



AC SERVO SYSTEM

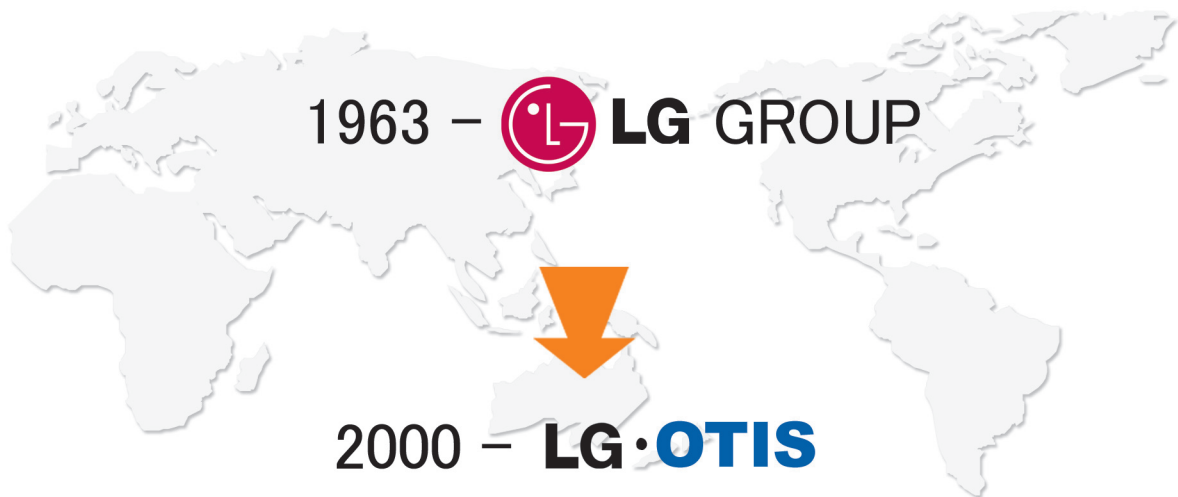
FDA 7000 + Network Type



HIGEN MOTOR Co., Ltd.



50 Years of Experience



2008 – **HIGEN
MOTOR**



PRODUCTS

Type	Application	Range	Annual Production Capacity	
Small Sized Low Voltage Motor	Single Phase, 220V	0.1 ~ 2.2 kW	400,000 sets	
	Three Phase, 220~660V	0.1 ~ 15 kW		
Middle Sized Low Voltage Motor	Three Phase, 220~660V	18.5 ~ 200 kW	200,000 sets	
Large Sized Low Voltage Motor	Three Phase, 220~660V	210 ~ 500 kW	40,000 sets	
Elevator Motor	Geared Type Gearless Type	OTIS E/L	55,000 sets	
	Hydraulic	CEMCO E/L		
Flameproof Motor	Ex d 380V, 415V	II B (T1~T4)	0.75 ~ 260 kW	1,000 sets
High Voltage Motor	690V~6600V	Industrial Pump, Fan Compressor etc.	55 ~ 1500 kW	2,000 sets
Servo Motor & Drive	High Inertia	Factory Automation Sys.	0.5 ~ 7.5 kW	100,000 sets
	Low Inertia	CNC Sys. Robot etc.	0.1 ~ 15 kW	
Spindle Motor	1500~8000 rpm	Factory Automation	3.7 ~ 11 kW	2,000 sets

Energy Efficient Servo Products in the Green Environmental Era

A leading company to the green industry

HIGEN

[New Products]

- * NDA7000 Series (RS485 based Communication Servo)
- * EDA7000 Series (EtherCAT Network Communication Servo)
- * MDA7000 Series (One Axis Controller Integrated Servo)
- * 380V Class Servo
- * 200W Explosion-Proof Servo Motor (HIGEN is the first company which has been certified by IECEx, ATEX)

New
FDA 7000B
Series

FDA 7000 Series





HIGEN MOTOR is the first company in Korea whose servo drive passed EtherCAT Conformance Test assuring compatibilities with EtherCAT based network system.

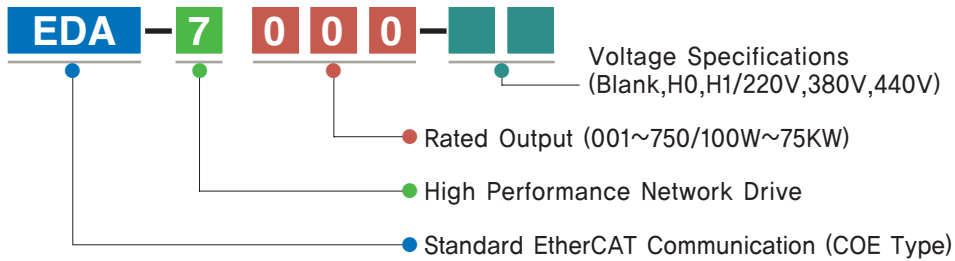
HIGEN EDA 7000 Series opens a new horizon unfolding the era of EtherCAT based Motion Network application.



The Key of EtherCAT Compatibility Verification is “EtherCAT Conformance Tested” International Certification Mark.

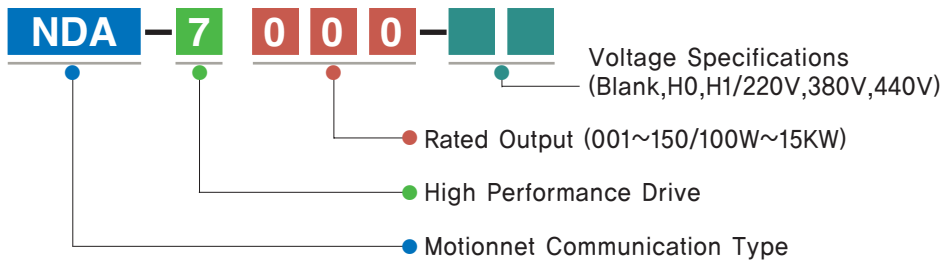
EDA-7000 Series

EtherCAT[®]
Conformance tested



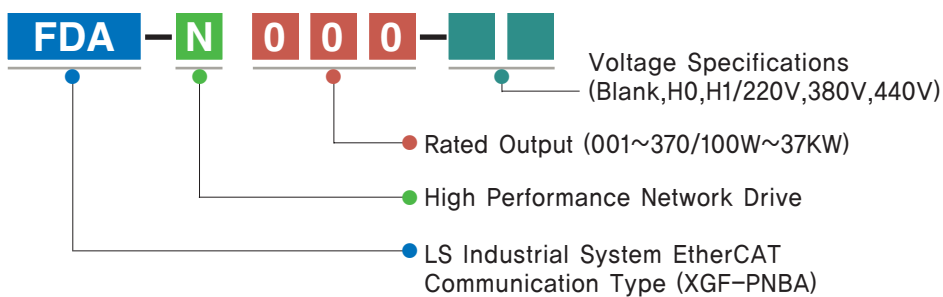
NDA-7000 Series

Motionnet[®]



FDA-N000 Series

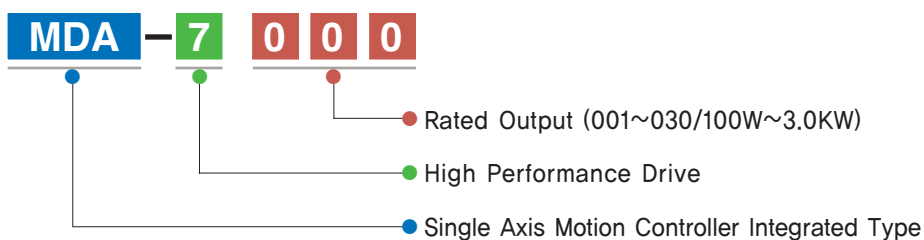
EtherCAT[®]



MDA-7000 Series

Ethernet HUB

Max 255

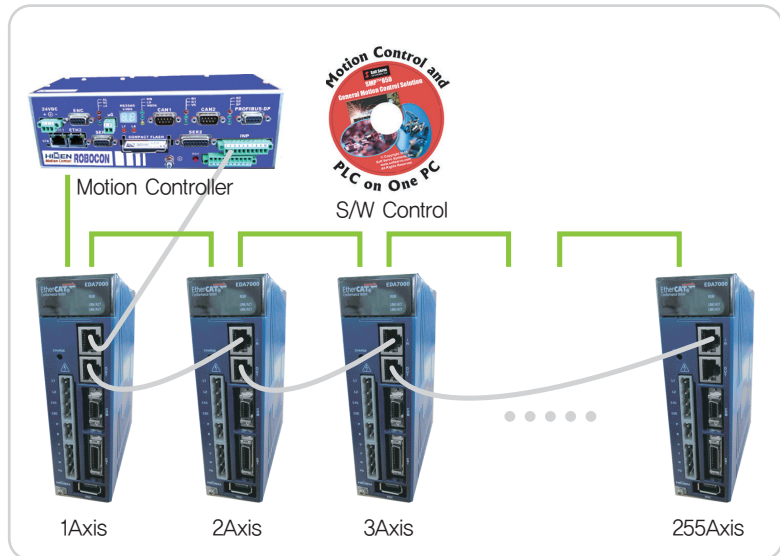


System Feature

EDA-7000 Servo Drive is a standard EtherCAT communication based product and it supports up to 255 axes of synchronized operation by software, and it is compatible with EtherCAT based products.

High Speed Communication Network

Synchronization Control of Maximum 255 Axes Servo Motor with 100Mbps High Speed Communication Network System



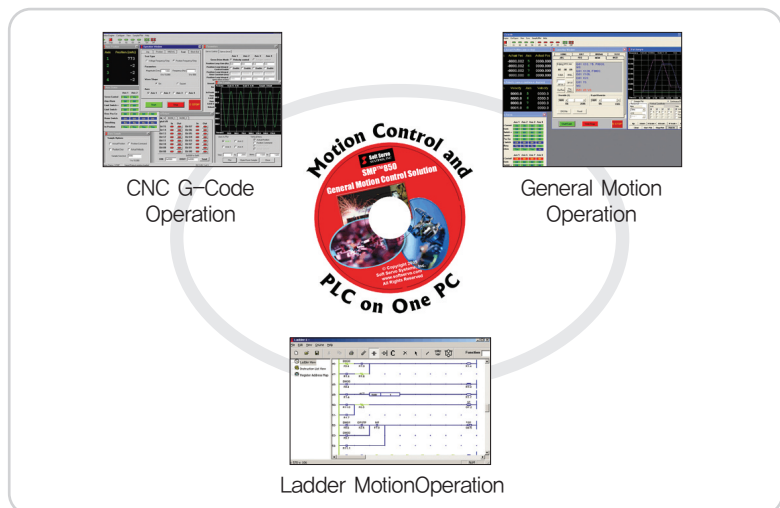
Optimum Solution for Multi-Axis Device

It enables maximum 255 axes and 100m distance transmission for multi-axis control. Control devices like external I/O for EtherCAT communication, pulse generator and safety sensor can be used easily.

Classification	Contents
Control Module	Standard EtherCAT S/W, Standard EtherCAT PL
Drive	EDA-7000 Series
Communication	Standard EtherCAT
Communication Speed	100Mbps
Communication Cycle	0.4ms ~ 2.4ms
Communication Distance	Max. 100m
Nos. of Control Station	Max. 255 Axes

Motion Control by Software

Precise Motion Control Operation by Motion Software
(S/W: SoftServo, WsinCAT etc. Standard EtherCAT S/W Support)



Stand-Alone Motion Control

It provides various motion control library and enables stable stand-alone operation in any industrial sites.
(Various Robot Control, Interpolation)

Strong Motion Controller HIGEN ROBOCON

- Max. 32 Axes Control
- Real-time Control
- Providing Various Communication Environments like Can Open etc.

System Feature

NDA7000 Servo Drive is a Motionnet communication based product and it is connected with NDA7000PCI motion control center board, which controls maximum 64 axes servo motor.

High Speed, Reliable Communication Network

Motion Control of Maximum 64 Axes with 20Mbps High Speed Communication Network System

Optimum Solution for Multi-Axes Device

It enables maximum 64axes and 100m distance transmission for multi-axis control.

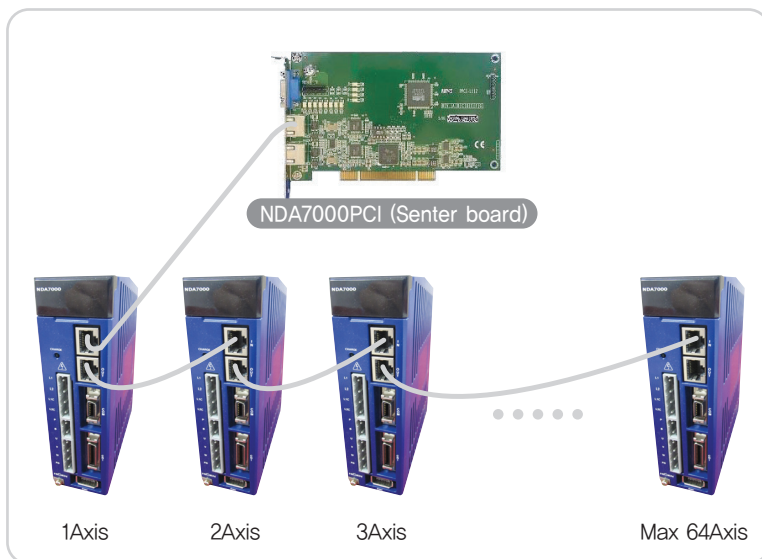
- I/O Control : Max 2048 Points
- Motion Control : Max 64-Axis
- Communication Distance : 100m (Securing Reliability)
- External Device : Motionnet based External H/W Devices can be attached

Multi-Axes Distributed Control

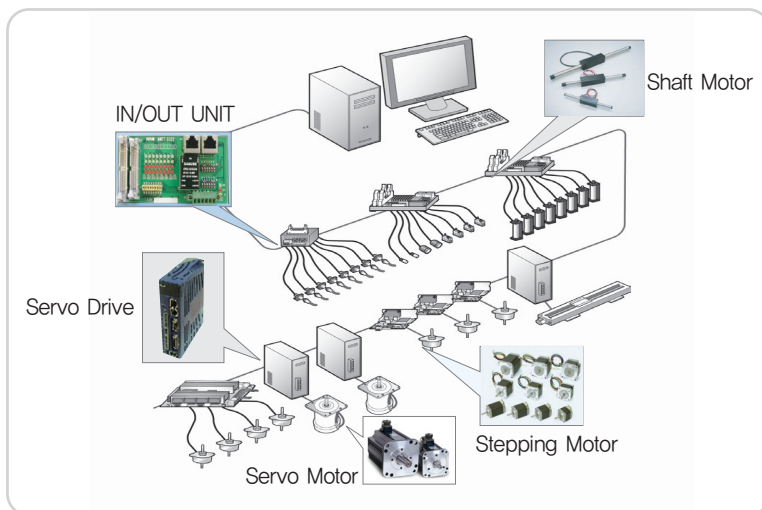
It connects center board, servo board, stepping motor drive and I/O device (max. 2048 points) using one network cable for easy system construction, and it has optimum condition for distributed control.

Stand-Alone Operation

It supports stand-alone operation of various systems more quickly by the provision of easy interface.



Classification	Contents
Control Module	NDA7000PCI
Drive	NDA-7000 Series
Communication	Motionnet
Communication Speed	20Mbps
Communication Cycle	0.3ms ~ 1.0ms
Communication Distance	Max. 100m
Nos. of Control Station	Max. 64 Axes



- Supports 32 Axes and 64 I/O Devices
- Simple and Easy Interface Software
- Provides Ethernet, RS232 Communication Environment
- Provides Digital Input 8 points, Output 8 points
- Supports Program Languages of Ladder, FBD, ST, IL, SFC

System Feature

FDA-N000 Servo Drive is a LS Industrial System EtherCAT based communication product, and it can be used connecting to XGF-PN8A EtherCAT network module of LS Industrial System.

High Speed Communication Network

Synchronization Control of Maximum 8 Axes with 100Mbps High Speed Communication Network System

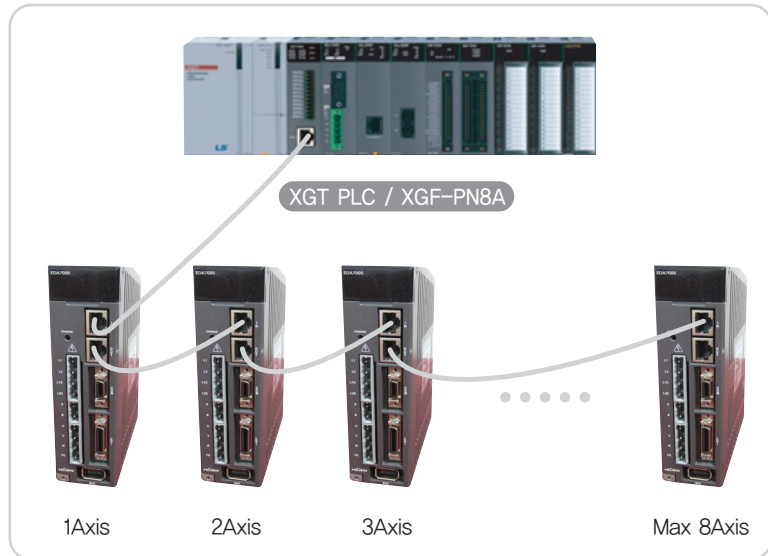
Simple Control Using Exclusive S/W

Use of XG-PM which is exclusive S/W for XGT PLC of LS Industrial System

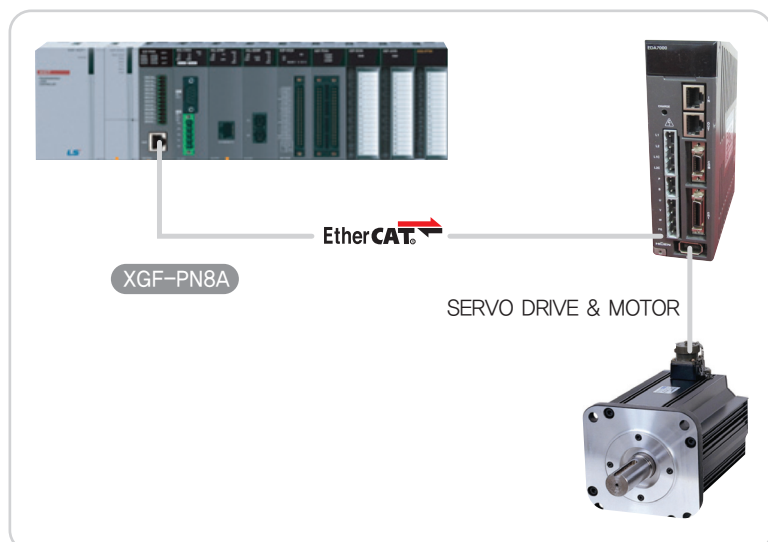
Operating Method

Position Control, Torque Control and Switching Control (Position ⇔ Speed, Speed ⇔ Torque and Position ⇔ Torque) can be done.

All operation is executed by data set with each control mode and operation status information of motor is feedback to XGF-PN8A module.

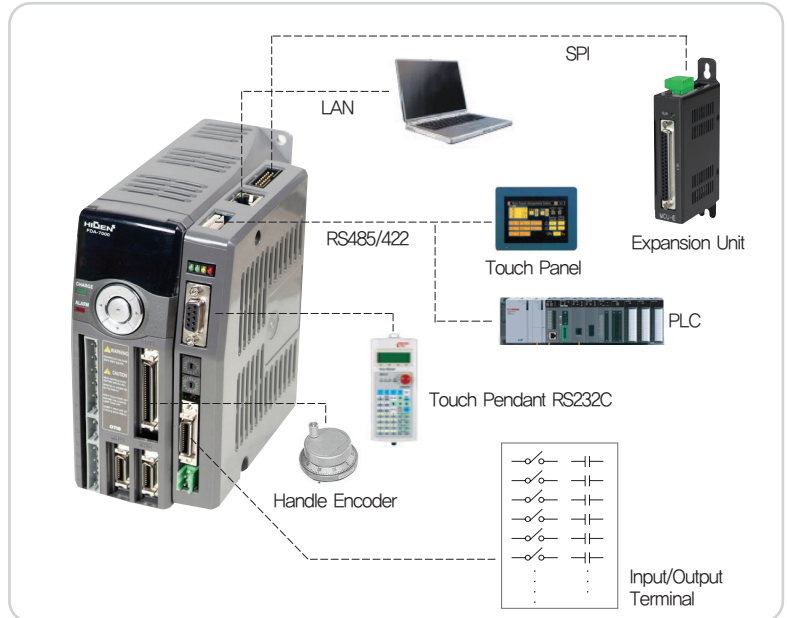


Classification	Contents
Control Module	XGF-PN8A
Drive	FDA-N000 Series
Communication	EtherCAT of LS Industrial System
Communication Speed	100Mbps
Communication Cycle	0.8ms
Communication Distance	Max. 100m
Nos. of Control Station	Max. 8 Axes



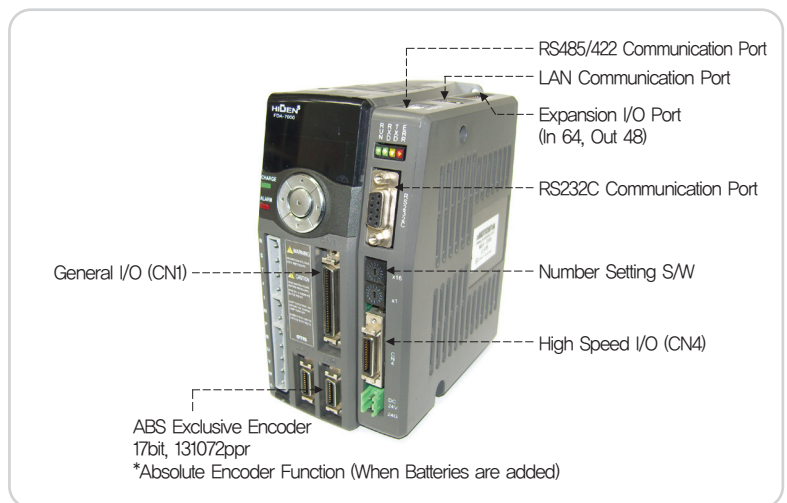
System Feature

MDA-7000 Servo Drive is a Motion Controller and Servo Drive Integrated Stand-Alone Motion Controller, and I/O and Analog control can be done, and it can display motion control state of max. 256 units at the monitor of host PC through internet HUB.



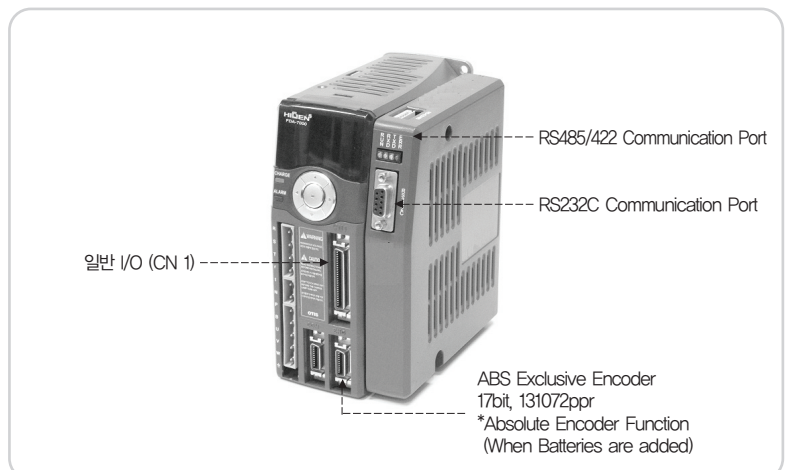
MDA-7000H

- General I/O (CN1)
 - Input : 12 Points Output : 10 Points
 - High Speed Counter 1Ch 500KHz
 - A/D Converter 2Ch 16bit, $\pm 12V$ for Load Cell
 - D/A Converter 2Ch 12bit, $\pm 5V$ for Monitor
- High Speed I/O (CN4)
 - Input : 10 Points Output : 8 Points
 - High Speed Counter 1CH (2.5MHz)



MDA-7000L

- Standard General I/O (CN1)
 - Input : 12 Points Output : 10 Points
 - High Speed Counter 1Ch 500KHz
 - A/D Converter 2Ch 16bit, $\pm 12V$ for Load Cell
 - D/A Converter 2Ch 12bit, $\pm 5V$ for Monitor

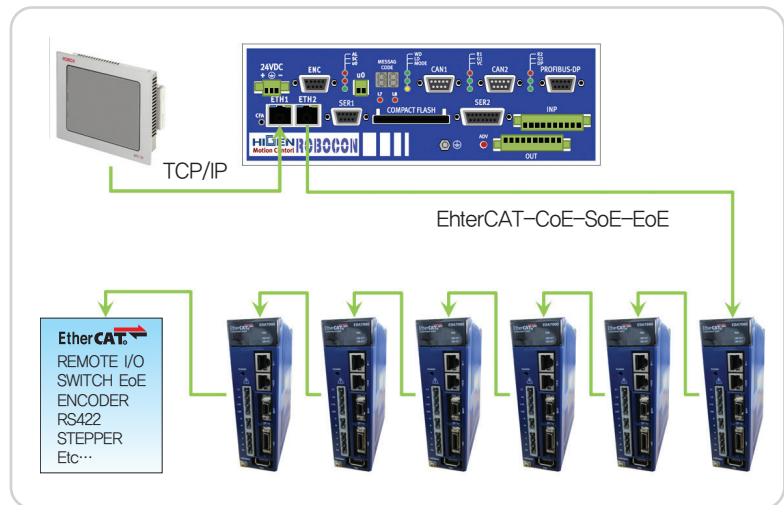


High Level Devices of Communication

HIGEN ROBOCON

■ Features

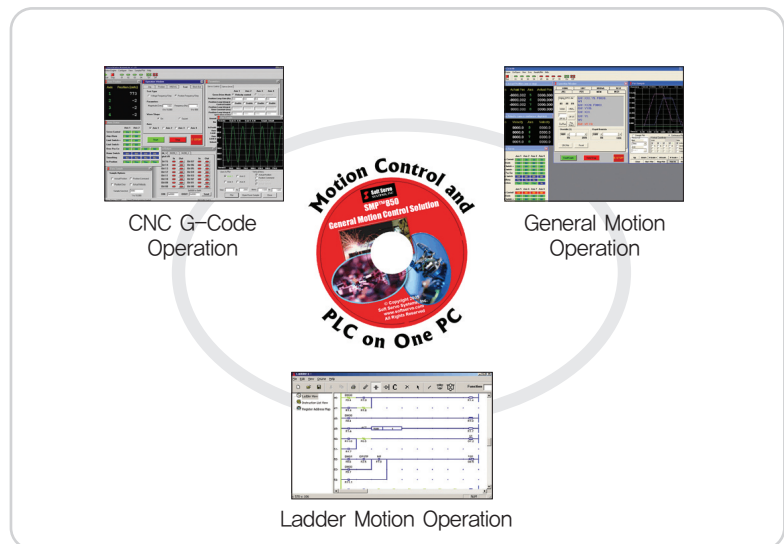
- EtherCAT Exclusive Motion Controller
- Max. 32 Axes Control
- Provision of Digital Input 8 Points, Output 8 Points
- Real-Time Control
- Provision of PC Software Tool with Various Functions
- IEC 61131-3
- R3 Robot Program Language
- Stand-Alone Operation



EtherCAT S/W

■ Features

- Max. 100 Axes Motion Control
- Communication Speed : 100Mbps
- Control by Motion S/W
- Various Languages Support (CNC G-Code Operation, Ladder Operation)



EasyPAC

■ Features

- Motionnet Exclusive Motion Controller
- Max. 32 Axes Control
- Provision of Digital Input 8 Points, Output 8 Points
- Provision of Easy Operating PC Software
- IEC 61131-3
- Compact size
- Stand-alone Operation



High Level Devices of Communication

XGF-PN8A

■ Features

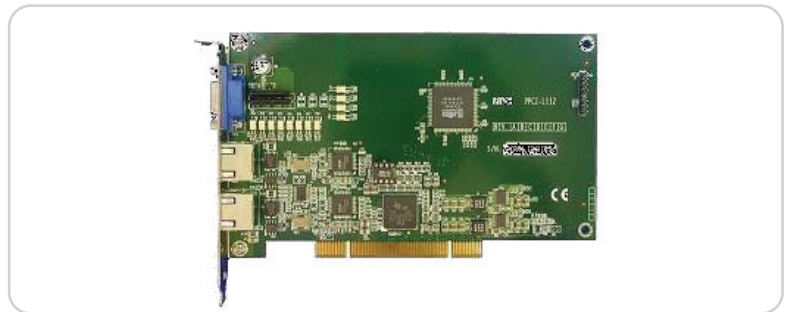
- LS Industrial System Exclusive EtherCAT Network Module
- Max. 8 Axes Servo Drive can be connected
- 400 Data Area Setting for Each Axis
- Multi-Axes Operation of 2~8 Axes, Linear Interpolation, 2-Axes Circular Interpolation, 3-Axes Helical Interpolation
- Various Switching Control (Speed/Position)
- 8 Kinds of CAM Data Generation for CAM Control
- Realization of Absolute Position System
- XGF-PN8A : FDA-N000 Series Exclusive Network Module
- XGF-PN8B : EDA7000 Series Exclusive Network Module



NDA7000PCI

■ Features

- Max. 64 Axes Control
- Max. 2048 Points of I/O Control
- High Speed Communication of 20Mbps
- Max. 100m Communication



EtherCAT[®]
Conformance tested

Motionnet[®]

Motion Control and
PLC on One PC

Servo Supporting Software

SERVO MAN

■ Features

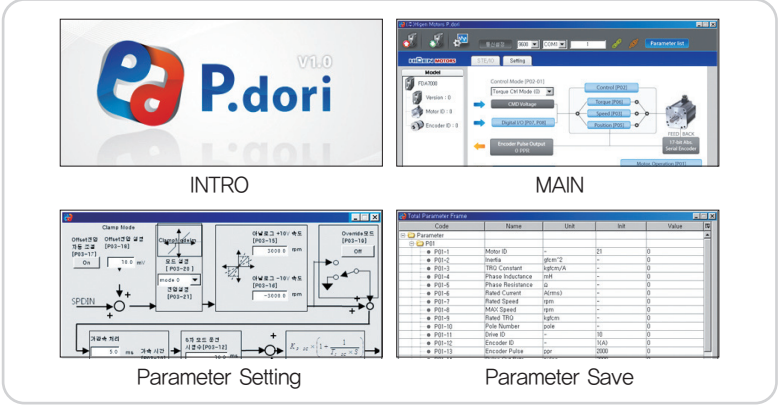
- Selection of Easy Servo Motor Capacity
- 7 Kinds of Representing Machines Structure Setting
- Input of Detailed Machine Information Value (Inertia, Friction Factor, Reduction Ratio, etc.)



P-DORI

■ Features

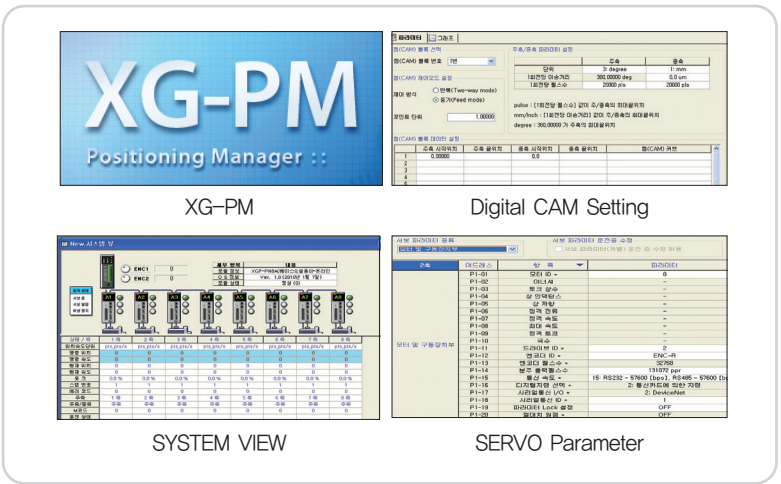
- Drive Parameter Recording and Reading Function
- Execution of Simple Servo Motion (JOG, I/O)
- Various Monitoring Functions
- Check of Detailed Operation Data by Graphic Display



XG-PM

■ Features

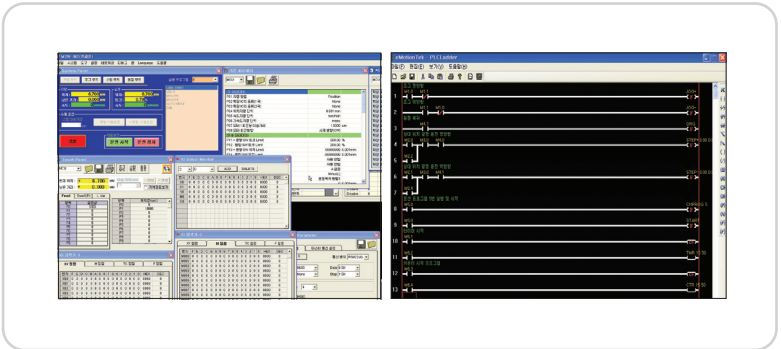
- Simple Setting of Operational Data (Servo Parameter, Operating Data)
- Various Monitoring Functions
- CAM Operation by Digital CAM Data Setting



MDA-TOOL

■ Features

- Various GUI Programs (Servo Parameter, Motion Data)
- Simple Language Motion Program
- Realization of Easy PLC by Ladder Program





HIGEN^S

The FDA 7000 series is more upgraded HIGEN^S servo system.

AC SERVO SYSTEM

Human Engineering

- + Realization of 600 Hz Speed Response Frequency, Built-in 17/21 bit class Serial Encoder Receiving Function

Innovative Technology

- + Built-in Duplex Notch Filter Resonance Suppressor and On-line Resonance Frequency Analyzer
- + Built-in Analog Command Auto Offset Control Function

Global Player

- + Elegant & Compact Exterior with 32 % reduced size compared to former model

Environmental Friendly

- + Real Time Auto Gain Tuning with Adjustment to Mechanical Hardness

New Frontier

- + Digital Interface Supporting by RS-232, RS-485 and Adapter Type Communication Modul

Smart Servo FDA 7000 Series

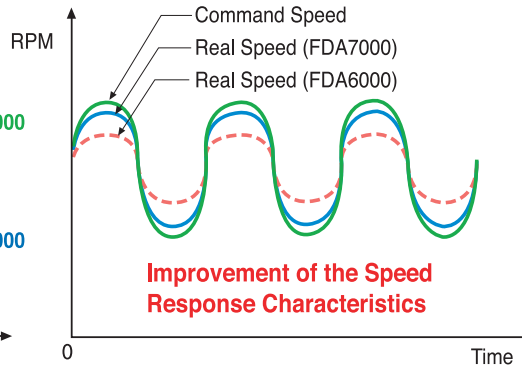
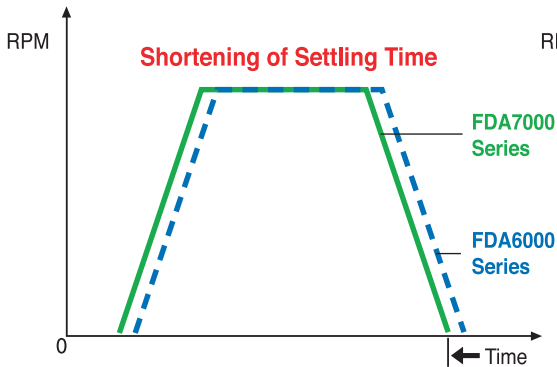
Application Area

- Machine Tool, Material Handling
- Pharmaceutical Industry, Packing Machine
- Robots, Automotive Industry, AGV (Automatic Guide Vehicle)
- Logistics, Semiconductor Manufacturing
- Inspection Machine, Wafer/Flat Panel Transfe

more upgraded HIGEN^S servo system

High performance

Actualization of High Speed,
Low Noise Operation



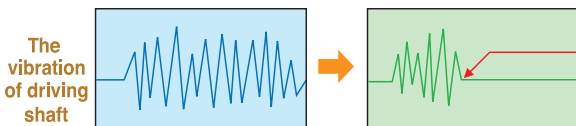
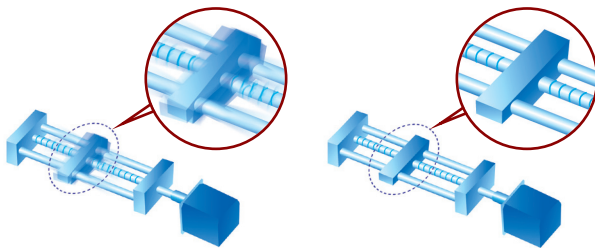
Higher Precision

Speed Up

- By realization of **600Hz** Speed response frequency, the settling time is more reduced.
- By applying **17Bit**(131072p/rev.) serial encoder for super-precise control, FDA 7000 series comes true the stability at low speed and improves settling precision. You don't need to have the origin reversion when you restart FDA 7000 series after power-reset.

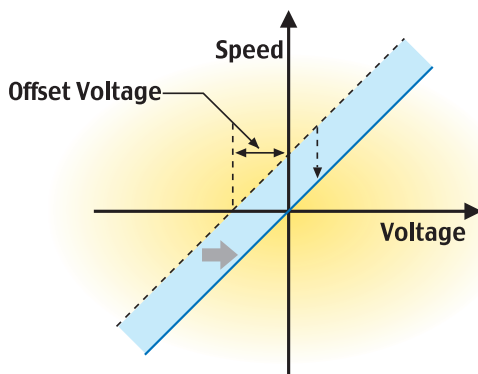
Intelligent Control

Now, resonance suppression will be automatically settled.



- FDA 7000 series controls resonance by automatical detecting of "mechanical resonance frequency", instead of measuring the mechanical frequency of driving shaft.

Easier to Use



- The offset voltage of servo drive is automatically controlled by analog command voltage with higher controller.

Auto-Setting

Good Design

More Compact & Elegant Design by 32% reduced size compared to former model



More Compact

Even Smaller

* Mid-size Former Model (L×W×H) : 93×209.3×184 → FDA7010 : 90×160×169

Easy to Use

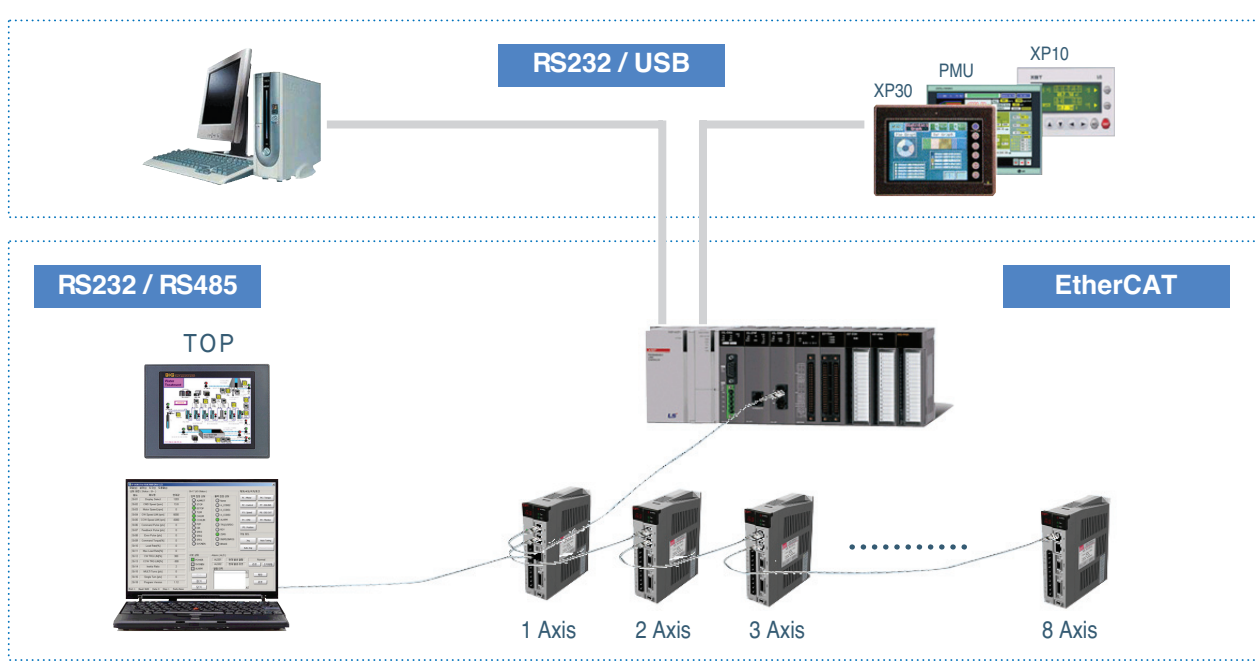
More convenient Real Time Auto-Tuning Function.

- By selecting system response setting point, you can avoid tangled setting repetition.
- FDA 7000 series actualizes real time auto-tuning with the reflection of real time load inertia variation.



Network-Based System

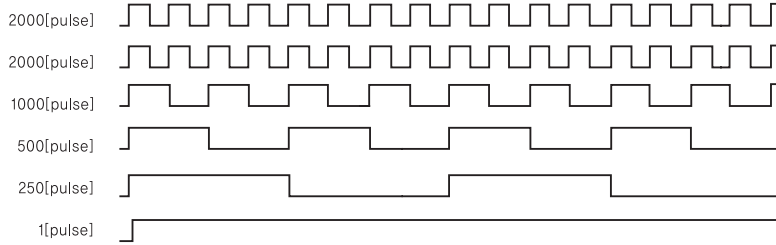
Digital Interface Supporting by RS232, RS485 and EtherCAT Network.



Smart Servo FDA7000 series

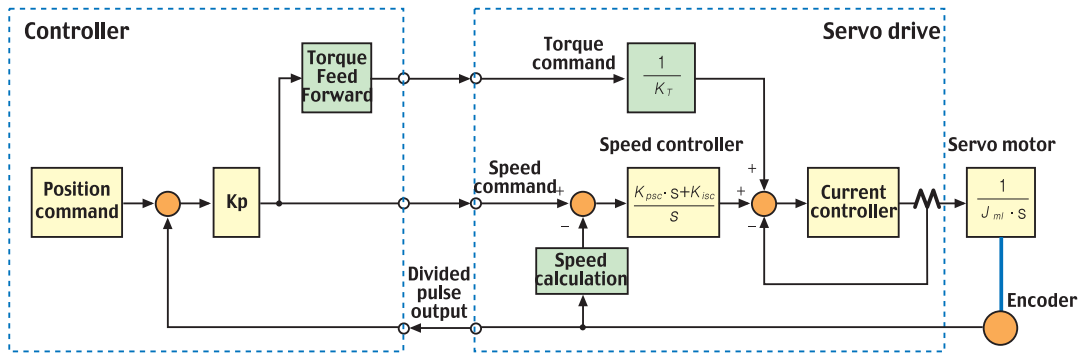
Encoder Pulse Divided Output Function

Divided pulse is set up as pulse number unit when output show up with line driver way, by dividing motor pulse feedback.



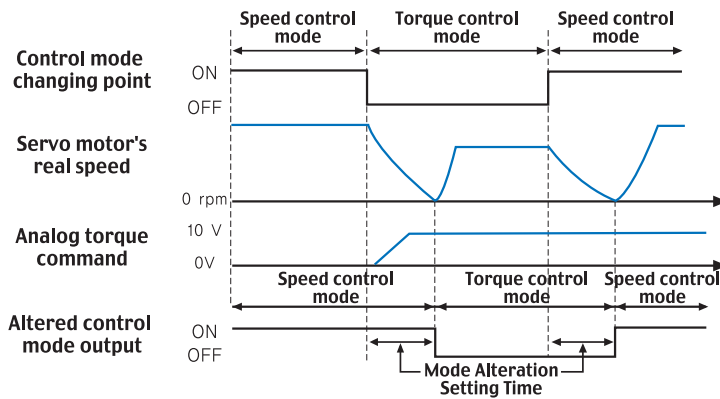
Torque Feed-Foward Compensation Function

Existing analog torque command and control function is available for feed-forward torque term.
(Application Example: Precise Control)

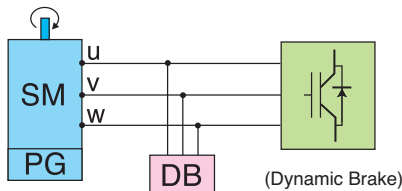


Smooth Control Mode Alteration

Control mode is changed at zero speed by decelerating servo motor during the mode alteration.



Various Advanced Control Mode Function

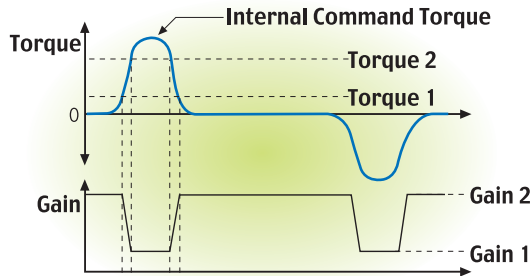


- Deceleration & keeping up by dynamic brake, at servo off mode
- Deceleration & free-run below zero speed set-up, at servo off mode
- Deceleration with free-run & keeping up free-run, at servo off mode
- Deceleration with free-run & keeping up dynamic brake below zero-speed set-up, at servo off mode

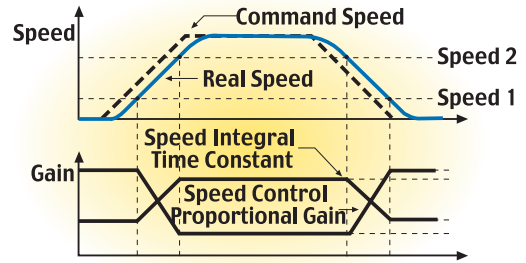
Multiple Variable Gain

Applying variable gain depends on speed section, torque section and contact point condition.

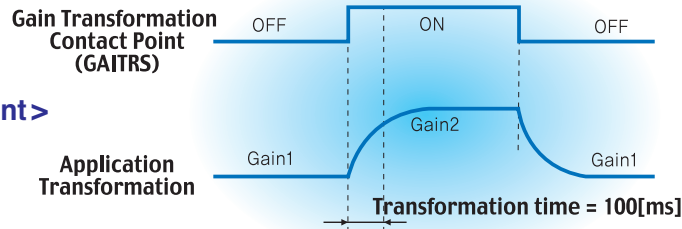
<Torque>



<Speed>

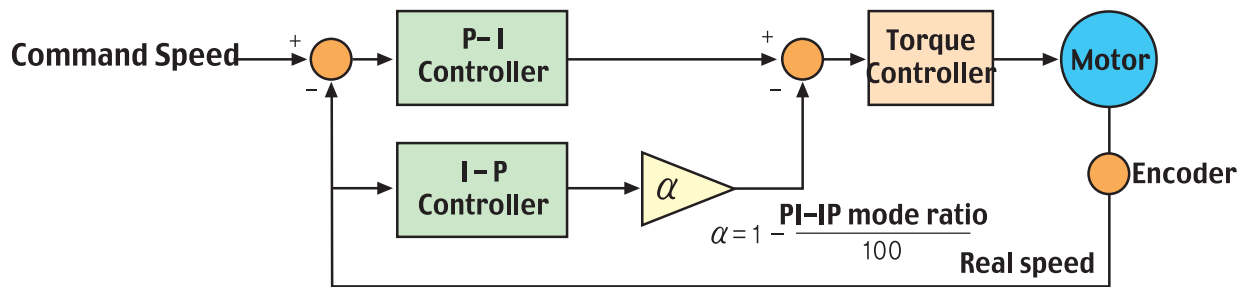


<Contact Point>



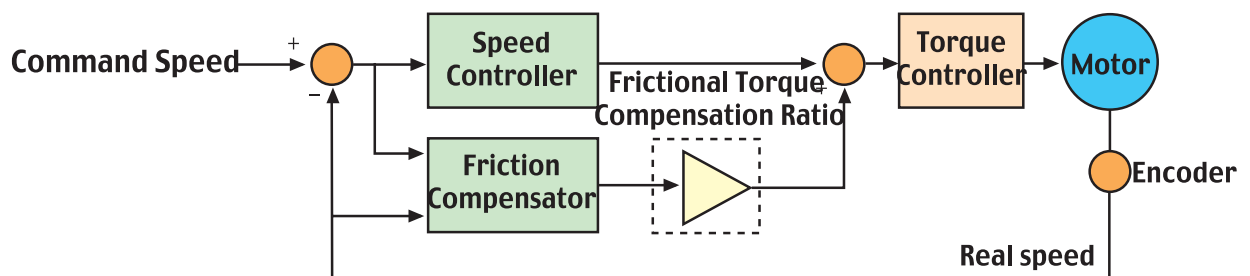
PI-IP Compound Type Speed Control Mode Function

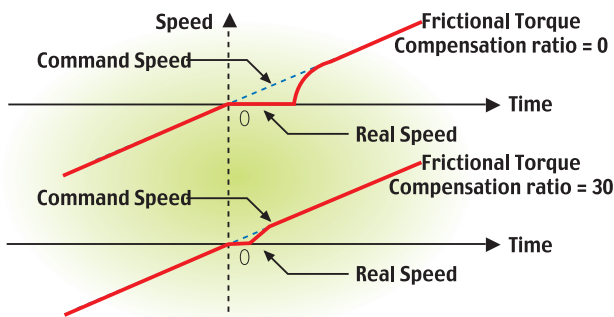
IP speed controller reduces vibration by suppressing overshoot, when overshoot occurs at the speed controller.



Frictional Torque Compensation Function

Friction torque compensation factor is set up for suppressing the dead zone by the rotational direction change, when the servo motor is installed at machinery with high friction, i.e. ball screws and so on.

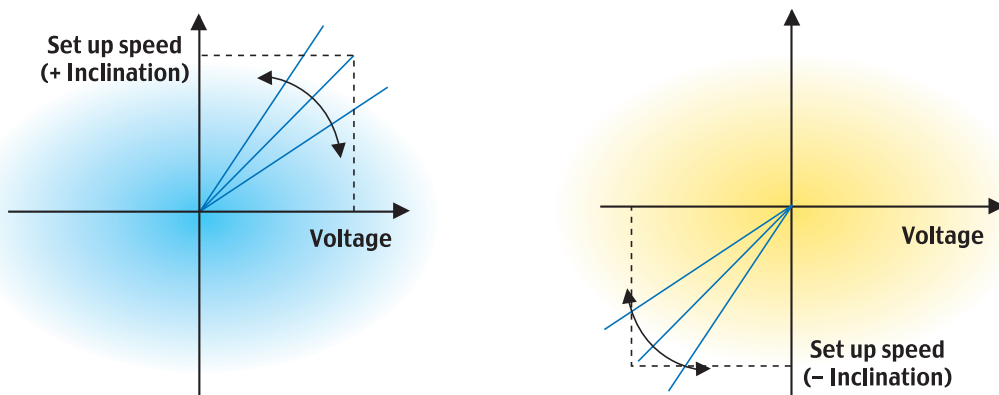




• The graph at left shows response characteristics, when the speed response characteristics with friction and frictional torque compensation factor are applied.

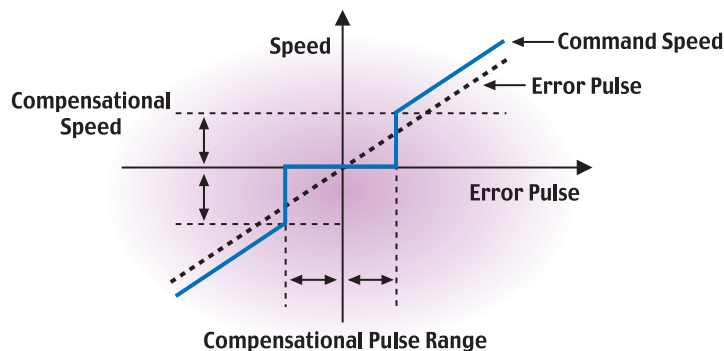
Forward/Reverse Division Type Analog Voltage Input

“+” and “-” inclinations of 10[V] are separately set up.



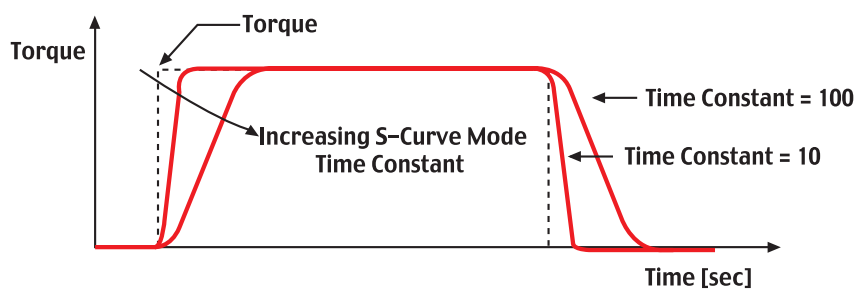
Position Control Mode Speed Compensation Function

Position settle time is shortened by adding compensational speed to Internal servo drive speed at position control mode.

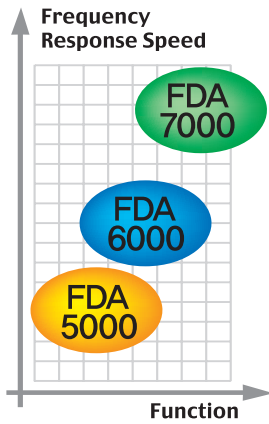


Torque Direction Acceleration & Deceleration and S-curve Operation Function

Acceleration & deceleration time set-up and S-curve operation is fully available.



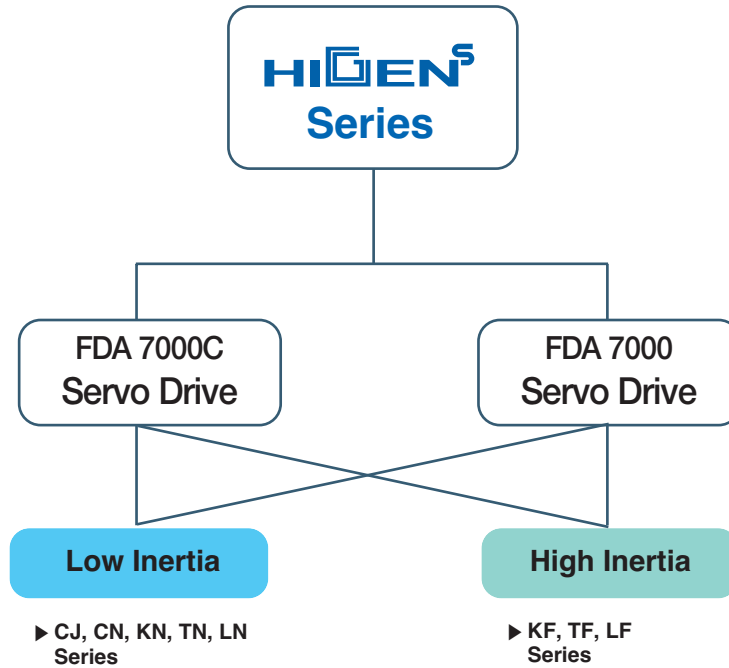
Features of FDA Series



Model	FDA7000	FDA6000	FDA5000
Frequency Response Characteristics	600Hz	400Hz	250Hz
CPU	VC33 (120MHz)	VC33 (120MHz)	C32 (40MHz)
AD Converter	16 bit	16 bit	12 bit
Encoder	- Serial 17bit/33bit (131072p/rev.) - Incremental 8192p/rev.	- ABS 11/13bit (2048 p/rev.) - Incremental 6000 p/rev.	- ABS 11/13bit (2048 p/rev.) - Incremental 6000 p/rev.
Communication Channel	RS-232 RS-485 Modbus Open Protocol Applied Maximum Transmission Speed 57.6Kbps	RS-232 RS-485 Modbus Open Protocol Applied Maximum Transmission Speed 9.6Kbps	RS-232 Maximum Transmission Speed 9.6Kbps
External Communication Module	optional	-	-
PC Loader	Combination of Standard & Control Type	Combination of Standard & Control Type	Separation of Standard & Control Type
Built-in Mount Loader	O	-	-
Digital Input Interface	12 pin(20 function)	12 pin	12 pin
Digital Output Interface	10pin(18 function)	9 pin	9 pin
Notch Filter	Duplex Notch filter Resonance Suppression	Single Notch filter Resonance Suppression	Single Notch filter Resonance Suppression
Resonance Frequency Analyzer	O	-	-
Jog Mode	Key Jog Auto Jog (8 step-2 mode)	Key Jog Auto Jog (3step-1 mode)	Key Jog Auto Jog (3 step-1 mode)
Auto-Tuning	On-line	Off-line	Off-line
Auto-Tuning Response Characteristics Set up Function	O	-	-
Position Mode Speed Compensation Control Function	O	-	-
Auto Gain Change	O	△	-
Frictional Torque Compensation Function	O	-	-
Compensational Feed-forward Torque Function	O	-	-
P-PI Auto Mode Change	O	-	-
PI-IP Control Mode Change	O	-	-
Offset Auto Control	O	-	-

Various HI⁵EN^S Series

Various HI⁵EN^S series offers the freedom of choice for the servo motor optimization on each usage & and mechanical characteristics.



Series	Rated Speed (Maximum Speed)	Rated Output	Use
CJ Series	3000 (5000)	0.05 ~ 0.4[kW] 4Type	■ Low Inertia <ul style="list-style-type: none"> ● Robot ● Semiconductor Production Equipment ● Chip Mounter ● Customized Machinery ● Tool Machinery ● Food Processing Machinery ● Carrying Machinery ● Textile Machinery
CN Series	3000 (5000)	0.1 ~ 5.0[kW] 15Type	
KN Series	2000 (3000)	0.3 ~ 5.5[kW] 12Type	
TN Series	1500 (3000)	0.45 ~ 5.5[kW] 11Type	
LN Series	1000 (2000)	0.3 ~ 5.5[kW] 9Type	
KF Series	2000 (3000)	0.75 ~ 5.0[kW] 6Type	■ High Inertia <ul style="list-style-type: none"> ● Tool Machinery ● Customized Machinery ● Carrying Machinery ● Transferring Machinery ● Food Processing Machinery
TF Series	1500 (3000)	0.45 ~ 4.4[kW] 6Type	
LF Series	1000 (2000)	0.3 ~ 3.0[kW] 6Type	

Full Digital Servo Drive

Full Digital Servo Drive (FDA7000) with Multi-Control :
Position / Speed / Torque Controlled by 32 bit DSP

Support
various type
of motors

- Various Motor Type Coupling Function
 - Cylinder type/Pan-cake
 - Large torque type/High speed type
 - Super-low inertia type/ low inertia type/ high inertia type
 - Built-in decelerator type/precise analyzing encoding attached type(for Direct-drive)
- Capacity : 50[W] ~ 4.5[kW]
- Encoder : Absolute serial type : 11, 17, 21[bit/rev.]
Incremental type : 2000 ~ 6000[p/rev.]

All-in-one
control

- Available Torque/Speed/Position control and their combination
- Operation by parameter setting
- Pre-defined motion control (Single axis controller built-in drive model)

- Standard wiring and customized function assignment by applying multi-functional input output selection usage
- Input : 20 Functional Option Type + 6 Function Pre-Setting for Each Mode
Output : 18 Functional Option Type + 6 Function Pre-Setting for Each Mode

Digital Inputs (12)

SVONEN	STOP
E.STOP	ALMRST
P/PI	SPD1/GEAR1
SPD2/GEAR2	SPD3
DIR	CWLIM
CCMLIM	SOPDLIM



Digital Outputs (10)

SVONOFF	BRAKE
RDY	INSPD
SPDOUT	ALARM
PCWOUT	NCWOUT
ZSPD	PPIOUT

Analog Command (Speed / Torque)

Pulse Command (6 types)

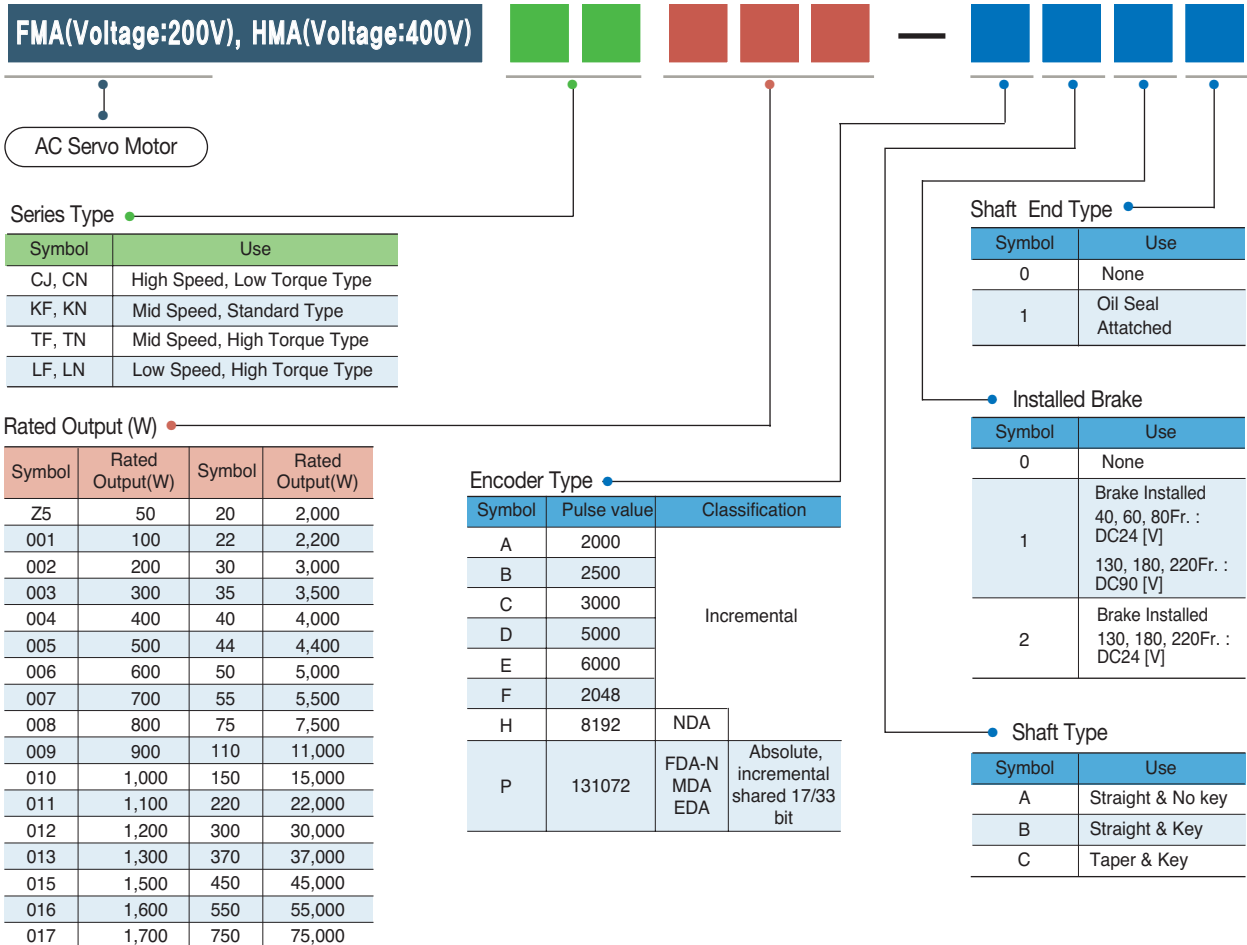
Alarm Code (4bit)

Analog Monitor (2Ch/12bit)

Pulse Output (A/B/Z)

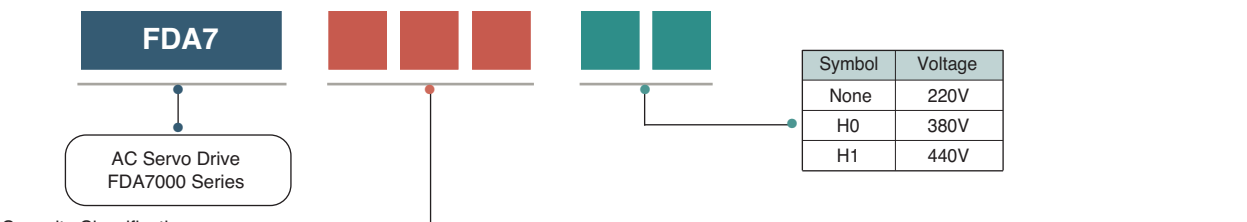
Position Data (Serial)

Servo Motor Model Marking



※45 / 55 / 75kW Servo Motors are going to be launched in the next year

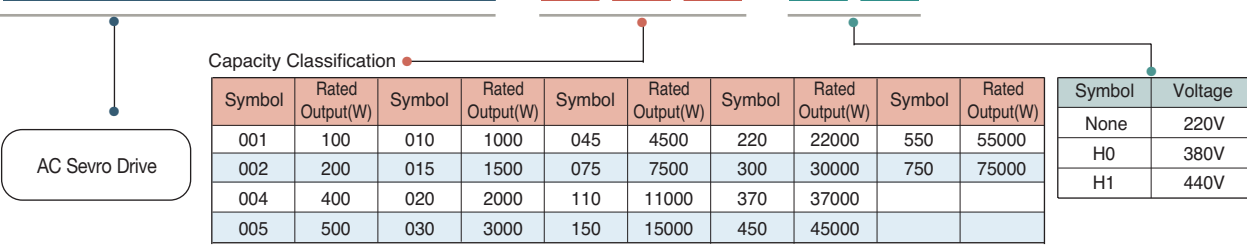
Servo Drive Model Marking



Symbol	Rated Output(W)	Symbol	Rated Output(W)	Symbol	Rated Output(W)	Symbol	Rated Output(W)
001	100	010	1000	045	4500	220	22000
002	200	015/015B	1500	075	7500	300	30000
004/004B	400	020/020B	2000	110	11000	370	37000
005	500	030/030B	3000	150	15000		

Note : When you adopt Serial 17bit ABS type, please attach Battery(option)
 AC220V Drives are available for 100-15000W, AC 380V / AC 400V Drives are available for 2000-37000W.

FDA-N / NDA-7 / MDA-7 / EDA-7



※MDA7000 Series is available up to maximum 3,0kW.
 ※AC220V Drives are available for 100-15000W, AC 380V / AC 400V Drives are available for 2000-37000W.

Main Circuit & Wiring Diagram for Adaptive Devices

Electricity Source Type
Use between AC 200 V and 230 V with 3 phase power source allowed by Servo. Must use transformer, when power supply voltage is AC 400 V class.

3 phase AC200~230V
50~60Hz

NFB (No Fuse Circuit Breaker)
Circuit is automatically cut off when over current occurs. NFB is also useful in circuit wiring fixing.

Noise Filter
Must use for cutting off external noise through common power supply.

Magnetic Contactor
On/off the Servo power. Don't use this for starting and stop, which will bring about decreasing Servo's durability.

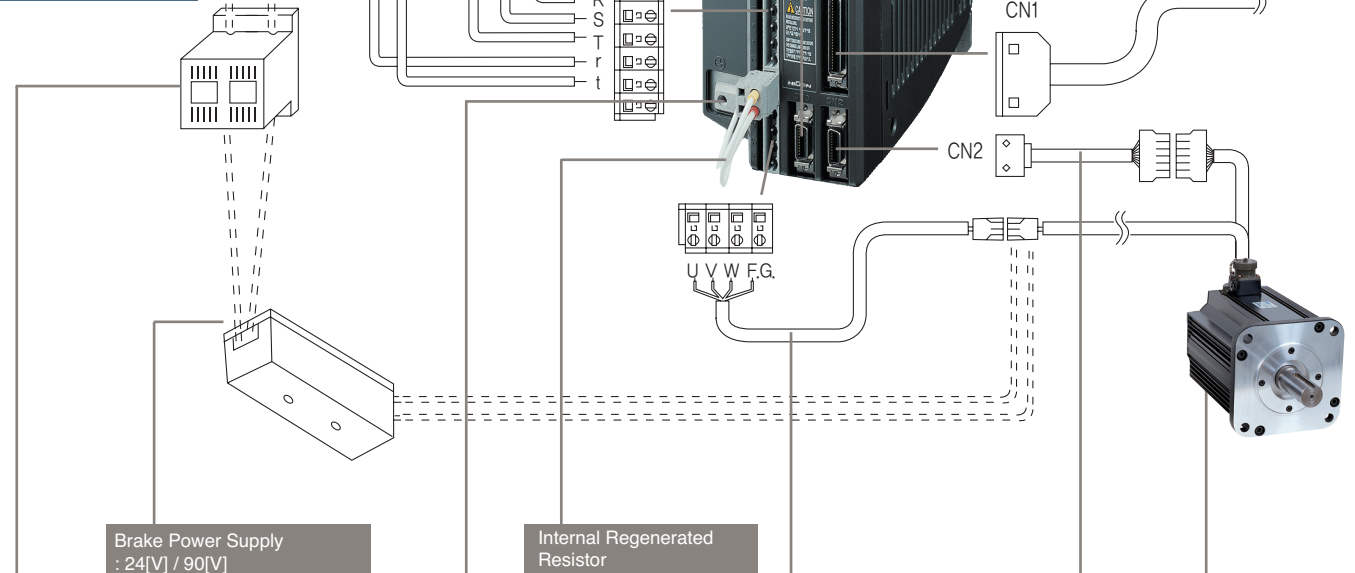
Wiring
Improper wiring can cause servo break-down. It is very important that control signal line should have enough distance with main circuit and little noise effect.

<P-DORI St.>
Useful for various kinds parameter setting and operational condition displaying.



Servo Drive
Servo driven longevity of Servo depends on surrounding temperature. Use under 50°C, on the average of 40°C.

CN1
Connector for servo drive and higher control machine. Connectable higher control machine like PLC, NC, Motion Controller and so on.



Brake Power Supply : 24[V] / 90[V]

Internal Regenerated Resistor

Earthing
For the electric shock prevention, ground motor & driver terminal to 3rd class or higher earthing with shortest distance.

Motor
Don't make impact on motor shaft and detector with hammer and so on.

MAGNETIC CONTACTOR
For motor brake control

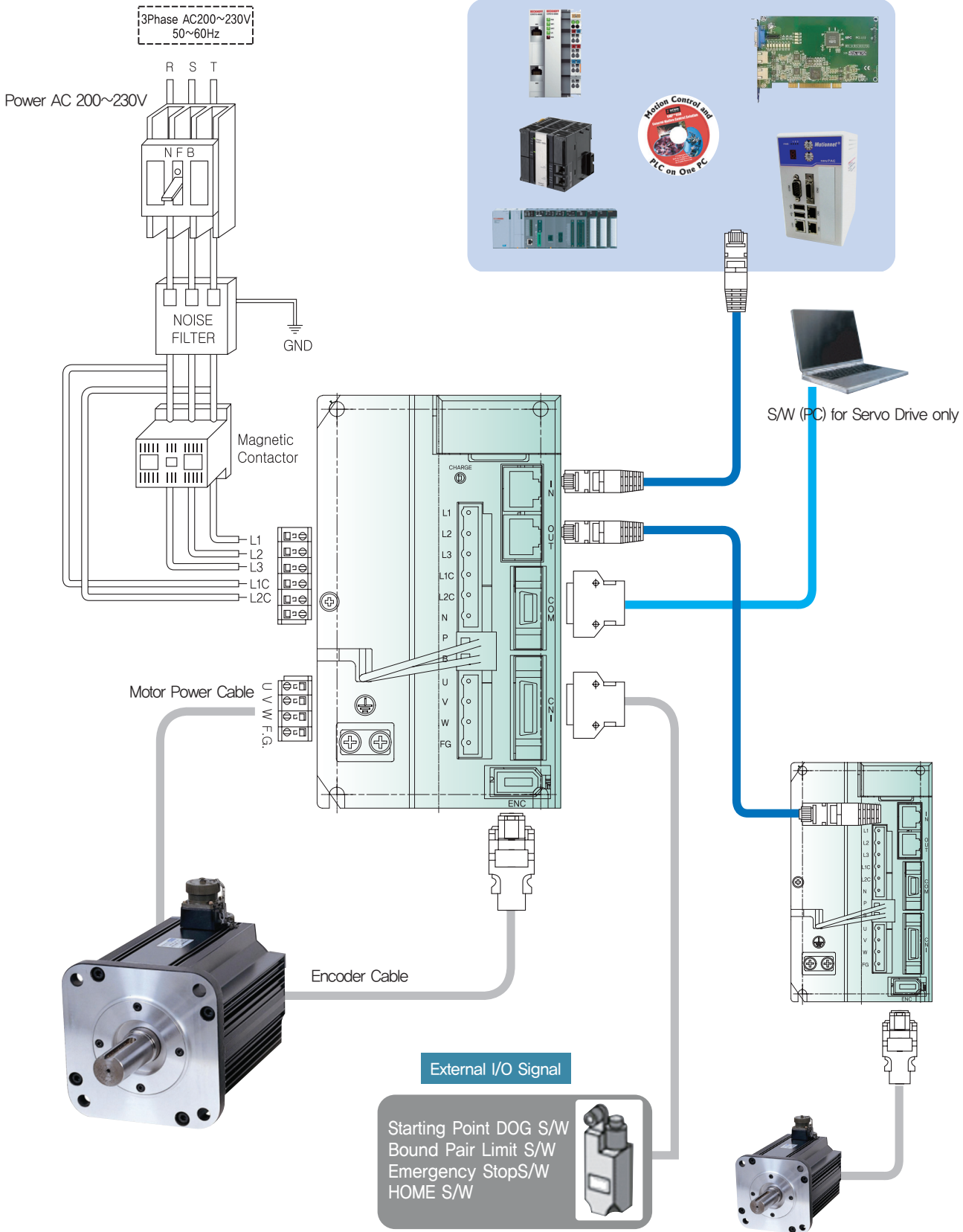
Motor Power Source Wiring
Drive and Motor's U, V, W, FG terminals should be correspondent.

Encoder Wiring
Connect encoder cable connector.

※ Note : The dotted line is a diagram for the use of the brake attached motor

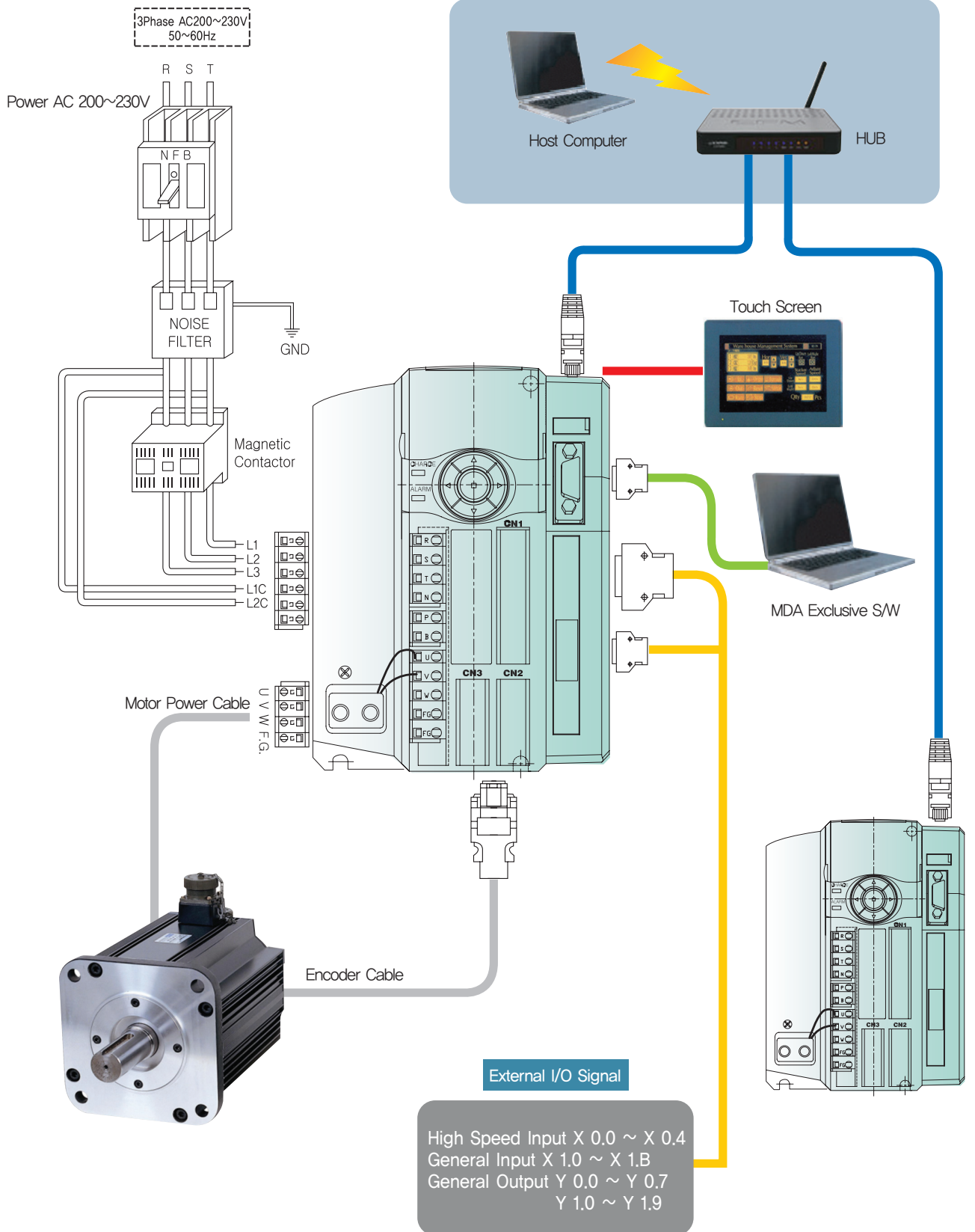
Wiring (Connection) of Main Circuit and Devices

[FDA-N000 / NDA-7000 / EDA-7000]



Wiring (Connection) of Main Circuit and Devices

[MDA-7000]



Servo Drive & Motor Combination Table

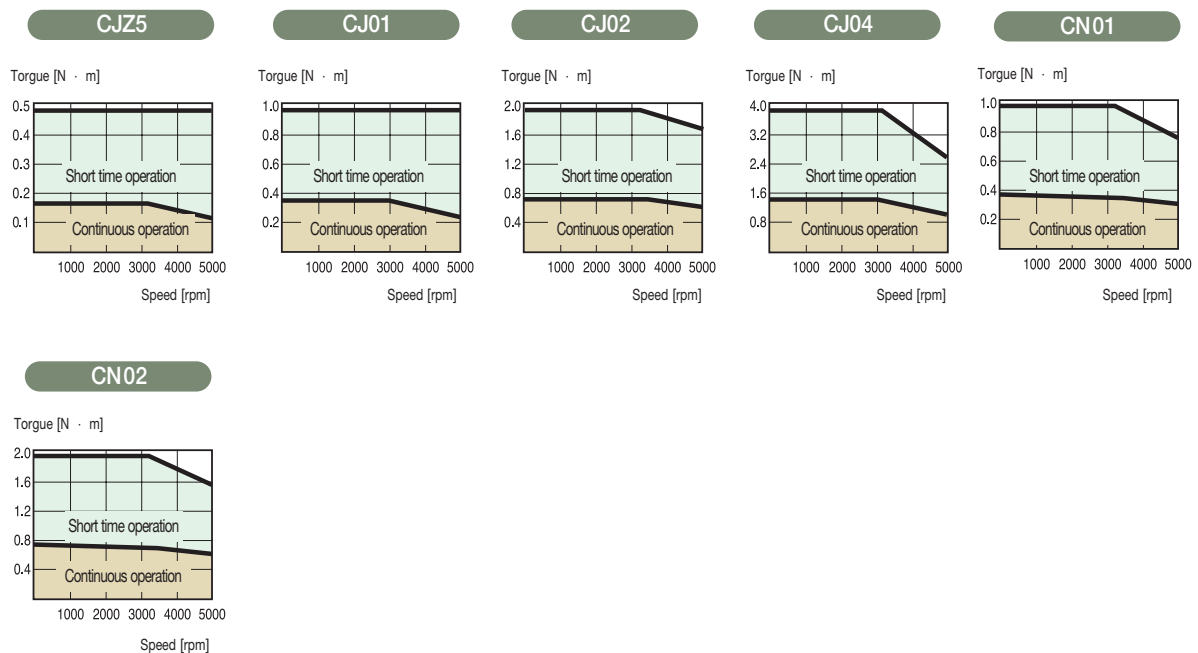
Drive [FDA70-]	Applicable Motor							
	CJ Series 3000/5000 [rpm]	CN Series 3000/5000 [rpm]	KN Series 2000/3000 [rpm]	TN Series 1500/3000 [rpm]	LN Series 1000/2000 [rpm]	KF Series 2000/3000 [rpm]	TF Series 1500/3000 [rpm]	LF Series 1000/2000 [rpm]
01	CJZ5 CJ01	CN01	-	-	-	-	-	-
02	CJ02	CN02	-	-	-	-	-	-
04	CJ04	CN03 CN04 CN04A CN05	KN03 KN05	-	LN03	-	-	LF03
05	-	CN06 CN08	KN06 KN06A	TN05	LN06	-	TF05	LF06
10	-	CN09 CN10	KN07 KN11	TN09	LN09	KF08 KF10	TF09	LF09
15	-	CN15	KN16	TN13	LN12 LN12A	KF15	TF13	LF12
20	-	CN22	KN22 KN22A	TN17 TN20	LN20	KF22	TF20	LF20
30	-	CN30 CN30A	KN35	TN30	LN30	KF35	TF30	LF30
45	-	CN50A	KN55	TN44 TN55	LN40 LN55	KF50	TF44	-
75	-	-	KN70	TN75N	LN55	-	-	-
110	-	-	-	TN110	-	-	-	-
150	-	-	-	TN150	-	-	-	-
220	-	-	-	TN220	-	-	-	-
300	-	-	-	TN300	-	-	-	-
370	-	-	-	TN370	-	-	-	-



Servo Drive and Motor Specifications [200V Class]

Motor [FMA]		CJZ5	CJ01	CJ02	CJ04	CN01	CN02	
Drive [FDA7~]		001		002	004	001	002	
Flange Size (□)		40			60			
Rated Output (W)		50	100	200	400	100	200	
Rated Current A (rms)		0.81	0.90	1.80	2.65	1.25	2.1	
Maximum Instantaneous Current A (rms)		2.43	2.70	5.40	7.95	3.75	6.3	
Rated Torque	(N · m)	0.16	0.32	0.64	1.27	0.32	0.64	
	(kgf · cm)	1.62	3.25	6.5	13.0	3.25	6.5	
Maximum Instantaneous Torque	(N · m)	0.48	0.95	1.92	3.81	0.96	1.92	
	(kgf · cm)	4.87	9.74	19.5	39.0	9.75	19.5	
Rated RPM (rpm)		3000						
Maximum RPM (rpm)		5000						
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	0.049	0.081	0.251	0.449	0.061	0.095	
	(kg · m ² · 10 ⁻⁴)	0.048	0.079	0.246	0.440	0.06	0.093	
Permitted Load Inertia Ratio (with Rotor)		Under 15 times				Under 30 times		
Rated Power Rate (kW/s)		5.3	12.8	16.5	36.8	17.0	43.6	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]						
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]						
Weight (kg)		0.42	0.55	1.0	1.5	0.85	1.14	

Torque/Speed Characteristics

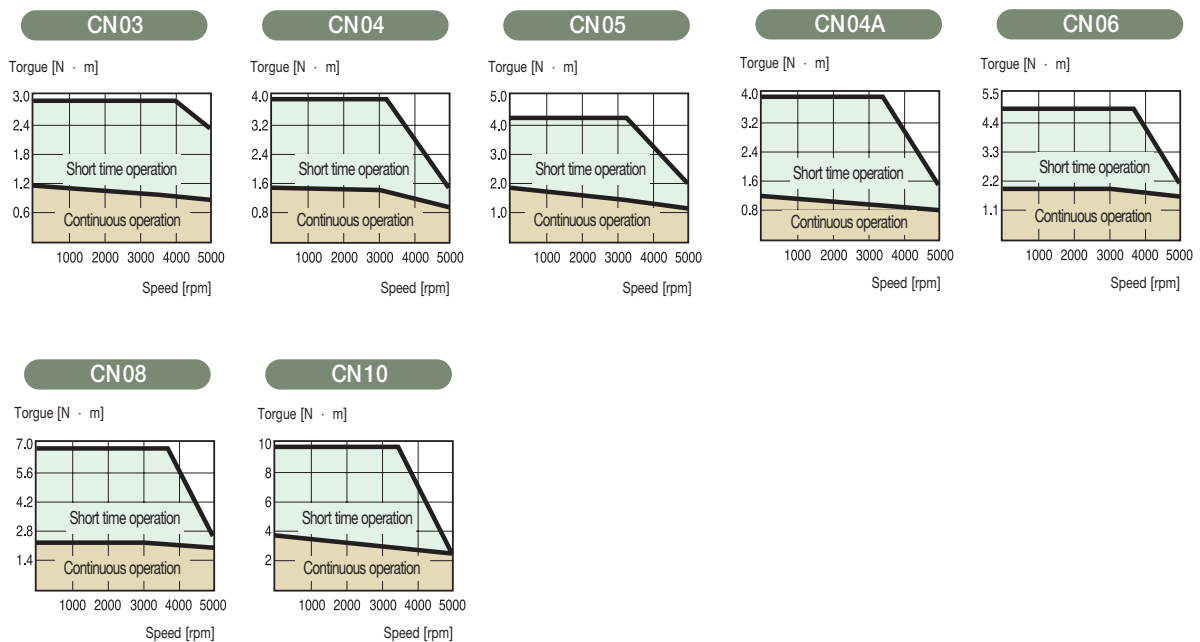


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]	CN03	CN04	CN05	CN04A	CN06	CN08	CN10	
Drive [FDA7~]	004			005		010		
Flange Size (□)	60			80				
Rated Output (W)	300	400	500	400	600	800	1000	
Rated Current A (rms)	2.8	2.85	3.2	2.8	3.5	4.65	5.8	
Maximum Instantaneous Current A (rms)	8.4	8.55	9.6	8.4	10.5	12.54	17.4	
Rated Torque	(N · m)	0.96	1.27	1.59	1.27	1.91	3.18	
	(kgf · cm)	9.75	13.0	16.2	13.0	19.5	32.5	
Maximum Instantaneous Torque	(N · m)	2.88	3.81	4.77	3.81	5.3	9.53	
	(kgf · cm)	29.3	39.0	48.7	39.0	54.5	97.5	
Rated RPM (rpm)	3000							
Maximum RPM (rpm)	5000							
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	0.129	0.163	0.208	1.1	1.5	1.77	2.11
	(kg · m ² · 10 ⁻⁴)	0.126	0.160	0.204	1.08	1.47	1.74	2.07
Permitted Load Inertia Ratio (with Rotor)	Under 30 times				Under 20 times			
Rated Power Rate (kW/s)	72.2	101.6	124.3	15.0	24.8	37.4	49.0	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]						
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]						
Weight (kg)	1.43	1.73	2.03	2.1	2.55	3.1	3.7	

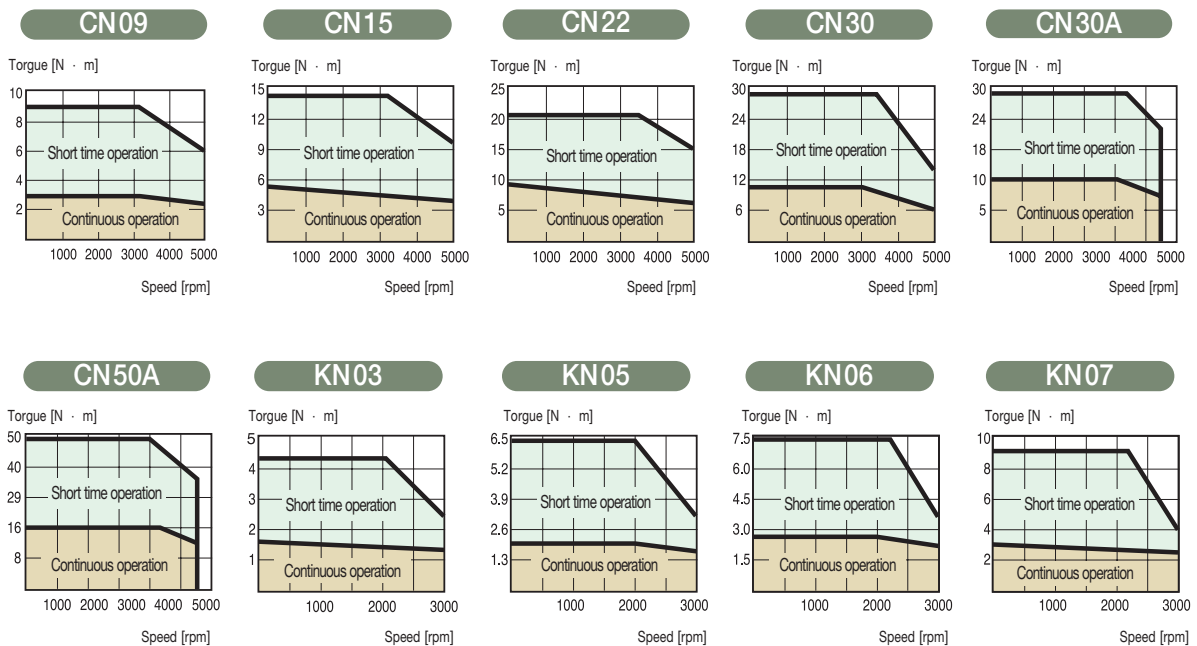
Torque/Speed Characteristics



Servo Drive and Motor Specifications [200V Class]

Motor [FMA]	CN09	CN15	CN22	CN30	CN30A	CN50A	KN03	KN05	KN06	KN07	
Drive [FDA7~]	010	015	020	030		045	004		005	010	
Flange Size(□)	130				180		80				
Rated Output (W)	900	1500	2200	3000	3000	5000	300	450	550	650	
Rated Current A (rms)	4.6	8.8	12.1	17.2	19.2	23.3	2.5	3.1	3.7	4.6	
Maximum Instantaneous Current A (rms)	13.8	26.4	36.3	51.6	48	58.2	7.5	9.3	10.7	13.8	
Rated Torque	(N · m)	2.86	4.77	7.0	9.54	9.54	1.43	2.15	2.57	3.04	
	(kgf · cm)	29.2	48.7	71.4	97.4	97.4	14.6	21.9	26.2	31	
Maximum Instantaneous Torque	(N · m)	8.6	14.3	21	28.6	28.6	4.29	6.45	7.42	9.12	
	(kgf · cm)	87.6	146	214	292	292	43.8	65.7	72.7	93	
Rated RPM (rpm)	3000					2000					
Maximum RPM (rpm)	5000				4500		3000				
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	4.12	7.63	11.12	14.63	26.1	43.8	1.1	1.5	1.77	2.11
	(kg · m ² · 10 ⁻⁴)	4.04	7.48	10.9	14.34	25.6	42.9	1.08	1.47	1.74	2.07
Permitted Load Inertia Ratio (with Rotor)	Under 10 times					Under 20 times					
Rated Power Rate (kW/s)	20.4	30.6	45.1	63.9	35.7	58.9	18.9	31.3	38.0	44.6	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]									
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]									
Weight (kg)	5.5	7.0	8.5	10.0	12.9	18.2	2.1	2.55	3.1	3.7	

Torque/Speed Characteristics

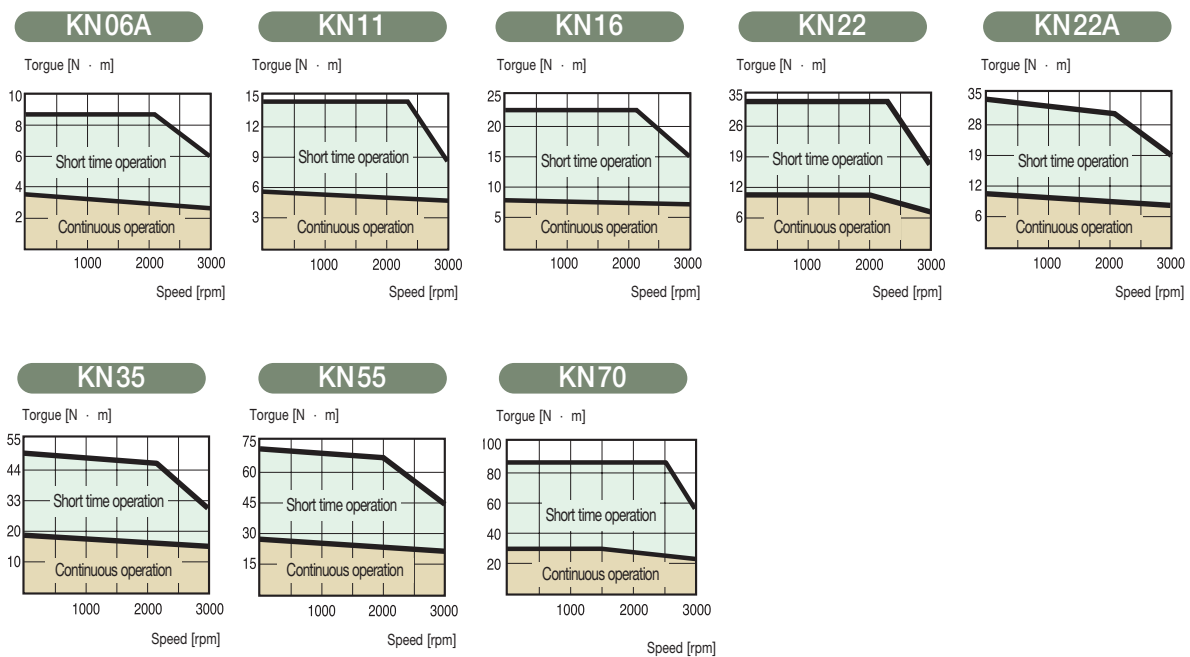


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]	KN06A	KN11	KN16	KN22	KN22A	KN35	KN55	KN70	
Drive [FDA7~]	005	010	015	020		030	045	075	
Flange Size (□)	130				180				
Rated Output (W)	600	1,100	1600	2200	2200	3500	5500	7000	
Rated Current A (rms)	3.7	6.7	10.2	14.1	15.2	20.2	31.6	36	
Maximum Instantaneous Current A (rms)	11.1	18.1	30.3	42.3	38	50.5	79	108	
Rated Torque	(N · m)	2.86	5.25	7.64	10.5	10.49	16.67	26.18	33.4
	(kgf · cm)	29.2	53.6	77.9	107	107	170	267	340
Maximum Instantaneous Torque	(N · m)	8.6	14.2	22.5	31.5	26.2	41.7	65.4	100.2
	(kgf · cm)	87.6	145	230	321	267.5	425	667.5	1020
Rated RPM (rpm)	2000								
Maximum RPM (rpm)	3000								
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	4.12	7.63	11.12	14.63	26.1	43.8	67.8	100.1
	(kg · m ² · 10 ⁻⁴)	4.04	7.48	10.9	14.34	25.6	42.9	66.4	98.1
Permitted Load Inertia Ratio (with Rotor)	Under 10 times								
Rated Power Rate (kW/s)	2.04	30.6	53.5	76.7	43.0	64.7	103.0	113.7	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]							
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]							
Weight (kg)	5.5	7.0	8.5	10.0	12.9	18.2	26.8	36.1	

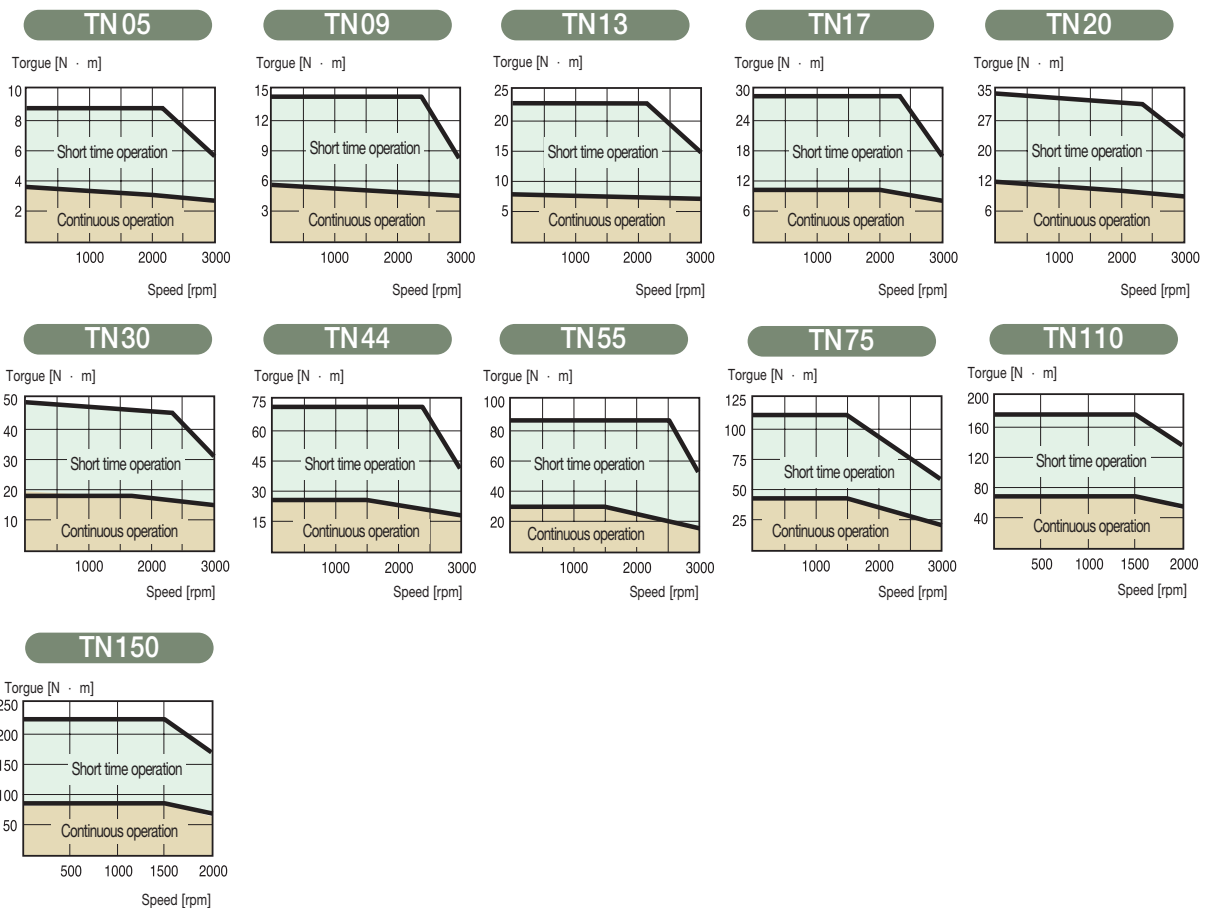
Torque/Speed Characteristics



Servo Drive and Motor Specifications [200V Class]

Motor [FMA]	TN05	TN09	TN13	TN17	TN20	TN30	TN44	TN55	TN75N	TN110	TN150	
Drive [FDA7~]	005	010	015	020		030	045		075	110	150	
Flange Size(□)	130				180				220			
Rated Output (W)	450	850	1300	1700	1800	2900	4400	5500	7500	11000	15000	
Rated Current A (rms)	3.7	6.9	10.9	14.4	16.4	22.6	33.1	37.0	47.6	54.5	73.7	
Maximum Instantaneous Current A (rms)	11.1	18.1	29.65	39.2	49.2	56.6	94.67	93.0	114	131	184.2	
Rated Torque	(N · m)	2.87	5.41	8.27	10.8	11.5	18.6	27.9	35.0	47.7	70	95.4
	(kgf · cm)	29.3	55.2	84.4	110	117	190	285	357	486.9	714	974
Maximum Instantaneous Torque	(N · m)	8.61	14.2	22.5	29.4	34.5	46.6	79.8	88	119.3	175	229
	(kgf · cm)	89.5	145	230	300	351	475	815.1	893	1217	1785	2434
Rated RPM (rpm)	1500											
Maximum RPM (rpm)	3000									2000		
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	4.12	7.63	11.12	14.63	26.1	43.8	67.8	100.1	126.4	201.5	314.5
	(kg · m ² · 10 ⁻⁴)	4.04	7.48	10.9	14.34	25.1	42.9	66.4	98.1	124	197.5	308.2
Permitted Load Inertia Ratio (with Rotor)	Under 10 times											
Rated Power Rate (kW/s)	20.5	39.1	62.8	81.1	51.5	80.8	117.4	124.8	183.8	236	301	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]										
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]										
Weight (kg)	5.5	7.0	8.5	10.0	12.9	18.2	26.8	36.1	45.7	59	84	

Torque/Speed Characteristics

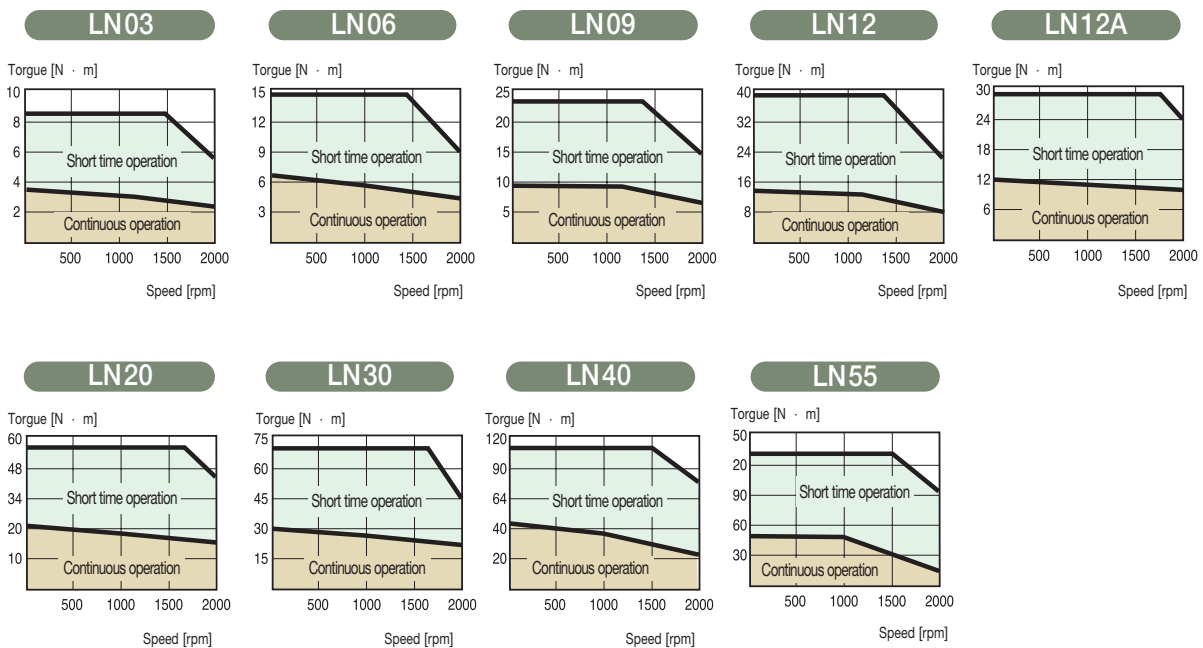


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]	LN03	LN06	LN09	LN12	LN12A	LN20	LN30	LN40	LN55	
Drive [FDA7~]	004	005	010	015		020	030	045		
Flange Size(□)	130				180					
Rated Output (W)	300	600	900	1200	1200	2000	3000	4000	5500	
Rated Current A (rms)	2.6	4.8	7.3	9.7	8.9	17.2	24.9	32.2	36.5	
Maximum Instantaneous Current A (rms)	7.8	12.0	18.76	29.0	22.2	51.6	62.34	96.6	91.3	
Rated Torque	(N · m)	2.86	5.72	8.6	11.5	11.5	19.1	28.6	38.2	52.5
	(kgf · cm)	29.2	58.4	87.7	117	116.9	194.8	292.2	389.6	535.5
Maximum Instantaneous Torque	(N · m)	8.6	14.3	22.1	34.4	28.7	57.3	71.6	114.6	131.2
	(kgf · cm)	87.6	146	226	351	292.3	584.4	730.5	1168.8	1338.8
Rated RPM (rpm)	1000									
Maximum RPM (rpm)	2000									
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	4.12	7.63	11.12	14.63	26.1	43.8	67.8	100.1	126.4
	(kg · m ² · 10 ⁻⁴)	4.04	7.48	10.9	14.34	25.6	42.9	66.4	98.1	123.9
Permitted Load Inertia Ratio (with Rotor)	Under 10 times									
Rated Power Rate (kW/s)	20.5	43.3	68.2	91.7	51.4	84.9	123.4	148.6	226.9	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]								
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]								
Weight (kg)	5.5	7.0	8.5	10.0	12.9	18.2	26.8	36.1	45.7	

Torque/Speed Characteristics

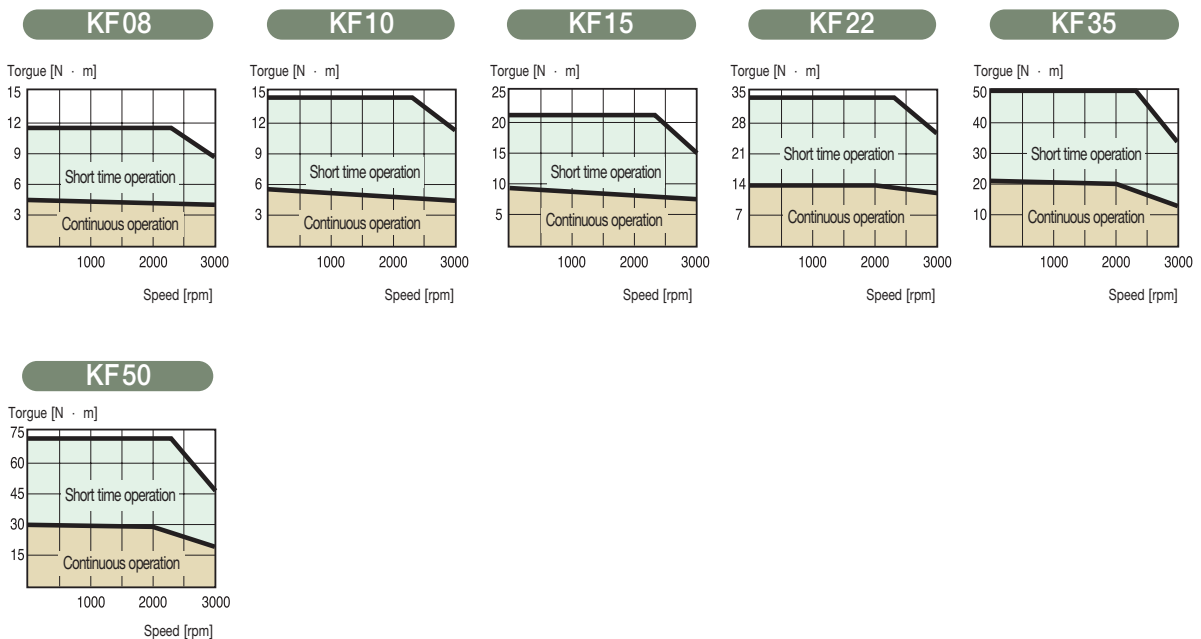


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]		KF08	KF10	KF15	KF22	KF35	KF50
Drive [FDA7~]		010		015	020	030	045
Flange Size(□)		130			180		
Rated Output (W)		750	1000	1500	2200	3500	5000
Rated Current A (rms)		5.3	6.2	9.2	14.1	20.5	33.8
Maximum Instantaneous Current A (rms)		15.9	18.6	27.6	42.3	61.5	101.4
Rated Torque	(N · m)	3.58	4.77	7.16	10.5	16.7	23.9
	(kgf · cm)	36.53	48.7	73.1	107	170	244
Maximum Instantaneous Torque	(N · m)	10.74	14.31	21.56	31.4	50.0	71.7
	(kgf · cm)	109.5	146.0	220.0	321	510	732
Rated RPM (rpm)		2000					
Maximum RPM (rpm)		3000					
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	10.5	15.5	25.3	65.3	100.5	159.1
	(kg · m ² · 10 ⁻⁴)	10.3	15.2	24.8	64.0	98.5	156
Permitted Load Inertia Ratio (with Rotor)		Under 10 times					
Rated Power Rate (kW/s)		12.3	15.0	20.7	17.2	28.2	36.4
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]					
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]					
Weight (kg)		8.2	11.6	15.8	17.2	27.4	38.3

Torque/Speed Characteristics

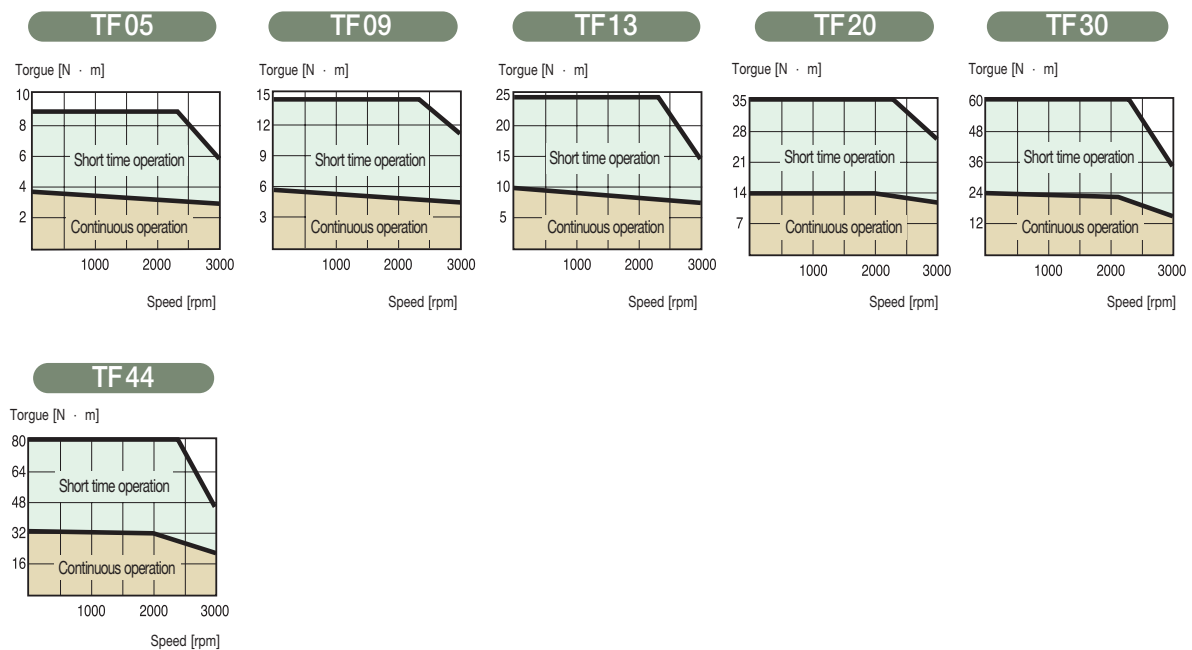


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]		TF05	TF09	TF13	TF20	TF30	TF44
Drive [FDA7~]		005	010	015	020	030	045
Flange Size (□)		130			180		
Rated Output (W)		450	850	1300	1800	2900	4400
Rated Current A (rms)		4.0	7.0	10.7	14.8	21.7	34.5
Maximum Instantaneous Current A (rms)		12.0	19.0	31.7	44.4	65.1	95.83
Rated Torque	(N · m)	2.87	5.41	8.27	11.5	18.6	27.9
	(kgf · cm)	29	55	85	117	190	285
Maximum Instantaneous Torque	(N · m)	8.61	14.7	24.5	34.4	55.9	77.5
	(kgf · cm)	89.5	150	250	351	570	790
Rated RPM (rpm)		1500					
Maximum RPM (rpm)		3000					
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	10.5	15.5	25.3	65.3	100.5	159.1
	(kg · m ² · 10 ⁻⁴)	10.3	15.2	24.8	64.0	98.5	156
Permitted Load Inertia Ratio (with Rotor)		Under 10 times					
Rated Power Rate (kW/s)		7.85	19.1	28.0	20.5	35.2	50.0
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]					
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]					
Weight (kg)		8.2	11.6	15.8	17.2	27.4	38.3

Torque/Speed Characteristics

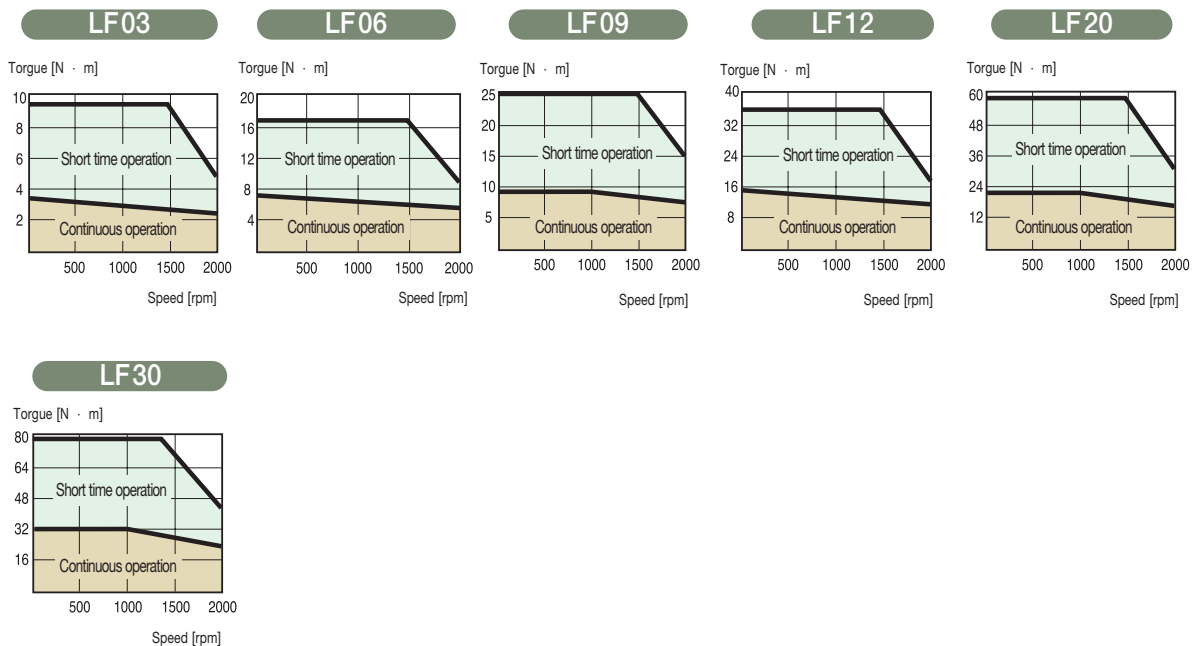


Servo Drive and Motor Specifications

[200V Class]

Motor [FMA]	LF03	LF06	LF09	LF12	LF20	LF30	
Drive [FDA7~]	004	005	010	015	020	030	
Flange Size(□)	130			180			
Rated Output (W)	300	600	900	1200	2000	3000	
Rated Current A (rms)	2.5	4.7	7.2	9.8	16.0	24.3	
Maximum Instantaneous Current A (rms)	7.5	13.65	19.21	29.32	48.0	67.34	
Rated Torque	(N · m)	2.84	5.68	8.62	11.5	19.1	28.4
	(kgf · cm)	29	58	88	117	195	290
Maximum Instantaneous Torque	(N · m)	8.7	16.5	23.0	34.4	57.3	78.7
	(kgf · cm)	90	169	235	351	585	803
Rated RPM (rpm)	1000						
Maximum RPM (rpm)	2000						
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	10.5	15.5	25.3	65.3	100.5	159.1
	(kg · m ² · 10 ⁻⁴)	10.3	15.2	24.8	64.0	98.5	158
Permitted Load Inertia Ratio (with Rotor)	Under 10 times						
Rated Power Rate (kW/s)	7.85	21.3	30.0	20.5	37.0	51.8	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]					
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]					
Weight (kg)	8.2	11.6	15.8	17.2	27.4	38.3	

Torque/Speed Characteristics

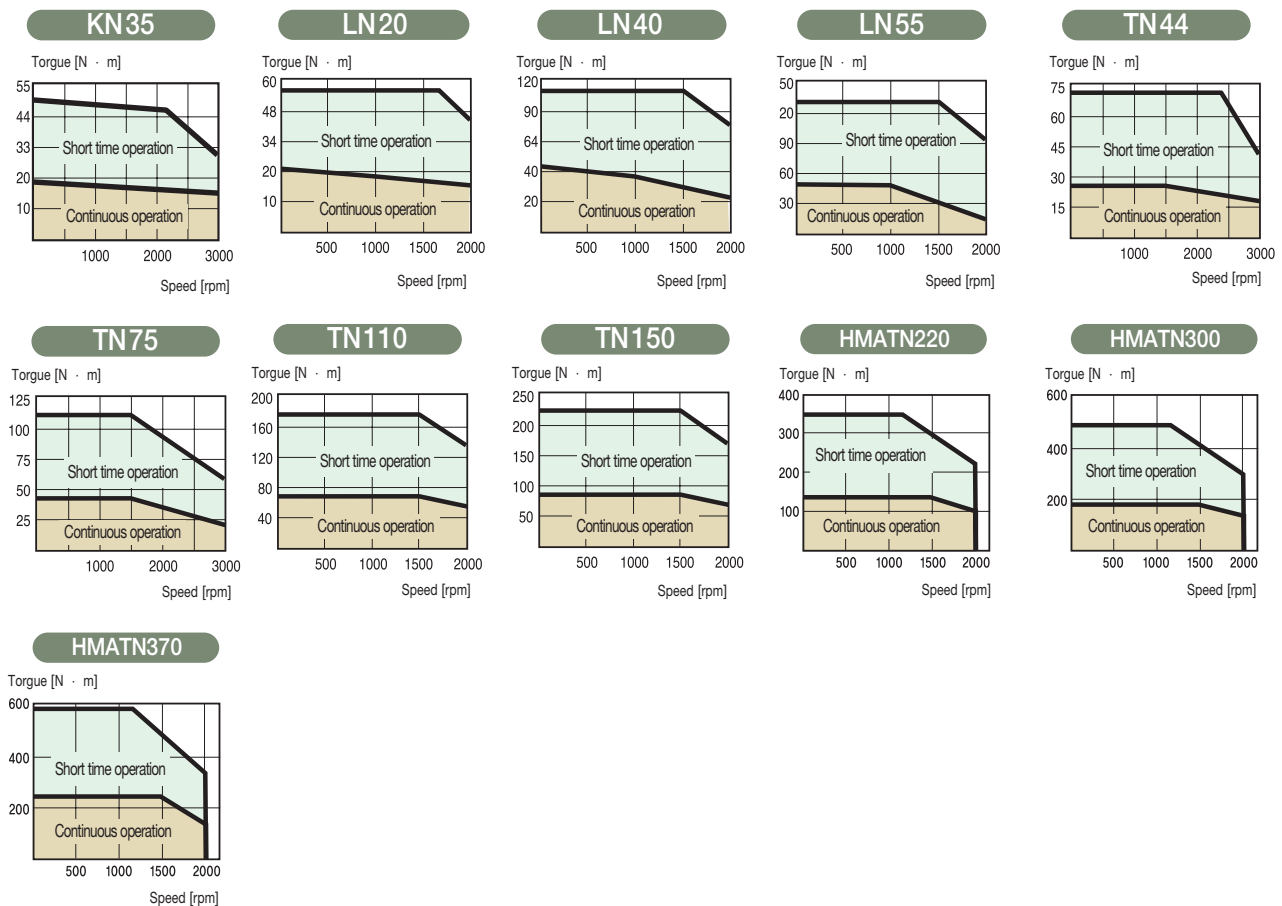


Servo Drive and Motor Specifications

[400V Class]

Motor [HMA]	KN35	LN20	LN40	LN55	TN44	TN75N	TN110	TN150	TN220	TN300	TN370	
Drive [FDA7~]	030-H	020-H	045-H	075-H	045-H	075-H	110-H	150-H	220-H	300-H	370-H	
Flange Size (□)	180					220			250			
Rated Output (W)	3500	2000	4000	5500	4400	7500	11000	15000	22000	30000	37000	
Rated Current A (rms)	11.68	8.42	18.82	23.8	16.5	35.5	35.8	45	45	62	77	
Maximum Instantaneous Current A (rms)	35.04	25.26	56.46	59.5	49.5	88.75	107.4	135	112.5	155	192.5	
Rated Torque	(N · m)	16.67	19.1	38.2	52.5	28	47.8	70	95.4	140	236	
	(kgf · cm)	170.03	194.8	389.64	535.5	284.6	487.6	714	973.08	1428	2407.2	
Maximum Instantaneous Torque	(N · m)	41.7	57.3	94.81	131.2	79.8	124.3	175	201	350	589	
	(kgf · cm)	425.34	584.5	967.06	1338.2	813.96	1267.9	1785	2050.2	3570	6007.8	
Rated RPM (rpm)	2000	1000	1000	1000	1500	1500	1500	1500	1500	1500	1500	
Maximum RPM (rpm)	3000	2000	2000	2000	3000	3000	2000	2000	2000	2000	2000	
Rotor Inertia (=GD ² /4)	(gf · cm · s ²)	43.8	43.8	100.1	126.4	67.7	126.5	201.5	314.5	412.8	473.9	620.6
	(kg · m ² · s ²)	42.9	42.9	98.1	123.9	66.4	124	197.5	308.3	404.7	464.6	608.5
Permitted Load Inertia Ratio (with Rotor)	Under 10 times											
Rated Power Rate (kW/s)	64.7	85.0	148.6	226.9	117.4	183.8	247.9	295.1	484.1	784.9	915	
Detector Type	Incremental	17/33 bit 131072 [p/rev.] or 2000 ~ 6000 [p/rev.]										
	Absolute	17/33 bit 131072 [p/rev.] or 11/13 bit 2048 [p/rev.]										
Weight (kg)	18.2	18.2	36.1	45.7	26.8	45.7	59	84	93	107	117	

Torque/Speed Characteristics



Ratings and Specifications for AC Drive

[FDA7000]

Servo Drive Type [FDA7___]		001	002	004B	005	010	015/ 015B	020/ 020B	030/ 030B	045	075	110	150	-	-	-
Servo Drive Type [FDA7___-H_]		-	-	-	-	-	-	020	030	045	075	110	150	220	300	370
Main Circuit Power Supply	Input Voltage, Frequency (Note1)	3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%					[FDA7___] 3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%									
	Permitted Voltage Change Ratio	Single phase AC230[V], 50/60[Hz] ± 5%					[FDA7___-H_] -H0 : 3 phase AC380[V], 50/60[Hz] ± 5%									
Control Circuit Power Supply	Input Voltage, Frequency	Separate Input Part N/A	[FDA7___] Single phase AC200 ~ 230[V], 50/60[Hz] ± 5%													
	Permitted Voltage Change Ratio		[FDA7___-H_] -H0 : Single phase AC380[V], 50/60[Hz] ± 5%													
Applied Detector	Detector Type	17/33bit Serial encoder, 11/13bit absolute value encoder, incremental 2000 ~ 6000 [p/rev.] 15 line type, 8192 [ppr](9wire)														
	Output Signal Type	Differential Line Driver Output														
	Detector Accuracy	Encoder Maximum per 1 rolling 131072 [pulse]														
	Detector Power Supply	Under DC 5[V], 0.3[A]														
Driving Type		Sine wave PWM Control Using IPM														
Speed Control Specifications	Speed Control Range	Internal Speed Command 1:5000 Analog Speed Command 1:2000														
	Frequency Response Characteristics	600[Hz]														
	Speed Command Input	DC 0 ~ ± 10[V], Maximum Speed (Controllable by parameter)														
	Speed Fluctuation Ratio	Under ± 0.01% (rated load: 0 ~ 100%) Under ± 0.01% (rated power voltage: 0 ± 10%) Under ± 0.1% (temperature change: 25 ± 25°C)														
	Acceleration & Deceleration Time	Available Straight line & S-Curve type (0 ~ 100[sec])														
Position Control Specifications	Position Input Pulse Frequency	500[kpps]														
	Position Input Pulse	Command + Pulse, Forward Pulse + Backward Pulse, 2 phase Pulse (A phase + B phase)														
	Position Input Type	Open Collector, Line Driver Output														
Torque Control Specifications	Detector Command Input	DC -10 ~ +10[V], Maximum Command (Controllable by parameter)														
	Torque Linearity	Under 4[%]														
	Speed Limit Command	DC -10 ~ +10[V], Maximum Speed (Controllable by parameter)														
Built-in Functions	Protective Function	Over Current, Regenerated Over Voltage, Over Load, Improper Motor Wiring, Encoder Disorder, Voltage Shortage, Over Speed, Excessive Error, etc.														
	Regenerated Resistor (W/Ω) [FDA7___]	50/50	70/50	250/25	500/12.5	1000/6.25	1600/4	2000/3	-							
	Regenerated Resistor (W/Ω) [FDA7___-H_]	-			250/40	500/20	1600/15	2000/15	3600/9	5000/5						
	Monitor Output	Speed, Torque (-5 ~ +5[V])														
	Dynamic Brake	Built-in														
	Additional Function	Testing Function (Jog or No-motor operation), Alarm Record, Forward & Backward Rotation, Encoder Signal Division Output														
Option		Motor Power Cable, Encoder Cable, Connector for CN1 & CN2, Digital Loader, Regenerated resistance														
Environment Specifications	Operating Ambient Temperature	0 ~ 50[°C]														
	Ambient Humidity	Under 90[%] (No dewdrops)														
	Storage Temperature	-20 ~ +80[°C]														
	Insulation Resistance	Over DC 500[V], 10 [MΩ]														
Weight (kg) [FDA7___]		1,0	1,0	1,5	1,9	1,9	4,3	4,4	4,5	4,6	15,0	24,0	24,5	-	-	-
Weight (kg) [FDA7___-H_]		-	-	-	-	-	-	6,0	6,2	6,4	15,0	23,0	24,0	35,4	51,7	52,3

(Note 1) These input voltage & frequency range guarantees motor rated output & rated rotational speed. In the case of voltage dropping, these cannot be assured

(Note 2) The regenerated resistance of the Drive (FDA7075 - FDA7150, FDA7075-H_ ~ FDA7370-H_) over 7.5[kW] is Option, Please inquire us separately

Ratings and Specifications for AC Drive

[EDA7000]

Servo Drive Type [EDA7__]		001	002	004	005	010	015	020	030	045	075	110	150	-	-	-
Servo Drive Type [EDA7__-H_]		-	-	-	-	-	-	020	030	045	075	110	150	220	300	370
Main Circuit Power Supply	Input Voltage, Frequency (Note1)	Single phase AC250[V], 60[Hz] ± 5%		3phase AC200 ~ 230[V], 50/60[Hz] ± 5%		Single phase AC230[V], 50/60[Hz] ± 5%		[EDA7__] 3 phase AC200 ~ 230[V], 50/60[Hz] ± 5% [EDA7__-H_] -H0 : 3 phase AC380[V], 50/60[Hz] ± 5% [EDA7__-H_] -H1 : 3 phase AC440[V], 50/60[Hz] ± 5%								
	Permitted Voltage Change Ratio	Single phase AC207 ~ 253[V] (Input voltage range +10/-10%)		3 phase AC170 ~ 253[V] (Input voltage range +10/-15%)		Single phase AC207 ~ 253[V] (Input voltage range +10/-10%)		Input voltage range +10/-15%								
Control Circuit Power Supply	Input Voltage, Frequency	[EDA7__] Single phase AC200 ~ 230[V], 50/60[Hz] ± 5% [EDA7__-H_] -H0 : Single phase AC380[V], 50/60[Hz] ± 5% [EDA7__-H_] -H1 : Single phase AC440[V], 50/60[Hz] ± 5%														
	Permitted Voltage Change Ratio	Input voltage range +10/-15%														
Applied Detector	Detector Type	17bit Serial encoder														
	Output Signal Type	Differential Line Driver Output														
	Detector Accuracy	Encoder Maximum per 1 rolling 131072 [pulse]														
	Detector Power Supply	Under DC 5[V], 0.3[A]														
Driving Type		Sine wave PWM Control Using IPM														
Speed Control Specifications	Speed Control Range	Internal Speed Command 1:5000														
	Frequency Response Characteristics	600 [Hz]														
	Speed Command Type	EtherCAT Type (CoE)														
	Speed Fluctuation Ratio	Under ± 0.01% (rated load: 0 ~ 100%) Under ± 0.01% (rated power voltage: 0 ± 10%) Under ± 0.1% (temperature change: 25 ± 25°C)														
Acceleration & Deceleration Time		Available Straight line & S-Curve type (0 ~ 100[sec])														
Position Control Specifications	Position Command Type	EtherCAT Type (CoE)														
Torque Control Specifications	Torque Command Type	EtherCAT Type (CoE)														
	Torque Linearity	Under 4[%]														
Built-in Functions	Protective Function	Over Current, Regenerated Over Voltage, Over Load, Improper Motor Wiring, Encoder Disorder, Voltage Shortage, Over Speed, Excessive Error, etc.														
	Regenerated Resistor (W/Ω) [EDA7__]	50/50	70/50	250/25	500/12.5	1000/6.25	1600/4	2000/3	-							
	Regenerated Resistor (W/Ω) [EDA7__-H_]	-		250/40	500/20	1600/15	2000/15	3600/9	5000/5							
	Monitor Output	Speed, Torque (-5 ~ +5[V])														
	Dynamic Brake	Built-in														
Additional Function		Testing Function (Jog), Alarm Record, Forward & Backward Rotation, Encoder Signal Division Output														
Upper Controller		EtherCAT Master														
Option		Motor Power Cable, Encoder Cable, Connector for CN1 & CN2, Digital Loader														
Communication Cable		CAT.5e over STP(Shielded Twisted-pair) Cable														
Environment Specifications	Operating Ambient Temperature	0 ~ 50 [°C]														
	Ambient Humidity	Under 90[%] (No dewdrops.)														
	Storage Temperature	-20 ~ +80 [°C]														
	Insulation Resistance	Over DC 500[V], 10 [MΩ]														
Weight (kg) [EDA7__]		1.0	1.0	1.5	1.9	1.9	4.3	4.4	4.5	4.6	15	23	24	-	-	-
Weight (kg) [EDA7__-H_]		-	-	-	-	-	-	6.0	6.2	6.4	15	23	24	35.4	51.7	52.3

(Note1) These input voltage & frequency range guarantees motor rated output & rated rotational speed. In the case of voltage dropping, these cannot be assured

(Note2) The regenerated resistance of the Drive (FDA7075 - FDA7150, FDA7075-H_ ~ FDA7370-H_) over 7.5[kW] is Option. Please inquire us separately

Ratings and Specifications for AC Drive

[FDA-N000]

Servo Drive Type [FDA-N__]		001	002	004	005	010	015	020	030	045	075	110	150	-	-	-
Servo Drive Type [FDA-N__-H_]		-	-	-	-	-	-	020	030	045	075	110	150	220	300	370
Main Circuit Power Supply	Input Voltage, Frequency (Note1)	Single phase AC250[V], 60[Hz] ± 5%		3 phase AC200-230[V], 50/60[Hz] ± 5%		Single phase AC230[V], 50/60[Hz] ± 5%		[FDA-N__] 3 phase AC200 ~ 230[V], 50/60[Hz] ± 5% [FDA-N__-H_] -H0: 3 phase AC380[V], 50/60[Hz] ± 5% [FDA-N__-H_] -H1: 3 phase AC440[V], 50/60[Hz] ± 5%								
	Permitted Voltage Change Ratio	Single phase AC207 ~ 253[V] (Input voltage range +10/-10%)		3 phase AC170 ~ 253[V] (Input voltage range +10/-15%)		Single phase AC207 ~ 253[V] (Input voltage range +10/-10%)		Input voltage range +10/-15%								
Control Circuit Power Supply	Input Voltage, Frequency	[FDA-N__] Single phase AC200 ~ 230[V], 50/60[Hz] ± 5% [FDA-N__-H_] -H0: Single phase AC380[V], 50/60[Hz] ± 5% [FDA-N__-H_] -H1: Single phase AC440[V], 50/60[Hz] ± 5%														
	Permitted Voltage Change Ratio	Input voltage range +10/-15%														
Applied Detector	Detector Type	17bit Serial encoder														
	Output Signal Type	Differential Line Driver Output														
	Detector Accuracy	Encoder Maximum per 1 rolling 131072 [pulse]														
	Detector Power Supply	Under DC 5[V], 0.3[A]														
Driving Type		Sine wave PWM Control Using IPM														
Position Control Specifications	Position Input Pulse Frequency	500[kpps]														
	Position Input Pulse	EtherCAT Type (CoE)														
	Position Input Type	EtherCAT Type (CoE)														
Torque Control Specifications	Detector Command Input	EtherCAT Type (CoE)														
	Torque Linearity	Under 4[%]														
	Speed Limit Command	EtherCAT Type (CoE)														
Built-in Functions	Protective Function	Over Current, Regenerated Over Voltage, Over Load, Improper Motor Wiring, Encoder Disorder, Voltage Shortage, Over Speed, Excessive Error, etc.														
	Regenerated Resistor (W/Ω) [FDA-N__]	50/50	70/50	250/25	500/12.5	1000/6.25	1600/4	2000/3								
	Regenerated Resistor (W/Ω) [FDA-N__-H_]	-		50/50		70/50		250/25	500/12.5							
	Monitor Output	Speed, Torque (-5 ~ +5[V])														
	Dynamic Brake	Built-in														
Additional Function	Testing Function (Jog), Alarm Record, Forward & Backward Rotation, Encoder Signal Division Output															
Upper Controller		XGF-PN8A (EtherCAT connection type position setting module)														
Communication Cable		CAT.5e over STP(Shielded Twisted-pair) Cable														
Option		Motor Power Cable, Encoder Cable, Connector for CN1 & CN2, Digital Loader														
Environment Specifications	Operating Ambient Temperature	0 ~ 50[°C]														
	Ambient Humidity	Under 90[%] (No dewdrops.)														
	Storage Temperature	-20 ~ +80[°C]														
	Insulation Resistance	Over DC 500[V], 10 [MΩ]														
Weight (kg) [FDA-N__]		1,0	1,0	1,5	1,9	1,9	4,3	4,4	4,5	4,6	15,0	24,0	24,5	-	-	-
Weight (kg) [FDA-N__-H_]		-	-	-	-	-	-	6,0	6,2	6,4	19,1	28,0	28,5	35,4	51,7	52,3

(Note 1) These input voltage & frequency range guarantees motor rated output & rated rotational speed. In the case of voltage dropping, these cannot be assured
(Note 2) The regenerated resistance of the Drive (FDA7075 - FDA7150, FDA7075-H_ ~ FDA7370-H_) over 7.5[kW] is Option, Please inquire us separately

Ratings and Specifications for AC Drive

[NDA7000]

Servo Drive Type [NDA7___]		001	002	004	005	010	015	020	030	045	070	110	150		
Servo Drive Type [NDA7___-H_]		-	-	-	-	-	-	020	030	045	075	110	150		
Main Circuit Power Supply	Input Voltage, Frequency (Note1)	Single phase AC250[V], 60[Hz] ± 5%			3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%		[NDA7___] 3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%								
	Permitted Voltage Change Ratio	Single phase AC207 ~ 253[V] (Input voltage range +10/-10%)			Single phase AC230[V], 50/60[Hz] ± 5%		[NDA7___-H_]-H0 : 3 phase AC380[V], 50/60[Hz] ± 5%								
Control Circuit Power Supply	Input Voltage, Frequency	[NDA7___] Single phase AC200 ~ 230[V], 50/60[Hz] ± 5%													
	Permitted Voltage Change Ratio	[NDA7___-H_]-H0 : Single phase AC380[V], 50/60[Hz] ± 5%													
Applied Detector	Detector Type	17bit Serial encoder, incremental 8192[ppr]: 9 line type													
	Output Signal Type	Differential Line Driver Output													
	Detector Accuracy	Encoder Maximum per 1 rolling 131072 [pulse]													
	Detector Power Supply	Under DC 5[V], 0.3[A]													
Driving Type		Sine wave PWM Control Using IPM													
Position Control Specifications	Position Input Pulse Frequency	6.5[Mpps]													
	Position Input Pulse	MotionNet Type													
	Position Input Type	MotionNet Type													
Built-in Functions	Protective Function	Over Current, Regenerated Over Voltage, Over Load, Improper Motor Wiring, Encoder Disorder, Voltage Shortage, Over Speed, Excessive Error and so on													
	Regenerated Resistor (W/Ω) [NDA7___]	50/50			70/50		250/25		500/12.5		1000/6.25		1600/4		2000/3
	Regenerated Resistor (W/Ω) [NDA7___-H_]	-							250/40		500/20		1600/15		2000/15
	Monitor Output	Speed, Torque (-5 ~ +5[V])													
	Dynamic Brake	Built-in													
Additional Function		Testing Function (Jog), Alarm Record, Forward & Backward Rotation, Encoder Signal Division Output													
Upper Controller		Industrial PC, MotionNET, CenterBoard													
Communication Cable		CAT.5e over STP(Shielded Twisted-pair) Cable													
Option		Motor Power Cable, Encoder Cable, Connector for CN1 & CN2, Digital Loader													
Environment Specifications	Operating Ambient Temperature	0 ~ 50[°C]													
	Ambient Humidity	Under 90[%] (No dewdrops.)													
	Storage Temperature	-20 ~ +80[°C]													
	Insulation Resistance	Over DC 500[V], 10 [MΩ]													
Weight (kg) [NDA7___]		1,0	1,0	1,5	1,9	1,9	4,3	4,4	4,5	4,6	15,0	24,0	24,5		
Weight (kg) [NDA7___-H_]		-	-	-	-	-	-	6,0	6,2	6,4	19,1	28,0	28,5		

(Note 1) These input voltage & frequency range guarantees motor rated output & rated rotational speed. In the case of voltage dropping, these cannot be assured

(Note 2) The regenerated resistance of the Drive (FDA7075 - FDA7150, FDA7075-H_ ~ FDA7370-H_) over 7.5[kW] is Option, Please inquire us separately

Ratings and Specifications for AC Drive

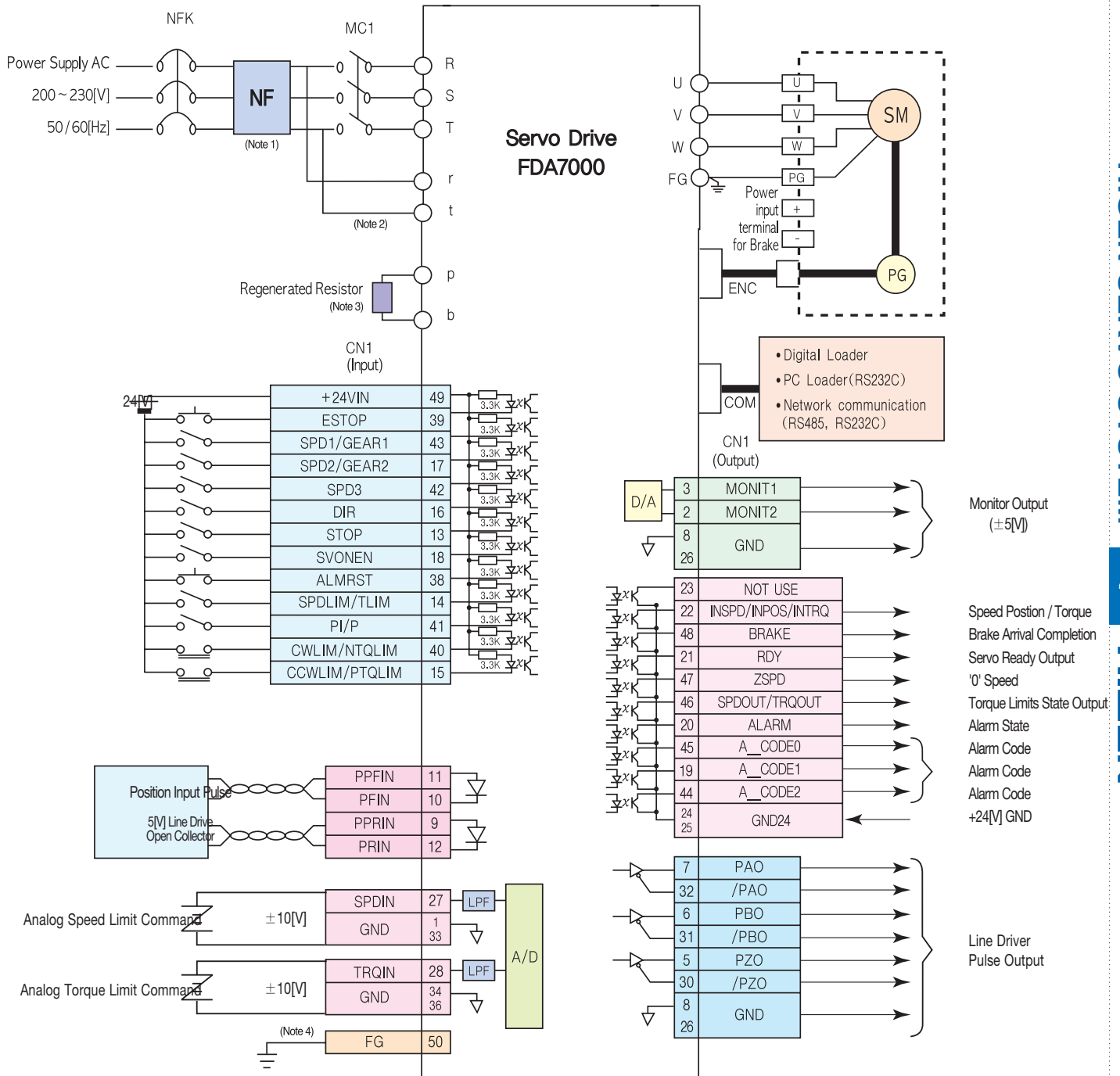
[FDA7000C]

Servo Drive Type [FDA7__C]		001	002	004/ 004B	005	010	015/ 015B	020/ 020B	030/ 030B	045	075	110	150	-	-	-
Servo Drive Type [FDA7__C-H_]		-	-	-	-	-	-	020	030	045	075	110	150	220	300	370
Main Circuit Power Supply	Input Voltage, Frequency (Note1)	3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%					[FDA7__C] 3 phase AC200 ~ 230[V], 50/60[Hz] ± 5%									
	Permitted Voltage Change Ratio	Single phase AC230[V], 50/60[Hz] ± 5%					[FDA7__C-H_]-H0 : 3 phase AC380[V], 50/60[Hz] ± 5%									
Control Circuit Power Supply	Input Voltage, Frequency	Separate Input Part N/A					[FDA7__C] Single phase AC200 ~ 230[V], 50/60[Hz] ± 5%									
	Permitted Voltage Change Ratio						[FDA7__C-H_]-H0 : Single phase AC380[V], 50/60[Hz] ± 5%									
Applied Detector	Detector Type	17/33bit Serial encoder, 11/13bit absolute value encoder, incremental 2000 ~ 6000 [p/rev.] 15 line type, 8192 [ppr](9wire)														
	Output Signal Type	Differential Line Driver Output														
	Detector Accuracy	Encoder Maximum per 1 rolling 131072 [pulse]														
	Detector Power Supply	Under DC 5[V], 0.3[A]														
Driving Type		Sine wave PWM Control Using IPM														
Operation Mode Specifications	Absolute Type Operation (Turret)	Position Setting		Absolute Position Table (Max, 32 Points) Setting with Parameter												
	Non-Absolute Type Operation	Command Input		Operation by selecting Absolute Position Table as input signal												
		System		Operation Mode 8 Types, Origin Mode 28 Types, Close Range Identificaiton Function Setting Possible & Origin Return, 2~32 Points Continuous Operation, Torque Limit, Software Upper/Lowest Limit by Internal Parameter, Angle Dividing Stop, Command Position Teaching Function												
	Position Setting	Position Setting		Position Command Table (Max, 32 Points) Setting with Parameter												
		Command Input		Operation by selecting Relative Position Table as input signal												
	System		Operation by Relative Position (Based upon Current Position) Command Type													
Position Control Specifications	Position Input Pulse Frequency		500[kpps]													
	Position Input Pulse		Command + Pulse, Forward Pulse + Backward Pulse, 2 phase Pulse (A phase + B phase)													
	Position Input Type		Open Collector, Line Driver Output													
	Jog Operation		Operation by Digital Loader, Mount Loader, Input signal (CW/CCW Limit)													
	Origin Method		24 Types Selection, Origin Execution Completion Warning Output Selection by Parameter													
	Speed Override Function		Override function is possible trough analog input													
	Acceleration-Deceleration Time		4 patterns are possible (1 pattern for 8 positions), S type of acceleration-deceleration is available (0-100[sec])													
Torque Control Specifications	Detector Command Input		DC -10 ~ +10[V] Analogue Torque Command													
	Torque Linearity		Under 4[%]													
Built-in Functions	Protective Function		Over Current, Regenerated Over Voltage, Over Load, Improper Motor Wiring, Encoder Disorder, Voltage Shortage, Over Speed, Excessive Error, etc.													
	Regenerated Resistor (W/Ω) [FDA7__C]		50/50	70/50	250/25	500/12.5	1000/6.25	1600/4	2000/3	-						
	Regenerated Resistor (W/Ω) [FDA7__C-H_]		-			250/40	500/20	1600/15	2000/15	3600/9	5000/5					
	Monitor Output		Speed, Torque (-5 ~ +5[V])													
	Dynamic Brake		Built-in													
Additional Function		Alarm Record, Forward & Backward Rotation, Encoder Signal Division Output														
Option		Motor Power Cable, Encoder Cable, Connector for CN1 & CN2, Digital Loader														
Environment Specifications	Operating Ambient Temperature		0 ~ 50[°C]													
	Ambient Humidity		Under 90[%] (No dewdrops.)													
	Storage Temperature		-20 ~ +80[°C]													
	Insulation Resistance		Over DC 500[V], 10 [MΩ]													
Weight (kg) [FDA7__C]		1,0	1,0	1,5	1,9	1,9	4,3	4,4	4,5	4,6	15,0	23,0	24,0	-	-	-
Weight (kg) [FDA7__C-H_]		-	-	-	-	-	-	6,0	6,2	6,4	19,1	28,0	28,5	35,4	51,7	52,3

(Note 1) These input voltage & frequency range guarantees motor rated output & rated rotational speed. In the case of voltage dropping, these cannot be assured
 (Note 2) The regenerated resistance of the Drive (FDA7075C - FDA7150C, FDA7075C-H_ ~ FDA7370C-H_) over 7.5[kW] is Option. Please inquire us separately

Terminal Diagram

[FDA7000 Standard]



※ (Note 1) : NF is abbreviation of Noise Filter. For the prevention of external noise, you must use NF.

(Note 2) : FDA 7004 ~ 45 type needs the connection of assistant power source terminal r, t to single phase AC 220 [V].
FDA 7001 ~ 2 type has no assistant power source terminal r, t.

(Note 3) : The regenerated resistor of FDA 7004~ 010 is built-in type, attached in drive.
The regenerated resistor of FDA 7001~ FDA 7002, FDA 7015 above is optional type, and you need capacity certification before applying them.

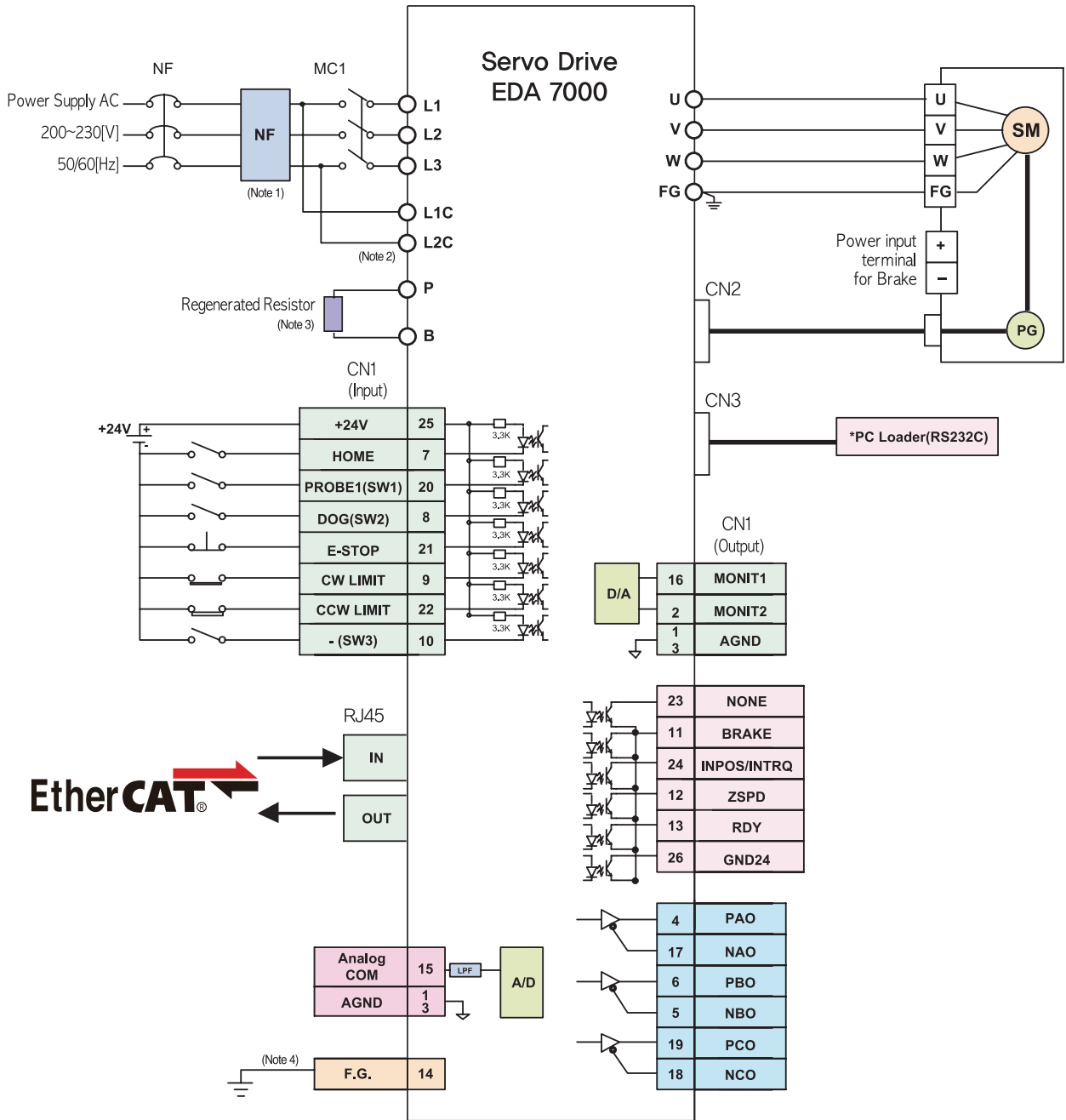
(Note 4) : Must ground CN1 cable's earthing line to FG(Frame Ground) terminal.

(Note 5) : GND signal must be separated from GND24 signal.

(Note 6) : In case of Serial Encoder adaption, Please set pulse divided output with this (32768~131072)

Terminal Diagram

[EDA7000 Standard]



※ (Note 1) :NF is abbreviation of Noise Filter. For the prevention of external noise, you must use NF.

(Note 2) :FDA 7004 ~ 45 type needs the connection of assistant power source terminal r, t to single phase AC 220 [V].
FDA 7001 ~ 2 type has no assistant power source terminal r, t.

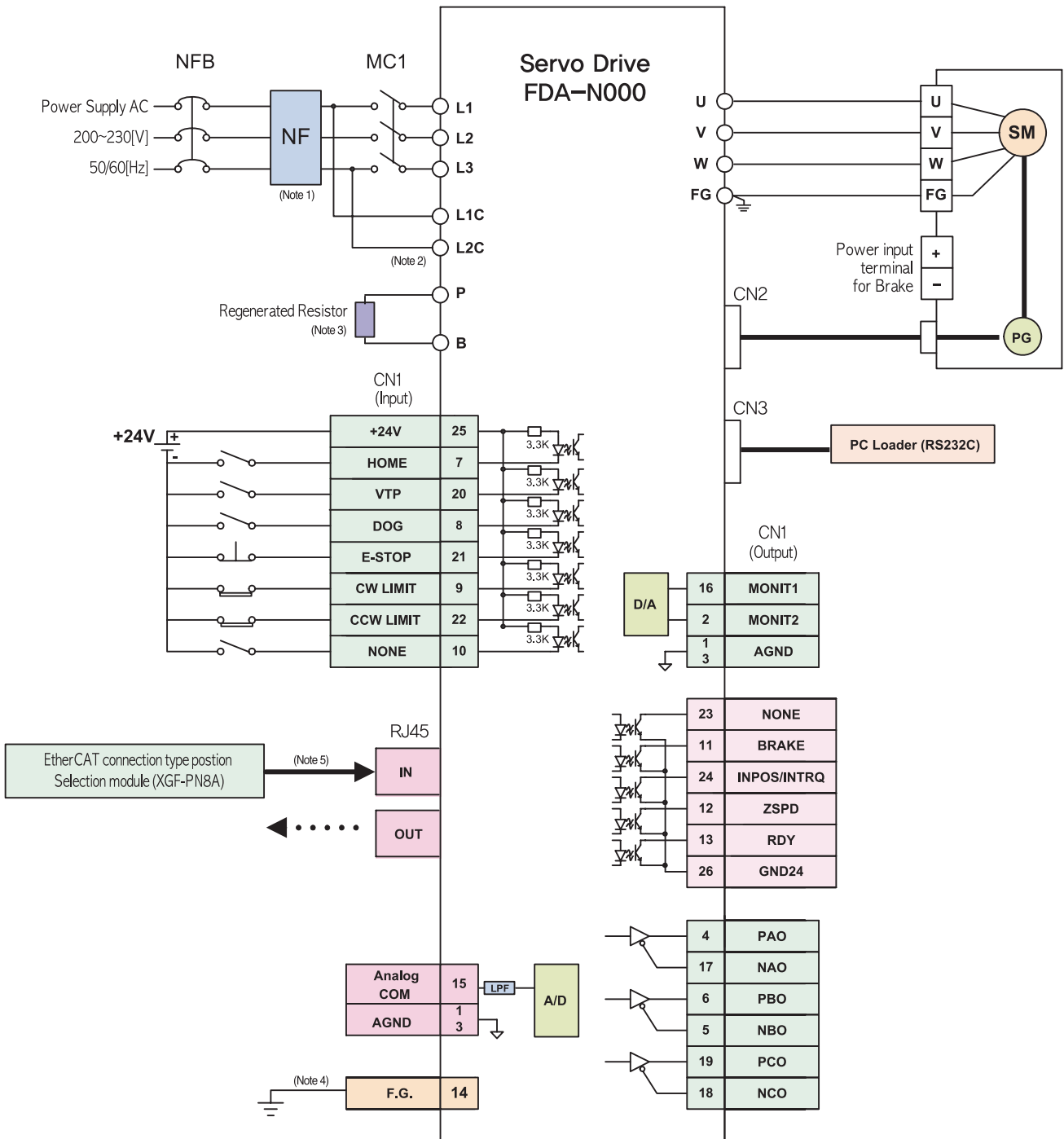
(Note 3) :The regenerated resistor of FDA 7004~ 010 is built-in type, attached in drive.
The regenerated resistor of FDA 7001~ FDA 7002, FDA 7015 above is optional type, and you need capacity certification before applying them.

(Note 4) : Must ground CN1 cable's earthing line to FG(Frame Ground) terminal.

(Note 5) : Please use communication cable of the specification over CAT.5 STP (Shielded Twisted-pair)

Terminal Diagram

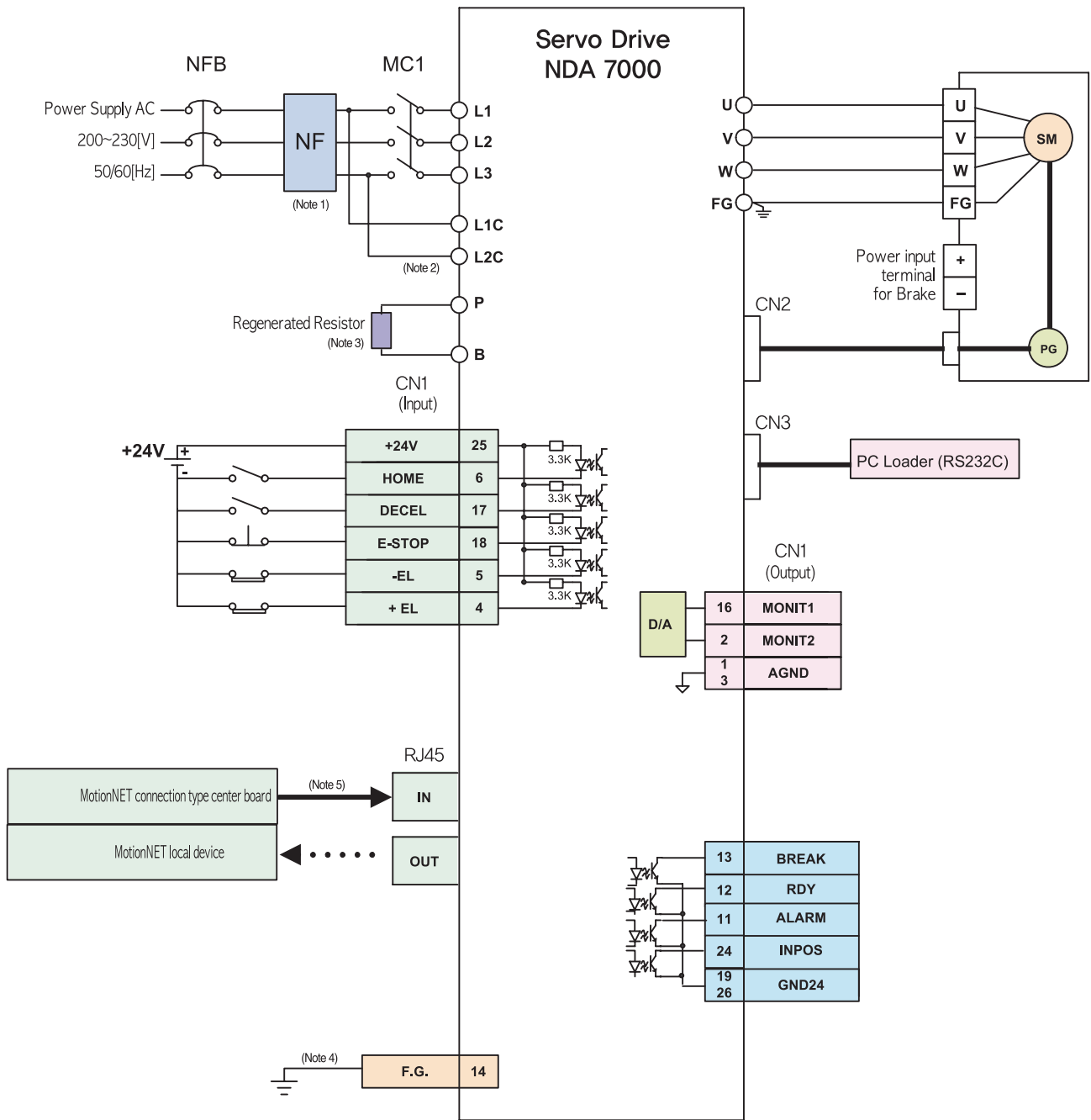
[FDA-N000 Standard]



- ※ (Note 1) :NF is abbreviation of Noise Filter. For the prevention of external noise, you must use NF.
- (Note 2) :FDA 7004 ~ 45 type needs the connection of assistant power source terminal r, t to single phase AC 220 [V].
FDA 7001 ~ 2 type has no assistant power source terminal r, t.
- (Note 3) :The regenerated resistor of FDA 7004~ 010 is built-in type, attached in drive.
The regenerated resistor of FDA 7001~ FDA 7002, FDA 7015 above is optional type, and you need capacity certification before applying them.
- (Note 4) : Must ground CN1 cable's earthing line to FG(Frame Ground) terminal.
- (Note 5) : Please use communication cable of the specification over CAT.5 STP (Shielded Twisted-pair)

Terminal Diagram

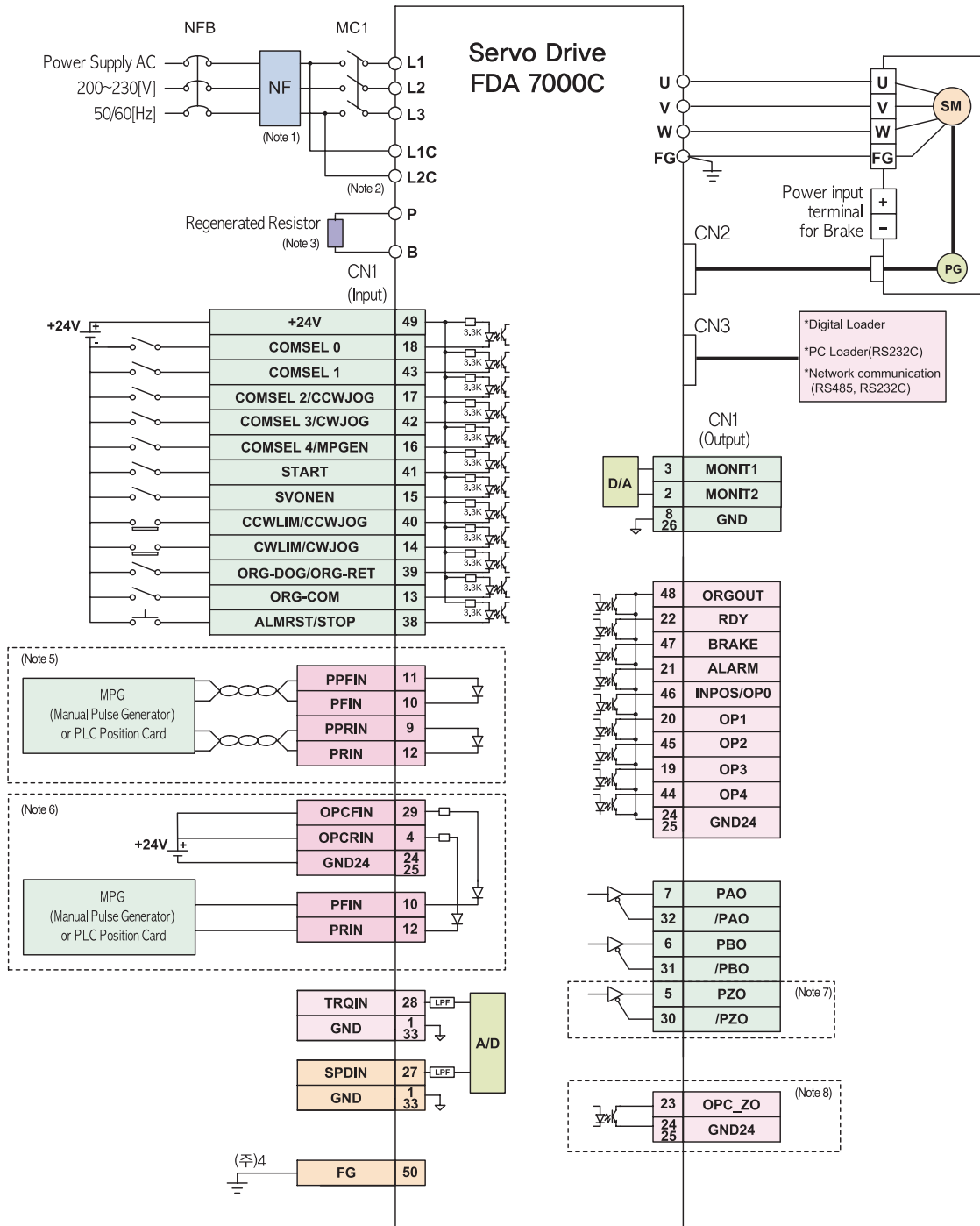
[NDA7000 Standard]



- ※ (Note 1) :NF is abbreviation of Noise Filter. For the prevention of external noise, you must use NF.
- (Note 2) :FDA 7004 ~ 45 type needs the connection of assistant power source terminal r, t to single phase AC 220 [V]. FDA 7001 ~ 2 type has no assistant power source terminal r, t.
- (Note 3) :The regenerated resistor of FDA 7004~ 010 is built-in type, attached in drive. The regenerated resistor of FDA 7001~ FDA 7002, FDA 7015 above is optional type, and you need capacity certification before applying them.
- (Note 4) : Must ground CN1 cable's earthing line to FG(Frame Ground) terminal.
- (Note 5) : Please use communication cable of the specification over CAT.5 STP (Shielded Twisted-pair)

Terminal Diagram

[FDA 700C Standard]

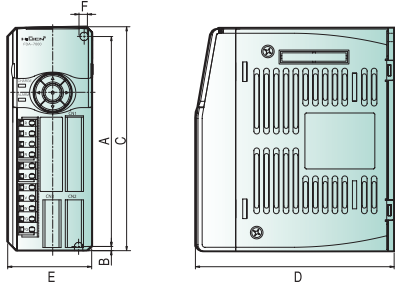


- ※ (Note 1) :NF is abbreviation of Noise Filter. For the prevention of external noise, you must use NF.
- (Note 2) :FDA 7004 ~ 45 type needs the connection of assistant power source terminal r, t to single phase AC 220 [V].
FDA 7001 ~ 2 type has no assistant power source terminal r, t.
- (Note 3) :The regenerated resistor of FDA 7004~ 010 is built-in type, attached in drive.
The regenerated resistor of FDA 7001~ FDA 7002, FDA 7015 above is optional type, and you need capacity certification before applying them.
- (Note 4) : Must ground CN1 cable's earthing line to FG(Frame Ground) terminal.
- (Note 5) : It is the wiring diagram that position input parts should be connected with line drive type
- (Note 6) : It is the wiring diagram that position input parts should be connected with open collector type
- (Note 7) : Please apply this when origin pulse is generated with line drive type.
- (Note 8) : Please apply this when origin pulse is generated with open collector type.
- (Note 9) : Please make sure the GND24 (CN1-24,25) and the GND (CN1-1, 8, 26, 33, 34, 36) are connected separately, otherwise it can bring damage or misoperation of the Servo Drive

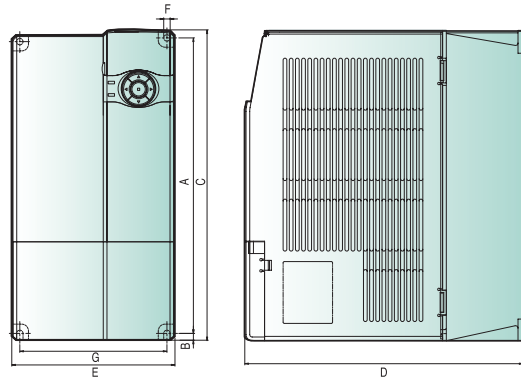
External Dimensions of the Servo Drive

[FDA7000 Series]

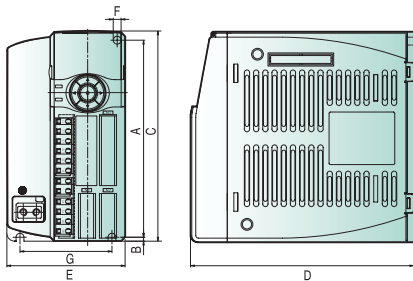
External Dimensions A



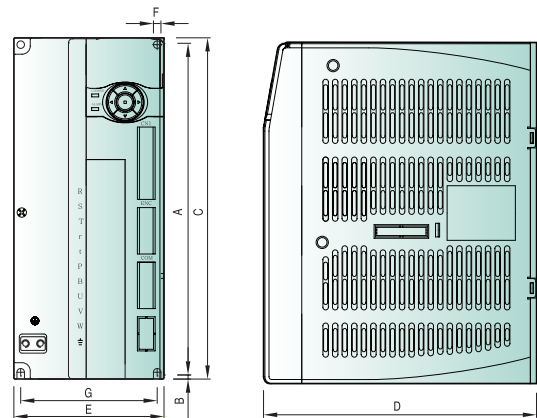
External Dimensions C



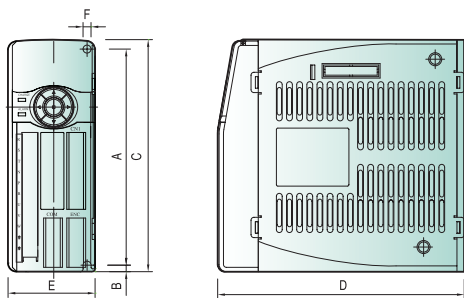
External Dimensions B



External Dimensions E



External Dimensions D



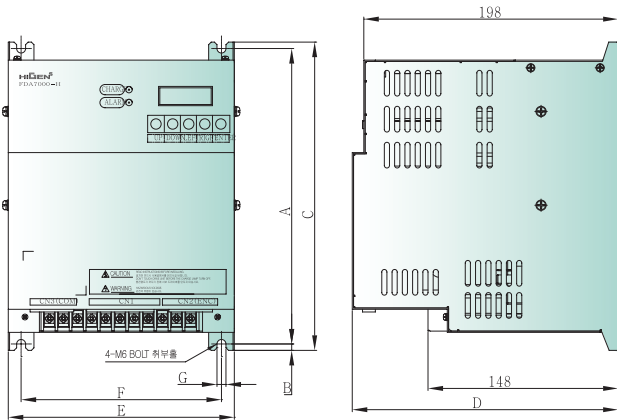
Wiring & Connection

Model	A	B	C	D	E	F	G	Weight [kg]	Cooling Type	Remarks
FDA7001	149	4.5	160	140	60	5.0	-	1.0	Natural Cooling	External Dimensions A
FDA7002	149	4.5	160	140	60	5.0	-	1.0		
FDA7004	150	3.0	160	170	90	6.0	70	1.5		External Dimensions B
FDA7005	150	3.0	160	170	90	6.0	70	1.9		
FDA7010	150	3.0	160	170	90	6.0	70	1.9	Forced Cooling (FAN)	External Dimensions C
FDA7015	239	5.5	251	225	132	5.2	119	4.3		
FDA7020	239	5.5	251	225	132	5.2	119	4.4		
FDA7030	239	5.5	251	225	132	5.2	119	4.5		
FDA7045	239	5.5	251	225	132	5.2	119	4.6	Natural Cooling	External Dim,D
FDA7004B	149	4.0	160	170	60	5.5	-	1.2		
FDA7015B	240	5.0	250	200	110	5.5	100	4.2	Forced Cooling (FAN)	External Dimensions Diagram E
FDA7020B	240	5.0	250	200	110	5.5	100	4.3		
FDA7030B	240	5.0	250	200	110	5.5	100	4.4		

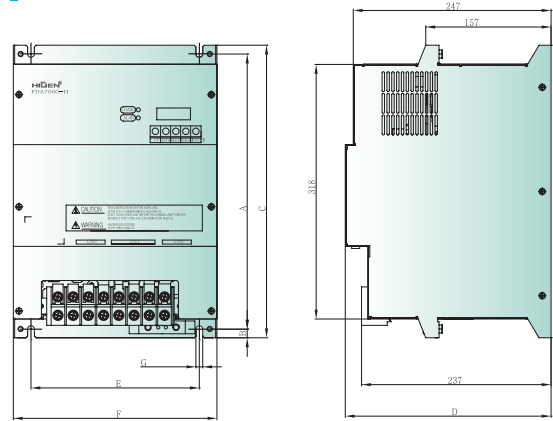
External Dimensions of the Servo Drive

[FDA7000 Series]

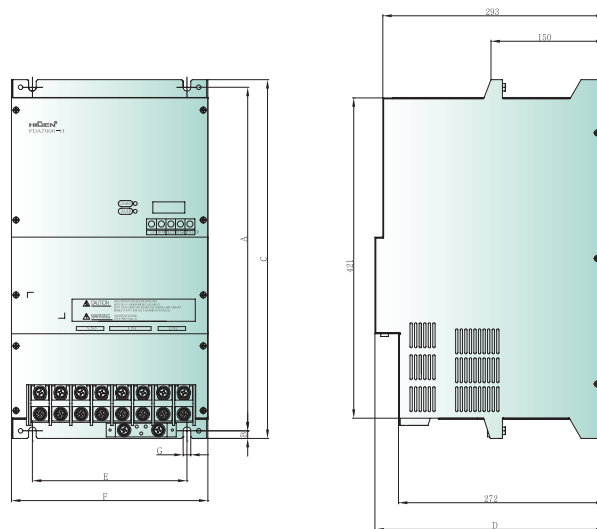
External Dimensions A



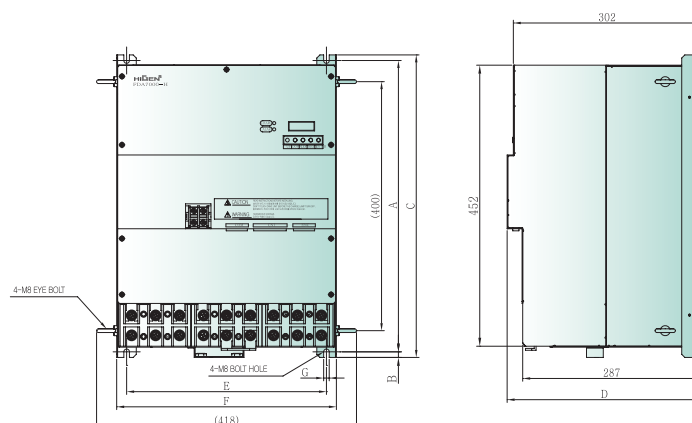
External Dimensions B



External Dimensions C



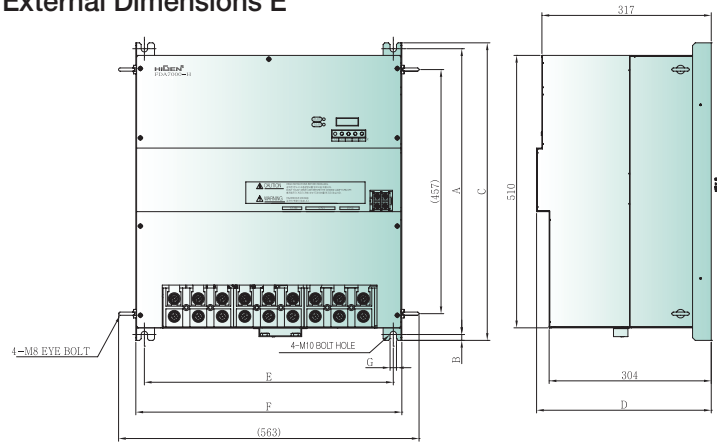
External Dimensions D



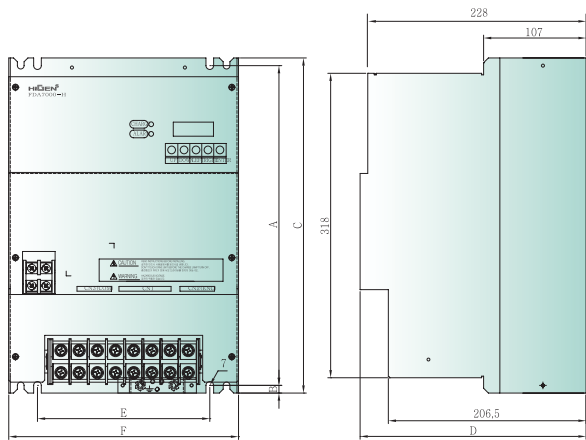
External Dimensions of the Servo Drive

[FDA7000 Series]

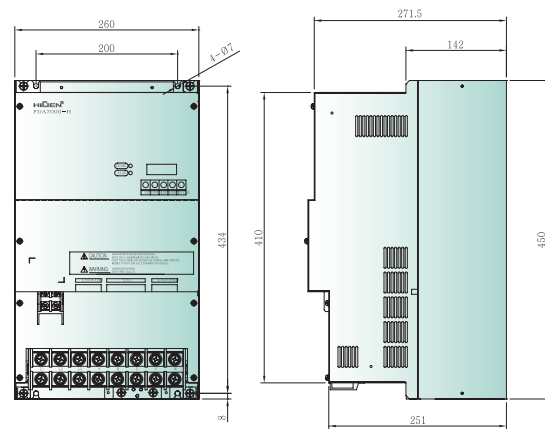
External Dimensions E



External Dimensions F



External Dimensions G



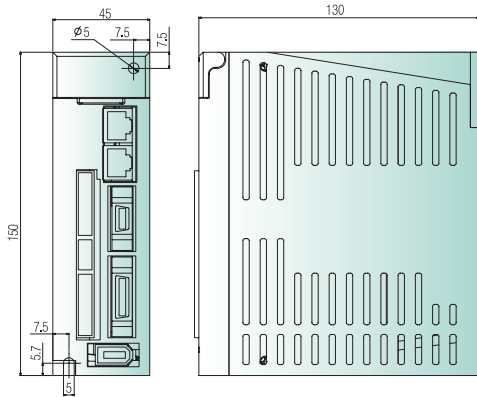
Wiring & Connection

Model	A	B	C	D	E	F	G	Weight	Capacity	Remarks
FDA7020-H/7045-H	230	5	240	207	176	156	7	7	380V 2.0~4.5kW	External Dimensions A
FDA 7075-H	345	10	365	257	254	210	8,5	18	380V 7,5kW	External Dimensions B
FDA7110-H/7150-H	452	10	472	303	259	203	9	27	380V 11~15kW	External Dimensions C
FDA7220-H	468	9	486	315	353	320	9	36	380V 22kW	External Dimensions D
FDA7300-H/7370-H	535	11	557	327	498	446	12	48	380V 30~37kW	External Dimensions E
FDA7075	334	8	350	236	240	180	7	15	220V 7,5kW	External Dimensions F
FDA7110/7150	434	8	450	280	260	200	7	23	220V 11~15kW	External Dimensions G

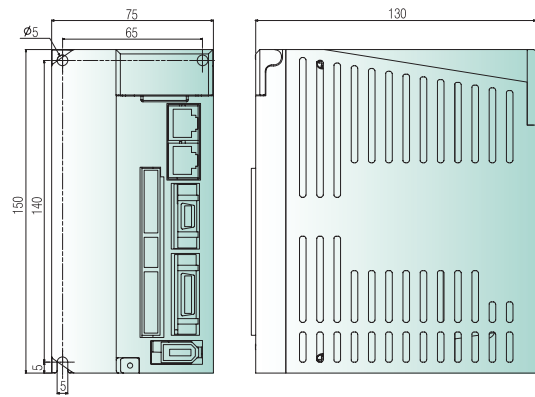
External Dimensions of the Servo Drive

[FDA-N000 / NDA-7000 / EDA-7000]

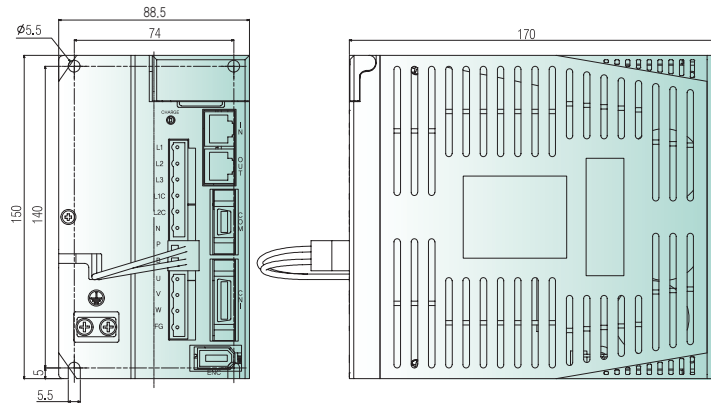
External Dimensions A



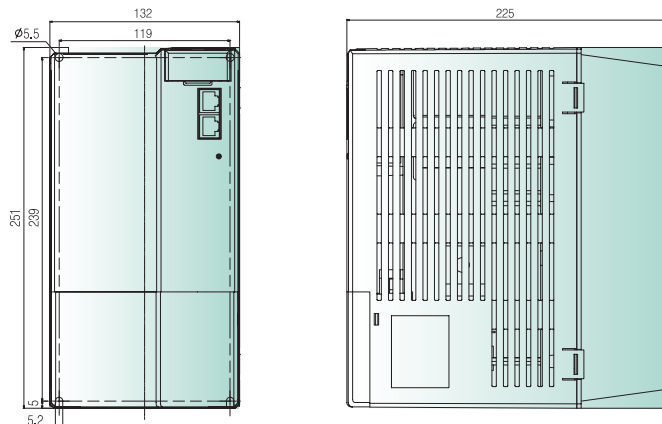
External Dimensions B



External Dimensions C



External Dimensions D



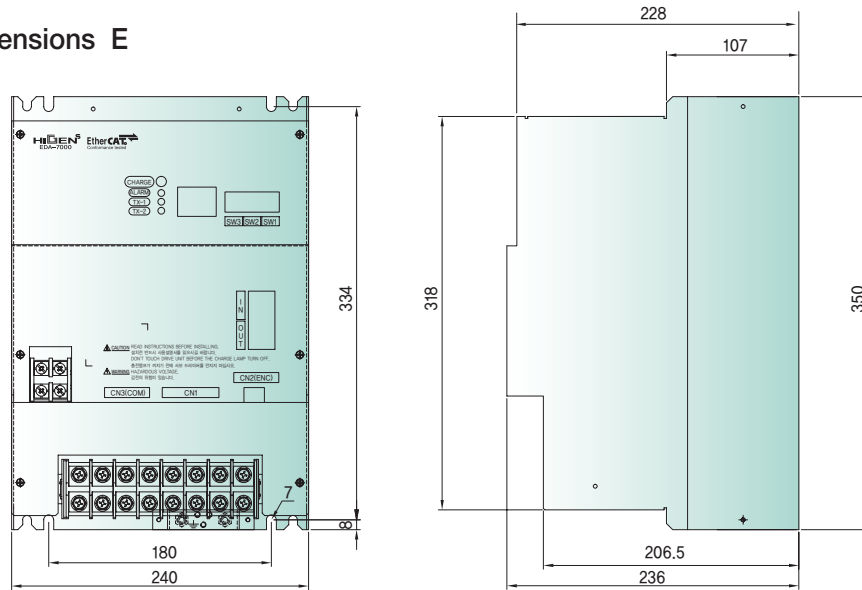
Wiring & Connection

Model Name	Symbol	Capacity	Weight(kg)	Cooling Method	Remarks
FDA-N0 NDA-70 EDA-70	01	100W	1.0	Self-Cooling	External Dimensions A
	02	200W	1.0		
	04	400W	1.5		
	05	500W	1.9	Forced Cooling (FAN)	External Dimensions B
	10	1.0kW	1.9		External Dimensions C
	15	1.5kW	4.3		External Dimensions D
	20	2.0kW	4.4		
	30	3.0kW	4.5		
45	4.5kW	4.6			

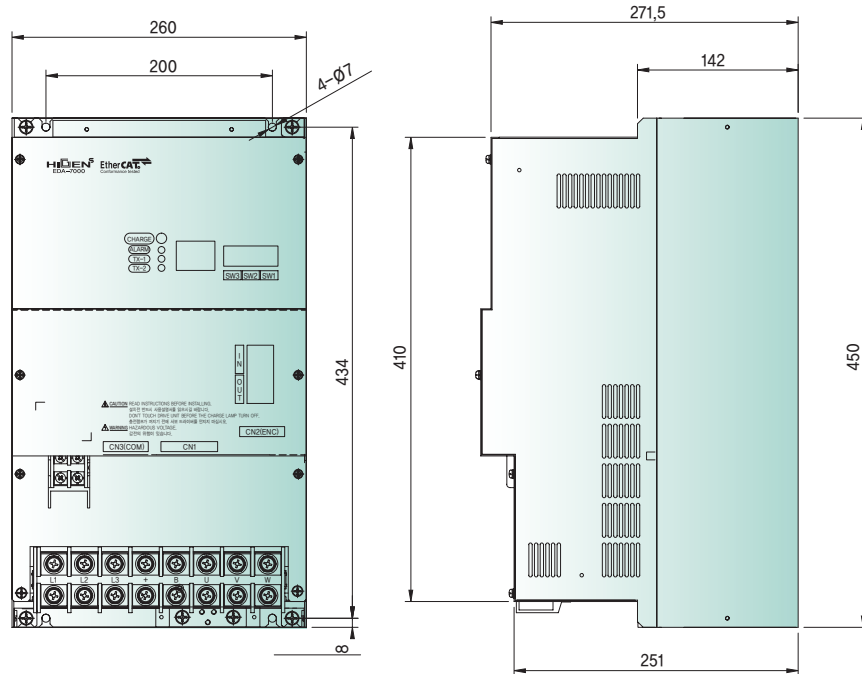
External Dimensions of the Servo Drive

[FDA-N000 / NDA-7000 / EDA-7000]

External Dimensions E



External Dimensions F



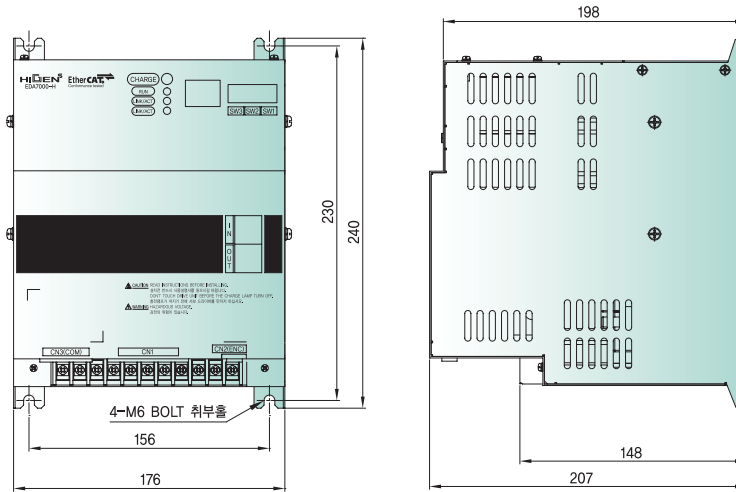
Wiring & Connection

Model Name	Symbol	Capacity	Weight(kg)	Cooling Method	Remarks
EDA-7	075	7,5kW	15,0	Forced Cooling (FAN)	External Dimensions E
FDA-N	110	11kW	24,0		External Dimensions F
NDA-7	150	15kW	24,5		

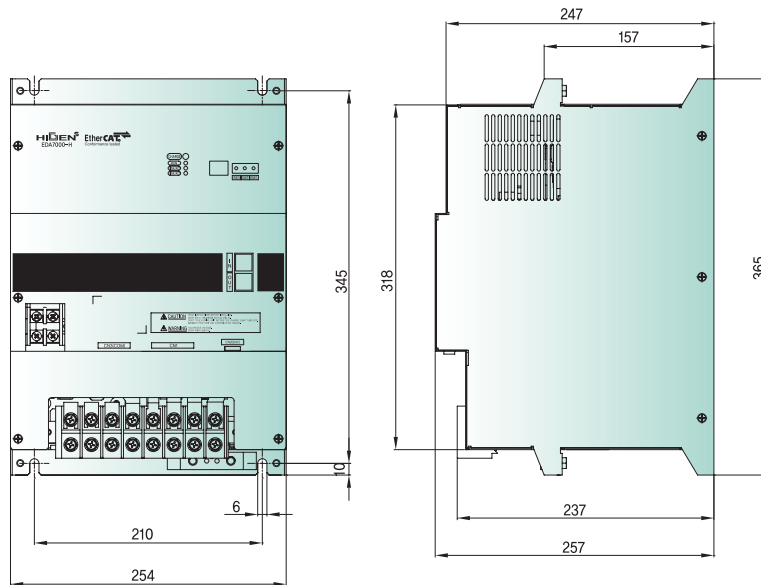
External Dimensions of the Servo Drive

[EDA-7000 H] Voltage : 380V/440V

EDA7020-H~7045-H



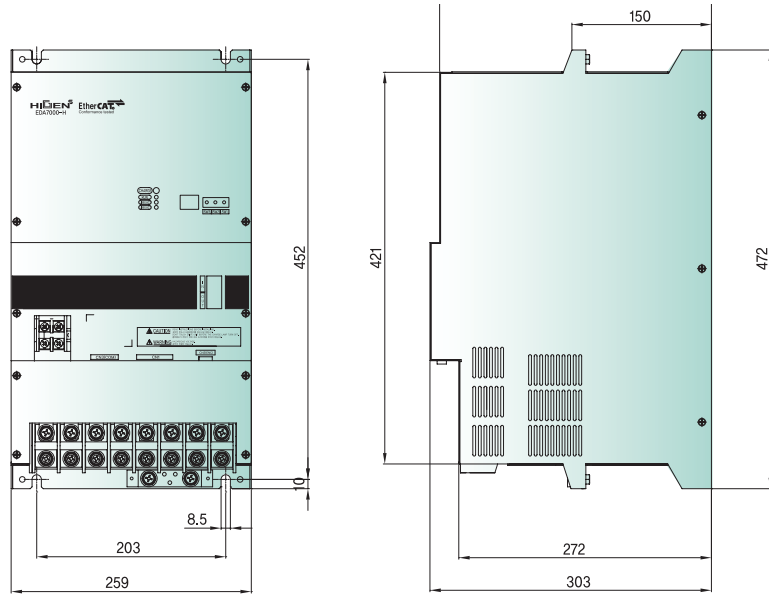
EDA7075-H



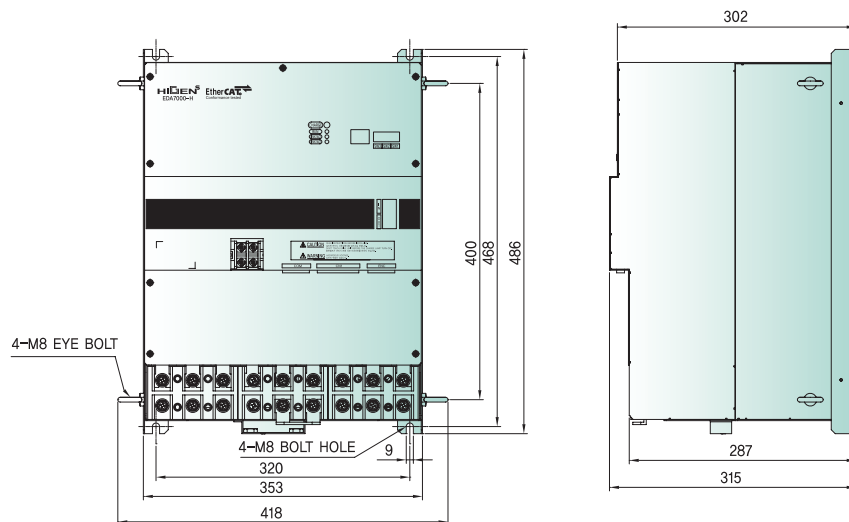
External Dimensions of the Servo Drive

[EDA-7000 H] Voltage : 380V/440V

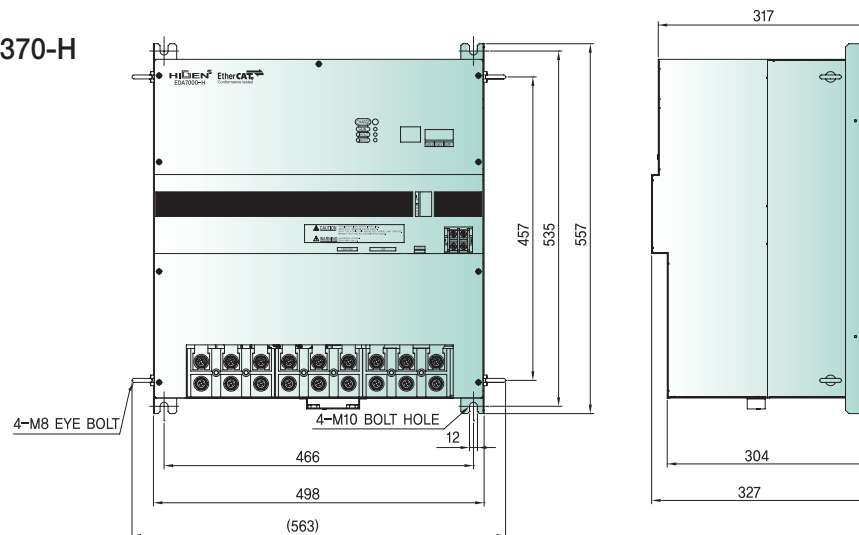
EDA7110-H_7150-H



EDA7220-H



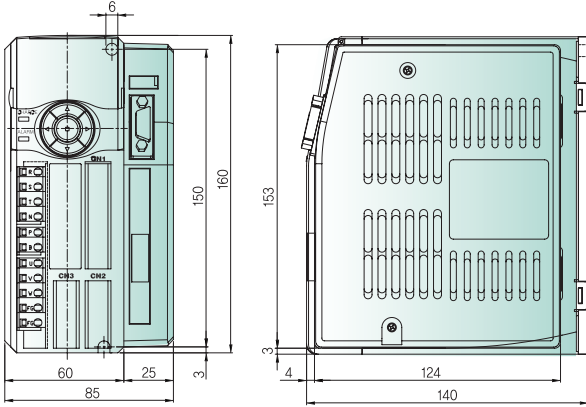
EDA7300-H_7370-H



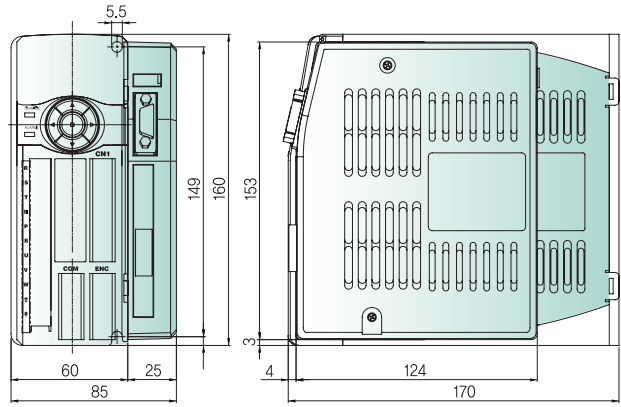
External Dimensions of the Servo Drive

[MDA-7000]

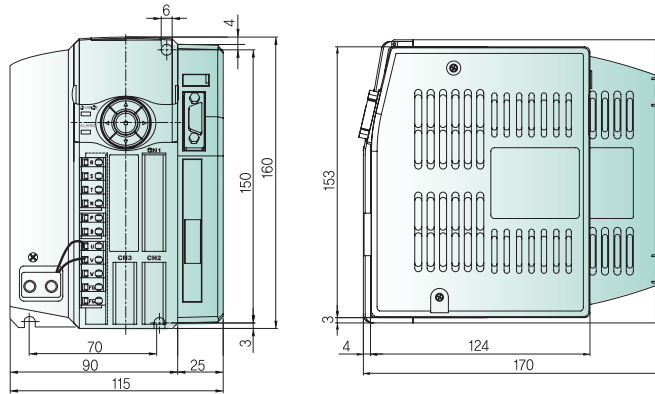
External Dimensions A



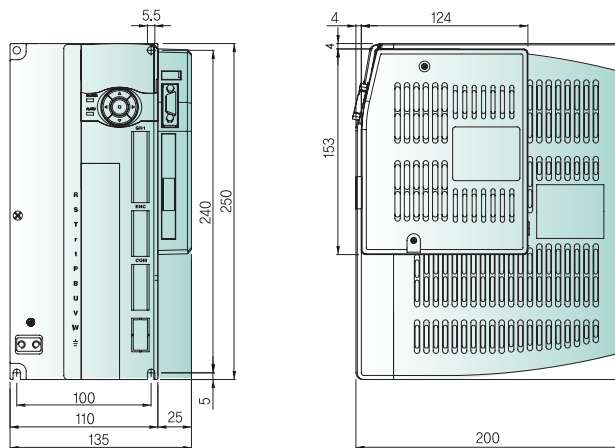
External Dimensions B



External Dimensions C



External Dimensions D



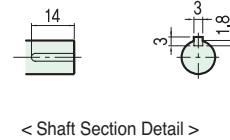
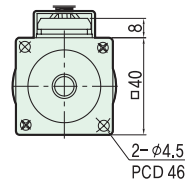
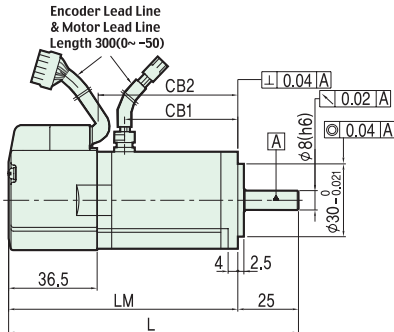
Wiring & Connection

Model Name	Symbol	Capacity	Weight(kg)	Cooling Method	Remarks
MDA-70	01	100W	1,2	Self-Cooling	External Dimensions A
	02	200W	1,2		External Dimensions B
	04B	400W	1,4		External Dimensions C
	05	500W	2,1	Forced Cooling (FAN)	External Dimensions D
	10	1,0kW	2,1		
	15B	1,5kW	4,4		
	20B	2,0kW	4,5		
	30B	3,0kW	4,6		

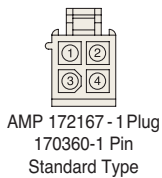
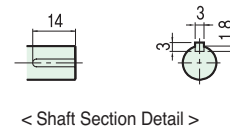
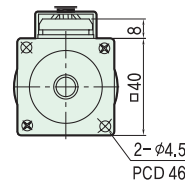
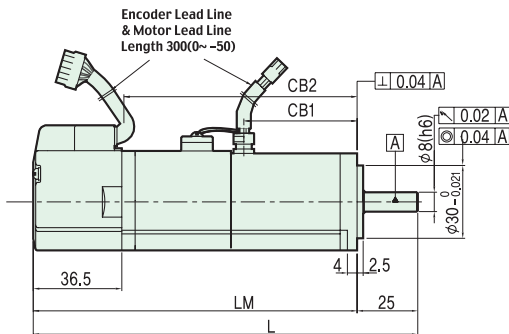
Dimensions of AC Servo Motor

[Flange40 Series]

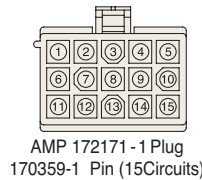
Standard Type



Brake Type

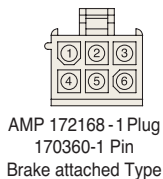


Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4



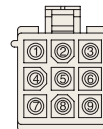
Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	A	9	V
2	A	10	V
3	B	11	W
4	B	12	W
5	Z	13	Vcc
6	Z	14	GND
7	U	15	Shield
8	U		

Incremental Encoder Connector Connection Diagram



Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4
Break Connection	+	5
	-	6

Motor Connector Connection Diagram



Line Color	Encoder Signal	Pin Number
Blue	SD	1
Blue/Black	SD	2
Brown	BT+	3
Brown/Black	BT-	4
Red	Vcc	5
Black	GND	6
Gray	FG	7
-	SHIELD	8

Serial 17bit Encoder Connector Connection Diagram

Model	External Dimensions				Weight [kg]
	L	LM	CB1	CB2	
FMA - CKZ5	105(144)	80(107)	32	42(81)	0.42(0.65)
FMA - CK01	120(159)	95(122)	47	57(96)	0.55(0.80)

Note 1 : () dimension represents brake attached type.

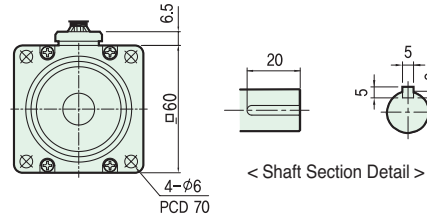
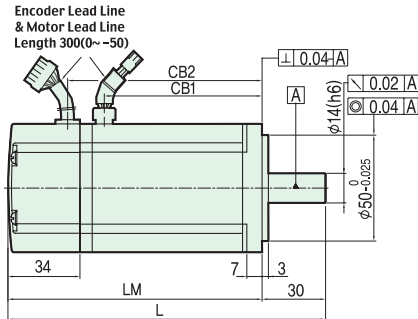
Note 2 : DC 24[V] is used as brake power source.

Note 3 : Motor overall length grows about 15mm longer with ABS encoder application.

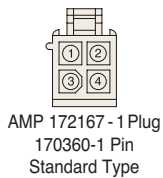
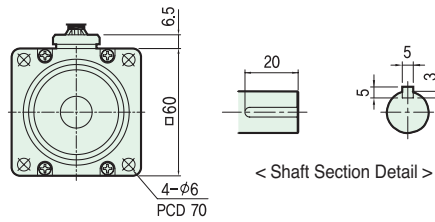
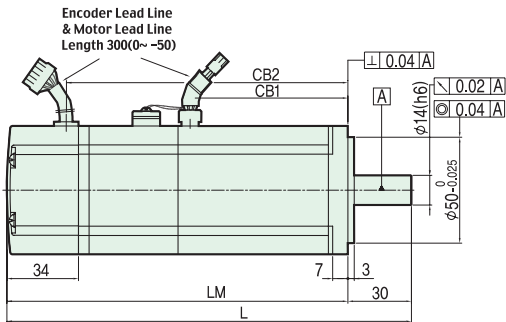
Dimensions of AC Servo Motor

[Flange60 Series] Low Inertia Type

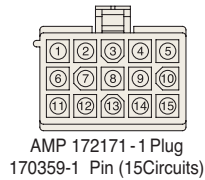
Standard Type



Brake Type

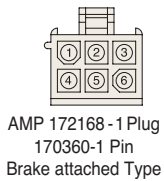


Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4



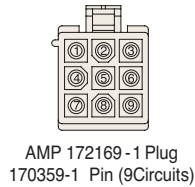
Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	A	9	V
2	A	10	V
3	B	11	W
4	B	12	W
5	Z	13	Vcc
6	Z	14	GND
7	U	15	Shield
8	U		

Incremental Encoder Connector Connection Diagram



Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
Break Connection	FG	4
	+	5
	-	6

Motor Connector Connection Diagram



Line Color	Encoder Signal	Pin Number
Blue	SD	1
Blue/Black	SD	2
Brown	BT+	3
Brown/Black	BT-	4
Red	Vcc	5
Black	GND	6
Gray	FG	7
-	SHIELD	8

Serial 17bit Encoder Connector Connection Diagram

Model	External Dimensions				Weight [kg]
	L	LM	CB1	CB2	
FMA - CK02	125(166)	95(136)	49.5	67(108)	1.0(1.6)
FMA - CK04	150(191)	120(161)	74.5	92(133)	1.5(2.1)

Note 1 : () dimension represents brake attached type.

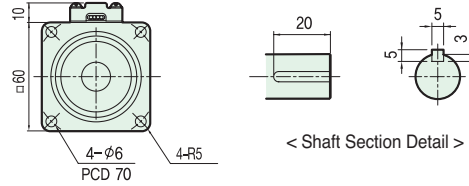
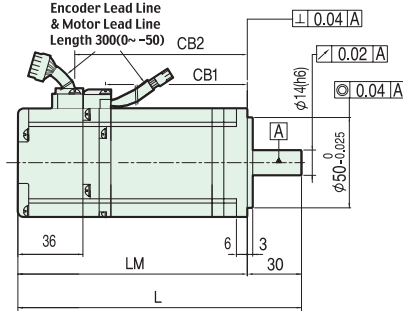
Note 2 : DC 24[V] is used as brake power source.

Note 3 : Motor overall length grows about 15mm longer with ABS encoder application.

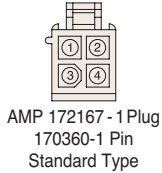
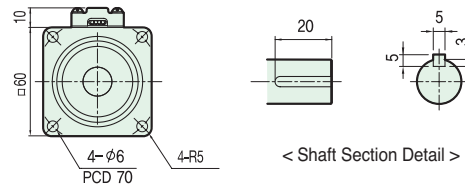
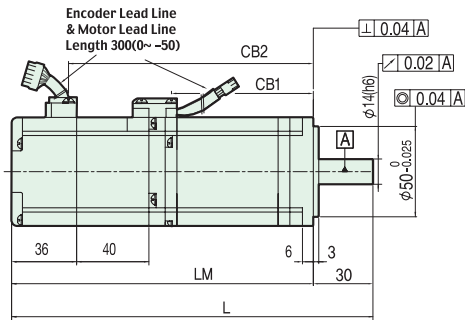
Dimensions of AC Servo Motor

[Flange60 Series] Super-low Inertia Type

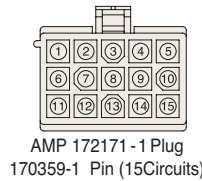
Standard Type



Brake Type

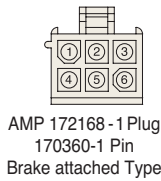


Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4



Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	A	9	V
2	A	10	V
3	B	11	W
4	B	12	W
5	Z	13	Vcc
6	Z	14	GND
7	U	15	Shield
8	U		

Incremental Encoder Connector Connection Diagram



Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4
Break Connection	+	5
	-	6

Motor Connector Connection Diagram



AMP 172169 - 1 Plug
170359-1 Pin (9Circuits)

Line Color	Encoder Signal	Pin Number
Blue	SD	1
Blue/Black	SD	2
Brown	BT+	3
Brown/Black	BT-	4
Red	Vcc	5
Black	GND	6
Gray	FG	7
-	SHIELD	8

Serial 17bit Encoder Connector Connection Diagram

Model	L	LM	CB1	CB2	Weight [kg]
FMA - CN01	115(155)	85(125)	44(44)	57(97)	0.85(1.4)
FMA - CN02	129(169)	99(139)	58(58)	71(111)	1.14(1.7)
FMA - CN03	143(183)	113(153)	72(72)	85(125)	1.43(2.0)
FMA - CN04	157(197)	127(167)	86(86)	99(139)	1.73(2.3)
FMA - CN05	171(211)	141(181)	100(100)	113(153)	2.03(2.6)

Note 1 : () dimension represents brake attached type.

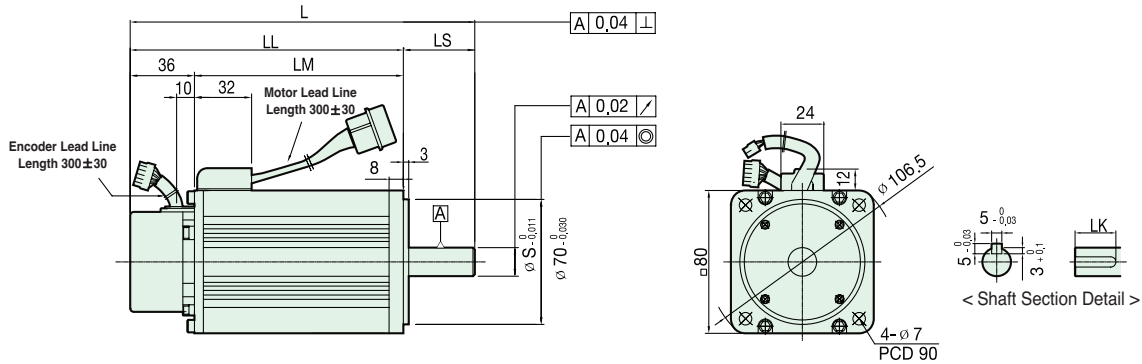
Note 2 : DC 24[V] is used as brake power source.

Note 3 : Motor overall length grows about 15mm longer with ABS encoder application.

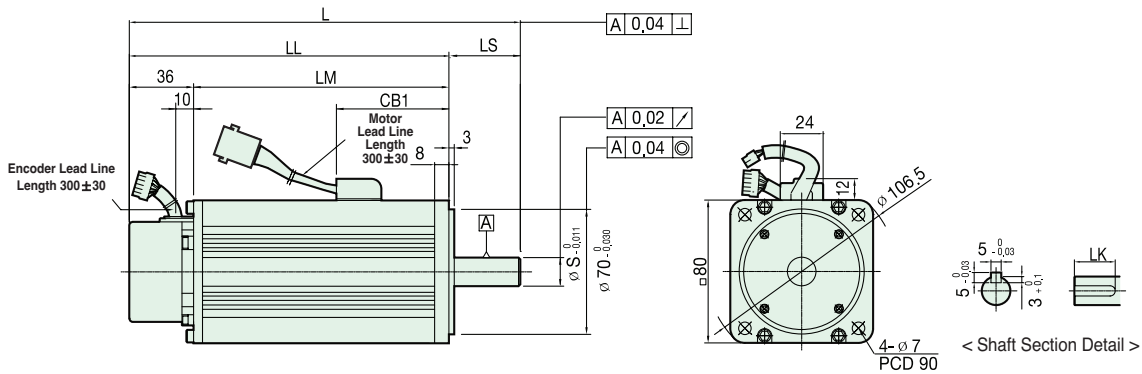
Dimensions of AC Servo Motor

[Flange80 Series]

Standard Type

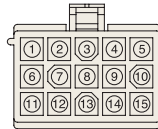


Brake Type



AMP 1-480426-0 Plug
61118-1 Pin
Standard Type

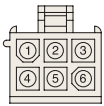
Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4



AMP 172171-1 Plug
170359-1 Pin (15Circuits)

Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	A	9	V
2	A	10	\bar{V}
3	B	11	W
4	B	12	\bar{W}
5	Z	13	Vcc
6	\bar{Z}	14	GND
7	U	15	Shield
8	\bar{U}		

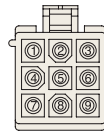
Incremental Encoder Connector Connection Diagram



AMP 172168-1 Plug
170360-1 Pin
Brake attached Type

Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4
Break Connection	+	5
	-	6

Motor Connector Connection Diagram



AMP 172169-1 Plug
170359-1 Pin (9Circuits)

Line Color	Encoder Signal	Pin Number
Blue	SD	1
Blue/Black	SD	2
Brown	BT+	3
Brown/Black	BT-	4
Red	Vcc	5
Black	GND	6
Gray	FG	7
-	SHIELD	8

Serial 17bit Encoder Connector Connection Diagram

Model	External Dimensions					Key Dimensions			Weight [kg]
	L	LL	LM	CB1	CB2	S	LS	LK	
CN04A, KN03	147(174)	112(139)	76(103)	(63)	(113)	14	35	20	2.1(2.9)
CN06, KN05	171(198)	131(158)	95(122)	(63)	(132)	16	40	25	2.6(3.3)
CN08, KN06	193(219)	153(179)	117(143)	(63)	(153)	16	40	25	3.1(3.9)
CN10, KN07	213(246)	173(206)	137(170)	(70)	(180)	16	40	25	3.7(4.6)

Note 1 : () dimension represents brake attached type.

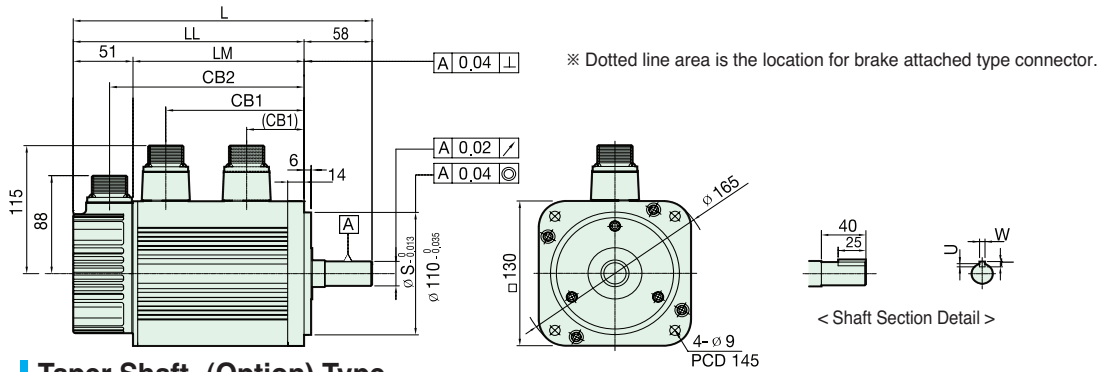
Note 2 : DC 24[V] is used as brake power source.

Note 3 : Motor overall length grows about 15mm longer with ABS encoder application.

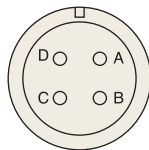
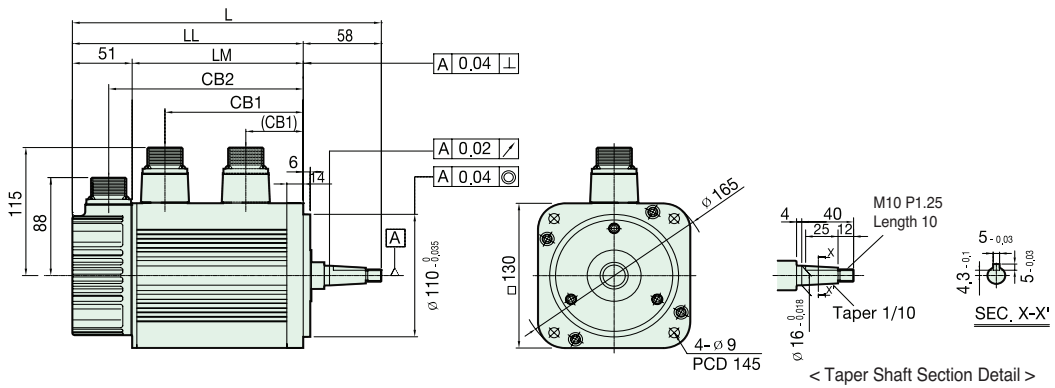
Dimensions of AC Servo Motor

[Flange130 Series]

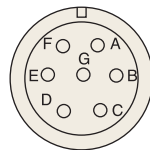
Straight Shaft (Standard) Type



Taper Shaft (Option) Type



MS3102A20-4P
Standard Type



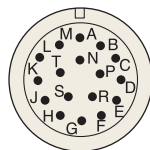
MS3102A20-15P
Brake Attached Type

Contents	LeadWire phase notification	Pin Number
Motor Connection	U	A
	V	B
	W	C
	FG	D
Break Connection	+	E
	-	F

Motor Connector Connection Diagram

Encoder Signal	Pin Number	Encoder Signal	Pin Number
A	A	U	K
Ā	B	Ū	L
B	C	V	M
B̄	D	V̄	N
Z	E	W	P
Z̄	F	W̄	R
GND	G	Shield	J
Vcc	H		

Incremental Encoder Connector Connection Diagram



MS 3102A20-29P
MS CONNECTOR

Line Color	Encoder Signal	Pin Number
Black	GND	G
Red	Vcc	H
Brown	BT+	K
Brown/Black	BT-	L
Gray	FG	N
Blue	SD	P
Blue/Gray	SD	R
-	SHIELD	J

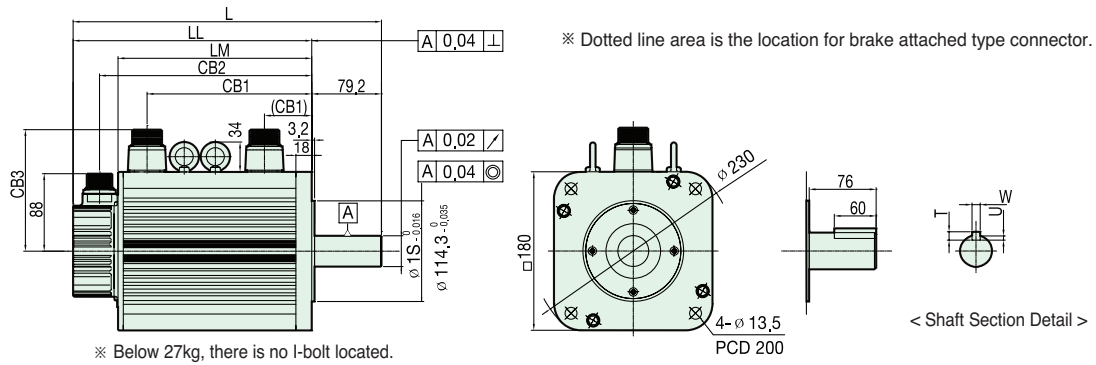
Serial 17bit Encoder Connector Connection Diagram

Model	External Dimensions						Key Dimensions				Weight [kg]		
	L	LL	LM	CB1	CB2	S	T	U	W				
CN09	KN06A	TN05	LN03	207(250)	149(192)	98(141)	70(71)	118(161)	19	5	3	5	5.5(7.7)
CN15	KN11	TN09	LN06	231(274)	173(216)	122(165)	94(71)	142(185)	19	5	3	5	7.0(9.2)
CN22	KN16	TN13	LN09	255(298)	197(240)	146(189)	118(71)	166(209)	22	6	3.5	6	8.5(10.7)
CN30	KN22	TN17	LN12	279(322)	221(264)	170(213)	142(71)	190(233)	22	6	3.5	6	10.0(12.2)
		TF05	LF03	269(315)	211(257)	160(206)	132(53)	180(226)	19	5	3	5	8.2(10.4)
		KF08		285(325)	227(267)	176(216)	148(53)	196(236)	19	5	3	5	8.8(11.0)
		KF10	TF09	325(365)	267(307)	216(256)	188(53)	236(276)	19	5	3	5	11.6(13.8)
		KF15	TF13	385(425)	327(367)	276(316)	248(53)	296(336)	22	6	3.5	6	15.8(18.0)

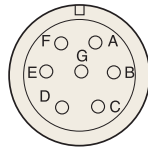
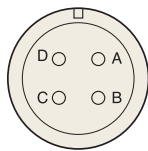
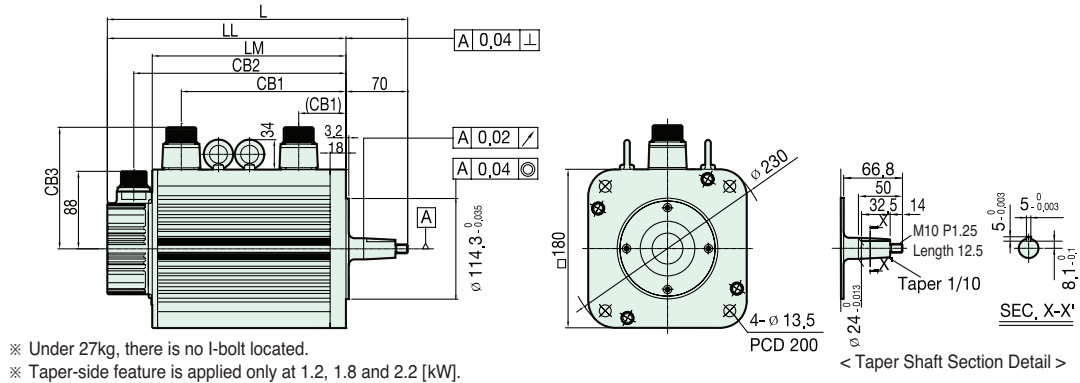
Note 1 : () dimension represents brake attached type.

Note 2 : Use brake input power source, after confirming standard DC 90[V] and on customers' requests DC 24[V]

Straight Shaft (Standard) Type



Taper Shaft (Option) Type

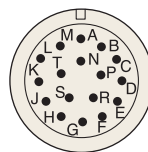


Motor Connector Connection Diagram

Contents	LeadWire phase notification	Pin Number
Motor Connection	U	A
	V	B
	W	C
	FG	D
Break Connection	+	E
	-	F

Encoder Signal	Pin Number	Encoder Signal	Pin Number
A	A	U	K
\bar{A}	B	\bar{U}	L
B	C	V	M
\bar{B}	D	\bar{V}	N
Z	E	W	P
\bar{Z}	F	\bar{W}	R
GND	G	Shield	J
Vcc	H		

Incremental Encoder Connector Connection Diagram



Line Color	Encoder Signal	Pin Number
Black	GND	G
Red	Vcc	H
Brown	BT+	K
Brown/Black	BT-	L
Gray	FG	N
Blue	SD	P
Blue/Black	$\bar{S}D$	R
-	SHIELD	J

Serial 17bit Encoder Connector Connection Diagram

Model	External Dimensions									Key Dimensions				Weight [kg]
	L	LL	LM	CB1	CB2	CB3	S	T	U	W				
CN30A	KN22A	TN20	LN12A	265(332)	186(253)	135(202)	102(96)	156(223)	138	35	8	5	10	12.9(18.5)
	KN35	TN30	LN20	300(367)	221(288)	170(237)	137(96)	191(258)	138	35	8	5	10	18.2(24.0)
CN50A				310(377)	231(298)	180(247)	147(96)	201(268)	138	35	8	5	10	19.9(25.7)
	KN55	TN44	LN30	350(417)	271(338)	220(287)	187(96)	241(308)	138	35	8	5	10	26.8(32.5)
		TN55	LN40	410(477)	331(398)	280(347)	247(96)	301(368)	138	35	8	5	10	36.1(41.8)
			LN55	461(527)	382(448)	331(397)	292(96)	352(418)	147	35	8	5	10	45.7(51.4)
	KF22	TF20	LF12	347(421)	268(342)	217(291)	181(96)	238(312)	138	35	8	5	10	17.2(24.7)
	KF35	TF30	LF20	407(476)	328(397)	277(346)	241(96)	298(367)	138	35	8	5	10	27.4(34.9)
	KF50	TF44	LF30	507(571)	428(492)	377(441)	341(96)	398(462)	138	35	8	5	10	38.3(45.8)

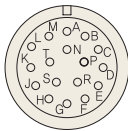
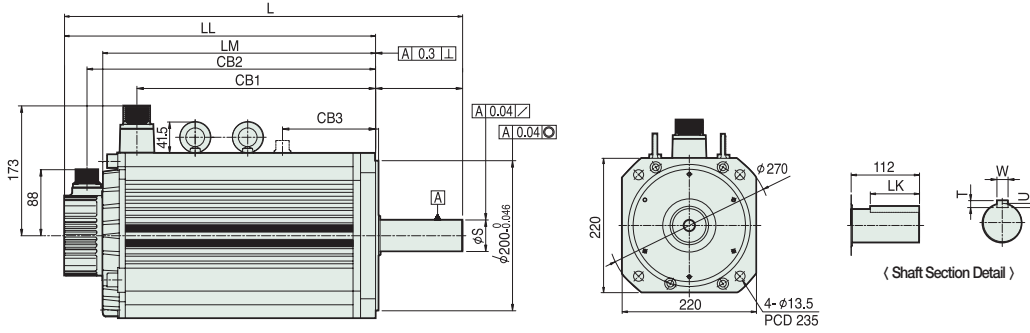
Note 1 : () dimension represents brake attached type.

Note 2 : Use brake input power source, after confirming standard DC 90[V], and on customers' reuests DC 24[V]

Note 3 : L length is shortened 9.2 mm when taper shaft is applied.

Dimensions of AC Servo Motor

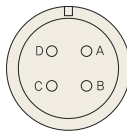
[Flange220 Series]



MS3102A20-29P

Encoder Signal	Pin Number	Encoder Signal	Pin Number
A	A	U	K
A	B	U	L
B	C	V	M
B	D	V	N
Z	E	W	P
Z	F	W	R
GND	G	Shield	J
Vcc	H		

Incremental Encoder Connector Connection Diagram



MS3102A32-17P (over 7.5kW)

Contents	LeadWire phase notification	Pin Number
Motor Connection	U	A
	V	B
	W	C
	FG	D

Motor Cable Connector Connection Diagram



MS3102A10SL-4P

Contents	LeadWire phase notification	Pin Number
Break Connection	+	A
	-	B

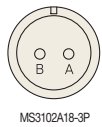
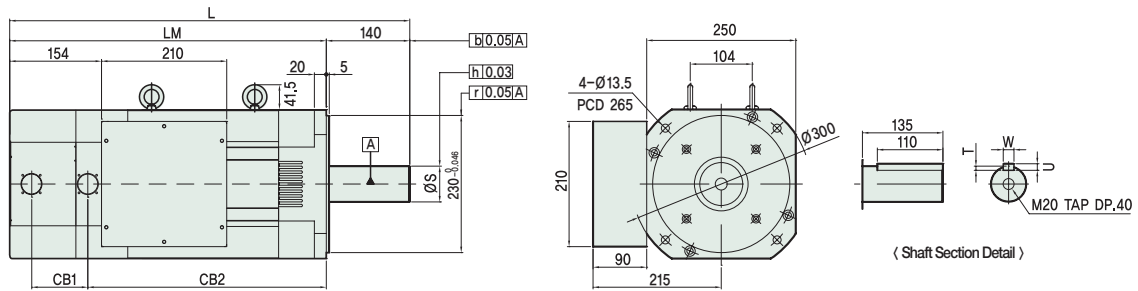
Break Cable Connector Connection Diagram

Model	External Dimensions							Key Dimensions				Weight [kg]	
	L	LL	LM	CB1	CB2	CB3	LK	S	T	U	W		
Standard Type	TN110	461	345	294	244	315	—	90	42 k6	8	5	12	59
	TN150	556	440	389	339	410	—	98	55 m6	10	6	16	86
Brake Type	TN110	531	415	364	318	385	121	90	42 k6	8	5	12	73
	TN150	626	510	459	413	480	121	98	48 m6	10	6	16	99

Note1: Use brake input power source, after confirming standard DC 90[V] and on customers' requests DC 24[V]

Dimensions of AC Servo Motor

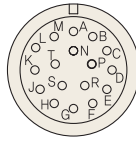
[Flange250 Series]



MS3102A18-3P

Pin Number	Fan Number
A	+
B	-

Fan Cable Connector Connection Diagram



MS3102A20-29P

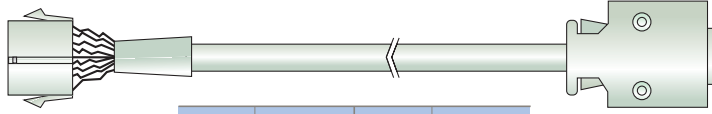
Line Color	Encoder Signal	Pin Number
Black	GND	G
Red	Vcc	H
Brown	BT+	K
Brown/Black	BT-	L
Gray	FG	N
Blue	SD	P
Blue/Black	SD	R
-	Shield	J

* Motor Fan power specification: Single phase 230V, 41W, Speed: 3400 RPM

Model	External Dimensions				Key Dimensions				Weight [kg]
	L	LM	CB1	CB2	S	T	U	W	
TN220	622	482	94	351	60	7	11	18	93
TN300	671	531	94	400	60	7	11	18	107
TN370	718	578	94	447	60	7	11	18	117

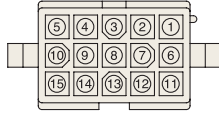
Encoder Signal Cable

[Flange 40, 60, 80 Series Motor]



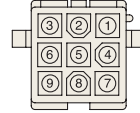
Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bits]

■ Motor Type Connector



AMP 172163-1 CAP
170361-1 Pin

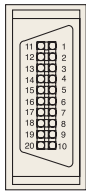
Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	A	9	V
2	Ā	10	V̄
3	B	11	W
4	B̄	12	W̄
5	Z	13	Vcc
6	Z̄	14	GND
7	U	15	Shield
8	Ū		



AMP 172161-1 CAP
170362-1 Pin (9Circuits)

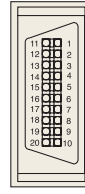
Pin Number	Encoder Signal
1	SD
2	SD
3	BT+
4	BT-
5	Vcc
6	GND
7	FG
8	Shield

■ Driver Type Connector



3M 10120-3000VE
3M 10320-52A0-008

Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	W	11	Z̄
2	W̄	12	Shield
3	V	13	B̄
4	V̄	14	Z
5	U	15	A
6	Ū	16	B
7	-	17	-
8	-	18	A
9	GND	19	Vcc
10	-	20	-



CONNECTOR 10120-3000VE 3M
CONNECTOR COVER
10320-52A0-008 type 3M

Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	SD	11	-
2	SD	12	FG/SHIELD
3	-	13	-
4	-	14	-
5	-	15	-
6	-	16	-
7	BT+	17	-
8	BT-	18	-
9	GND	19	Vcc
10	-	20	-

※ Model Name : FCA □□□□□

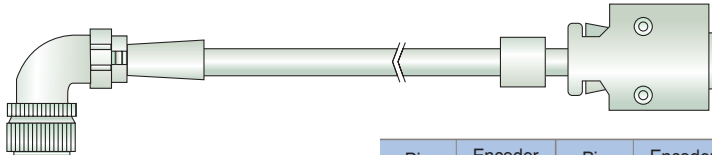
<Incremental>

<17bit Connector>

Flange	Operating Type				Non-Operating Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
40, 60, 80	EA03F	EA05F	EA10F	EA20F	EA03N	EA05N	EA10N	EA20N	7000 Series, INC.15 line
	EP03F	EP05F	EP10F	EP20F	EP03N	EP05N	EP10N	EP20N	7000 Series, 17Bits

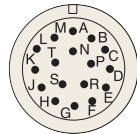
Encoder Signal Cable

[Flange 130, 180 Series Motor]



Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bits]

■ Motor Type Connector

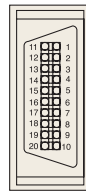


MS3102A20-29S

Pin Number	Encoder Signal	Pin Number	Encoder Signal
A	A	M	V
B	Ā	N	V̄
C	B	P	W
D	B̄	R	W̄
E	Z	H	Vcc
F	Z̄	G	GND
K	U	J	Shield
L	Ū		

Pin Number	Encoder Signal	Pin Number	Encoder Signal
A	-	K	BT+
B	-	L	BT-
C	-	M	-
D	-	N	FG/SHIELD
E	-	P	SD
F	-	R	SD
G	GND	S	-
H	Vcc	T	-
J	Shield		

■ Driver Type Connector



3M 10120-3000VE
3M 10320-52A0-008

Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	W	11	Z̄
2	W̄	12	Shield
3	V	13	B̄
4	V̄	14	Z
5	U	15	A
6	Ū	16	B
7	-	17	-
8	-	18	A
9	GND	19	Vcc
10	-	20	-

Pin Number	Encoder Signal	Pin Number	Encoder Signal
1	SD	11	-
2	SD	12	FG/SHIELD
3	-	13	-
4	-	14	-
5	-	15	-
6	-	16	-
7	BT+	17	-
8	BT-	18	-
9	GND	19	Vcc
10	-	20	-

※ Model Name : FCA □□□□□

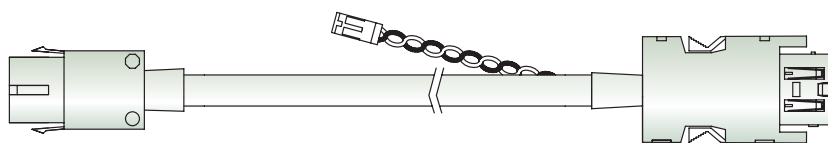
<Incremental>

<17bit Connector>

Flange	Flexible Type				Non-Flexible Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
130, 180, 220	FC03F	FC05F	FC10F	FC20F	FC03N	FC05N	FC10N	FC20N	7000 Series, INC.15 line
	FP03F	FP05F	FP10F	FP20F	FP03N	FP05N	FP10N	FP20N	7000 Series, 17Bits

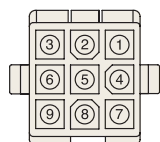
Encoder Signal Cable

[Standard Network Cable]



Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bites]

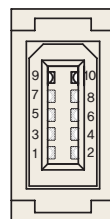
Motor Type Connector



AMP 172161-1 CAP
170362-1 Pin

Encoder Signal	Pin Number
SD	1
SD	2
BT+	3
BT-	4
Vcc	5
GND	6
FG	7
Shield	8

Driver Type Connector



CONNECTOR 54599-1019 MOLEX

Encoder Signal	Pin Number
-	1
-	2
-	3
-	4
GND	5
SD	6
-	7
SD	8
Vcc	9
Shield	10

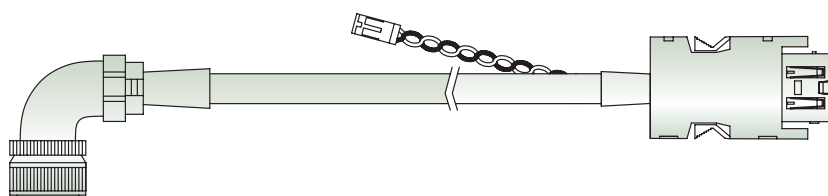
<17bit Connector>

※ Model Name : FCA □□□□□

Flange	Operating Type				Non-Operating Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
40 / 60 / 80	EPN03F	EPN05F	EPN10F	EPN20F	EPN03N	EPN05N	EPN10N	EPN20N	17bits, 9 line, Abs

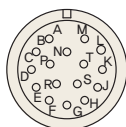
Encoder Signal Cable

[Standard Network Cable]



Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bites]

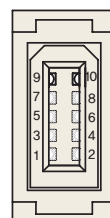
Motor Type Connector



MS3108A/B20-29S
MS CONNECTOR

Encoder Signal	Pin Number	Encoder Signal	Pin Number
-	A	BT+	K
-	B	BT-	L
-	C	-	M
-	D	FG	N
-	E	SD	P
-	F	SD	R
GND	G	-	S
Vcc	H	-	T
Shield	J		

Driver Type Connector



CONNECTOR 54599-1019 MOLEX

Encoder Signal	Pin Number
-	1
-	2
-	3
-	4
GND	5
SD	6
-	7
SD	8
Vcc	9
Shield	10

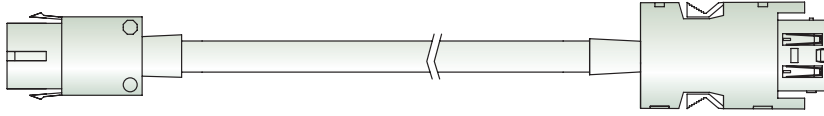
<17bit Connector>

※ Model Name : FCA □□□□□

Flange	Flexible Type				Non-Flexible Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
130/180/220/250/280	FPN03F	FPN05F	FPN10F	FPN20F	FPN03N	FPN05N	FPN10N	FPN20N	17bits, 9 line, Abs

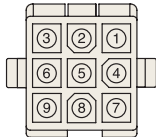
Encoder Signal Cable

[NDA 7000]



Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bites]

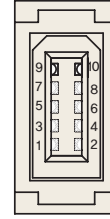
■ Motor Type Connector



AMP 172161-1 CAP
170362-1 Pin

Encoder Signal	Pin Number
B	1
\bar{B}	2
A	3
\bar{A}	4
Z	5
\bar{Z}	6
Vcc	7
GND	8
Shield	10

■ Driver Type Connector



CONNECTOR 54599-1019 MOLEX

Encoder Signal	Pin Number
A	1
\bar{B}	2
\bar{A}	3
B	4
GND	5
Z	6
Vcc	7
Z	8
-	9
Shield	10

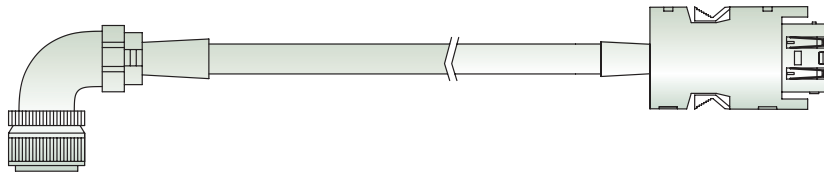
<Incremental>

※ Model Name : FCA □ □ □ □ □

Flange	Operating Type				Non-Operating Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
40 / 60 / 80	ANP03F	ANP05F	ANP10F	ANP20F	ANP03N	ANP05N	ANP10N	ANP20N	8192Pis, 9 line Inc

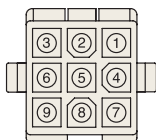
Encoder Signal Cable

[NDA 7000]



Encoder Cable : For preventing noise, single-directional shielded & twisted paired cable[Using above LS Cable COVV-SB (non-operating type) ROVV-SB(operating type) level production,below 5 pair production in case of 17 Bites]

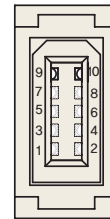
■ Motor Type Connector



AMP 172161-1 CAP
170362-1 Pin

엔코더신호	핀번호
B	1
\bar{B}	2
A	3
\bar{A}	4
Z	5
\bar{Z}	6
Vcc	7
GND	8
Shield	10

■ Driver Type Connector



CONNECTOR 54599-1019 MOLEX

엔코더신호	핀번호
A	1
\bar{B}	2
\bar{A}	3
B	4
GND	5
Z	6
Vcc	7
Z	8
-	9
Shield	10

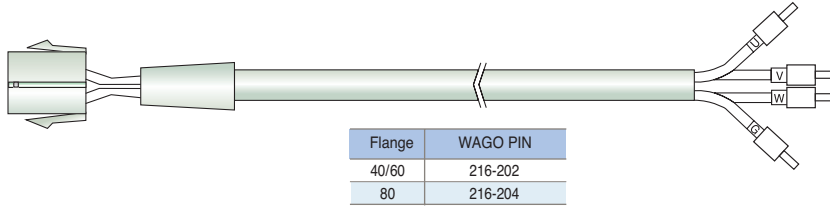
<Incremental>

※ Model Name : FCA □ □ □ □ □

Flange	Flexible Type				Non-Flexible Type				Remarks
	3m	5m	10m	20m	3m	5m	10m	20m	
130/180/220	MNP03F	MNP05F	MNP10F	MNP20F	MNP03N	MNP05N	MNP10N	MNP20N	8192Pis, 9 line Inc

Motor Power Cable

[FDA 7000]



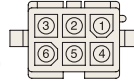
Motor Connector Connection Diagram

AMP 172159-1 Cap
170362-1 Pin
(Standard)



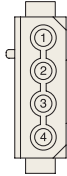
Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4

AMP 172160-1
Cap 170362-1 Pin
(Brake Type)

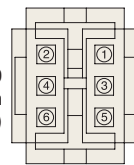


Contents	Signal	Pin Number
Motor Connection	U	1
	V	2
	W	3
	FG	4
Break Connection	+	5
	-	6

AMP 1-480424-0 Cap
61117-1 Pin
(Standard)



AMP 1-480270-0
Cap 61117-1 Pin
(Brake Type)

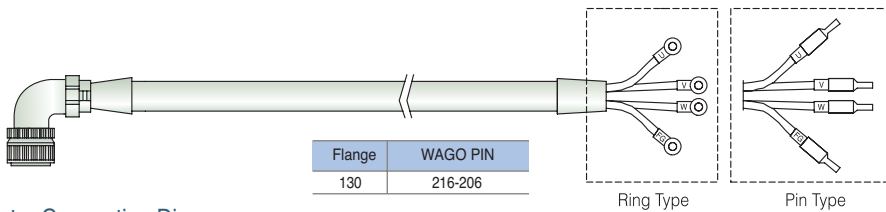


※ Model Name : FCA □□□□□

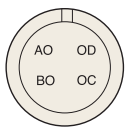
Flange	Classification	Operating Type				Non-Operating Type			
		3m	5m	10m	20m	3m	5m	10m	20m
40 / 60	Standard	SL03F	SL05F	SL010F	SL20F	SL03N	SL05N	SL010N	SL20N
	Brake	BL03F	BL05F	BL010F	BL20F	BL03N	BL05N	BL010N	BL20N
80	Standard	SJ03F	SJ05F	SJ010F	SJ20F	SJ03N	SJ05N	SJ010N	SJ20N
	Brake	BJ03F	BJ05F	BJ010F	BJ20F	BJ03N	BJ05N	BJ010N	BJ20N

Motor Power Cable

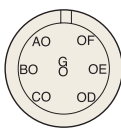
[FDA 7000]



Motor Connector Connection Diagram



Contents	LeadWire Phase Notification	Pin Number
Motor Connection	U	A
	V	B
	W	C
	FG	D



Contents	LeadWire Phase Notification	Pin Number
Motor Connection	U	A
	V	B
	W	C
	FG	D
Break Connection	+	E
	-	F

①,② MS3108B20-4S (N/F130 series standard)
③ MS3108B22-22S (N/F180 series standard, 5.5KW below)

④,⑤ MS3108B20-15S (N/F130 Brake attached type)
⑥ MS3108B24-10S (N/F180 Brake attached type)

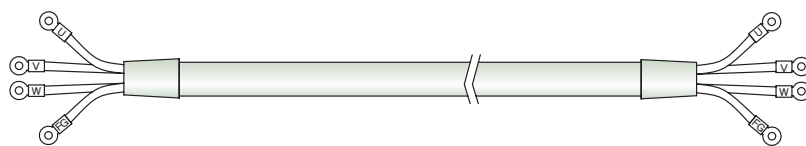
※ Model Name : FCA □□□□□

Flange	Terminal Type	Classification	Operating Type				Non-Operating Type				Rated Output(W)	
			3m	5m	10m	20m	3m	5m	10m	20m		
130	Pin	Standard	③	SK03F	SK05F	SK10F	SK20F	SK03N	SK05N	SK10N	SK20N	0.3~1.1[kW]
		Brake	④	BK03F	BK05F	BK10F	BK20F	BK03N	BK05N	BK10N	BK20N	
130	Ring	Standard	①	SC03F	SC05F	SC10F	SC20F	SC03N	SC05N	SC10N	SC20N	
		Brake	②	BC03F	BC05F	BC10F	BC20F	BC03N	BC05N	BC10N	BC20N	
180	Ring	Standard	②	SD03F	SD05F	SD10F	SD20F	SD03N	SD05N	SD10N	SD20N	1.2~3.5[kW]
			③	SE03F	SE05F	SE10F	SE20F	SE03N	SE05N	SE10N	SE20N	4.4~5.5[kW]
	Ring	Brake	⑤	BD03F	BD05F	BD10F	BD20F	BD03N	BD05N	BD10N	BD20N	1.2~3.5[kW]
			⑥	BE03F	BE05F	BE10F	BE20F	BE03N	BE05N	BE10N	BE20N	4.4~5.5[kW]
220	Ring	Standard	⑦	SG03F	SG05F	SG10F	SG20F	SG03N	SG05N	SG10N	SG20N	11[kW]
			⑧	SH03F	SH05F	SH10F	SH20F	SH03N	SH05N	SH10N	SH20N	15[kW]
		Brake	⑨	BG03F	BG05F	BG10F	BG20F	BG03N	BG05N	BG10N	BG20N	over 7.5[kW]

※ ②或⑤ : Applying to 1.2~3.5[kW] / ③或⑥ : Applying to 4.4~5.5[kW] / ①and④ : Applying to 0.3~1.1[kW]

Motor Power Cable

[FDA 7000]



※ Model Name : FCA □□□□□

Flange	Classification	Rated Output(W)	Flexible Type				Non-Flexible Type			
			3m	5m	10m	20m	3m	5m	10m	20m
250	Standard	22kW	SM03F	SM05F	SM10F	SM20F	SM03N	SM05N	SM10N	SM20N
		30kW	SN03F	SN05F	SN10F	SN20F	SN03N	SN05N	SN10N	SN20N
		37kW	SP03F	SP05F	SP10F	SP20F	SP03N	SP05N	SP10N	SP20N
280	Standard	45kW	SQ03F	SQ05F	SQ10F	SQ20F	SQ03N	SQ05N	SQ10N	SQ20N
		55kW	SR03F	SR05F	SR10F	SR20F	SR03N	SR05N	SR10N	SR20N
		75kW	SS03F	SS05F	SS10F	SS20F	SS03N	SS05N	SS10N	SS20N

Additional Option Specifications of AC Servo Drive

Digital Loader
(Order code No.: FDA 7000DL)



Available for NDA/FDA7000/FDA7000C

■ Noise Filter & Regenerated Resistor

AC Servo Drive (FDA 7-)	001~030	045	075	110	150
Noise Filter	ET3RE-4030 (30A)	ET3RE-4040 (40A)	ET3RE-4050 (50A)	ET3RE-4060 (60A)	ET3RE-4080 (80A)
Regenerated Resistor Other Code No.	-		HDA500010S	HDA600010S	HDA600011S

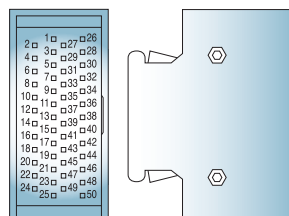
AC Servo Drive (FDA 7000-H)	020~045	075~110	150	220	300	370
Noise Filter	ET3RE-4030 (30A)	ET3RE-4040 (40A)	ET3RE-4050 (50A)	ET3RE-4060 (60A)	ET3RE-4080 (80A)	ET3RE-4100(100A)
Regenerated Resistor Other Code No.	-	HDA600010S	HDA600012S	HDA600013S		HDA600014S

※ Manufacturer: OKY LTD., <http://www.oky.co.kr>

■ Connector & Brake Type Power Unit

Use / Specification	FDA 7000	Brake Type Power Unit	
	CN1(Model Name : FDACON50P-3M)	60, 80 Flange	130, 180 Flange
Connector	0150-3000VE	-	
Case	10350-52A0-008		
Manufacturer	3M		
Input		Single Phase AC200-220[V]	Single Phase AC200-220[V]
Output		DC 24[V], 0.5[A]	Standard DC90[V],1[A], Customized Division DC24[V],1[A]

■ CN1 Connector (Manufacturer: 3M)



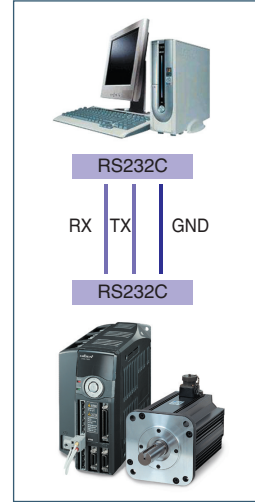
Item No.: 10150-3000VE, 10350-52A0-008

Connector backside view (PIN positions)

P-DORI STATION

Main Features

- Rapid Monitoring by applying MODBUS Protocol
- Digital I/O Command Control
- Parameter Read/Write
- Supporting RS232C/RS485 and monitoring function by the selection of exchange number
- Supporting Standard/Positioning Type
- Compatible OS : Windows 98, 2000, 7(x64bit)
- FDA/NDA7000 Series are available



Software for PC Communication

[Monitoring]

[Parameter Save]

Code	Name	Unit	Init	Value
P01-1	Motor ID	-	21	0
P01-2	Inertia	kgm ²	-	0
P01-3	TW Constant	lighter/A	-	0
P01-4	Phase Inductance	mH	-	0
P01-5	Phase Resistance	Ω	-	0
P01-6	Rated Current	(Arms)	-	0
P01-7	Rated Speed	rpm	-	0
P01-8	MAX Speed	rpm	-	0
P01-9	Rated TWD	kg/cm	-	0
P01-10	Pole Number	pole	-	0
P01-11	Drive ID	-	10	0
P01-12	Encoder ID	-	11(A)	0
P01-13	Encoder Pulse	ppr	3000	0
P01-14	Pulse Out Rate	pulse	2000	0
P01-15	COM Baud Rate	-	0	0
P01-16	Serial Select	-	0	0
P01-17	Serial I/O	-	1	0

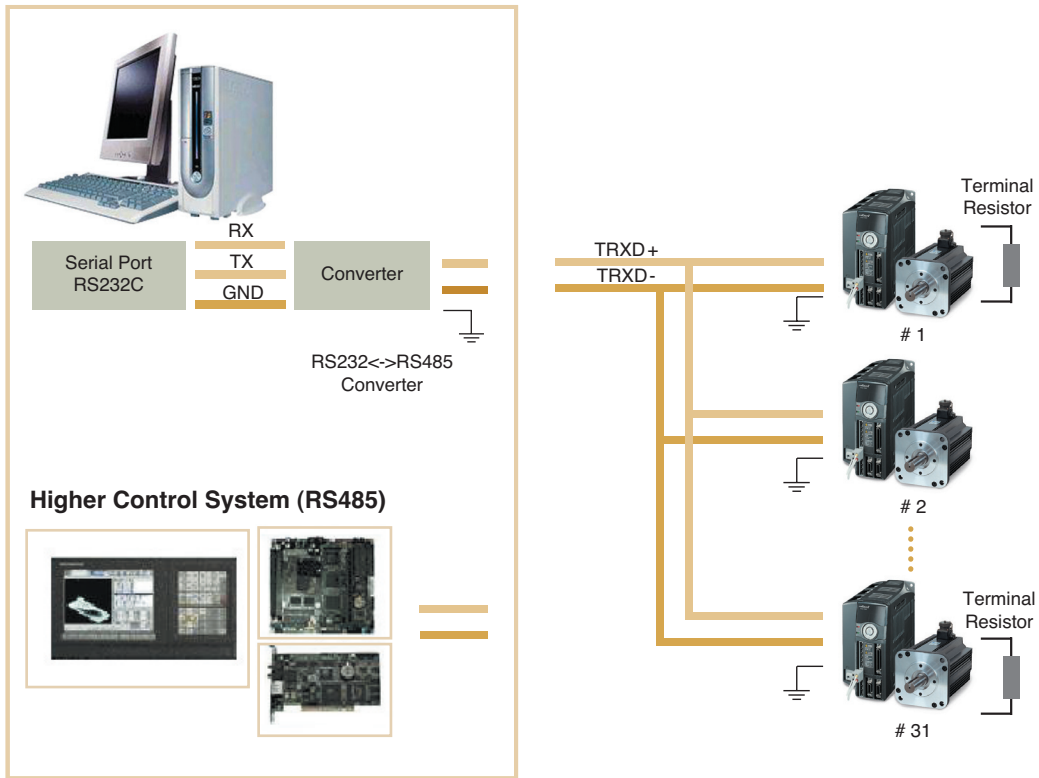
[Digital Speed Command]

[Digital I/O Command]

P.dori v1.0
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Communicational Function Model (RS 485)

- Supporting both RS232C and RS485 communication channel
- Using wide MODBUS Protocol
- Making-up Communication Networks with Higher Controller (PLC, MMI)



MODBUS RTU Protocol

Start(Logical)	Address Field	Function Field	Data Field	CRC Check
3.5 Char. Times	1 Byte	1 Byte	n×2 Byte	2 Byte

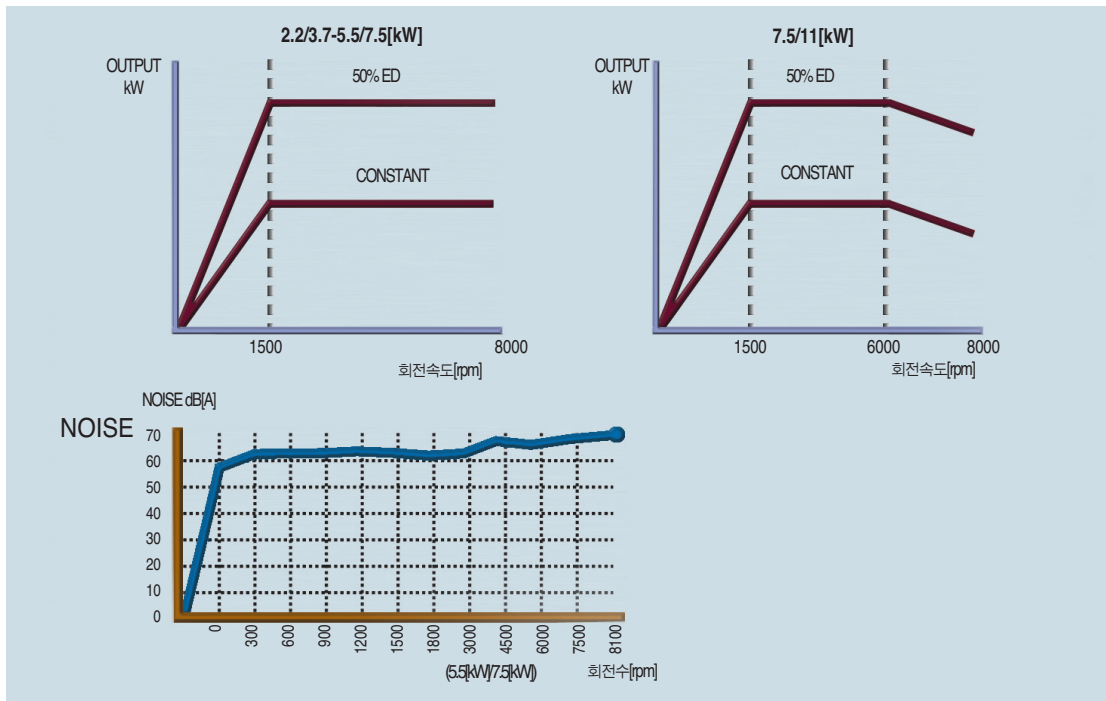
FIELD	Contents
Address Field	Slave ID (1~31)
Function Field	Organized by Function Code
Data Field	Organized by Data following Function Code
CRC Check	CRC-16 : X16 + X15 + X2 + 1

SPINDLE MOTORS

Features

- Korea's first frameless type, Rated RPM : 8000
- State Core : Direct Cooling method
- High responsive acceleration and deceleration due to high torque and low inertia design criteria
- Ball bearing designed to withstand high temperature and high speed operation condition.
- Low vibration : V5, Precise Balancing
- Totally Enclosed Fan Cooled Type, IP54
- Compact frameless compact design 30% light, 30% smaller volume as compared with conventional type
- Installation Condition : Indoor, Max Elevation 1000 m above the sea level, Ambient temperature range : - 20 degree C + 40 degrees C
- Accessories : Cooling Fan, Encoder(1024[P/R]), High temperature sensor [NTC]

SPEED-OUTPUT CURVE

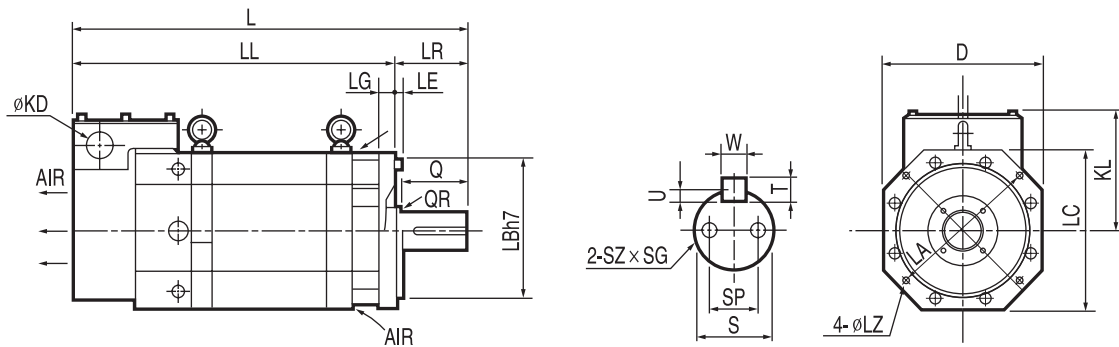
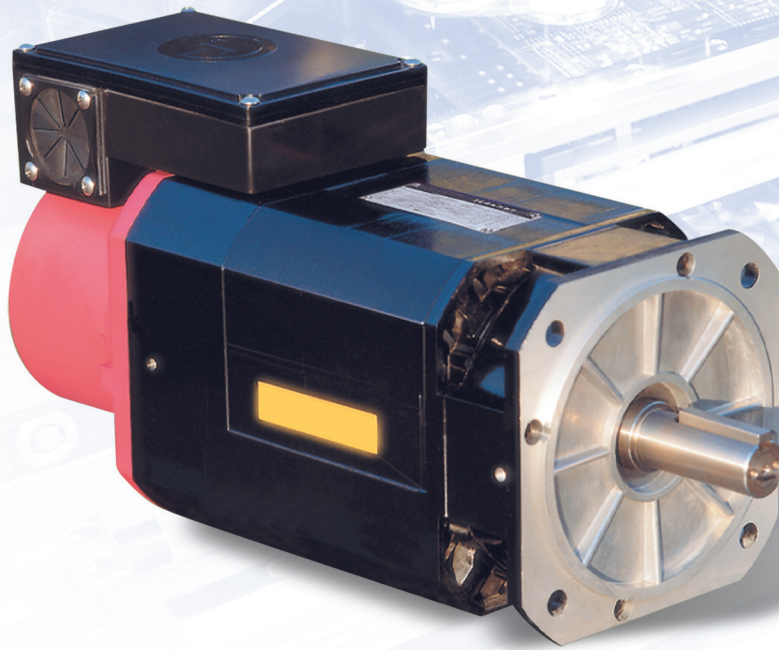


SPECIFICATIONS

FEATURES	MODEL	S05HC1BF	S08HC1BF	S10HC1BF	S15HC1BF
RATED OUTPUT [kW]	50%ED	3.7	5.5	7.5	11
RATED OUTPUT [CONSTANT]		2.2	3.7	5.5	7.5
CONSTANT RATED TORQUE [kgf · m]		1.43	2.40	3.57	4.87
BASE SPEED [rpm]		1,500			
MAX SPEED [rpm]		8,000			
WITHSTANDING FOR OVER LOAD		50% ED × 120% 1Minute			
GD ² [kg · m ²]		0.035	0.057	0.086	0.11
VIBRATION		V5			
NOISE		70dB[A]			
ACCESSORIES		COOLING FAN, ENCODER (1024[P/R]), [NTC]			

50%ED : Output measured under the operation mode of 50% ED, which runs on 10 minutes operation cycles consisting of 5 minutes on "on" and the other 5 minutes on "off".

HIGIEN



OUTPUT (kW)	DIMENSIONS(mm)													SHAFT					WEIGHT (kg)				
	FR	FL	D	L	LL	LR	KD	KL	LA	LB	LC	LE	LG	LZ	Q	S	T	U		W	SP	SZ	SG
2.2/3.7	112	F215	204	435	375	60	43	162	215	180	204	5	12	15.5	55	28j6	7	4	8	18	M5	10	35
3.7/5.5	112	F215	204	490	410	80	43	162	215	180	204	5	12	15.5	75	32h6	8	5	10	18	M5	12	48
5.5/7.5	112	F215	204	540	460	80	43	162	215	180	204	5	12	15.5	75	32h6	8	5	10	18	M5	12	56
7.5/11	112	F215	204	590	510	80	43	162	215	180	204	5	12	15.5	75	38h6	8	5	10	18	M5	12	73

IPM Motor

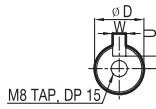
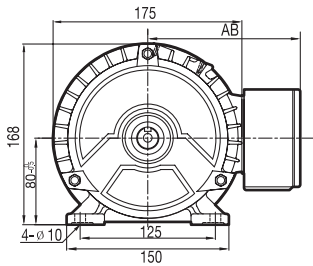
Special Features

- As permanent magnet applied synchronous motor, constant speed realization without slip occurred in asynchronous motor
- Approximately 50% downsizing and high speed possible as compared with asynchronous motor of same output
- Noise Reduction owing to no cooling fan
- Sensorless control without encoder
- Operation cost cutting through power dissipation reduction by high efficiency design as compared with asynchronous motor of same output
- Customized model possible by 100% domestic production

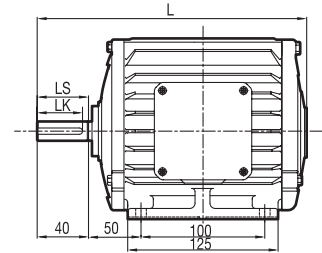


External Dimensions

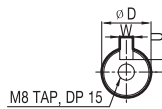
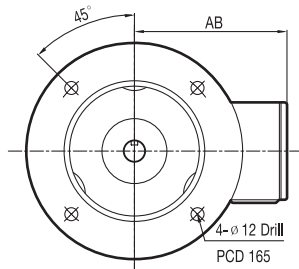
Foot Mount Type



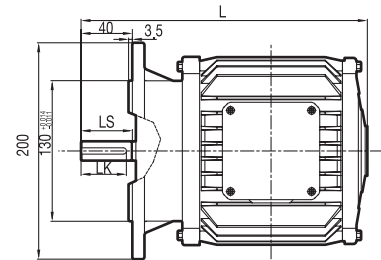
Key part details



Flange Type



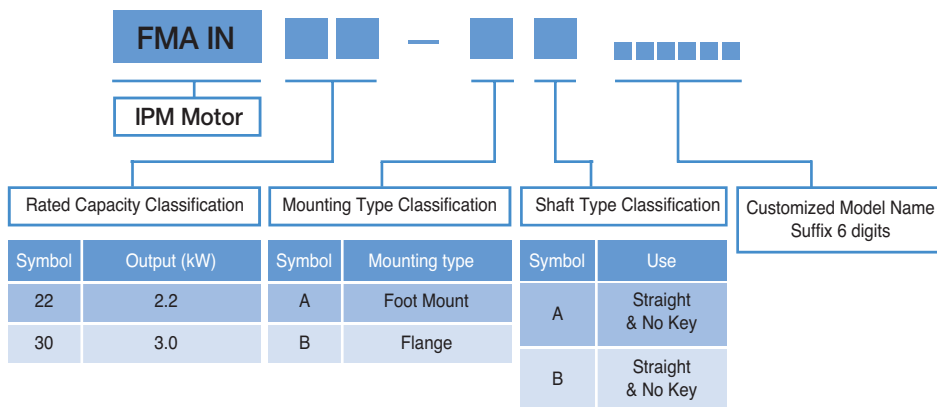
Key part details



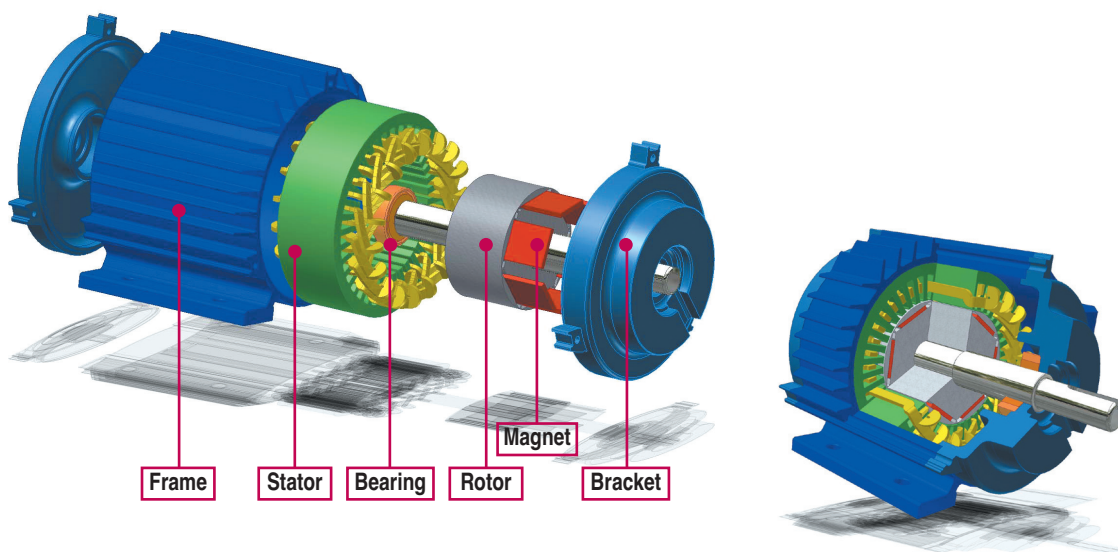
External Dimensions

Model	External Dimensions (Foot Mount/Flange)				Key Dimensions		
	L	LS	LK	AB	φD	U	W
FMAIN 22	227.5/258	40/40	36/36	140/140	19j6/19j6	6	6
FMAIN 30	227.5/258	40/40	36/36	140/140	19j6/19j6	6	6

※(Note): Shaft specification can be changed as an option.



IPM 3D Image



Main Specifications

Model		FMAIN22	FMAIN30
Item			
Rated Output	[kW]	2,2	3,0
Rated Torque	[Nm]	4,7	6,4
Rated RPM	[r/min]	4500	4500
Rated Current	[A]	8,2	10,1
Rotor Inertia J	[x 10 ⁻⁴ · kg · m ²]	17,18	20,81
Insulation Class		F Class	
Structure		TE (Degrees of protection IP44)	
Vibration Class		V_10	
Ambient Temperature		0 °C ~ +40 °C (freezing not available)	
Ambient Humidity		Under 80%RH (condensation not available)	
Preservation Temperature		0 °C ~ +40 °C (freezing not available)	
Preservation Humidity		Under 90%RH (condensation not available)	
Environmental Condition		Indoor (Don't expose to direct sunlight) Corrosive Gas · Flammable Gas · Oil Mist · Dust free	
Height		Up to 1000m above the sea level	
Weight [kg]	[kg]	14	15

① Informations are subject to change without notice to improve product performance.



2013. 9 Servo Eng. (D) Ver 1309.1

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- Homepage : <http://www.higenmotor.com/eng>

※ The information in this catalogue is subject to change for product improvement without prior notice.