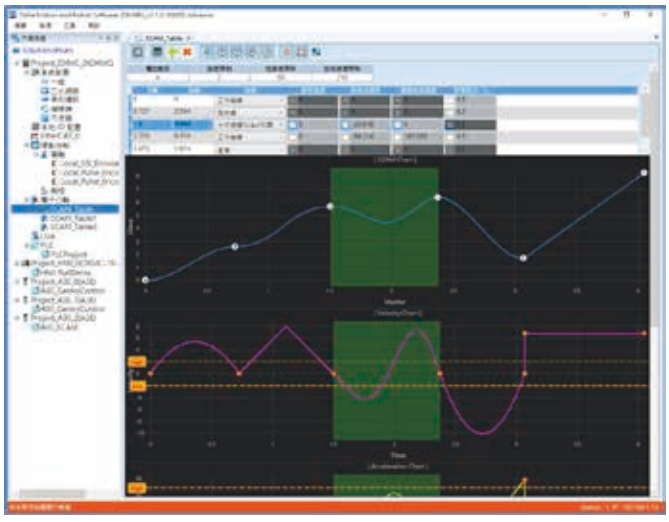
XYChart





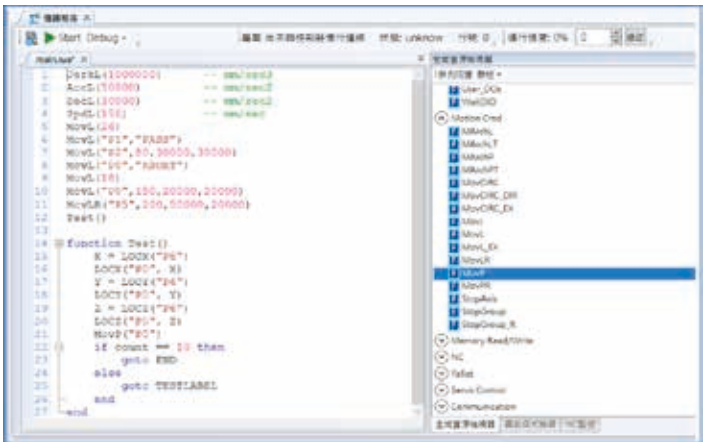
ECAM Editor

- Supports linear, parabolic, simple harmonic, cubic / quintic / septic curves
- The curve of each segment between key point is variable
- Drags the key point of the curve directly
- Connects the speed, acceleration, and jerk continuously to maintain smoothness
- Symmetric point function to micro-adjust the curve
- User-defined speed, acceleration, and jerk
- Max. and min. limit of curve notification



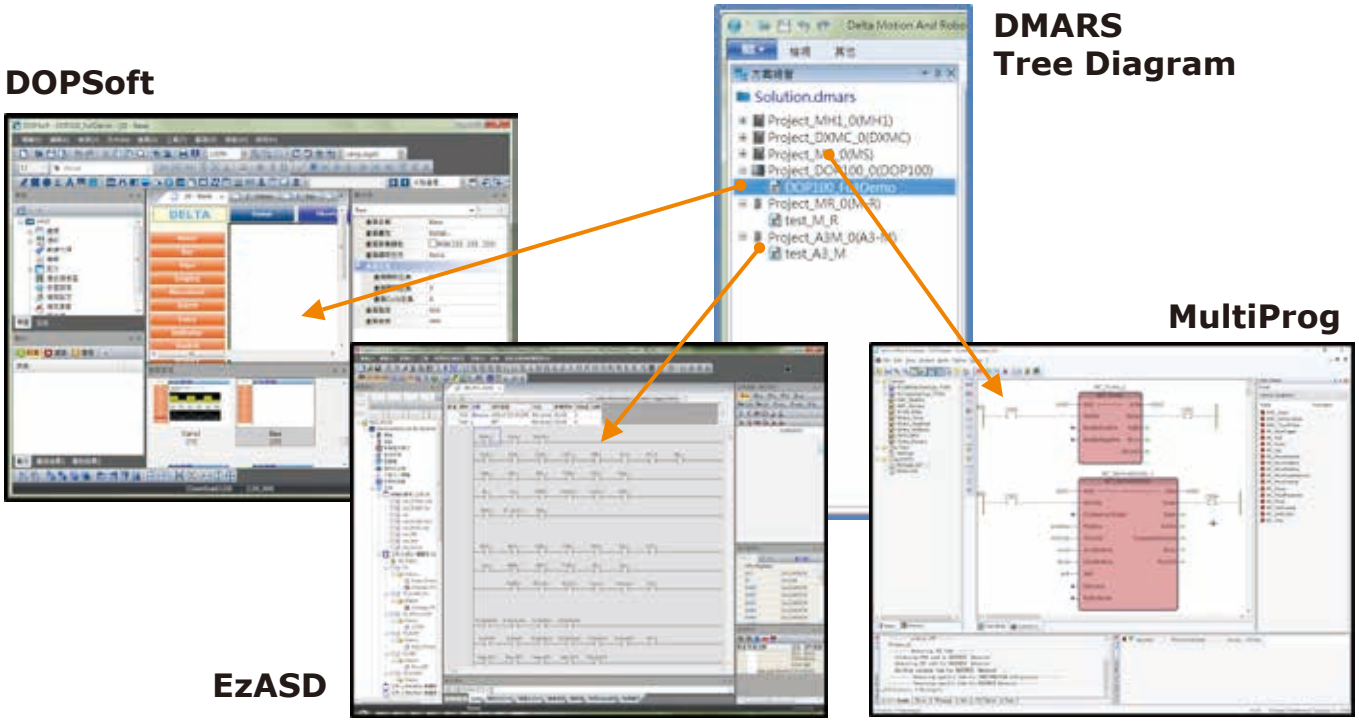
Delta Robotic Programming Language

- Lua based
- Easy-to-use interpreted language
- No variable declaration needed
- Flexible function to input/output variable quantities
- Strong table function for digit and string index
- Multi-task supported
- Garbage collection (GC) supported
- C/C++ expansible



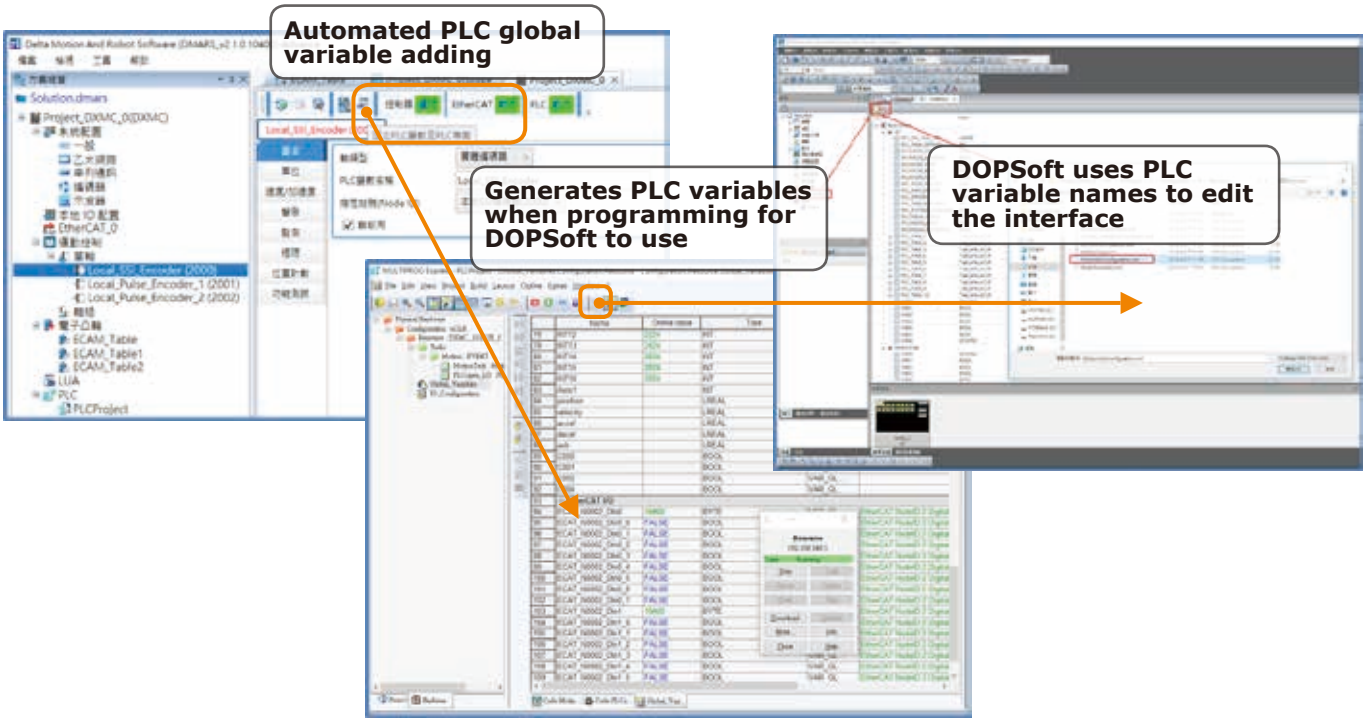
Software Integrated

- Integrated software project management (Multiprog / DOPSoft / EzASD)



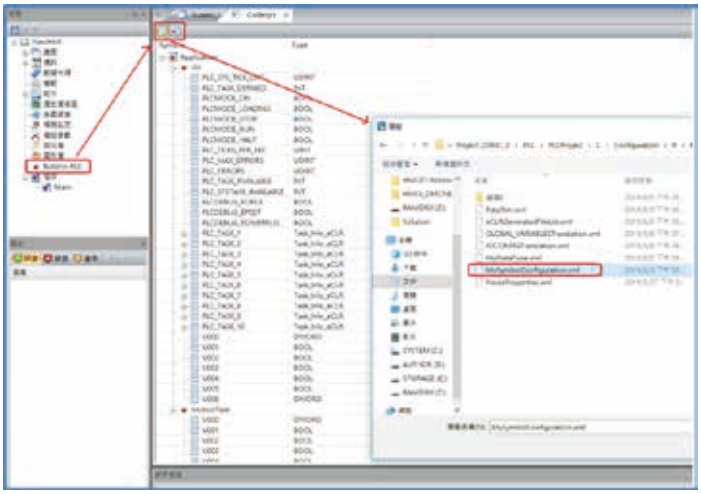
TAG Exchange

- Automated PLC variables adding and HMI variable tags exchange



DOPSoft Integrated

- DOPSoft uses tag names to edit directly
- Supports variables, literals (boolean, integer, floating-point number), struct, and array
- Supporting variables: GV global variables, all real POU local variables under Task



Applications

- Packaging machines, winding machines, printing machines

Ordering Information

Model Name Explanation

Delta Extended Motion Controller DXMC Series

DXMC - 1 S 32 T E - 0 0

Product Name

DXMC:
Delta E**x**tended **M**otion **C**ontroller

Product Series

1: 1000 Series (Multiprog SoftPLC)

Type

S: Standard
P: Panel

Axes of Control

08: 8 axes
16: 16 axes
32: 32 axes

I/O: (Transistor)

T: NPN
N: N/A

Fieldbus

E: EtherCAT

Communication

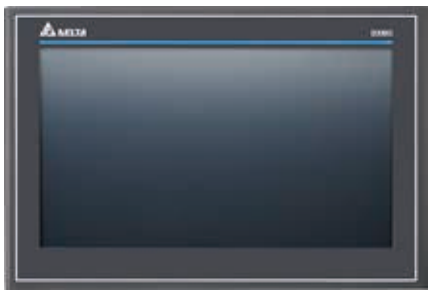
0: Ethernet & Serial Communication
S: Only Serial Communication

Supported External Display (S)

S (Standard Type)	P (Panel Type)
0: N/A	A: 10", LCM
	7: 7", LCM
	8: 8", LCM

DXMC-1S32TE-00
DXMC-1S16TE-00

DXMC-1P08NE-A0



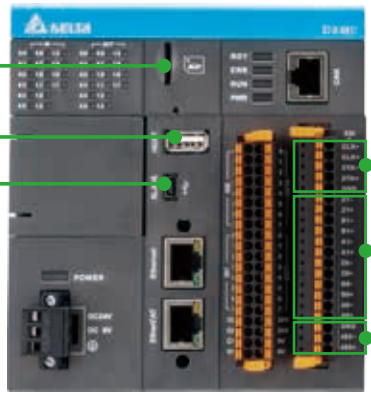
DXMC-1P08NE-7S

Product Information

Standard Type DXMC-S

- Max. 32 axes control, execution cycle 1 ms
- EtherCAT bus: for communication with servo drives (high speed)
- CANopen bus: for communication with I/O modules or peripheral devices (low speed)
- EthernetIP interface: for communication with host controllers or multiple DXMC-Ss
- Built-in 16 DI/DO (All 16 DIs are high speed)

- Built-in two channels of encoder pulse train input: A/B/Z ±differential signal
- Built-in one channel of communication type encoder input: SSI
- Built-in SD extension card slot
- Built-in USB interface (mini USB and USB Host)
- Built-in RS-485 communication port

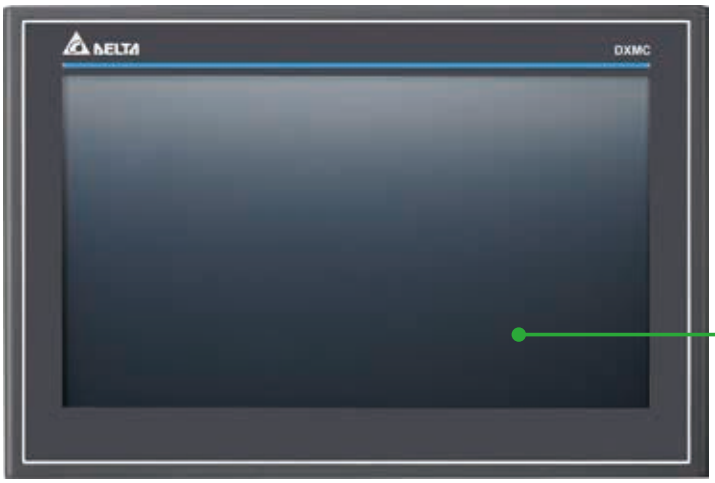


Product Information

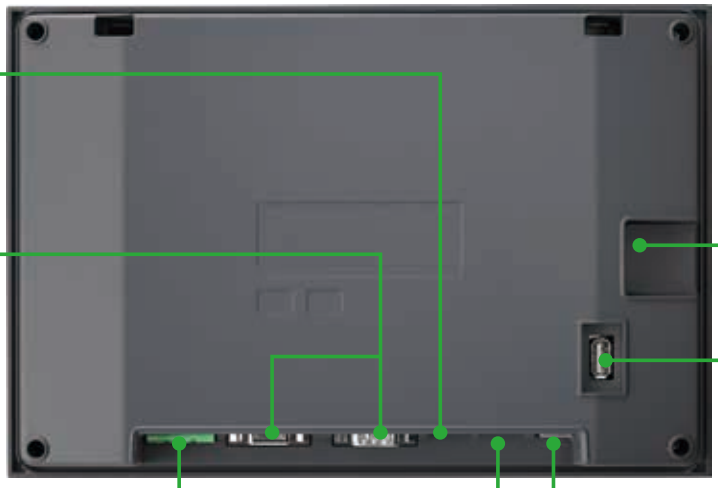
Panel Type DXMC-P

- 7" / 10" 65,536 colors TFT LCD, 1,024 x 600 pixels
- EtherCAT bus: for communication with servo drives (high speed)
- Max. 8 servo axes control, execution cycle 2ms
- Ethernet/IP interface: for communication with host controllers or multiple DXMCs
- Built-in SD extension card slot
- Built-in USB interface (mini USB and USB host)
- Built-in RS-232 / RS-422 / RS-485 COM ports

*** 10" model**



Display
Vivid touch panel



EtherCAT
Connects servo system easily for high-precision synchronous motion control

COM 1~COM3
(RS-232 / RS-422 / RS-485) Serial COM ports to connect peripheral devices for motion command

SD Extension Card Slot
Extends RAM to store more data

USB Host
Enables users to store edited programs with USB flash memory

USB Slave
Connects PC to transmit data and edit the programs

Power Input
DC 24V (±15%)

Ethernet
Connects PC or other DXMCs

Specifications

Model		DXMC-1S32TE-00	DXMC-1P08NE-A0	DXMC-1P08NE-7S
Processor	CPU	ARM Cortex-A17(1.8G Hz) Quad Core	ARM Cortex-A8 (800 MHz)	ARM Cortex-A8 (800MHz)
Monitor	Display Type	N/A	10.1" TFT LCD	7" TFT LCD
	Colors		65,536	65,536
	Resolution (pixels)		1,024*600	800*480
	Backlight		LED	LED
	Backlight Luminance (cd/m2)		450	450
	Backlight Life (Hr)		30,000	30,000
Input / Output	Standard I/O	16 DI / 16 DO	Remote I/O	Remote I/O
	Transistor	NPN		
Encoder Input	Encoder	A0± / B0± / Z0±; A1± / B1± / Z1± SSI		
Hardware Expansion	Max. expansible module	4	Remote I/O	Remote I/O
	DI / DO Module	16 IN / 16 OUT		
	AD / DA Module	4 AD / 4 DA		
Storage	USB Host	USB 2.0 × 1	USD 2.0 x 1	USD 2.0 x 1
	SD	SD Card slot × 1	SD Card slot × 1	N/A
Power	Input Voltage	$24V_{DC}$, ± 10 %		
	Rated Output	10 W	11 W	8.4 W
	Max. Curr. Consumption	500 mA	460 mA	450 mA
Memory Backup Battery		3V Lithium Battery CR2032 x 1		
Dimensions (W) * (H) * (D) mm / Weight		120 x 130 x 108 / 780g	270 x 180.9 x 47.75 / 1,100g	196 x 136 x 39 / 560g
Cooling Method		Natural		
Axes of Control		Max. 32 Axes	Max. 8 Axes	
Processing Speed	IL (LD)	419ns/1000	2000ns/1000	
PLC Programs	Program Capacity	32MB	8MB	
	Variable Capacity	32M (Retain : 128KB)	8M (Retain : 32KB)	
PLC Tasks	Sync. Motion Task Quantity (High-speed task included)	1		
	Cycle Task Quantity (Low-speed task included)	9 / 9 (Max.)	9 / 9 (Max.)	9 / 9 (Max.)
	Action Task Quantity	5 / 9 (Max.)	5 / 9 (Max.)	5 / 9 (Max.)
	Background Task Quantity	1 / 9 (Max.)	1 / 9 (Max.)	1 / 9 (Max.)
	Sync. Motion Execution Cycle (High-speed task included)	125 µS ~ 1 mS	Only 2 mS	
	Periodic Task Execution Cycle (Low-speed task included)	1 mS ~	2 mS ~	
Robot Language (LUA)	Program Capacity	8 MB	2 MB	
	Task Quantity	4		

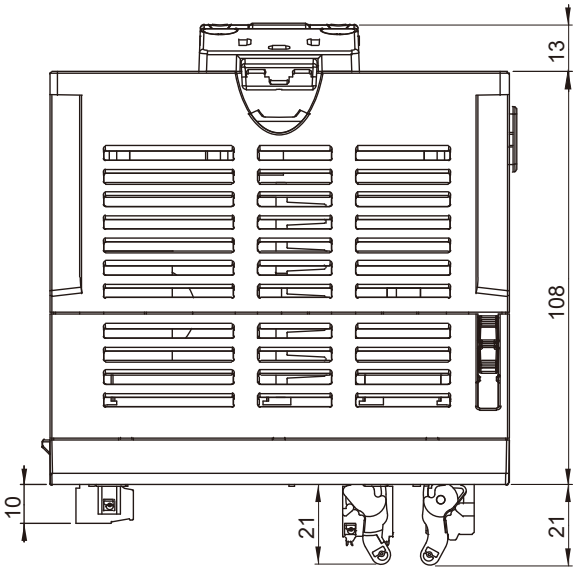
Model		DXMC-1S32TE-00	DXMC-1P08NE-A0	DXMC-1P08NE-7S
Motion Control	Supports PLCopen	Part 1&2&4		
	Max. Axes of Control (Real + Virtual)	96 (32 +64)	16 (8 +8)	
	Max. Real Axes of Control	32	8	
	Max. Group	48	4	
	Max. Axes per Group	12	8	
	Max. Robot	4	2	
	Min. Motion Control Cycle	125 µS (8 Axis)	2 mS (8 Axis)	
CAM	Max. CAM	256	16	
	Max. Point per CAM	65,535		
	Total CAM Points	1,048,560	65,535	
Communication	Network Interface	Ethernet x 1		
	High-speed Bus	EtherCAT x 1		
	Low-speed Bus	CANopen x 1	N/A	
	Serial Port	RS-485	RS-232/RS-422/RS-485	
	USB Slave	1 (connects to PC)		
Environment	Ambient Temperature	0 ~ 50° C		
	Storage Temperature	- 25° C ~ 70° C	- 20° C ~ 60° C	
	Humidity	10 ~ 90%RH (Non-condensing)		
	Vibration	IEC61131-2 compliant 5 Hz~8.3 Hz 3.5 mm, 8.3 Hz ~ 150 Hz 1G		
	Shock	IEC 60068-2-27 compliant 15G peak for 11ms duration	IEC 60068-2-27 compliant 15G peak for 11ms duration, X, Y, Z, directions for 6 times	
	Protection Rating	IP20	IP65 / NEMA4 / UL Type 4X (Indoor use only)	
	Certification	CE		

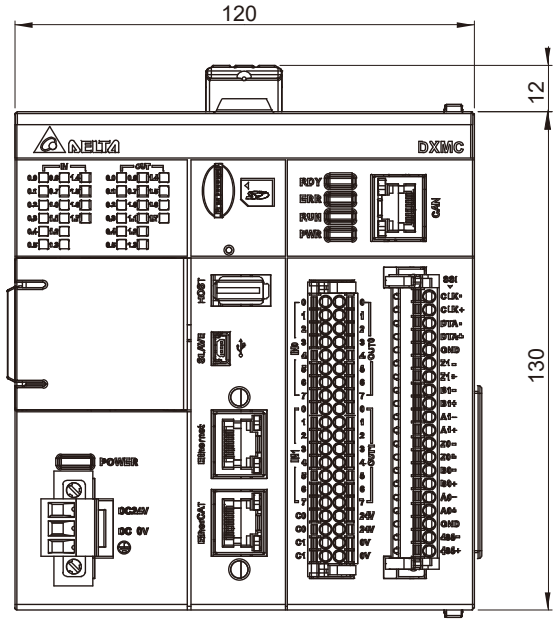
Dimensions

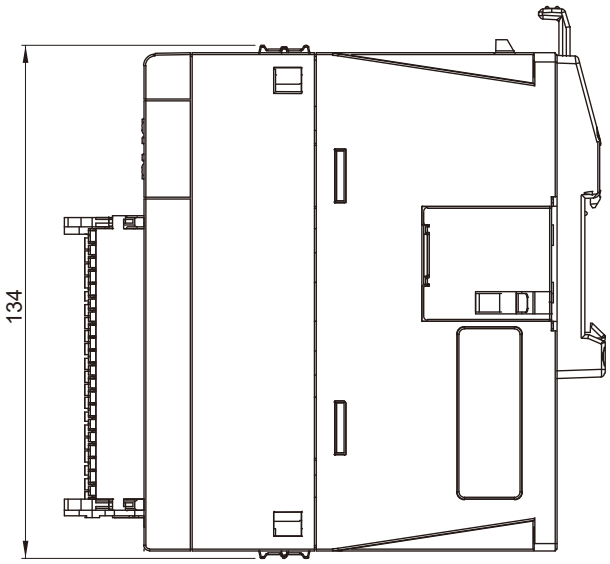
DXMC-1S16TE-00

DXMC-1S32TE-00

Unit: mm



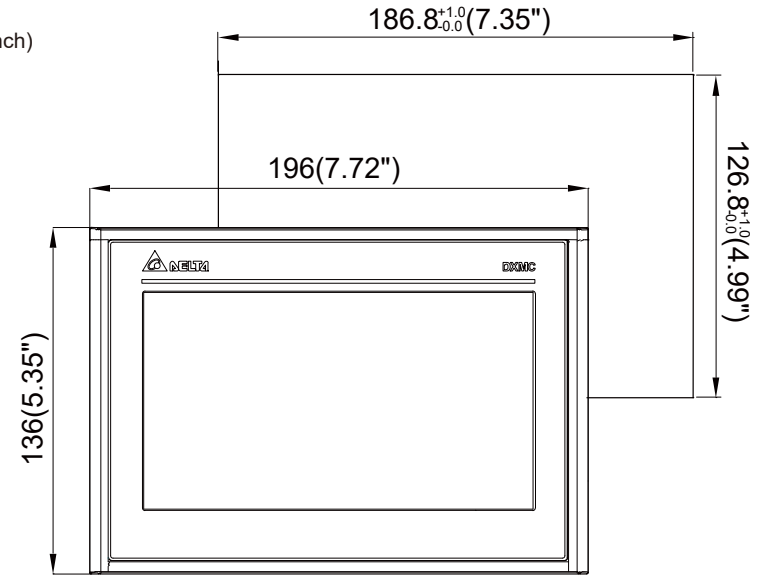




Dimensions

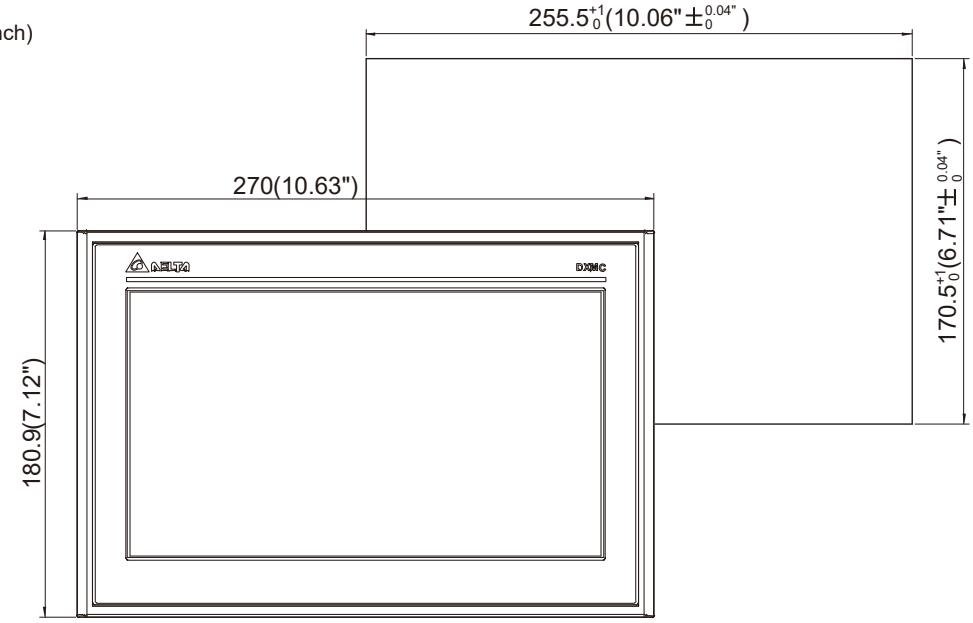
DXMC-1P08NE-7S

Unit: mm (inch)



DXMC-1P08NE-A0

Unit: mm (inch)

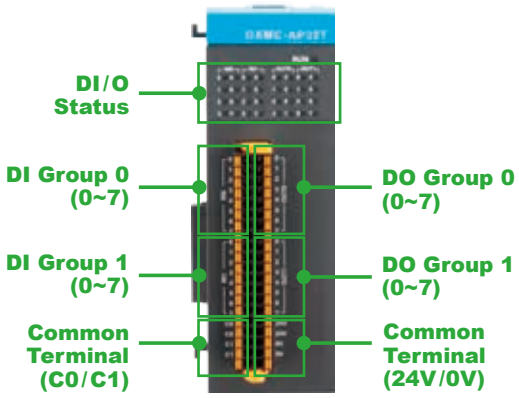


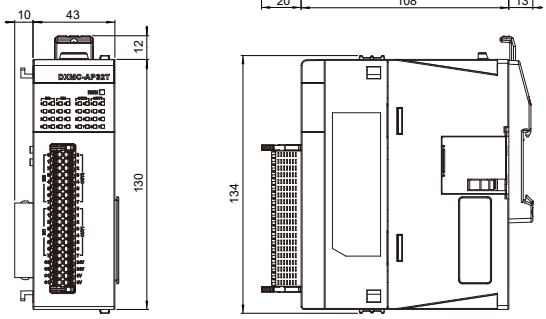
I/O Modules

DI/DO Module

Developing

AP32T



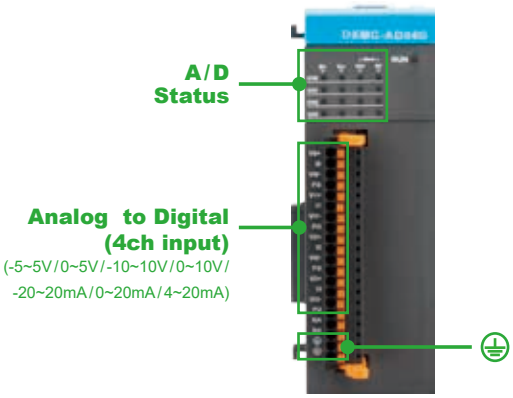


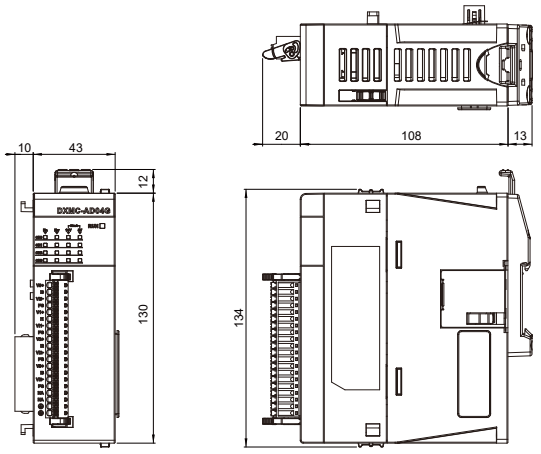
Unit: mm

A/D Module

Developing

AD04G



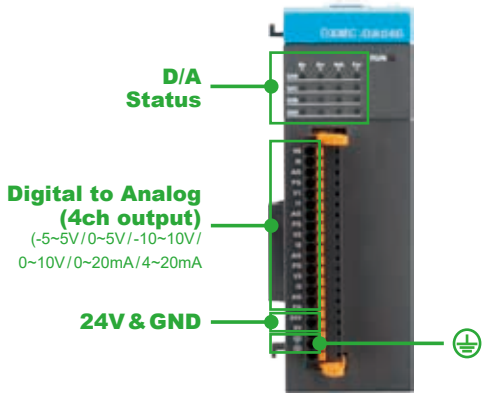


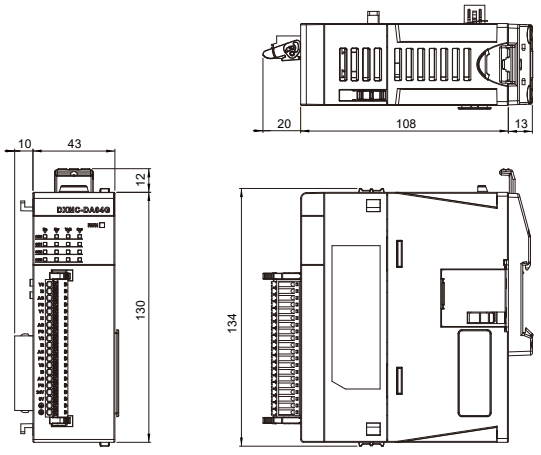
Unit: mm

D/A Module

Developing

DA04G





Unit: mm

Product Information- ASDA-A3 Series Servo Drives

Model Name Explanation

ASD - A3 - 04 21 - L

Product Name:
AC Servo Drive

Series:
ASDA-A3 Series

Rated Output Power

01: 100 W	10: 1 kW
02: 200 W	15: 1.5 kW
04: 400 W	20: 2 kW
07: 750 W	30: 3 kW

Input Voltage and Phase
21: 220V 1-phase / 3-phase
23: 220V 3-phase

Model Type
(see the table below)

Type	PT Mode Pulse Train	PR Mode	RS-485	CANopen	DMCNET	EtherCAT	Full-closed Loop Control	Analog Voltage Control	E-CAM	STO
L	○	○	○	X	X	X	○	○	○	X
M	○	○	○	○	X	X	○	○	○	○
F	X	○	X	X	○	X	○	X	○	X
E*	X	○	X	X	X	○	○	X	○	○

Note: Models with a * mark are the ones to be launched.

Product Information- ASDA-A3 Series Servo Drives

Servo Drive Dimensions

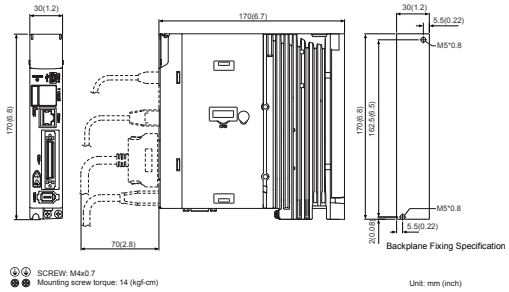
ASDA-A3			100 W	200 W	400 W	750 W	1 kW	1.5 kW	2 kW	3 kW
			01	02	04	07	10	15	20	30
Power Supply	Phase / Voltage		Single-phase / three-phase 220 VAC						Three-phase 220 VAC	
	Permissible Voltage Range		Single-phase / three-phase 200~230 VAC, -15%~10%						Three-phase 200~230 VAC, -15%~10%	
	Input Current (3PH) (Units: Arms)		0.67	1.34	2.67	5.01	6.68	10.02	13.36	20.05
	Input Current (1PH) (Units: Arms)		1.16	2.31	4.63	8.68	11.57	17.36	-	-
	Continuous Output Current (Units: Arms)		0.9	1.55	2.65	5.1	7.3	12.6	13.4	19.4
	Instantaneous Maximum Output Current (Units: Arms)		3.54	7.07	10.61	21.21	24.75	35.36	53.03	70.71
Cooling System			Natural Air Circulation			Fan Cooling				
Drive Resolution			24-bit (16777216 p/rev)							
Control of Main Circuit			SVPWM Control							
Tuning Modes			Auto / Manual							
Regenerative Resistor			None		Built-in					
Position Control Mode	Pulse Type (Only for Non-DMCNET mode)		Pulse + Direction, A phase + B + CW pulse							
	Max. Input Pulse Frequency (Only for Non-DMCNET mode)		Pulse + Direction: 4Mpps ; CCW pulse + CW pulse: 4Mpps ; A phase + B phase: Single phase 4Mpps ; Max. 200Kpps (Open collector) pps							
	Command Source		External pulse train (PT mode) (only for Non-DMCNET mode) / Internal parameters (PR mode)							
	Smoothing Strategy		Low-pass and P-curve filter							
	Electronic Gear		Electronic gear N/M multiple N: 1~536870911, M: 1~2147483647 (1/4< N/M < 262144)							
	Torque Limit Operation		Set by parameters							
	Feed Forward Compensation		Set by parameters							
Speed Control Mode	Analog Input Command (Only for Non-DMCNET mode)	Voltage Range	0 ~ ±10 V_{DC}							
		Resolution	15-bit							
		Input Resistance	1MΩ							
		Time Constant	25 μs							
	Speed Control Range *1		1 : 6000							
	Command Source		External analog signal (only for Non-DMCNET mode) / Internal parameters							
	Smoothing Strategy		Low-pass and S-curve filter							
	Torque Limit Operation		Set by parameters or analog input (only for Non-DMCNET mode)							
	Frequency Response Characteristic		Maximum 3.1kHz							
	Speed Accuracy*2		0.01% or less at 0 to 100% load fluctuation							
			0.01% or less at ±10% power fluctuation							
			0.01% or less at 0ºC to 50ºC ambient temperature fluctuation							
Torque Control Mode	Analog Input Command (Only for Non-DMCNET mode)	Voltage Range	0 ~ ±10 V_{DC}							
		Input Resistance	1 MΩ							
		Time Constant	25 μs							
	Command Source		External analog signal (only for Non-DMCNET mode) / Internal parameters							
	Smoothing Strategy		Low-pass filter							
	Speed Limit		Set by parameters or analog input (only for Non-DMCNET mode)							
Analog Monitor Output			Monitor signal can set by parameters (output voltage range: ±8V)							
Digital Inputs / Outputs	Inputs		Servo on, Reset, Gain switching, Pulse clear, Zero speed CLAMP, Command input reverse control, Command triggered, Speed/ Torque limit enabled, Position command selection, Motor stop, Speed position selection, Position / Speed mode switching, Speed / Torque mode switching, Torque / Position mode switching, PT / PR command switching, Emergency stop, Forward / Reverse inhibit limit, Reference "Home" sensor, Forward / Reverse operation torque limit, Move to "Home", Electronic Cam (E-Cam), Forward / Reverse JOG input, Event trigger PR command, Electronic gear ratio (Numerator) selection and Pulse inhibit input * Please note that the above digital signals and inputs are available only for Non-DMCNET mode. In DMCNET mode, it is recommended to write digital inputs into the servo drives through DMCNET communication, and the digital inputs should be used for Emergency Stop, Forward / Reverse / Inhibit limit and Reference "Home" sensor only.							
	Outputs		Encoder signal output (A, B, Z Line Driver and Z Open Collector)							
			Servo ready, Servo on, At Zero speed, At Speed reached, At Positioning completed, At Torques limit, Servo alarm (Servo fault) activated, Electromagnetic brake control, Homing completed, Output overload warning, Servo warning activated, Position command overflow, Forward / Reverse software limit, Internal position command completed, Capture operation completed output., Motion control completed output., Master position of E-Cam (Electronic Cam)							
Protective Functions			Overcurrent, Overvoltage, Undervoltage, Motor overheated, Regeneration error, Overload, Overspeed, Abnormal pulse control command, Excessive deviation, Encoder error, Adjustment error, Emergency stop activated, Reverse/ Forward limit switch error, Position excessive deviation of full-close control loop, Serial communication error, Input power phase loss, Serial communication time out, short circuit protection of U, V, W, and CN1, CN2, CN3 terminals							
Communication Interface			RS-485 / CANopen / USB							
Environment	Installation Site		Indoor environment (free of direct sunlight), no corrosive liquid and gas (free of oil mist, flammable gas, or dust)							
	Altitude		Altitude 1000m or lower above sea level							
	Atmospheric Pressure		86kPa ~ 106kPa							
	Operating Temperature		0ºC ~ 55ºC (If operating temperature is above 45ºC, forced cooling will be required)							
	Storage Temperature		-20 ºC ~ 65 ºC							
	Humidity		0 ~ 90% RH (non-condensing)							
	Vibration		9.80665 m/s^2 (1G) less than 20Hz, 5.88 m/s^2 (0.6G) 20 to 50Hz							
	IP Rating		IP20							
	Power System		TN System*3*4							
	Certification		IEC/EN 61800-5-1 · UL 508C CE UL							

Note: *1. When it is with the rated load, the speed ratio is: the minimum speed (smooth operation) / rated speed.
*2. When the command is the rated speed, the velocity correction ratio is: (free run speed - full load speed) / rated speed
*3. TN system: The neutral point of the power system connects to the ground directly. The exposed metal components connect to the ground via the protective earth conductor.
*4. Use a single-phase three-wire power systems for models of single-phase power

Unit: mm [inch]

Frame A
100W / 200W

Weight
0.84 kg



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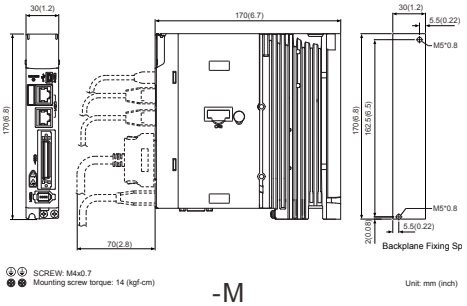

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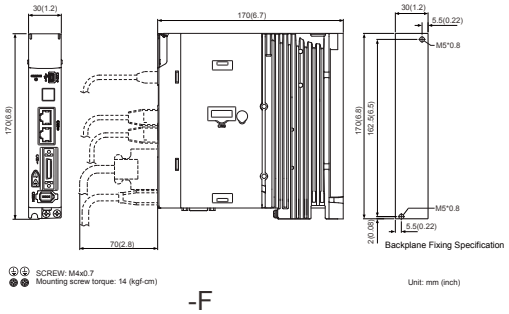

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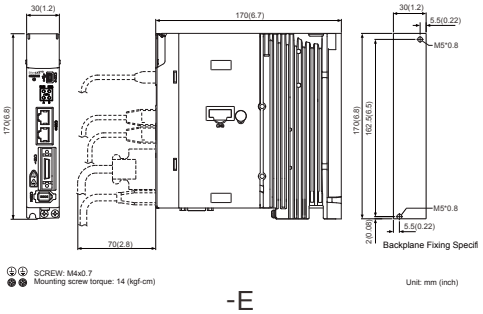

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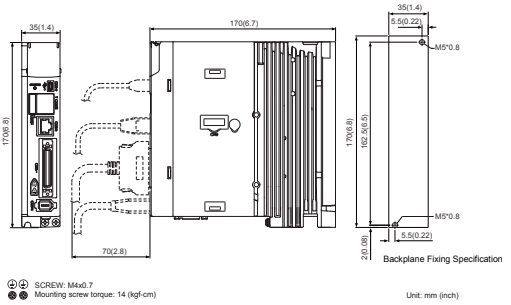
Frame B
400W

Weight
0.92kg



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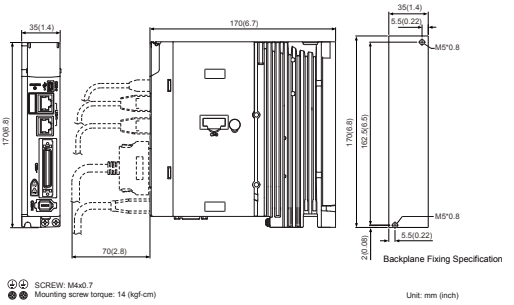

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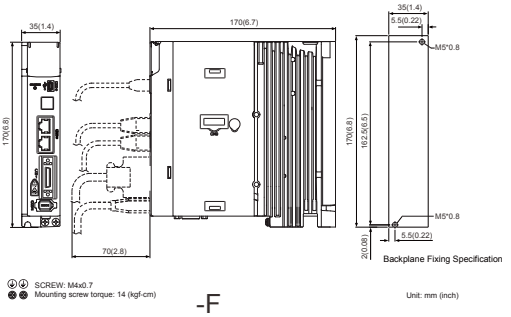

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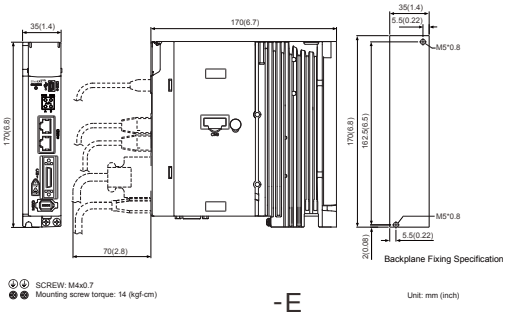


-E

Note:
1. Dimensions are in millimeters (inches); Weights are in kilograms (kg) and pounds (lbs).
2. Dimensions and weights of the servo drive may be revised without prior notice.

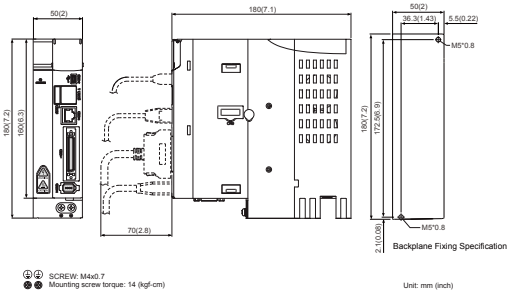
Product Information- ASDA-A3 Series Servo Drives

Dimensions

Frame C
750W / 1 kW / 1.5 kW

Unit: mm [inch]

Weight
1.3kg



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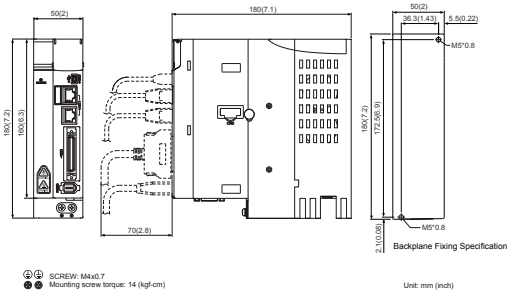

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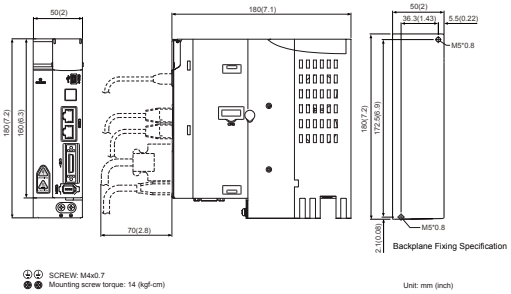

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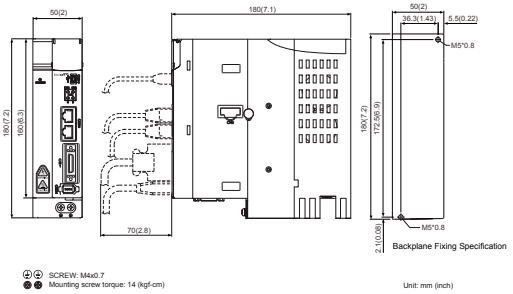

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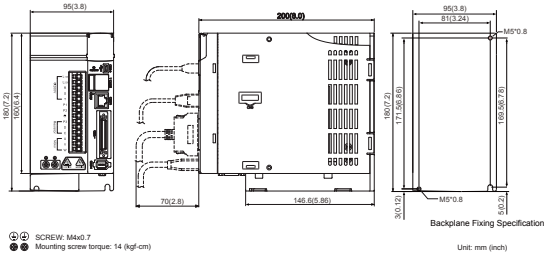
Frame D
2 kW / 3 kW

Weight
2.7kg



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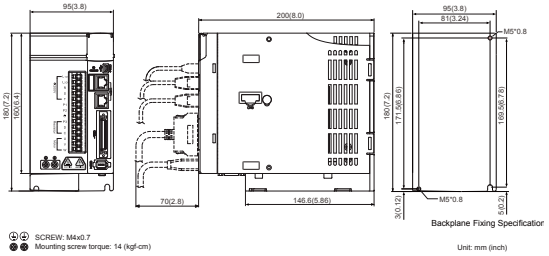

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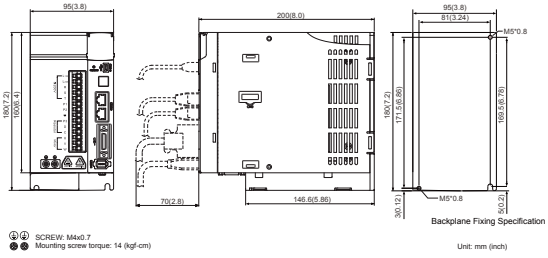

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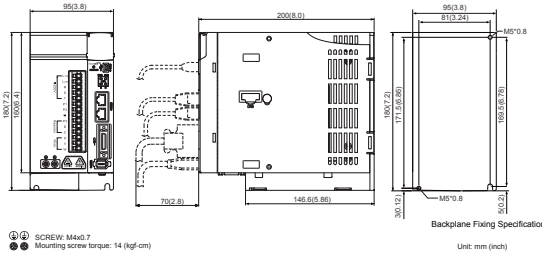

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Note:
1. Dimensions are in millimeters (inches); Weights are in kilograms (kg) and pounds (lbs).
2. Dimensions and weights of the servo drive may be revised without prior notice.

Product Information- ECM-A3 Series Servo Motors

Model Name Explanation

ECM - A 3 H - C Y 06 04 R S 1

Product Name
ECM: Electrical Commutation Motor

Driving Type
A: A Series

Generation
3: 3rd Generation

Inertia
H: High inertia
L: Low inertia

Series Rated Voltage / Rated Speed
C: Rated Voltage 220 V
Rated Speed 3,000 r/min

Encoder Type
Y: 24-bit Absolute Optical Encoder
Single-turn: 24-bit
Multi-turn: 16-bit
1: 24-bit Single-turn Absolute Optical Encoder
G: 16-bit Single-turn Absolute Magnetic Encoder
2*: 24-bit Single-turn Absolute Magnetic Optical Encoder
A*: 24-bit Absolute Magnetic Optical Encoder
Single-turn: 24-bit
Multi-turn: 16-bit

*To be launched

Motor Frame Size
04: 40 mm
06: 60 mm
08: 80 mm

Rated Output Power
0F: 50 W
01: 100 W
02: 200 W
04: 400 W
07: 750 W

Shaft and Oil Seal	W/O Brake W/O Oil Seal	With Brake W/O Oil Seal	W/O Brake With Oil Seal	With Brake With Oil Seal
Round Shaft (with screw hole)	-	-	C	D
Keyway (with screw hole)	P	Q	R	S

Shaft Size
S: Standard
7: Special (14 mm)

Special Digit
1: Standard product

Product Information- ECM-A3 Series Servo Motors

Specifications

Low Inertia ECM-A3L Series

ECM-A3L Series	C□04		C□06		C□08	
	0F	01	02	04	04	07
Rated Output Power (kW)	0.05	0.1	0.2	0.4	0.4	0.75
Rated Torque (N-m)*1	0.159	0.32	0.64	1.27	1.27	2.39
Maximum Torque (N-m)	0.557	1.12	2.24	4.45	4.44	8.36
Rated Speed (r/min)	3000					
Maximum Speed (r/min)	6000					
Rated Current (Arms)	0.66	0.9	1.45	2.65	2.6	5.1
Maximum Current (Arms)	2.82	3.88	6.2	10.1	10.6	20.6
Power Rating (kW/s)	11	25.6	45.5	107.5	45.8	102.2
Rotor Moment of Inertia (x10-4kg-m^2) (Without brake)	0.0229	0.04	0.09	0.15	0.352	0.559
Mechanical Time Constant (ms)	1.28	0.838	0.64	0.41	0.68	0.44
Torque Constant (N-m/A)	0.241	0.356	0.441	0.479	0.488	0.469
Voltage Constant-KE (mV/(r/min)	9.28	13.3	16.4	18.0	17.9	17
Armature Resistance (Ohm)	12.1	9.47	4.9	2.27	1.6	0.6
Armature Inductance (mH)	18.6	16.2	18.52	10.27	10.6	4.6
Electrical Time Constant (ms)	1.54	1.71	3.78	4.52	6.63	7.67
Insulation Class	Class A (UL), Class B (CE)					
Insulation Resistance	100 MΩ, DC 500 V above					
Insulation Strength	1.8k Vac, 1 sec					
Weight (kg) (without brake)	0.38	0.5	1.1	1.4	2.05	2.8
Weight (kg) (with brake)	0.68	0.8	1.6	1.9	2.85	3.6
Max. Radial Shaft Load (N)	78	78	245	245	392	392
Max. Thrust Shaft Load (N)	54	54	74	74	147	147
Power Rating (kW/s) (with brake)	9.9	24	34.1	89.6	39.5	93
Rotor Moment of Inertia (x10^{-4}kg-m^2) (with brake)	0.0255	0.0426	0.12	0.18	0.408	0.614
Mechanical Time Constant (ms) (with brake)	1.44	0.892	0.85	0.5	0.78	0.48
Brake Holding Torque [Nt-m (min)]*2	0.32	0.32	1.3	1.3	2.5	2.5
Brake Power Consumption (at 20˚C) [W]	6.1	6.1	7.2	7.2	8	8
Brake Release Time [ms (Max)]	20	20	20	20	20	20
Brake Pull-in Time [ms (Max)]	35	35	50	50	60	60
Vibration Grade (μm)	V15					
Operating Temperature (˚C)	0℃ ~ 40℃					
Storage Temperature (˚C)	-10℃ ~ 80℃					
Operating Humidity	20 to 90%RH (non-condensing)					
Storage Humidity	20 to 90%RH (non-condensing)					
Vibration Capacity	2.5G					
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft)					
Certification	CE					

Note:
1. The rated torque is the permissable continuous torque at the operation temperature of 0~40˚C when the following heat sink is applied:
   ECM-A3:__04/06/ 08 : 250 mm x 250mm x 6mm
   Material type: Aluminum- F40, F60, F80
2. The built-in brake of the servo motor is for clamping the shaft. Never use it for decelerating or stopping the motor

Specifications

High Inertia ECM-A3H Series

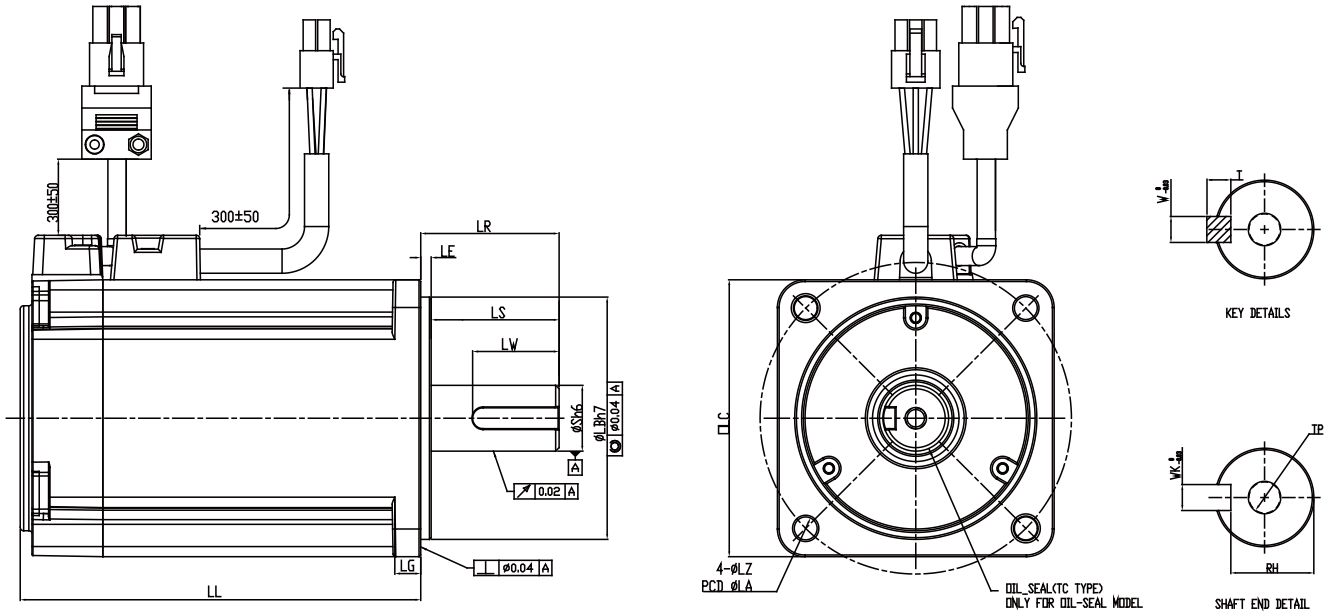
ECM-A3H Series	C□04		C□06		C□08	
	0F	01	02	04	04	07
Rated Output Power (kW)	0.05	0.1	0.2	0.4	0.4	0.75
Rated Torque (N-m)*1	0.159	0.32	0.64	1.27	1.27	2.39
Maximum Torque (N-m)	0.557	1.12	2.24	4.45	4.44	8.36
Rated Speed (r/min)	3000					
Maximum Speed (r/min)	6000					
Rated Current (Arms)	0.64	0.9	1.45	2.65	2.6	4.61
Maximum Current (Arms)	2.59	3.64	5.4	9.8	9.32	16.53
Power Rating (kW/s)	5.56	13.6	16.4	35.8	17.5	37.8
Rotor Moment of Inertia ($x10^{-4}$kg-m^2) (Without brake)	0.0455	0.0754	0.25	0.45	0.92	1.51
Mechanical Time Constant (ms)	2.52	1.43	1.38	0.96	1.32	0.93
Torque Constant (N-m/A)	0.248	0.356	0.441	0.479	0.49	0.52
Voltage Constant-KE (mV/(r/min)	9.54	12.9	16.4	17.2	17.9	18.7
Armature Resistance (Ohm)	12.5	8.34	3.8	1.68	1.19	0.57
Armature Inductance (mH)	13.34	11	8.15	4.03	4.2	2.2
Electrical Time Constant (ms)	1.07	1.32	2.14	2.40	3.53	3.86
Insulation Class	Class A (UL), Class B (CE)					
Insulation Resistance	100 MΩ, DC 500 V above					
Insulation Strength	1.8k Vac, 1 sec					
Weight (kg) (without brake)	0.38	0.5	1.1	1.4	2.05	2.8
Weight (kg) (with brake)	0.68	0.8	1.6	1.9	2.85	3.6
Max. Radial Shaft Load (N)	78	78	245	245	392	392
Max. Thrust Shaft Load (N)	54	54	74	74	147	147
Power Rating (kW/s)(with brake)	4.89	12.5	14.6	33.6	15.07	34.41
Rotor Moment of Inertia ($x10^{-4}$kg-m^2) (with brake)	0.0517	0.0816	0.28	0.48	1.07	1.66
Mechanical Time Constant (ms) (with brake)	2.86	1.55	1.54	1.02	1.54	1.02
Brake Holding Torque [Nt-m (min)]*2	0.32	0.32	1.3	1.3	2.5	2.5
Brake Power Consumption (at 20˚C) [W]	6.1	6.1	7.2	7.2	8	8
Brake Release Time [ms (Max)]	20	20	20	20	20	20
Brake Pull-in Time [ms (Max)]	35	35	50	50	60	60
Vibration Grade (μm)	V15					
Operating Temperature (˚C)	0℃ ~ 40℃					
Storage Temperature (˚C)	-10℃ ~ 80℃					
Operating Humidity	20 to 90%RH (non-condensing)					
Storage Humidity	20 to 90%RH (non-condensing)					
Vibration Capacity	2.5G					
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft)					
Certification	CE					

Note:
1. ECM-A3:__04/06/08: 250 mm x 250mm x 6mm
   The rated torque is the permissable continuous torque at the operation temperature of 0~40˚C when the following heat sink is applied:
   Material: aluminum - F40, F60, F80
2. The built-in brake of the servo motor is for clamping the shaft. Never use it for decelerating or stopping the motor.

Product Information- ECM-A3 Series Servo Motors

Dimensions

Frame Size 80 mm and Below

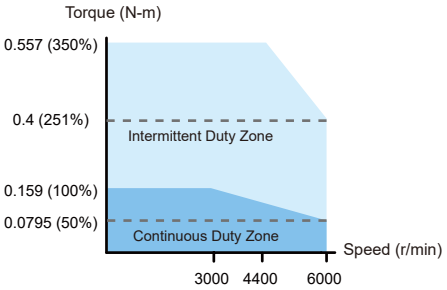


Units: mm

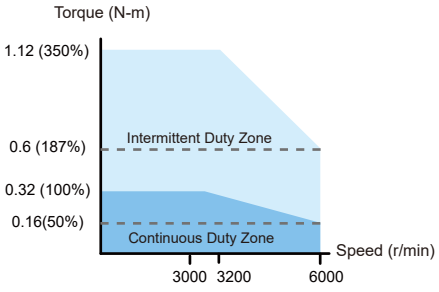
Model	C □1 040F □2 S □3 *1	C □1 0401 □2 S □3	C □1 0602 □2 S □3	C □1 0604 □2 S □3	C □1 0804 □2 7 □3	C □1 0807 □2 S □3 *2
LC	40	40	60	60	80	80
LZ	4.5	4.5	5.5	5.5	6.6	6.6
LA	46	46	70	70	90	90
S	8 ($^{+0}_{-0.009}$)	8 ($^{+0}_{-0.009}$)	14 ($^{+0}_{-0.011}$)	14 ($^{+0}_{-0.011}$)	14 ($^{+0}_{-0.011}$)	19 ($^{+0}_{-0.013}$)
LB	30 ($^{+0}_{-0.021}$)	30 ($^{+0}_{-0.021}$)	50 ($^{+0}_{-0.025}$)	50 ($^{+0}_{-0.025}$)	70 ($^{+0}_{-0.03}$)	70 ($^{+0}_{-0.03}$)
LL (w/o Brake)	70.6	85.3	84	106	93.7	115.8
LL (with Brake)	105.4	120.1	117.6	139.7	131.2	153.2
LS	21.5	22.5	27	27	27	37
LR	25	25	30	30	30	40
LE	2.5	2.5	3	3	3	3
LG	5	5	7.5	7.5	8	8
LW	16	16	20	20	20	25
RH	6.2	6.2	11	11	11	15.5
WK	3	3	5	5	5	6
W	3	3	5	5	5	6
T	3	3	5	5	5	6
TP	M3 Depth 6	M3 Depth 6	M4 Depth 8	M4 Depth 8	M4 Depth 8	M6 Depth 10

Note:
*1. In servo motor model names, □1 signifies encoder type, □2 signifies shaft diameter and oil seal, and □3 signifies special code
*2. When □3 of Model 807 is Z, LS=32, LR=35

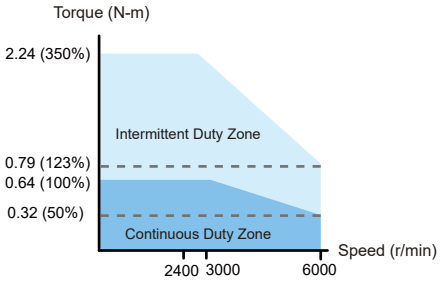
Speed-Torque Curves (T-N Curves)



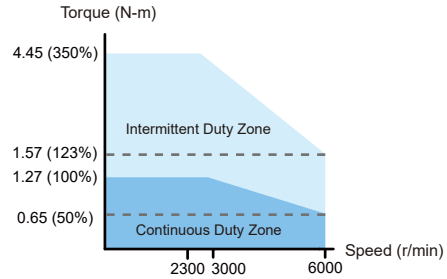
ECM-A3L-C△040F□S1



ECM-A3L-C△0401□S1



ECM-A3L-C△0602□S1



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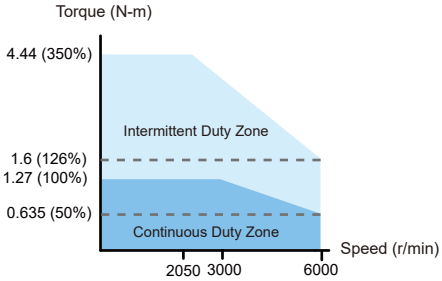
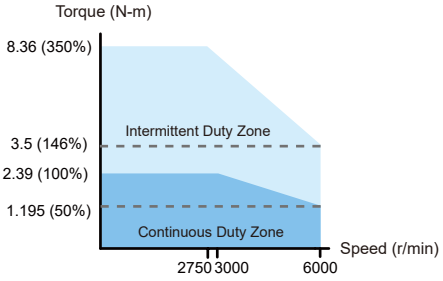
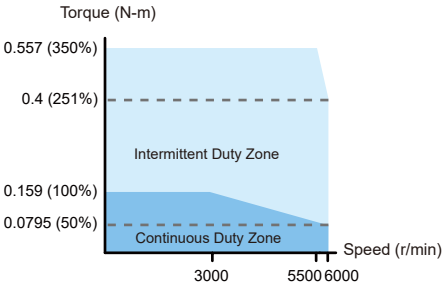


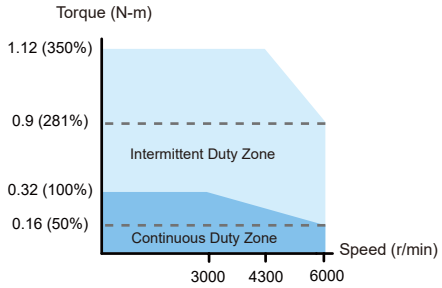
ECM-A3L-C△0804□71



ECM-A3L-C△0807□S1



ECM-A3H-C△040F□S1



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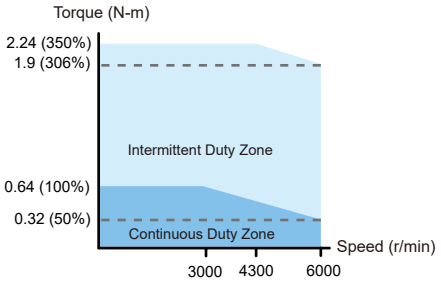

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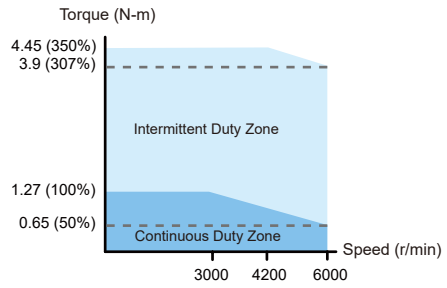

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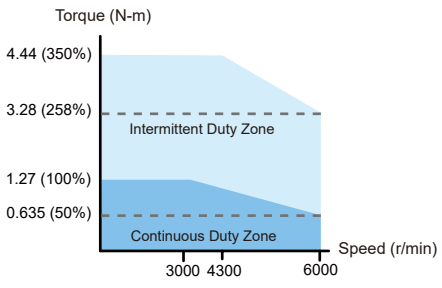

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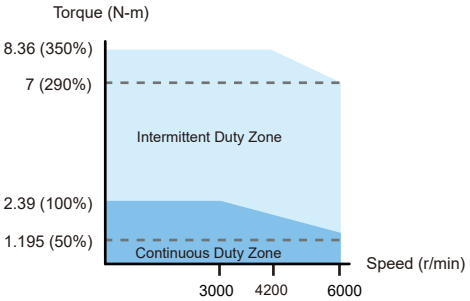

ECM-A3H-C△0807□S1

Smarter. Greener. Together.

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