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Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

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2014. 3 ※ The content and specifications are subject to be changed without prior notice.

LS MECAPION L7 DRIVE

The World Class Leader in Automation System



LS Mecapion
Products Collection Vol. 2.3

L7 Drive

LS Mecapion's L7 Series

will be the best partner for your future vision.

Your reasonable selection for Total Solution





Moving towards tomorrow

The World Class Leader in Automation System

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Characteristics of L7 Series

Compact Size

Capacity	400W 44% Down Size			1kW 46% Down Size			3.5kW 62% Down Size		
Series	L7	VS	Competitor	L7	VS	Competitor	L7	VS	Competitor
L [mm]	38	80	40	58	88	60	88	137	90
W [mm]	169	187	168	169	210	168	169	256	168
H [mm]	173	132	170	198	195	195	198	225	195

Compared with VS Drive

Max
52%
Slim

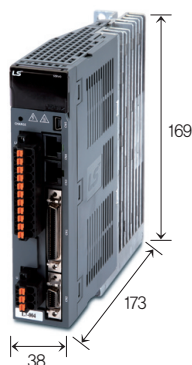
Compared with
competitor's drive

Max
5%
Slim

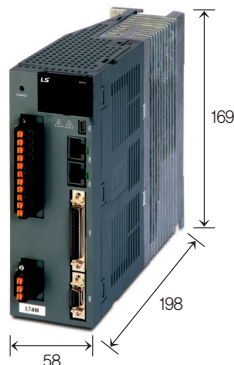
The Minimized Width to 38mm!!! (400W)

– Downsize Machine with Compact and Slim Design

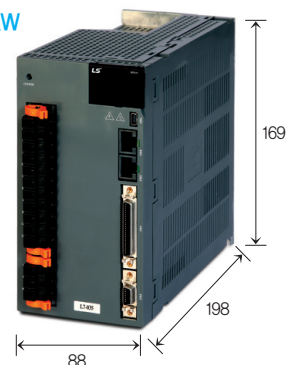
400W



1kW



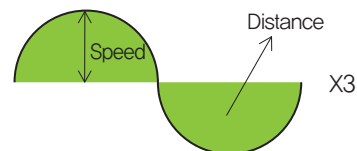
3.5kW



Easy to USE

Easy Gain Tuning with Automatic Inertia Estimating Function

- Quick & Accurate Inertia Estimating
- Off-Line Tuning
- Parameter for Estimation(Speed & Distance)



Encoder with Bi-Directinal High Speed Serial Communication

- Automatic Identification(Motor ID / Encoder Pulse)
- BiSS protocol
- Easy Wiring(15 Encoder wires → 7 Encoder wires) and Anti-External Noise

BiSS
INTERFACE

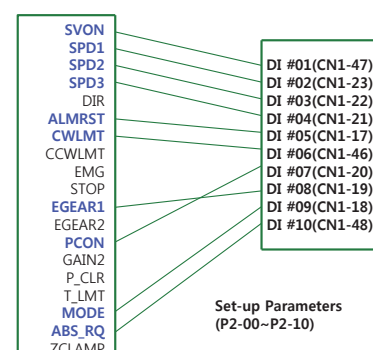
Characteristics of L7 Series

● Easy Setting with Built-in Pannel Operator

- 4 Built-in Operation Key(UP, DOWN, MODE/LEFT, SET/RIGHT)
 - : Eidetic & Convenient Parameter and Menu Editing
 - : According to Key State and Parameter type, Easy Editing
- Parameter consists of Status Monitoring(St), Parameter Setting(P0~P4), Function(Cn)
- Monitoring Function for Many States and Variables
 - : Present Operating State(St-00), Input Frequency(St-06), Accumulated Over Load Factor(St-09), Regenerative Over Load Factor(St-13), Data in one revolution(St-17), Drive Internal Temperature(St-19)
- Grouping of Parameter(P0-XX~P4-XX)
 - : P0(System Configuration), P1(Control), P2(Input/Output), P3(Speed Mode), P4(Position Mode)
- Various Functions and Adjusting(Cn-XX)
 - : Automatic Gain Estimating Function(Cn-05), Analog Input Adjusting(Cn-10~13), Manual JOG Operation(Cn-00), Forced Input/Output Function(Cn-07, Cn-08)

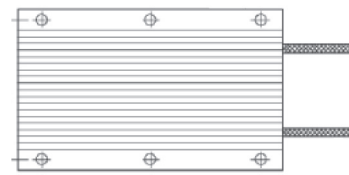
● Many I/O Contacts and Various Functions

- Digital Input(10 contacts, 19 functions)
 - : SV_ON, SPD1/2/3, DIR, A_RST, CWLMT, CCWLMT, EMERGENCY, STOP, EGEAR1/2, PCON, GAIN2, P_CLR, T_LMT, MODE, ABS_RQ, ZCLAMP
- Digital Output : 5 Contacts + Alarm Code(3 contacts, 9 functions)
 - : ALARM, RDY, ZSPD, BRAKE, INPOS, INSPD, T_LMT, V_LMT, WARN
- Versatile I/O Assignment by Parameter Including contact level(A/B) setting
- Forced I/O Function for Easy I/O Setting
- Analog Input Contacts : 2 contacts(Speed, Torque)
- Analog Monitoring Output : 2 contacts(12Bit)



● Regeneration Brake Resistor

- Built-in Drive for User's Convenience(100W~3.5kW)
- Connection of External Installation(Optional) Available
- The adoption of reinforced protect algorithm



● Plug-in Type Power Connector

- Easy Wiring(Up to 3.5kW Model)



● 400V(High Voltage) Servo

- Convenient Wiring by Using Same Voltage for Main Power and Control Power
- Power Input : 3Phase 380 ~ 480Vac
- Main Input : 1Phase 380 ~ 480Vac

Characteristics of L7 Series

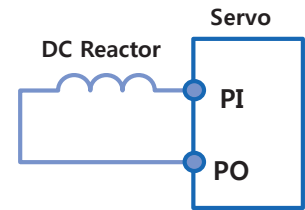
■ Reliability

● Increased Durability of Main Capacitor

- Long Life Type Capacitor(2.5 times longer than previous one)

● Convenient DC Reactor

- Providing Power Connection for the Connection of DC-Link Terminal
- Compact Size and Easy Wiring(Compared with 3 phase AC Reactor)
- Providing Connection for DC Input(PI, N)



● Safe "Off" Function with Detecting Control Power "Off"

● CE, RoHS Certified

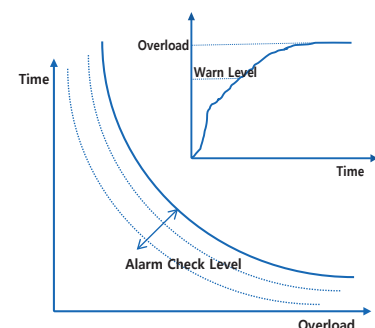


● Upgraded Protection Function(I)

- Triple Protection Functions for Power Module
 - : IPM Fault, CL Detecting, Over Current Detecting with S/W
- Main Power Mis-wiring Detecting Function
 - : Selecting 3 Phase or Single Phase, and Alarm or Warn is available
- Protecting Overheating with Thermal Sensor in the Drive and Motor
- Alarm Code Grouping and Exclusive Output Contacts(AL00, AL01, AL02)
- Warn Function(Digital Output WARN Output is Available)
 - : Mis-wiring of Power, Low voltage for Encoder Battery, Over Speed Command, Over Torque Command, Over Load, Mis-matched motor and drive

● Upgrade Protection Function(II)

- Detecting Function for Accumulated Over Load of Regenerative Resistor
 - : Protect algorithm is provided with embedded resistor characteristic
 - : Protection by Capacity(P0-11) and Resistance(P0-10)
 - : Providing Derating Factor for radiant heat
- Available Continuous Overload Capacity Setting as followed Operating Condition
 - : Protections with Capacity of I²T(Protect with separated Overload table at Stall & Operation)
 - : Set Overload check level(P0-12)
 - : Setting Warn signal output Level is available(P0-13)



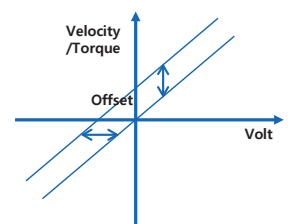
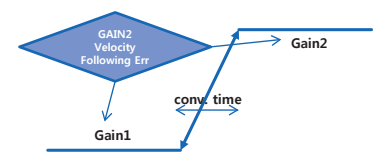
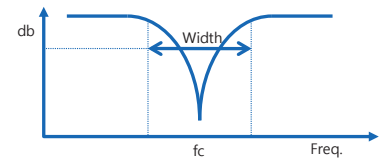
Characteristics of L7 Series

High Performance

- **High Resolution Serial type Encoder(16bit, 19bit, 21bit)**
 - Accurate Position Control and Improved Stability at Low Speed
- **Stable Low Speed Operation with Accurate Speed Check**
 - Stable Measurement at Low Speed
- **Absolute Encoder(Multi-turn)**
 - Origin Function is not needed
- **Improved Speed Response Frequency**
 - About 1kHz
 - Reduced Positioning Time

Intelligent Control

- **Notch Filter for Resonance Control**
 - Available Setting Frequency(P1-18) and Width(P1-19)
- **Various Gain Switching Mode for Improved Control Functions**
 - Auto Switching Function for P/PI can reduce overshooting at Accel/Decel time
: Switching by Torque, Speed and Accel/Decel command, Position Error is available
 - Various Gain1 ↔ Gain2 Switching Mode is provided
: Switching as followed Input Gain2, ZSPD, INPOS condition
 - Smooth Gain Switching with Setting Switching Time(P1-16)
- **Various Dynamic Brake Control Mode**
 - Setting Mode [at Stop] or [after Stop]
: Hold after DB STOP, Release after DB STOP, Hold after Free-run, Release after Free-run
- **Improved Adjusting Function for Analog Input**
 - Auto Adjusting for Speed Command(Cn-10)
 - Auto Adjusting for Torque Command(Cn-11)
 - Manual Adjusting for Speed Command(Cn-12)
 - Manual Adjusting for Torque Command(Cn-13)
- **Providing Trapezoid & S-Curve type Accel/Decel Pattern**



Characteristics of L7 Series

■ Motion Network Type(EtherCAT) – L7N Series

● High Performance

- High speed, Real-time capability and Synchronization mechanism

● Open Network

- Global open protocol(> 1600 world wide members)

● Cost Effective

- Standard Ethernet Cabling+Connectors, Less implementation efforts for master and slave

● Easy to Use

- Versatile topology, Diagnostics

● L7 Drive with Built-in EtherCAT Interface

- 100BASE-TX(100Mbps) ethernet based real-time communication
- Support CiA402(IEC61800-7) drive profile • Interoperability
- Max. 100m between nodes • Have a precise synchronization mechanism(<1us)
- Freely settable process data length and mapping
- Four status indication LEDs(L/A0, L/A1, RUN, ERR)
- Standard RJ45 connector and cabling(CAT5)
- Have intrinsic functions of L7S series(same size) • Support various homing modes
- Support full-closed control(2012' 4Q planned)

● Support various operation modes

- CSP, CSV, CST, PP, PV, PT, HM, IP

● Safe Torque Off function

- Forced torque off by HWBB signals without intervention of μ P and FPGA(ASIC), International standard(IEC61508))

● Versatile I/O assignment by parameters

- 6 inputs, 4 outputs

● High speed position capture function

- Touch probe function(PROBE1, PROBE2)

● Provide specialized commissioning tools by LSIS's XGT PLC

- Tune inertia ratio, velocity/position gains, gain conversion configuration

● Have conformity of EtherCAT device

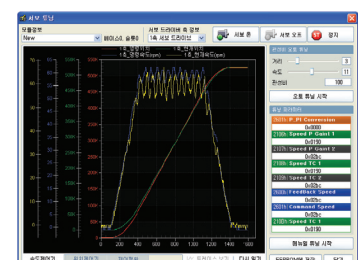
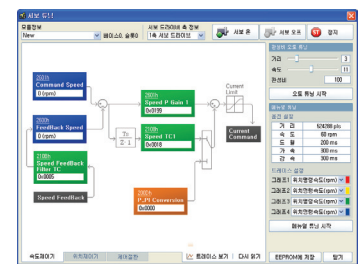
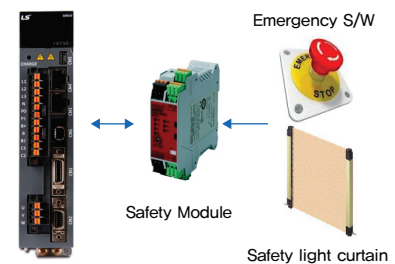
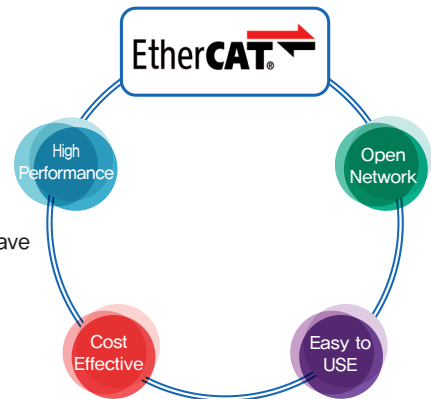
- In-house test using CTT(Conformance Test Tool)

● Support scaling objects for position, velocity and acceleration

- Numerator and denominator

● Provide Gain Tuning Tools and Commissioning Packages

- Automatic inertia tuning and PI gains • Gain conversion setting
- Manual fine gain tuning tool • Object save and initialization function
- Alarm history function(recently issued 20 alarm codes)



L7 Servo Drive & Motor



Servo Motor & Drive Designations

Servo Drive Designation

L7	S	A	004	B	AA
Series	Communication	Input Power Supply	Capacity	Encoder Type	Option
L7 Series	S : Standard I/O Type N : Network Type	A : 220VAC B : 400VAC	001 : 100W 002 : 200W 004 : 400W 008 : 750W 010 : 1.0kW 020 : 2.0kW 035 : 3.5kW 050 : 5.0kW 075 : 7.5kW (Coming Soon) 110 : 11kW (Coming Soon) 150 : 15kW (Coming Soon)	A : Parallel (Pulse Type) B : Serial (Communication Type) ※ L7N : Serial encoder only	Exclusive Option Code

Servo Motor Designation

APM	S	B	04	A	M	K	1
Servo Motor	Motor Shaft	Flange Size	Motor Capacity	Encoder Type	Rated Speed	Oil Seal, Brake Type	Shape of Shaft End
	S : Solid Shaft F : Flat Type H : Hollow Shaft L : Low Current Type	A : 40 Flange B : 60 Flange C : 80 Flange E : 130 Flange F : 180 Flange G : 220 Flange	R3 : 30[W] R5 : 50[W] 01 : 100[W] 02 : 200[W] 03 : 300[W] 04 : 400[W] 07 : 650[W] 08 : 800[W] 10 : 1.0[kW] 15 : 1.5[kW] 20 : 2.0[kW] 35 : 3.5[kW] 44 : 4.4[kW] 50 : 5.0[kW] 75 : 7.5[kW] (Coming Soon) 110 : 11kW (Coming Soon) 150 : 15kW (Coming Soon)	A : Inc. 1024[P/R] B : Inc. 2000[P/R] C : Inc. 2048[P/R] D : Inc. 2500[P/R] E : Inc. 3000[P/R] N : 19bit S-Turn Abs. M : 19bit M-Turn Abs.	A : 3000[rpm] D : 2000[rpm] G : 1500[rpm] M : 1000[rpm]	None : None 1 : Oil Seal Attached 2 : Brake Attached 3 : Oil Seal, Brake Attached Note) Refer to Brake Specifications	N : Straight K : One side Round key (Standard) H : Hollow Shaft

Servo Motor & Drive Designations

Servo Motor & Drive Selection Table

● APM-F Series Selection

Rated Speed (rpm)	Max. Speed (rpm)	Flange Size	Motor (APM)	Drive	Encoder Type	IP Grade
3,000	5,000	□60	FB01A	L7□A001B	*19Bit Serial Abs	IP65
		□60	FB02A	L7□A002B		
		□60	FB04A	L7□A004B		
		□80	FC04A	L7□A004B		
		□80	FC06A	L7□A008B		
		□80	FC08A	L7□A008B		
		□80	FC10A	L7□A010B		
		□130	FE09A	L7□A010B		
		□130	FE15A	L7□A020B		
		□130	FE22A	L7□A020B		
		□130	FE30A	L7□A035B		
		□180	FF30A	L7□A035B		
		□180	FF50A	L7□A050B		
2,000	3,000	□80	FC03D	L7□A004B		
		□80	FC05D	L7□A008B		
		□80	FC06D	L7□A008B		
		□80	FC07D	L7□A008B		
		□180	FE06D	L7□A008B		
		□180	FE11D	L7□A010B		
		□180	FE16D	L7□A020B		
		□180	FE22D	L7□A020B		
		□180	FF22D	L7□A020B		
		□180	FF35D	L7□A035B		
		□180	FF55D	L7□A050B		
		□180	FF75D	L7□A075B		
		□220	FG22D	L7□A020B		
		□220	FG35D	L7□A035B		
		□220	FG55D	L7□A050B		
		□220	FG75D	L7□A075B		
1,500	3,000	□130	FE05G	L7□A008B		
		□130	FE09G	L7□A010B		
		□130	FE13G	L7□A020B		
		□130	FE17G	L7□A020B		
		□180	FF20G	L7□A020B		
		□180	FF30G	L7□A035B		
		□180	FF44G	L7□A050B		
		□180	FF60G	L7□A075B		
		□180	FF75G	L7□A075B		
		□220	FG20G	L7□A020B		
		□220	FG30G	L7□A035B		
		□220	FG44G	L7□A050B		
		□220	FG60G	L7□A075B		
1,000	2,000	□130	FE03M	L7□A004B		
		□130	FE06M	L7□A008B		
		□130	FE09M	L7□A010B		
		□130	FE12M	L7□A020B		
		□180	FF12M	L7□A020B		
		□180	FF20M	L7□A020B		
		□180	FF30M	L7□A035B		
		□180	FF44M	L7□A050B		
		□220	FG12M	L7□A020B		
		□220	FG20M	L7□A020B		
		□220	FG30M	L7□A035B		
		□220	FG44M	L7□A050B		

Note) L7□A075 Servo Drive is Coming soon.

Servo Motor & Drive Designations

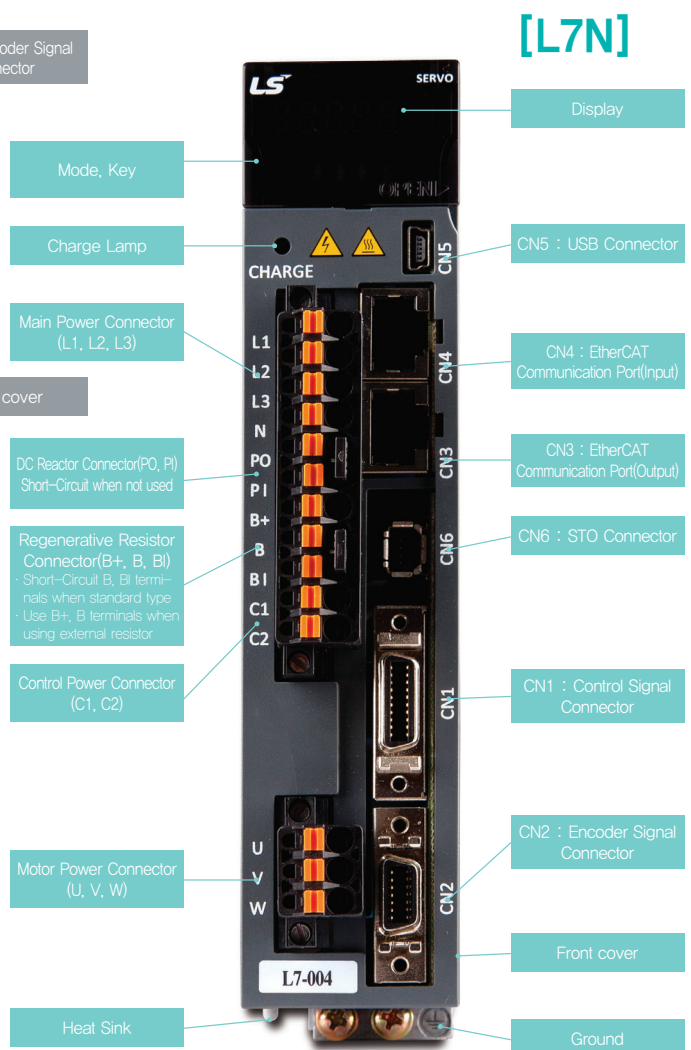
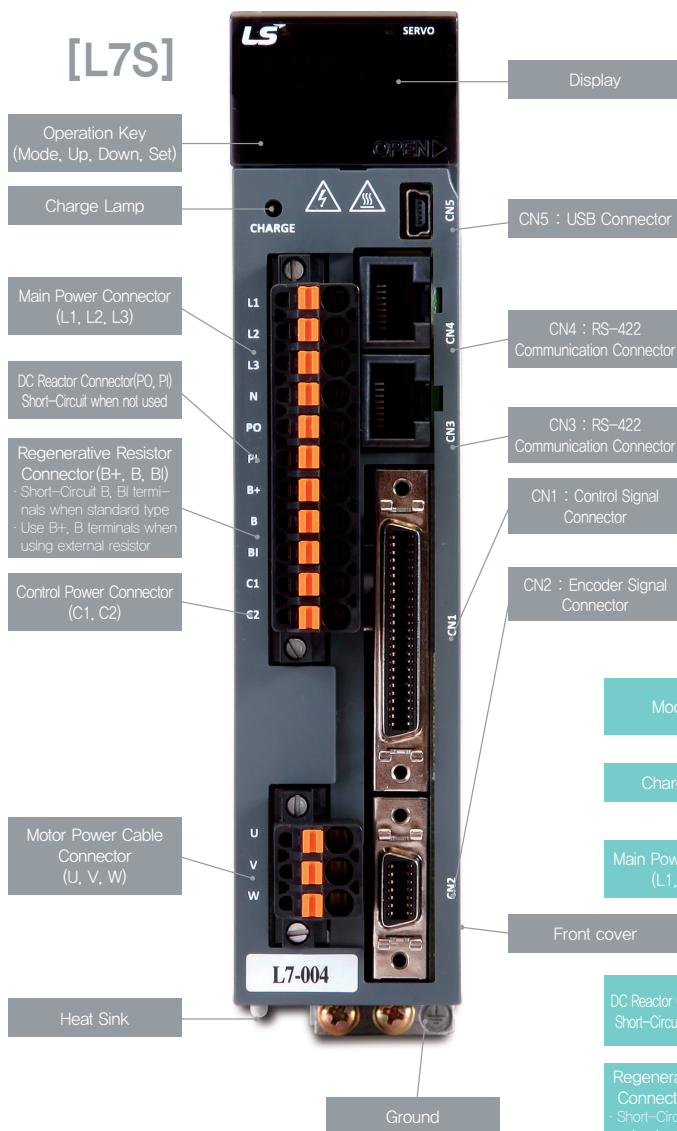
Servo Motor & Drive Selection Table

● APM-S Series Selection

Rated Speed (rpm)	Max. Speed (rpm)	Flange Size	Motor (APM)	Drive	Encoder Type		IP Grade
					Parallel Type	Serial Type	
3,000	5,000	□ 40	SAR3A	L7 □ A001 □	*2,048 P/R	*18Bit Serial Abs	IP55
		□ 40	SAR5A	L7 □ A001 □			
		□ 40	SA01A	L7 □ A001 □			
		□ 40	SA015A	L7 □ A002 □			
		□ 60	SB01A	L7 □ A002 □			
		□ 60	SB02A	L7 □ A002 □			
		□ 60	SB04A	L7 □ A004 □			
		□ 80	SC04A	L7 □ A004 □			
		□ 80	SC06A	L7 □ A008 □			
		□ 80	SC08A	L7 □ A008 □			
		□ 80	SC10A	L7 □ A010 □			
		□ 130	SE09A	L7 □ A008 □			
		□ 130	SE15A	L7 □ A020 □			
		□ 130	SE22A	L7 □ A020 □			
		□ 130	SE30A	L7 □ A035 □			
		□ 180	SF30A	L7 □ A035 □			
□ 180	SF50A	L7 □ A050 □	*3,000 P/R	*19Bit Serial Abs	IP65		
2,000	3,000	□ 80				SC03D	L7 □ A004 □
		□ 80				SC05D	L7 □ A008 □
		□ 80				SC06D	L7 □ A008 □
		□ 80				SC07D	L7 □ A008 □
		□ 130				SE06D	L7 □ A008 □
		□ 130				SE11D	L7 □ A010 □
		□ 130				SE16D	L7 □ A020 □
		□ 130				SE22D	L7 □ A020 □
		□ 180				SF22D	L7 □ A020 □
		□ 180				LF35D	L7 □ A035 □
		□ 180				SF55D	L7 □ A050 □
		2,500				□ 180	SF75D
	3,000	□ 220				SG22D	L7 □ A020 □
		□ 220				LG35D	L7 □ A035 □
	2,500	□ 220				SG55D	L7 □ A050 □
	1,500	3,000	□ 220	SG75D	L7 □ A075 □		
□ 130			SE05G	L7 □ A008 □			
□ 130			SE09G	L7 □ A010 □			
□ 130			SE13G	L7 □ A020 □			
□ 130			SE17G	L7 □ A020 □			
□ 180			SF20G	L7 □ A035 □			
□ 180			LF30G	L7 □ A035 □			
□ 180			SF44G	L7 □ A050 □			
2,500			□ 180	SF60G	L7 □ A075 □		
3,000		□ 220	SG20G	L7 □ A020 □			
		□ 220	LG30G	L7 □ A035 □			
2,500		□ 220	SG44G	L7 □ A050 □			
1,000		2,000	□ 220	SG60G	L7 □ A075 □		
			□ 130	SE03M	L7 □ A004 □		
	□ 130		SE06M	L7 □ A008 □			
	□ 130		SE09M	L7 □ A010 □			
	□ 130		SE12M	L7 □ A020 □			
	□ 180		SF12M	L7 □ A020 □			
	□ 180		SF20M	L7 □ A035 □			
	□ 180		LF30M	L7 □ A035 □			
	□ 180		SF44M	L7 □ A050 □			
	□ 220		SG12M	L7 □ A020 □			
	□ 220		SG20M	L7 □ A035 □			
	□ 220		LG30M	L7 □ A035 □			
	□ 220		SG44M	L7 □ A050 □			
	□ 220		SG60M	L7 □ A075 □			
3,000	3,500	□ 60	HB01A	L7 □ A002 □	*1,024 P/R	*No application	IP55
		□ 60	HB02A	L7 □ A002 □			
		□ 60	HB04A	L7 □ A004 □			
		□ 130	HE09A	L7 □ A008 □	*2,048 P/R		
		□ 130	HE15A	L7 □ A020 □			
		□ 130	HE30A	L7 □ A035 □			

Note) L7 □ A075 Servo Drive is Coming soon.

Identifying the Parts of L7



L7S Product Features

Item		Model	L7SA001□	L7SA002□	L7SA004□	L7SA008□	L7SA010□	L7SA020□	L7SA035□	L7SA050□
Input Power	Main Power Supply	3 Phase AC200 ~ 230[V](−15 ~ +10[%]), 50 ~ 60[Hz]								
	Control Power Supply	Single Phase AC200 ~ 230[V](−15 ~ +10[%]), 50 ~ 60[Hz]								
Rated Current[A]		1.4	1.7	3.0	5.2	6.75	13.5	16.7	32	
Peak Current[A]		4.2	5.1	9.0	15.6	20.25	40.5	50.1	96	
Encoder Type		Quad. Type Incremental Line Driver Max 10000[P/R] Serial Type 19Bit								
Control Performance	Speed Control	Speed Control Range	Max. 1 : 5000							
		Frequency Response	Max. 1[kHz] or above(When using 19bit Serial Encoder)							
		Speed Command	DC−10[V]~+10[V](Reverse rotation in case of−voltage)							
		Accel/Decel Time	Linear or S–Shape Accel/Decel.(0~10,000[ms], Setting 1[ms] is possible)							
		Speed Variation Ratio	±0.01[%] or less [at Load variation 0 ~ 100%] ±0.1[%] or less [at Temp. 25±10℃]							
	Position Control	Input Frequency	1[Mpps], Line Driver / 200[kpps], Open Collector							
		Input Pulse Type	+Pulse, CW+CCW, A/B Phase							
		Electric Gear Ratio	Setting and selecting 4 digital electric gear ratio, Precise adjustment is possible							
	Torque Control	Torque Command	DC −10 ~ +10[V](Reverse rotation in case of − voltage)							
		Speed Limit	DC 0 ~ +10[V], within ±1[%] of internal speed command							
		Repeatability	±1[%] or less							
Input/Output Signal	Analog Input	Input Range	DC −10 ~ +10[V]							
		Resolution	12[bit]							
	Digital Input		Total 10 Input Channels(assignment available) SVON, SPD1, SPD2, SPD3, ALMRST, DIR, CCWLIM, CWLIM, EMG, STOP, EGEAR1, EGEAR2, PCON, GAIN2, P_CLR, T_LMT, MODE, ABS_RQ, ZCLAMP Above 19 functions can be used selectively for assignment Signal can be set as positive logic or negative logic							
	Digital Output		Total 5 Channels(assignment available), 3 Channels(set as alarm code) ALARM, READY, ZSPD, BRAKE, INPOS, TLMT, VLMT, INSPD, WARN Above 9 outputs can be used selectively for assignment Signal can be set as positive logic or negative logic							
Communication	RS422		PC Software and RS422 Server are available							
	USB		Status monitoring, JOG operation, parameter upload/download are available with PC Software							
Encoder		Compatible with Serial BiSS encoder, Parallel encoder								
Encoder Output Type		Random pre–scale output by FPGA(Max. 6.4Mpps)								
Built-in Function	Dynamic Braking		Built–in type(operates when Servo alarm or Servo off)							
	Regenerative Braking		Built–in type, and also external connection is available							
	Display		7 segments(5DIGIT)							
	Setting Function		Loader([SET], [MODE], [UP], [DOWN] key)							
	Additional Function		Automatic gain tuning function, Z–phase detection, manual JOG operation, program JOG operation, analog–input auto Calibration function							
Protective Function		Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, control power input problem, overspeed, motor cable, overheat(power module overheat, abnormal drive operation's temp), encoder problem, over–regenerative, sensor problem, communication problem								
Operation Environment		Temperature	0 ~ 50[℃]							
		Humidity	Below 90[%]RH(avoid dew–condensation)							
		Ambient Environment	Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.							

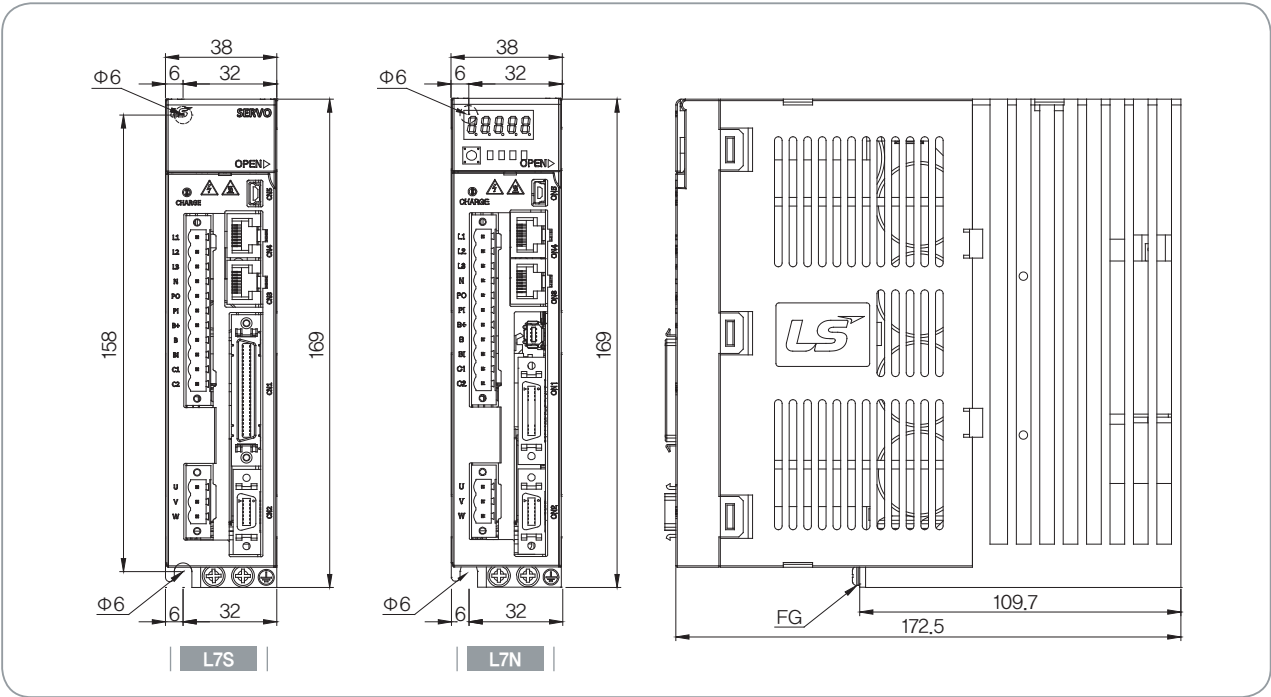
L7N Product Features

Item		Model	L7NA001B	L7NA002B	L7NA004B	L7NA008B	L7NA010B	L7NA020B	L7NA035B
Input Power	Main Power Supply	3-Phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
	Control Power Supply	Single Phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
Rated Current[A]		1.4	1.7	3.0	5.2	6.75	13.5	16.7	
Peak Current[A]		4.2	5.1	9.0	15.6	20.25	40.5	50.1	
Encoder Type		Serial 17Bit / 19Bit / 21Bit							
Control Performance	Speed Control Range	Maximum 1 : 5000							
	Frequency Response	Maximum 1[kHz]] or above(When the 19-bit Serial Encoder is applied)							
	Speed Command	DC-10[V]~+10[V](Reverse rotation in case of-voltage)							
	Speed Variation Ratio	±0.01[%] or lower(When the load changes between 0 and 100%) ±0.1[%] or less(Temperature of 25°C[±10])							
	Torque Control Repetition Accuracy	Within ±1%							
Supported Drive Modes (CiA402)		Profile Position Mode Profile Velocity Mode Profile Torque Mode Interpolated Position Mode Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode Cyclic Synchronous Torque Mode Homing Mode							
Digital Input / Output	Digital Input	Total 6 input channels(allocable) PCON, GAIN2, ALMRST, HOME, P-OT, N-OT Above 6 functions can be used selectively for assignment. Signal can be set as positive logic or negative logic.							
	Touch Probe Input	There are 2 input channels. Provides rising and falling edge detection functions for each channel.							
	Digital Output	Total 4 channels (allocable) ALARM, READY, ZSPD, BRAKE, INPOS, INSPD, WARN Above 7 outputs can be used selectively for assignment. Signal can be set as positive logic or negative logic.							
Additional Communication	USB	Program download is available with USB Communication.							
Built-in Function	Dynamic Braking	Built-in type(operates when Servo alarm or Servo off)							
	Regenerative Braking	Built-in type, and also external connection is available							
	Display Function	7 segments(5DIGIT)							
	Self-Setting Function	The [MODE] key changes the content displayed in 7 segments.							
	Additional Function	Auto gain tuning function							
Operation Environment	Protective Function	Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, control power input problem, overspeed, motor cable, overheat(power module overheat, abnormal drive operation's temp), encoder problem, over-regenerative, sensor problem, communication problem							
	Temperature	0 ~ 50[°C]							
	Humidity	Below 90[%]RH(avoid dew-condensation)							
Ambient Environment		Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.							

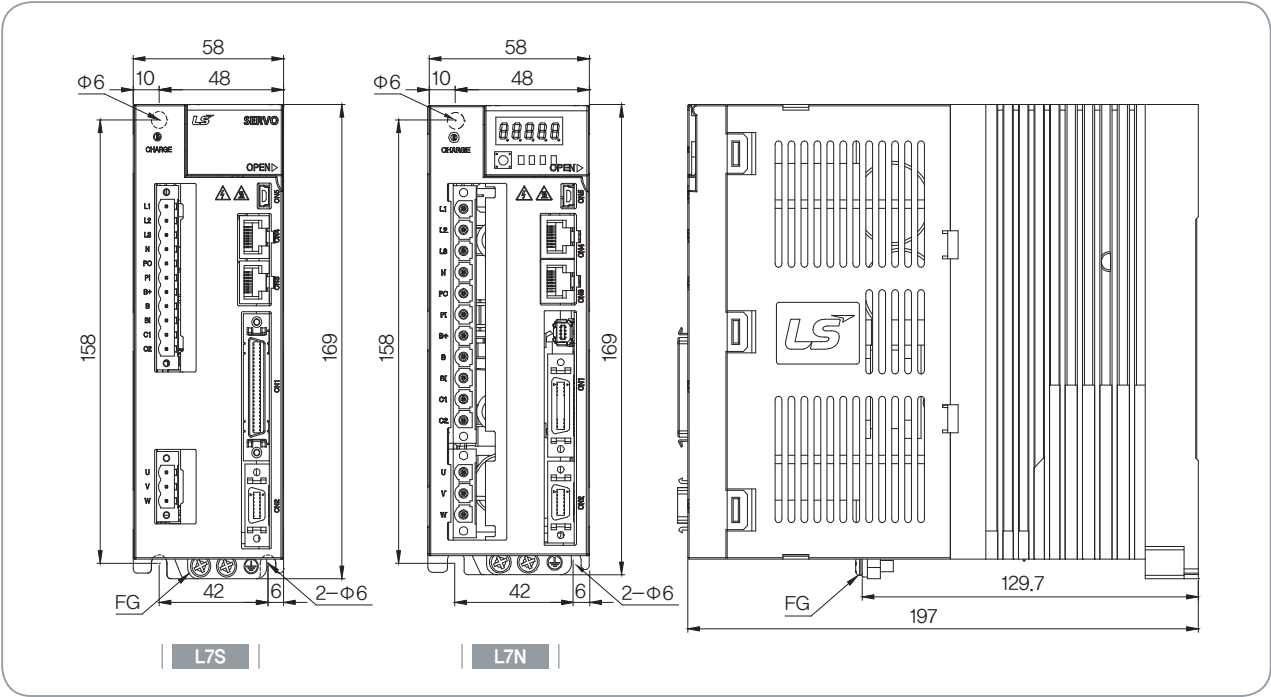
External Dimensions of Servo Drive

■ L7□A001□ ~ L7□A004□ [Weight : 1.2kg]

* Unit [mm]



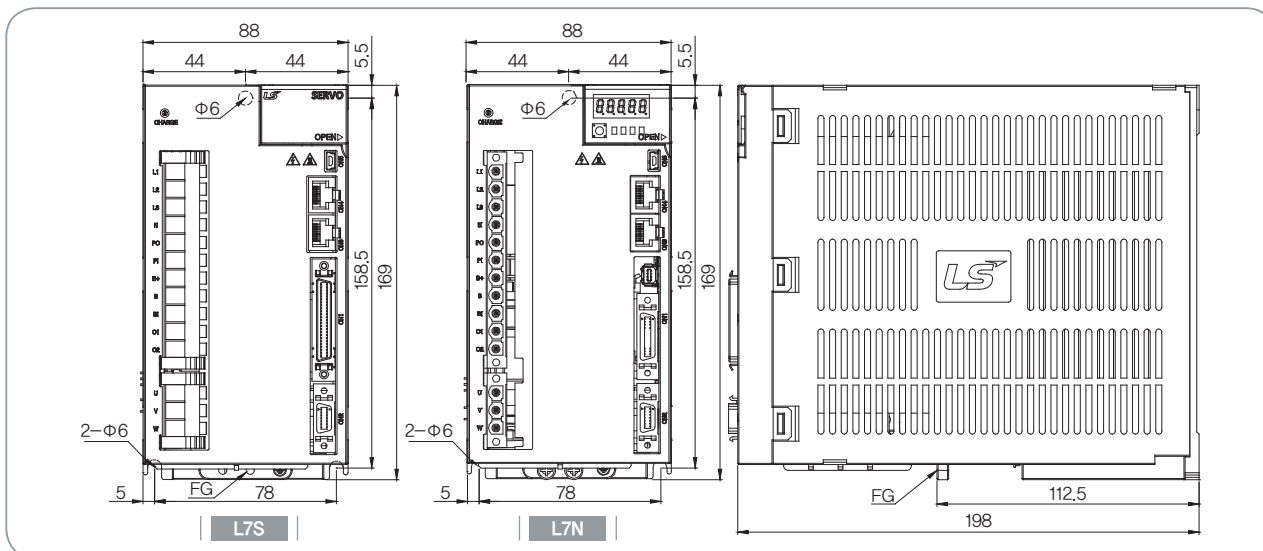
L7□A008□ ~ L7□A010□ [Weight : 1.5kg(Fan-Cooling included)]



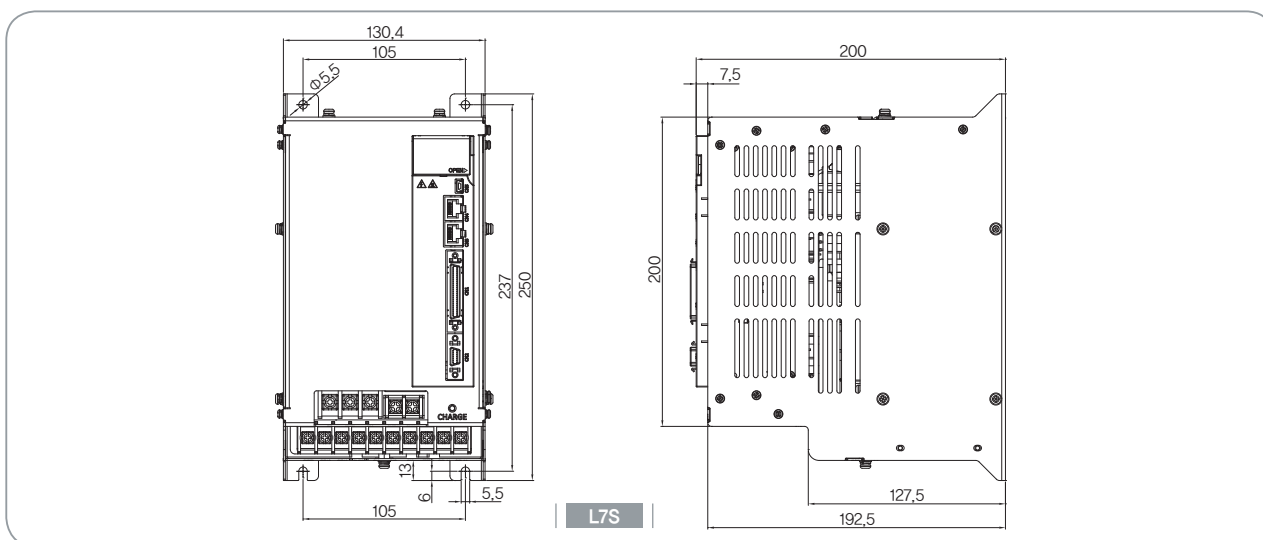
External Dimensions of Servo Drive

■ L7□A020□ ~ L7□A035□ [Weight : 2,5kg(Fan-Cooling included)]

*Unit [mm]



■ L7□A050□ [Weight : 5.5kg(Fan-Cooling included)]



Brake Specifications

Note1) For the Electronic Brake that is attached to our Servo Motor, the same specifications are to be applied as per the series.

Note2) Do not use it for braking purpose because the electronic brake is only for maintaining the stopped condition.

Note3) The characteristics of electronic brake is measured at 20°C

APM-SA	APM-SA	APM-SB APM-FB	APM-SC APM-FC	APM-SE APM-FE	APM-SF APM-LF APM-FF	APM-SG APM-LG APM-FG
Purpose	Holding	Holding	Holding	Holding	Holding	Holding
Input Power[V]	DC 24V	DC 24V	DC 24V	DC 24V	DC 24V	DC 90V
Static Friction Torque[N · m]	0.32	1.47	3.23	10.4	40	74
Capacity[W]	6	6.5	9	19.4	25	25
Coil Resistance[Ω]	96	89	64	29.6	23	327
Rated Current[A]	0.25	0.27	0.38	0.81	1.04	0.28
Braking type	Spring Brake	Spring Brake	Spring Brake	Spring Brake	Spring Brake	Spring Brake
Insulation Class	F-Class	F-Class	F-Class	F-Class	F-Class	F-Class

External Dimensions of Servo Motor

SA Series

Plug Specifications

[Power]

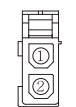


Spec.
: 172167-1
(Made by AMP)

Pin No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Power Connector Pin Table)

[Brake]

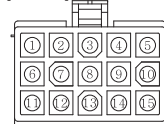


Spec.
: 172165-1
(Made by AMP)

Pin No.	Signal
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



Spec. : 172171-1(Made by AMP)

Pin No.	Signal	Pin No.	Signal
1	A	9	V
2	A	10	∇
3	B	11	W
4	B	12	W
5	Z	13	+5V
6	Z	14	0V
7	U	15	SHIELD
8	U		

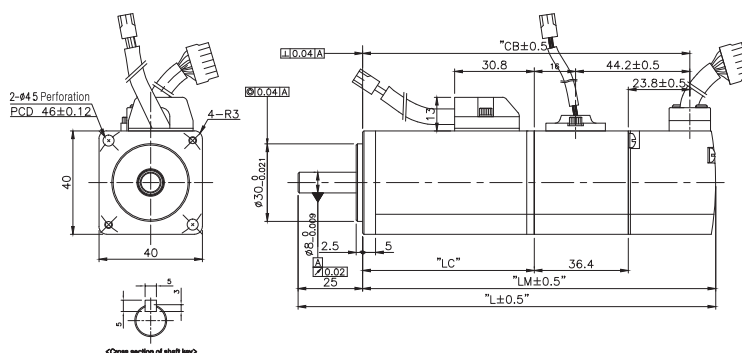
(Parallel Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Note4) Refer to page 24 for serial encoder pin table.



Model	External Dimensions				Weight(kg)
	L	LM	LC	CB	
SAR3A	101,3(137,6)	76,3(112,6)	42,5(42,4)	66,3(102,3)	0.32(0.67)
SAR5A	108,3(144,6)	83,3(119,6)	49,5(49,4)	73,3(109,3)	0.38(0.73)
SA01A	125,3(161,6)	100,3(136,6)	66,5(66,4)	90,3(126,3)	0.5(0.85)
SA015A	145,3	120,3	86,5	110,3	0.7

SB Series

Plug Specifications

[Power]

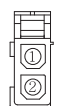


Spec.
: 172167-1
(Made by AMP)

Pin No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Power Connector Pin Table)

[Brake]

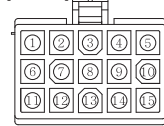


Spec.
: 172165-1
(Made by AMP)

Pin No.	Signal
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



Spec. : 172171-1(Made by AMP)

Pin No.	Signal	Pin No.	Signal
1	A	9	V
2	A	10	∇
3	B	11	W
4	B	12	W
5	Z	13	+5V
6	Z	14	0V
7	U	15	SHIELD
8	U		

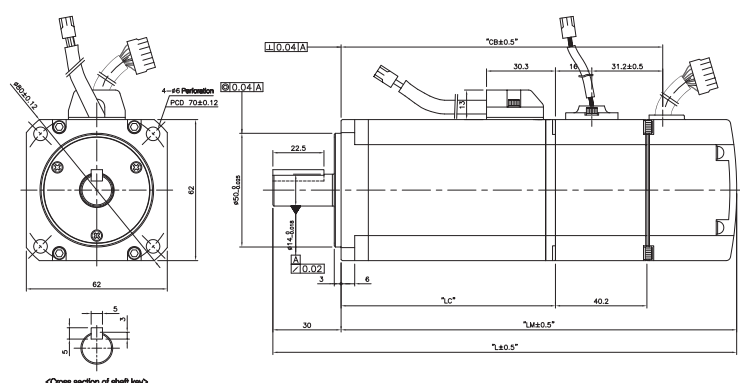
(Parallel Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Note4) Refer to page 24 for serial encoder pin table.

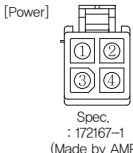


Model	External Dimensions				Weight(kg)
	L	LM	LC	CB	
SB01A	122(162)	92(132)	52,5(52,3)	59,5(99,5)	0.82(1.4)
SB02A	136(176)	106(146)	66,5(66,3)	73,5(113,5)	1.08(1.66)
SB04A	164(199)	134(169)	94,5(94,3)	101,5(141,5)	1.58(2.16)

External Dimensions of Servo Motor

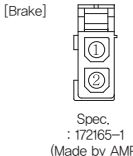
■ SC Series

Plug Specifications



Pin No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Power Connector Pin Table)



Pin No.	Signal
1	BK+
2	BK-

(Brake Connector Pin Table)

Pin No.	Signal	Pin No.	Signal
1	A	9	V
2	$\overline{A}$	10	$\overline{V}$
3	B	11	W
4	$\overline{B}$	12	$\overline{W}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	U	15	SHIELD
8	$\overline{U}$		

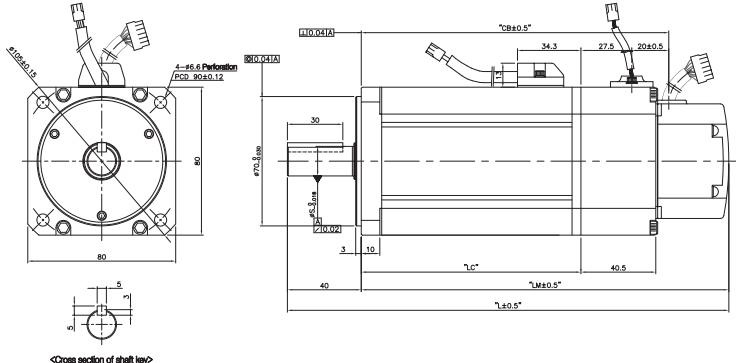
Spec. : 172171-1(Made by AMP) (Parallel Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

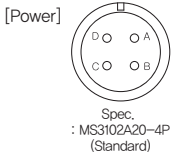
Note4) Refer to page 24 for serial encoder pin table.



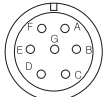
Model	External Dimensions					Weight(kg)
	L	LM	LC	CB	S	
SC04A, SC03D	158.5(198,8)	118.5(158,8)	79(78,8)	86(126,3)	14	1,88(2,92)
SC06A, SC05D	178.5(218,8)	138.5(178,8)	99(98,8)	106(146,3)	16	2,52(3,56)
SC08A, SC06D	198.5(238,8)	158.5(198,8)	119(118,8)	126(166,3)	16	3,15(4,22)
SC10A, SC07D	218.5(258,8)	178.5(218,8)	139(138,8)	146(186,3)	16	3,80(4,94)

■ SE Series

Plug Specifications



Pin No.	Signal
A	U
B	V
C	W
D	Ground



Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Spec.
: MS3102A20-15P
(Brake-attached type)

Pin No.	Signal	Pin No.	Signal
A	A	M	V
B	$\overline{A}$	N	$\overline{V}$
C	B	P	W
D	$\overline{B}$	R	$\overline{W}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	U	J	SHIELD
L	$\overline{U}$		

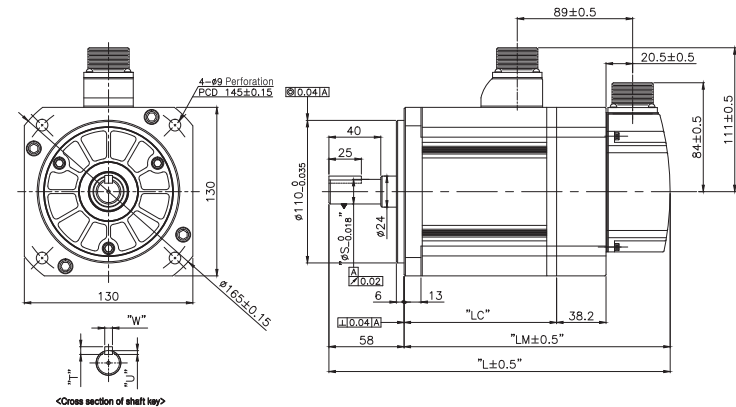
Spec.
: MS3102A20-29P (Parallel Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Note4) Refer to page 24 for serial encoder pin table.

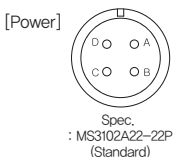


Model	External Dimensions				Key				Weight(kg)
	L	LM	LC	S	T	W	U		
SE09A, SE06D, SE05G, SE03M	201.3(239.3)	143.3(181.3)	93.8(93.6)	19	5	5	3	5.5(7.04)	
SE15A, SE11D, SE09G, SE06M	225.3(263.3)	167.3(205.3)	117.8(117.6)					7.54(9.08)	
SE22A, SE16D, SE13G, SE09M	249.3(287.3)	191.3(229.3)	141.8(141.6)	22	6	6	3.5	9.68(11.22)	
SE30A, SE22D, SE17G, SE12M	273.3(311.3)	215.3(253.3)	165.8(165.6)					11.78(13.32)	

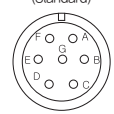
External Dimensions of Servo Motor

■ SF, LF Series

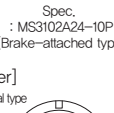
Plug Specifications



Pin No.	Signal
A	U
B	V
C	W
D	Ground



Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-



Pin No.	Signal	Pin No.	Signal
A	A	M	V
B	$\overline{A}$	N	$\overline{V}$
C	B	P	W
D	$\overline{B}$	R	$\overline{W}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	U	J	SHIELD
L	$\overline{U}$		

Spec. : MS3102A20-29P (Parallel Encoder Connector Pin Table)

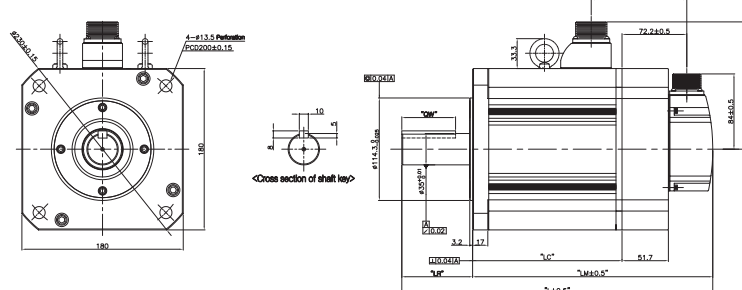
Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Note4) Refer to page 24 for serial encoder pin table.

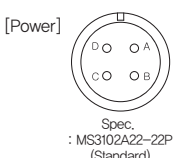
Note5) Use MS3102A32-17 for SF75G Power connector.



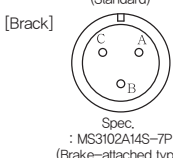
Model	External Dimensions				Key					Weight(kg)
	L	LM	LC	LR	S	QW	T	W	U	
SF30A, SF22D, SF20G, SF12M	261.5(312.9)	182.5(233.9)	133(132.7)	79	35 ^{+0.01} ₀	60	8	10	5	12.4(19.2)
SF50A, SF35D, SF30G, SF20M, LF35D, LF30G	295.5(346.9)	216.5(267.9)	167(166.7)							17.7(24.9)
SF55D, SF44G, SF30M, LF30M	345.5(396.9)	266.5(317.9)	217(216.7)							26.3(33.4)
SF75D, SF60G, SF44M	405.5(456.9)	326.5(377.9)	277(276.7)							35.6(42.8)
SF75G Note5)	457.5	344.5	295	113	42 ⁰ _{-0.016}	96	8	12	5	39.4

■ SG, LG Series

Plug Specifications



Pin No.	Signal
A	U
B	V
C	W
D	Ground



Pin No.	Signal
A	BK+
B	BK-
C	NC



Pin No.	Signal	Pin No.	Signal
A	A	M	V
B	$\overline{A}$	N	$\overline{V}$
C	B	P	W
D	$\overline{B}$	R	$\overline{W}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	U	J	SHIELD
L	$\overline{U}$		

Spec. : MS3102A20-29P (Parallel Encoder Connector Pin Table)

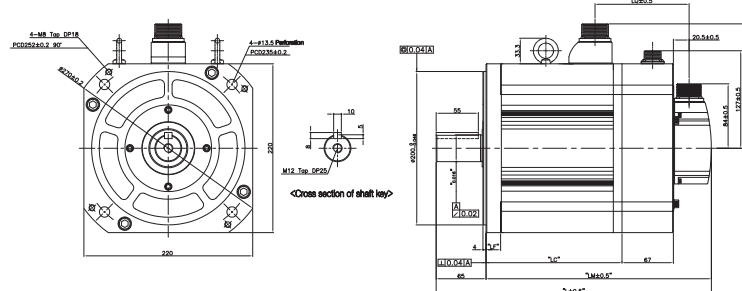
Note1) In case of SG, use DC[90V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Note4) Refer to page 24 for serial encoder pin table.

Note5) Use MS3102A32-17 for SG60M Power connector.



Model	External Dimensions					Key	Weight(kg)
	L	LM	LC	LF	LQ	S	
SG22D, SG20G, SG12M	236.5(302.7)	171.5(237.7)	122(121.2)	19	56.4(122.6)	35	16.95(30.76)
SG35D, SG30G, SG20M, LG35D, LG30G	256.5(322.7)	191.5(257.7)	142(141.2)				21.95(35.7)
SG55D, SG44G, SG30M, LG30M	292.5(358.7)	227.5(293.7)	178(177.2)				30.8(44.94)
SG75D, SG60G, SG44M	320.5(386.7)	255.5(321.7)	206(205.2)				37.52(50.94)
SG60M(Notes)	418.5(484.7)	353.5(419.7)	304(303.2)	21	66(132.2)	42	

External Dimensions of Servo Motor

HB Series [Hollow Shaft type]

Plug Specifications

[Power]

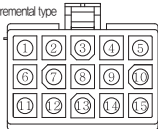


Spec.
: 172167-1
(Made by AMP)

Pin No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

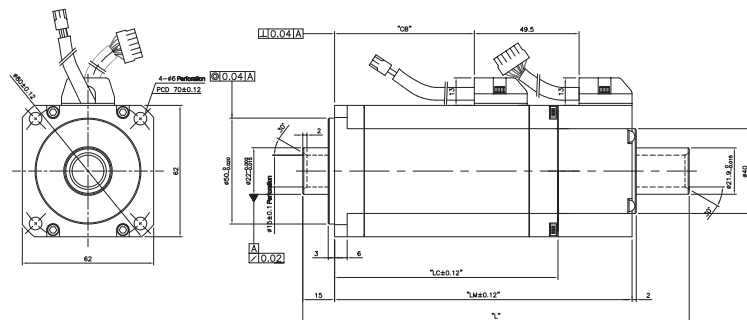
(Power Connector Pin Table)

[Encoder]
Incremental type



Spec. : 172171-1(Made by AMP) (Parallel Encoder Connector Pin Table)

Pin No.	Signal	Pin No.	Signal
1	A	9	V
2	A	10	V
3	B	11	W
4	B	12	W
5	Z	13	+5V
6	Z	14	0V
7	U	15	SHIELD
8	U		

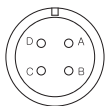


Model	External Dimensions					Weight(kg)
	L	LM	LC	CB	Hollow Shaft	
HB01A	140.5	103.5	68.5	24	15	0.89
HB02A	154.5	117.5	82.5	38	15	1.16
HB04A	182.5	140.5	105.5	66	15	1.69

HE Series [Hollow Shaft type]

Plug Specifications

[Power]

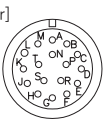


Spec.
: MS3102A20-4P
(Standard)

Pin No.	Signal
A	U
B	V
C	W
D	Ground

(Power Connector Pin Table)

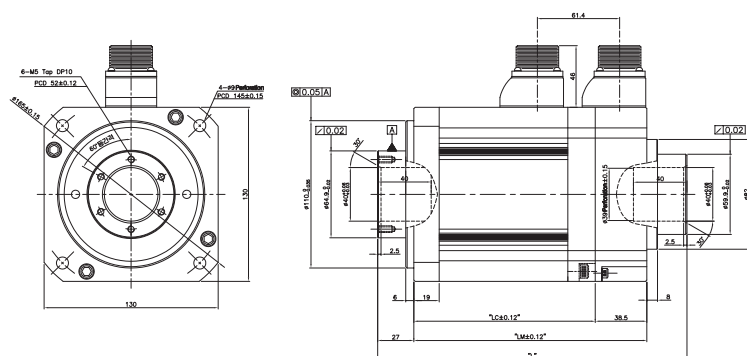
[Encoder]



Spec.
: MS3102A20-29P

Pin No.	Signal	Pin No.	Signal
A	A	M	V
B	A	N	V
C	B	P	W
D	B	R	W
E	Z	H	+5V
F	Z	G	0V
K	U	J	SHIELD
L	U		

(Parallel Encoder Connector Pin Table)



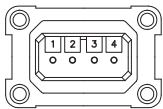
Model	External Dimensions				Weight(kg)
	L	LM	LC	Hollow Shaft	
HE09A	207	150	111.5	40	5.82
HE15A	231	174	135.5	40	7.43
HE30A	279	222	183.5	40	

External Dimensions of Servo Motor

FB Series

Plug Specifications

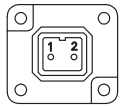
[Power]



Pin No.	Color	Signal
1	Black	W
2	White	V
3	Red	U
4	Green	Ground

(Power Connector Pin Table)

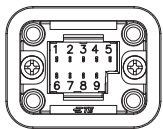
[Brake]



Pin No.	Signal
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



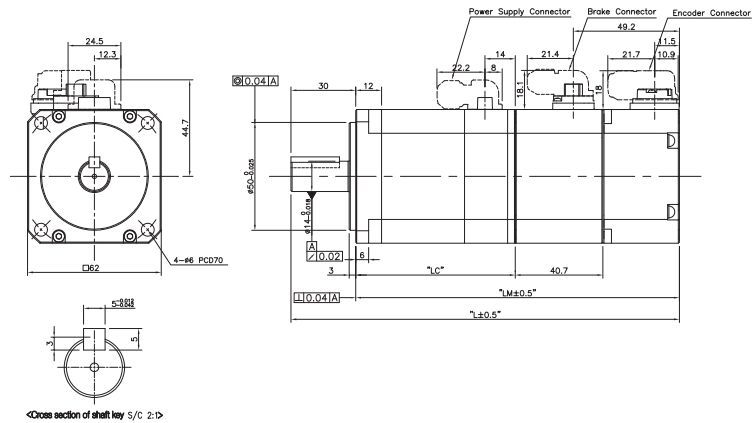
Single Turn (N)		Multi Turn (M)	
Pin No.	Signal	Pin No.	Signal
1	MA	1	MA
2	SLO	2	SLO
3	—	3	GND_B
4	0V	4	0V
5	SHIELD	5	SHIELD
6	MA	6	MA
7	SLO	7	SLO
8	—	8	VDD_B
9	+5V	9	+5V

(Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

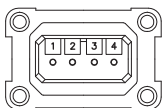


Model	External Dimensions			Weight(kg)
	L	LM	LC	
FB01A	109(149.2)	79(119.2)	43.5(43)	0.72(1.27)
FB02A	120(160.2)	90(130.2)	54.5(54)	0.94(1.49)
FB04A	140(180.2)	110(150.2)	74.5(74)	1.32(1.87)

FC Series

Plug Specifications

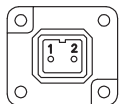
[Power]



Pin No.	Color	Signal
1	Black	W
2	White	V
3	Red	U
4	Green	Ground

(Power Connector Pin Table)

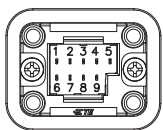
[Brake]



Pin No.	Signal
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



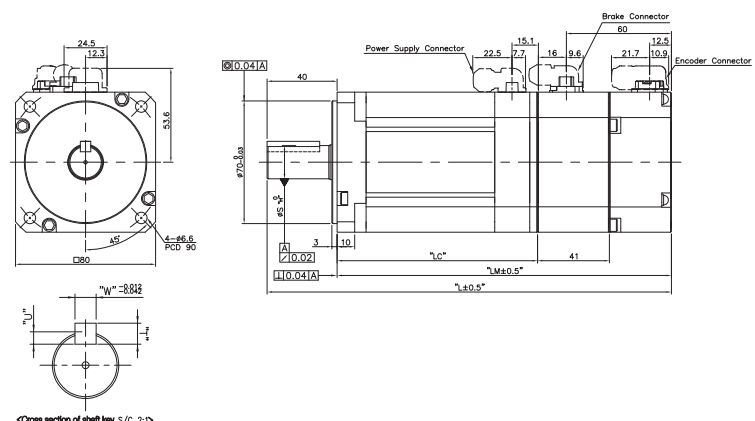
Single Turn (N)		Multi Turn (M)	
Pin No.	Signal	Pin No.	Signal
1	MA	1	MA
2	SLO	2	SLO
3	—	3	GND_B
4	0V	4	0V
5	SHIELD	5	SHIELD
6	MA	6	MA
7	SLO	7	SLO
8	—	8	VDD_B
9	+5V	9	+5V

(Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.



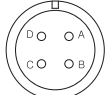
Model	External Dimensions								Weight(kg)
	L	LM	LC	S	H	T	W	U	
FC04A, FC03D	136.5(177)	96.5(137)	61(60.5)	14	-0.018	5	5	3	1.56(2.71)
FC06A, FC05D	154.5(195)	114.5(155)	79(78.5)	19	-0.021	6	6	3.5	2.18(3.33)
FC08A, FC06D	172.5(213)	132.5(173)	97(96.5)	19	-0.021	6	6	3.5	2.72(3.87)
FC10A, FC07D	190.5(231)	150.5(191)	115(114.5)	19	-0.021	6	6	3.5	3.80(4.94)

External Dimensions of Servo Motor

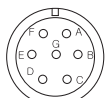
FE Series

Plug Specifications

[Power]



Spec.
: MS3102A20~4P
(Standard)



Spec.
: MS3102A20~15P
(Brake-attached type)

[Encoder]
2) Serial type



Spec.
: MS3102A20~29P

Pin No.	Signal
A	U
B	V
C	W
D	Ground

Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	-	H	+5V
F	-	G	0V
K	-	J	SHIELD
L	-	-	-

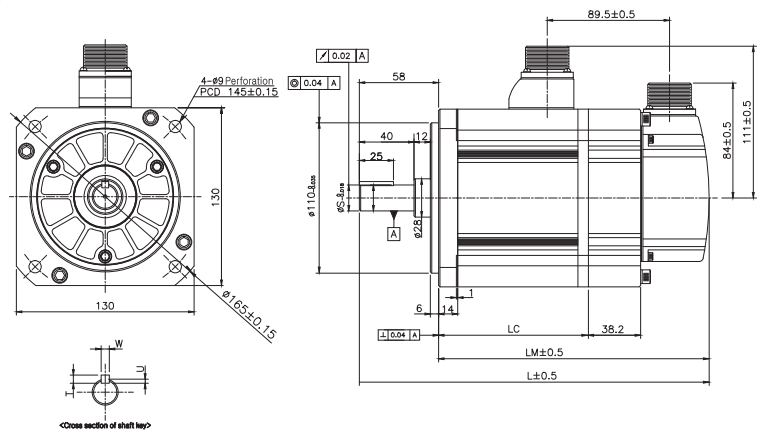
(Single Turn Encoder Connector Pin Table)

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	VOD_B	H	+5V
F	GND_B	G	0V
K	-	J	SHIELD
L	-	-	-

(Multi Turn Encoder Connector Pin Table)

Note1) Use DC[24V] for brake input power supply.

Note2) The () is for brake-attached type.

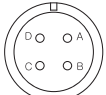


Model	External Dimensions								Weight(kg)
	L	LM	LC	S	T	W	U		
FE09A, FE06D, FE05G, FE03M	197.3(235.3)	139.3(177.3)	89.8(89.6)	19	5	5	3	5.04(6.58)	
FE15A, FE11D, FE09G, FE06M	217.3(255.3)	159.3(197.3)	109.8(109.6)	19	5	5	3	6.74(8.28)	
FE22A, FE16D, FE13G, FE09M	237.3(275.3)	179.3(217.3)	129.8(129.6)	22	6	6	3.5	8.48(10.02)	
FE30A, FE22D, FE17G, FE12M	255.3(293.9)	197.3(235.3)	147.8(147.6)	24	7	8	4	10.05(11.59)	

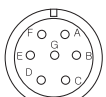
FF Series

Plug Specifications

[Power]



Spec.
: MS3102A22~22P
(Standard)



Spec.
: MS3102A24~10P
(Brake-attached type)

[Encoder]
2) Serial type



Spec.
: MS3102A20~29P

Pin No.	Signal
A	U
B	V
C	W
D	Ground

Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	-	H	+5V
F	-	G	0V
K	-	J	SHIELD
L	-	-	-

(Single Turn Encoder Connector Pin Table)

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	VOD_B	H	+5V
F	GND_B	G	0V
K	-	J	SHIELD
L	-	-	-

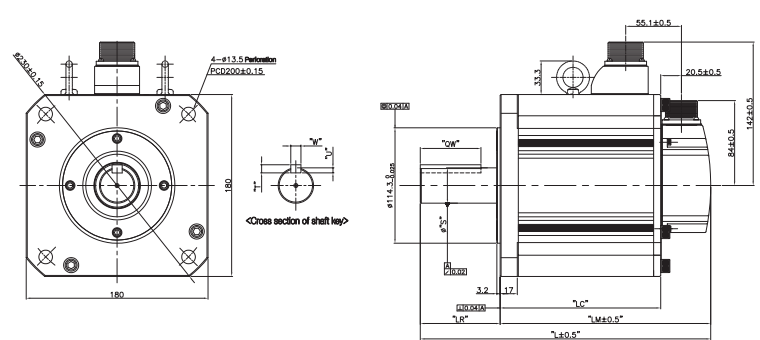
(Multi Turn Encoder Connector Pin Table)

Note1) FF30M or above models have eye bolts.

Note2) Use DC[24V] for brake input power supply.

Note3) The () is for brake-attached type.

Note4) Use MS3102A32~17 for FF75G Power connector.

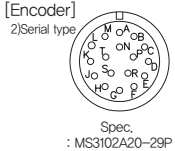
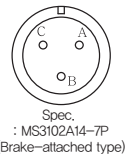
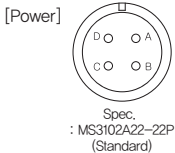


Model	External Dimensions				Key					Weight(kg)
	L	LM	LC	LR	S	QW	T	W	U	
FF30A, FF22D, FF20G, FF12M	257.5(308.9)	178.5(229.9)	129(128.7)							12.5(19.7)
FF50A, FF35D, FF30G, FF20M	287.5(338.9)	208.5(259.9)	159(158.7)		35 +0.01 0	60		10		17.4(24.6)
FF55D, FF44G, FF30M	331.5(382.9)	252.5(303.9)	203(202.7)				8		5	25.2(32.4)
FF75D, FF60G, FF44M	384.5(435.9)	305.5(356.9)	256(255.7)		42 0 -0.016			12		33.8(41.0)
FF75G Note4)	439.5	326.5	277	113		96				38.5(45.7)

External Dimensions of Servo Motor

■ FG Series

Plug Specifications



Pin No.	Signal
A	U
B	V
C	W
D	Ground

Pin No.	Signal
A	BK+
B	BK+
C	NC

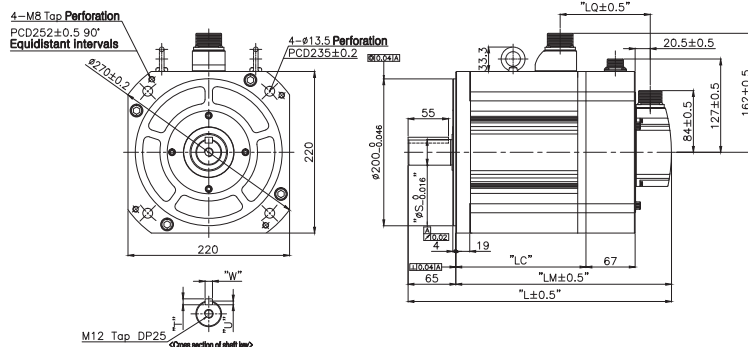
Pin No.	Signal	Pin No.	Signal
A	MA	M	—
B	MA	N	—
C	SLO	P	—
D	SLO	R	—
E	—	H	+5V
F	—	G	0V
K	—	J	SHIELD
L	—		

(Single Turn Encoder Connector Pin Table)

Pin No.	Signal	Pin No.	Signal
A	MA	M	—
B	MA	N	—
C	SLO	P	—
D	SLO	R	—
E	VOD_B	H	+5V
F	GND_B	G	0V
K	—	J	SHIELD
L	—		

(Multi Turn Encoder Connector Pin Table)

Encoder Pin Ma



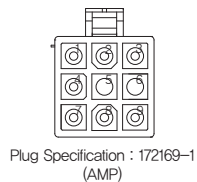
Model	External Dimensions			Key				Weight(kg)
	L	LM	LC	S	T	W	U	
FG22D, FG20G, FG12M	229.5(295.7)	164.5(230.7)	115(114.2)	35 ^{+0.01} ₀	8	10	5	15.42(29.23)
FG35D, FG30G, FG20M	250.5(316.7)	185.5(251.7)	136(135.2)					20.22(34.03)
FG55D, FG44G, FG30M	282.5(348.7)	217.5(283.7)	168(167.2)					28.02(41.83)
FG75D, FG60G, FG44M	304.5(370.7)	239.5(305.7)	190(189.2)	42 ^{+0.016} ₀	12			33.45(47.26)

Note1) In case of SG, use DC[90V] for brake input power supply.

Note2) The () is for brake-attached type.

■ S Series Encoder Pin Map

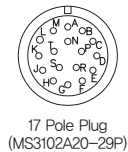
SA, SB, SC Series



Single Turn (N)		Multi Turn (M)	
Pin No.	Signal	Pin No.	Signal
1	MA	1	MA
2	MA	2	MA
3	SLO	3	SLO
4	SLO	4	SLO
5	—	5	VOD_B
6	—	6	GND_B
7	+5V	7	+5V
8	0V	8	0V
9	SHIELD	9	SHIELD

〈Serial Encoder Connector Pin Table〉

SE, SF, SG Series



Single Turn (N)				Multi Turn (M)			
Pin No	Signal	Pin No	Signal	Pin No	Signal	Pin No	Signal
A	MA	M	—	A	MA	M	—
B	MA	N	—	B	MA	N	—
C	SLO	P	—	C	SLO	P	—
D	SLO	R	—	D	SLO	R	—
E	—	H	+5V	E	VOD B	H	+5V
F	—	G	0V	F	GND B	G	0V
K	—	J	MA	K	—	J	MA
L	—			L	—		

〈Serial Encoder Connector Pin Table〉

■ Test Standard for Heat Sink

Flange	Standard(mm)	Material
40	250×250×6	Aluminum
60	250×250×6	
80	250×250×12	
130	350×350×20	
180	550×550×30	
220	650×650×35	

Note) Those heat sinks are the same as the heat sinks applied for servo motor torque test.

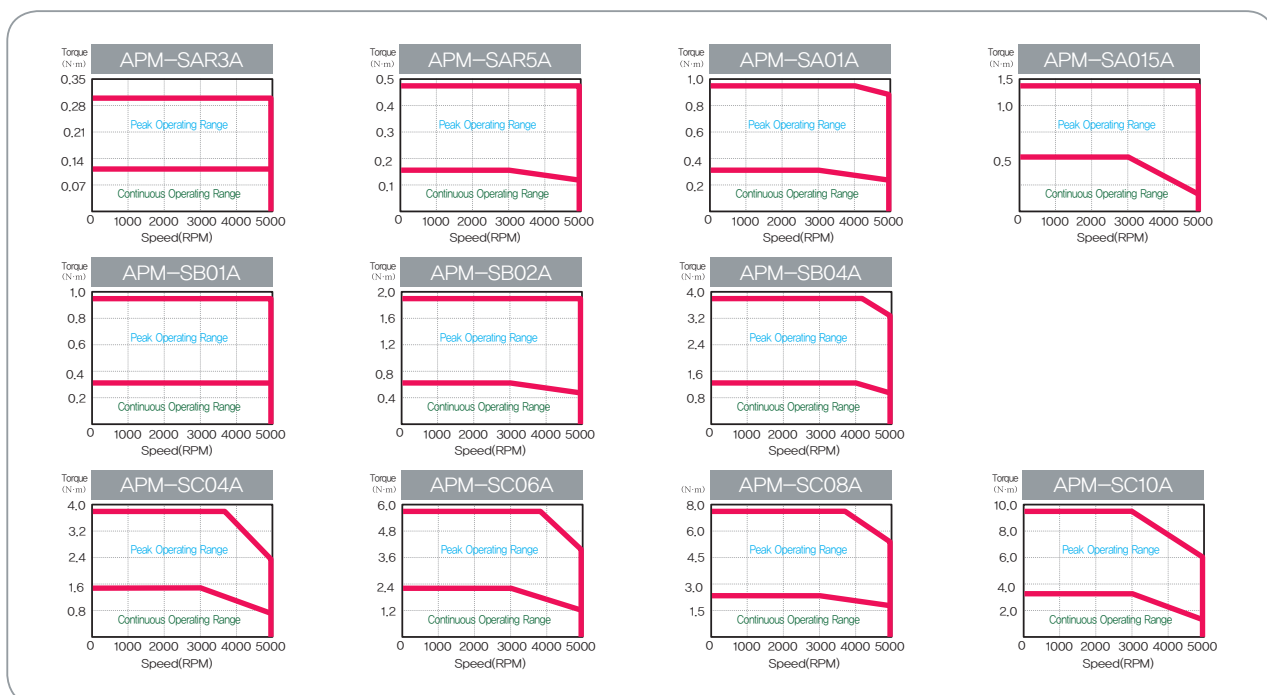
Servo Motor Characteristics(S Series)

Motor Specifications [Rated 3000r/min]

Servo Motor (APM-□□□□)		SAR3A	SAR5A	SA01A	SA015A	SB01A	SB02A	SB04A	SC04A	SC06A	SC08A	SC10A	
Applicable Drive		L7□A001			L7□A002			L7□A004		L7□A008		L7□A010	
Flange Size(□)		□40				□60			□80				
Rated Output	[kW]	0.03	0.05	0.1	0.15	0.1	0.2	0.4	0.4	0.6	0.8	1.0	
Rated Torque	[N・m]	0.095	0.16	0.32	0.48	0.32	0.64	1.27	1.27	1.91	2.55	3.19	
	[kgf・cm]	0.97	1.62	3.25	4.87	3.25	6.49	12.99	12.99	19.50	25.98	32.48	
Max. Instantaneous	[N・m]	0.286	0.48	0.96	1.43	0.96	1.91	3.82	3.82	5.73	7.64	9.56	
	[kgf・cm]	2.92	4.87	9.74	14.62	9.74	19.48	38.96	38.96	58.47	77.95	97.43	
Rated Speed	[r/min]	3000											
Max. Speed	[r/min]	5000											
Inertia	[kg・m ² ×10 ⁻⁴]	0.0164	0.02	0.05	0.06	0.11	0.18	0.32	0.67	1.09	1.51	1.93	
	[gf・cm×s ²]	0.0167	0.02	0.05	0.07	0.12	0.19	0.33	0.69	1.11	1.54	1.97	
Allowable Load Inertia Ratio		30 times of motor inertia			20 times of motor inertia			15 times of motor inertia					
Rated Power Rate	[kW/s]	5.56	10.55	23.78	35.34	8.89	22.26	50.49	24.05	33.39	43.02	52.57	
Speed/Position Detector	Standard(Notel)	Parallel, Type Incremental 2048[P/R]					Parallel, Type Incremental 3000[P/R]						
	Option	Serial Type 18[Bit]					Serial Type 19[Bit]						
Specifications & Features	Structure	Fully closed・Self cooling IP55(excluding the shaft-through section)							Fully closed・Self cooling IP65 (excluding the shaft-through section)				
	Rated Time	Continuous											
	Ambient Temp	Operating : 0 ~ 40[℃] Storage : -20 ~ 60[℃]											
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
	E/V	Elevation/vibration 49[m/s2](5G)											
Weight	[kg]	0.32	0.38	0.5	0.7	0.82	1.08	1.58	1.88	2.52	3.15	3.80	

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



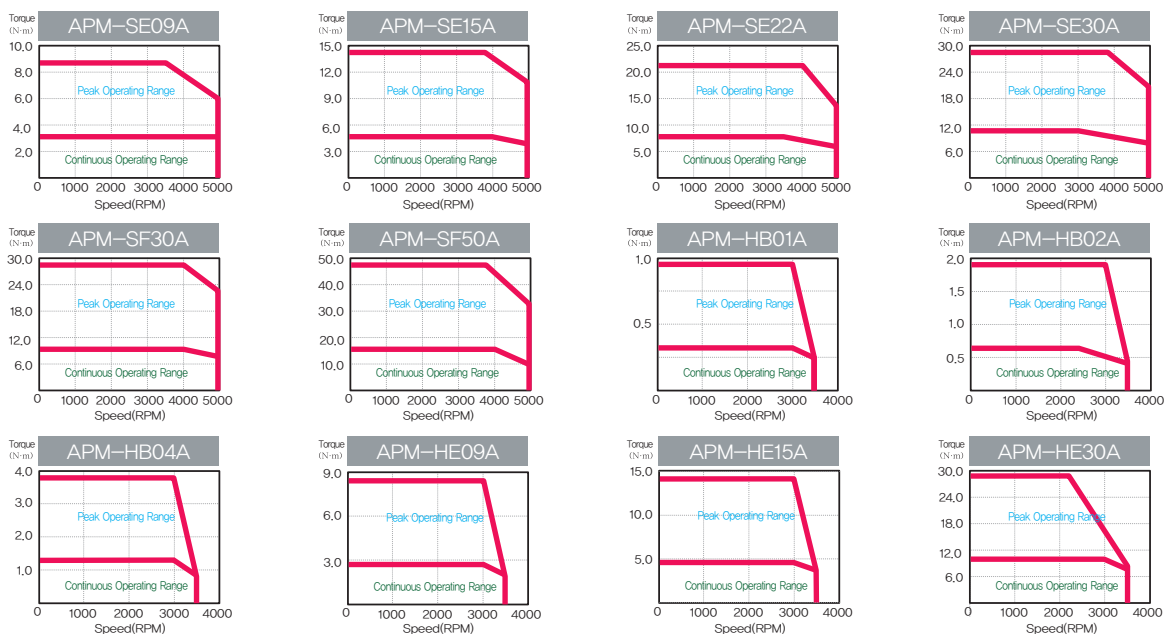
Servo Motor Characteristics(S Series)

Motor Specifications [Rated 3000r/min]

Servo Motor (APM-□□□□)	SE09A	SE15A	SE22A	SE30A	SF30A	SF50A	HB01A	HB02A	HB04A	HE09A	HE15A	HE30A	
Applicable Drive	L7□A010	L7□A020		L7□A035		L7□A050	L7□A002		L7□A004	L7□A010	L7□A020	L7□A035	
Flange Size(□)	□130					□180		□60			□130		
Rated Output	[kW]	0.9	1.5	2.2	3.0	3.0	5.0	0.1	0.2	0.4	0.9	1.5	3.0
Rated Torque	[N・m]	2.86	4.77	7.00	9.55	9.55	15.91	0.32	0.64	1.27	2.86	4.77	9.55
	[kgf・cm]	29.23	48.72	71.45	97.43	97.43	162.38	3.25	6.49	12.99	29.23	48.72	97.43
Max. Instantaneous	[N・m]	8.59	14.32	21.01	28.64	28.64	47.74	0.96	1.91	3.82	8.59	14.32	28.64
	[kgf・cm]	87.69	146.15	214.35	292.29	292.29	487.15	9.74	19.48	38.96	87.69	146.15	292.29
Rated Speed	[r/min]	3000											
Max. Speed	[r/min]	5000						3500					
Inertia	[kg・m ² ×10 ⁻⁴]	6.66	12.00	17.34	22.68	30.74	52.13	0.27	0.33	0.46	19.56	22.27	31.81
	[gf・cm×s ²]	6.80	12.24	17.69	23.14	31.37	53.19	0.27	0.34	0.47	19.96	22.72	32.46
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia		20 times of motor inertia			10 times of motor inertia		
Rated Power Rate	[kW/s]	12.32	18.99	28.28	40.20	29.66	48.58	3.34	11.98	34.47	4.10	10.01	22.03
Speed/Position Detector	Standard(Note1)	Parallel, Type Incremental 3000[P/R]						Parallel, Type Incremental 1024[P/R]			Parallel, Type Incremental 2048[P/R]		
	Option	Serial Type 19[Bit]						X					
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)						Fully closed・Self cooling IP55(excluding the shaft-through section)					
	Rated Time	Continuous											
	Ambient Temp	Operating：0～40[℃] Storage：-20～60[℃]				Operating：0～40[℃] Storage：-10～60[℃]							
	Ambient Humidity	20～80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
	E/V	Elevation/vibration 49[m/s2](5G)											
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	0.89	1.16	1.69	5.82	7.43	

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



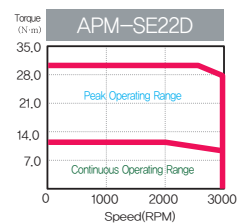
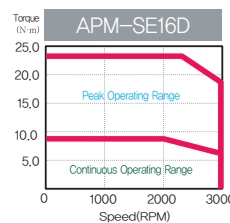
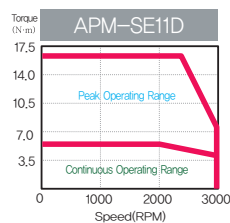
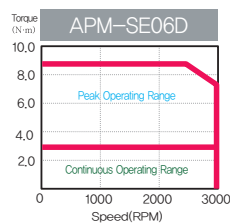
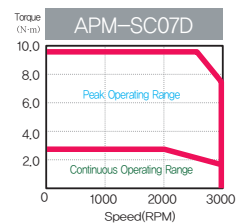
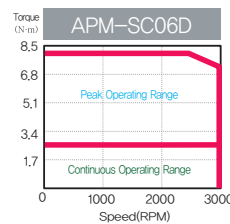
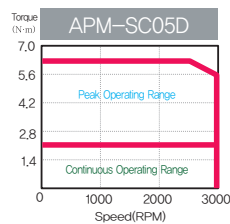
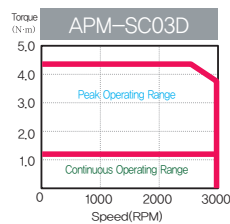
Servo Motor Characteristics(S Series)

Motor Specifications [Rated 2000r/min]

Servo Motor (APM-□□□□)		SC03D	SC05D	SC06D	SC07D	SE06D	SE11D	SE16D	SE22D
Applicable Drive		L7□A004	L7□A008			L7□A008	L7□A010	L7□A020	
Flange Size(□)		□80				□130			
Rated Output	[kW]	0.3	0.45	0.55	0.65	0.6	1.1	1.6	2.2
Rated Torque	[N・m]	1.43	2.15	2.63	3.10	2.86	5.25	7.64	10.50
	[kgf・cm]	14.61	21.92	26.79	31.66	29.23	53.59	77.94	107.17
Max. Instantaneous	[N・m]	4.30	6.45	7.88	9.31	8.59	15.75	22.92	31.51
	[kgf・cm]	43.84	65.77	80.38	94.99	87.69	160.76	233.83	321.52
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000							
Inertia	[kg・m ² ×10 ⁻⁴]	0.67	1.09	1.51	1.93	6.66	12.00	17.34	22.68
	[gf・cm×s ²]	0.69	1.11	1.54	1.97	6.80	12.24	17.69	23.14
Allowable Load Inertia Ratio		15 times of motor inertia				10 times of motor inertia			
Rated Power Rate	[kW/s]	30.43	42.27	45.69	49.97	12.32	22.98	33.65	48.64
Speed/Position Detector	Standard(Note1)	Parallel, Type Incremental 3000[P/R]							
	Option	Serial Type 19[Bit]							
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)							
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[℃] Storage : -20 ~ 60[℃]							
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.							
	E/V	Elevation/vibration 49[m/s2](5G)							
Weight	[kg]	1.88	2.52	3.15	3.80	5.5	7.54	9.68	11.78

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



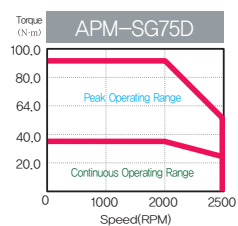
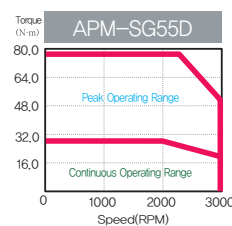
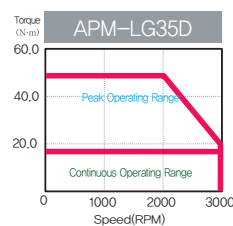
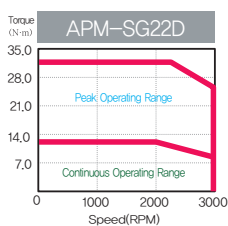
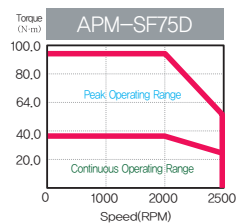
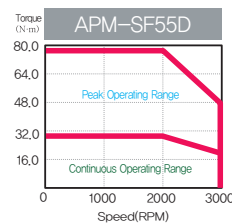
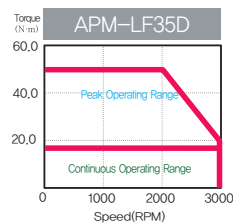
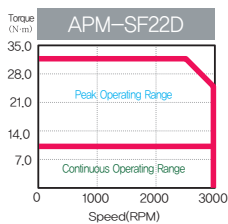
Servo Motor Characteristics(S Series)

Motor Specifications [Rated 2000r/min]

Servo Motor (APM-□□□□)		SF22D	LF35D	SF55D	SF75D	SG22D	LG35D	SG55D	SG75D
Applicable Drive		L7□A020	L7□A035	L7□A050	L7□A075	L7□A020A	L7□A035A	L7□A050A	L7□A075A
Flange Size(□)		□180				□220			
Rated Output	[kW]	2.2	3.5	5.5	7.5	2.2	3.5	5.5	7.5
Rated Torque	[N・m]	10.50	16.71	26.26	35.81	10.50	16.71	26.26	35.81
	[kgf・cm]	107.17	170.50	267.93	365.36	107.20	170.52	267.90	365.40
Max. Instantaneous	[N・m]	31.51	50.13	78.77	89.51	31.51	50.13	78.77	89.51
	[kgf・cm]	321.52	511.51	803.80	913.41	321.52	511.51	803.80	913.41
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000			2500	3000			2500
Inertia	[kg・m ² ×10 ⁻⁴]	30.74	52.13	83.60	121.35	51.42	80.35	132.41	172.91
	[gf・cm×s ²]	31.35	53.16	85.24	123.74	52.47	81.99	135.11	176.44
Allowable Load Inertia Ratio		5 times of motor inertia							
Rated Power Rate	[kW/s]	35.88	53.56	82.56	105.75	21.45	34.75	52.07	74.15
Speed/Position Detector	Standard(Note1)	Parallel. Type Incremental 3000[P/R]							
	Option	Serial Type 19[Bit]							
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)							
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[℃] Storage : -20 ~ 60[℃]							
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.							
	E/V	Elevation/vibration 49[m/s2](5G)							
Weight	[kg]	12.4	17.7	26.3	35.6	16.95	21.95	30.8	37.52

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



Servo Motor Characteristics(S Series)

Motor Specifications [Rated 1500r/min]

Servo Motor (APM-□□□□)		SE05G	SE09G	SE13G	SE17G	SF20G	LF30G	SF44G	SF60G	SG20G	LG30G	SG44G	SG60G
Applicable Drive		L7□A008	L7□A010	L7□A020		L7□A035		L7□A050	L7□A075	L7□A020	L7□A035	L7□A050	L7□A075
Flange Size(□)		□130				□180				□220			
Rated Output	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4	6.0	1.8	2.9	4.4	6.0
Rated Torque	[N・m]	2.86	5.41	8.28	10.82	11.46	18.46	28.01	38.19	11.46	18.46	28.01	38.19
	[kgf・cm]	29.23	55.21	84.44	110.42	116.92	188.37	285.80	389.72	116.92	188.37	285.80	389.72
Max. Instantaneous	[N・m]	8.59	16.23	24.83	32.46	34.37	55.38	84.02	95.48	34.47	55.38	84.02	95.48
	[kgf・cm]	87.69	165.63	253.32	331.26	350.75	565.10	857.39	974.90	350.80	565.10	857.39	974.31
Rated Speed	[r/min]	1500											
Max. Speed	[r/min]	3000				3000	2700	3000	2500	3000	2700	3000	2500
Inertia	[kg・m ² ×10 ⁻⁴]	6.66	12.00	17.34	22.68	30.74	52.13	83.60	121.35	51.42	80.35	132.41	172.91
	[gf・cm×s ²]	6.80	12.24	17.69	23.14	31.37	53.19	85.31	123.83	52.47	81.99	135.11	176.44
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia							
Rated Power Rate	[kW/s]	12.32	24.40	39.49	51.63	42.71	65.37	93.83	120.21	25.53	42.41	59.24	84.36
Speed/Position Detector	Standard(Note1)	Parallel, Type Incremental 3000[P/R]											
	Option	Serial Type 19[Bit]											
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)											
	Rated Time	Continuous											
	Ambient Temp	Operating : 0 ~ 40[℃] Storage : -20 ~ 60[℃]											
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
	E/V	Elevation/vibration 49[m/s2](5G)											
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6	16.95	21.95	30.8	37.52

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



Servo Motor Characteristics(S Series)

Motor Specifications [Rated 1000r/min]

Servo Motor (APM-□□□□)		SE03M	SE06M	SE09M	SE12M	SF12M	SF20M	LF30M	SF44M	SG12M	SG20M	LG30M	SG44M	SG60M		
Applicable Drive		L7□A004	L7□A008	L7□A010	L7□A020		L7□A035		L7□A050	L7□A020	L7□A035		L7□A050	L7□A075		
Flange Size(□)		□130					□180			□220						
Rated Output	[kW]	0.3	0.6	0.9	1.2	1.2	2.0	3.0	4.4	1.2	2.0	3.0	4.4	6.0		
Rated Torque	[N・m]	2.86	5.73	8.59	11.46	11.46	19.10	28.64	42.01	11.46	19.10	28.64	42.01	57.29		
	[kgf・cm]	29.23	58.46	87.69	116.92	116.92	194.86	292.29	428.69	116.92	194.86	292.29	428.69	584.58		
Max. Instantaneous	[N・m]	8.59	17.19	25.78	34.37	34.37	57.29	85.93	126.04	34.37	57.29	85.93	126.04	171.87		
	[kgf・cm]	87.69	175.30	263.06	350.75	350.75	584.58	876.88	1286.08	350.75	584.58	876.88	1286.08	1753.75		
Rated Speed	[r/min]	1000														
Max. Speed	[r/min]	2000						1700		2000			1700		2000	
Inertia	[kg・m ² ×10 ⁻⁴]	6.66	12.00	17.34	22.68	30.74	52.13	83.60	121.35	51.42	80.35	132.41	172.91	291.36		
	[gf・cm×s ²]	6.80	12.24	17.69	23.14	31.37	53.19	85.31	123.83	52.47	81.99	135.11	176.44	297.31		
Allowable Load Inertia Ratio		10 times of motor inertia					5 times of motor inertia									
Rated Power Rate	[kW/s]	12.32	27.35	42.59	57.89	42.71	69.95	98.15	145.45	25.53	45.39	61.97	102.08	112.65		
Speed/Position Detector	Standard(Note1)	Parallel, Type Incremental 3000[P/R]														
	Option	Serial Type 19[Bit]														
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)														
	Rated Time	Continuous														
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]														
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)														
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.														
	E/V	Elevation/vibration 49[m/s ²](5G)														
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6	17.0	22.0	30.8	37.5	66.2		

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



Servo Motor Characteristics(F Series)

Motor Specifications [Rated 3000r/min]

Servo Motor (APM-□□□□)	FB01A	FB02A	FB04A	FC04A	FC06A	FC08A	FC10A	FE09A	FE15A	FE22A	FE30A	FF30A	FF50A
Applicable Drive	L7□A001	L7□A002	L7□A004	L7□A008	L7□A010	L7□A020	L7□A035	L7□A050					
Flange Size(□)	□60			□80			□130			□180			
Rated Output	[kW]	0.1	0.2	0.4	0.4	0.6	0.75	1.0	0.9	1.5	2.2	3.0	5.0
Rated Torque	[N·m]	0.32	0.64	1.27	1.27	1.91	2.39	3.18	2.86	4.77	7.00	9.55	15.91
	[kgf·cm]	3.25	6.50	12.99	13.00	19.50	24.36	32.50	29.20	48.70	71.40	97.40	162.30
Max. Instantaneous	[N·m]	0.96	1.91	3.82	3.82	5.73	7.16	9.55	8.59	14.32	21.01	28.65	47.74
	[kgf·cm]	9.74	19.49	38.98	38.98	58.47	73.08	97.44	87.70	146.10	214.30	292.20	487.00
Rated Speed	[r/min]	3000											
Max. Speed	[r/min]	5000											
Inertia	[kg·m ² ×10 ⁻⁴]	0.09	0.15	0.25	0.50	0.88	1.25	1.62	5.66	10.18	14.62	19.04	46.56
	[gf·cm×s ²]	0.09	0.15	0.25	0.51	0.89	1.27	1.65	5.77	10.39	14.92	19.43	47.51
Allowable Load Inertia Ratio		20 times of motor inertia			15 times of motor inertia			10 times of motor inertia			5 times of motor inertia		
Rated Power Rate	[kW/s]	11.38	27.95	65.9	32.62	41.69	45.78	62.74	14.47	22.38	33.59	47.85	54.33
Speed/Position Detector	Standard(Not1)	Serial Type 19[Bit]											
	Option	X											
Specifications & Features	Structure	Fully closed · Self cooling IP65(excluding the shaft-through section)											
	Rated Time	Continuous											
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]											
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
Weight	E/V	Elevation/vibration 49[m/s ²](5G)											
	[kg]	0.72	0.94	1.32	1.56	2.18	2.72	3.80	5.04	6.74	8.48	10.05	17.4

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



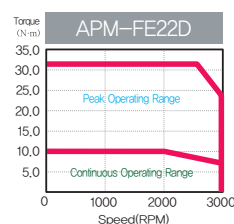
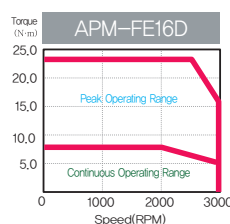
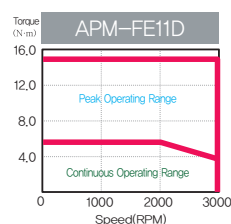
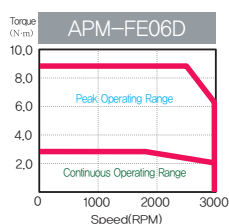
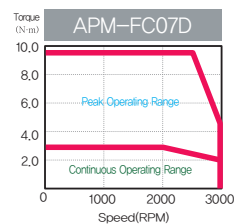
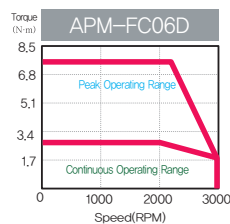
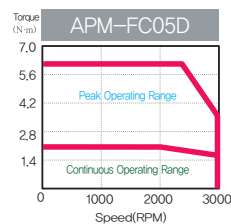
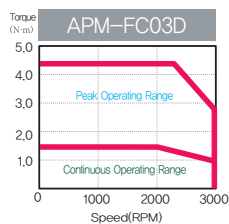
Servo Motor Characteristics(F Series)

Motor Specifications [Rated 2000r/min]

Servo Motor (APM-□□□□)		FC03D	FC05D	FC06D	FC07D	FE06D	FE11D	FE16D	FE22D
Applicable Drive		L7□A004	L7□A008				L7□A010	L7□A020	
Flange Size(□)		□80				□130			
Rated Output	[kW]	0.3	0.45	0.55	0.65	0.6	1.1	1.6	2.2
Rated Torque	[N · m]	1.43	2.15	2.60	3.10	2.86	5.25	7.63	10.50
	[kgf · cm]	14.60	21.90	26.80	31.70	29.20	53.60	77.90	107.10
Max. Instantaneous	[N · m]	4.30	6.45	7.88	9.31	8.59	15.75	22.92	31.51
	[kgf · cm]	43.80	65.80	80.40	95.00	87.70	160.70	233.80	321.40
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000							
Inertia	[kg · m ² × 10 ⁻⁴]	0.50	0.88	1.25	1.62	5.66	10.18	14.62	19.04
	[gf · cm × s ²]	0.51	0.89	1.27	1.65	5.77	10.39	14.92	19.43
Allowable Load Inertia Ratio		15 times of motor inertia				10 times of motor inertia			
Rated Power Rate	[kW/s]	41.28	52.76	55.39	59.64	14.49	27.08	39.89	57.9
Speed/Position Detector	Standard(Notet)	Serial Type 19[Bit]							
	Option	X							
Specifications & Features	Structure	Fully closed · Self cooling IP65(excluding the shaft-through section)							
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]							
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.							
	E/V	Elevation/vibration 49[m/s2](5G)							
Weight	[kg]	1.56	2.18	2.72	3.8	5.04	6.74	8.48	10.05

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



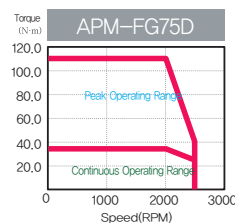
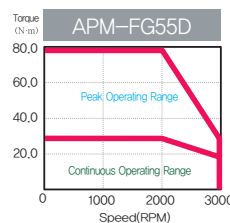
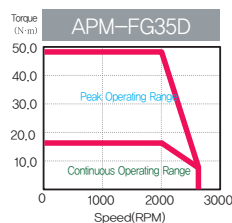
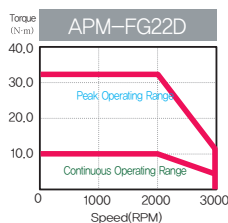
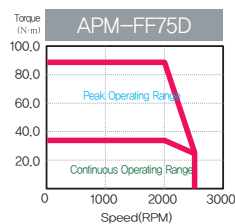
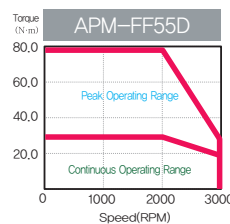
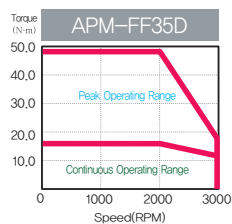
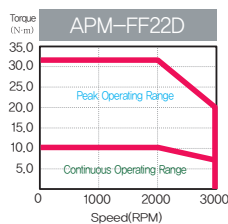
Servo Motor Characteristics(F Series)

Motor Specifications [Rated 2000r/min]

Servo Motor (APM-□□□□)		FF22D	FF35D	FF55D	FF75D	FG22D	FG35D	FG55D	FG75D
Applicable Drive		L7□A020	L7□A035	L7□A050	L7□A075	L7□A020	L7□A035	L7□A050	L7□A075
Flange Size(□)		□180				□220			
Rated Output	[kW]	2.2	3.5	5.5	7.5	2.2	3.5	5.5	7.5
Rated Torque	[N・m]	10.50	16.70	26.25	35.81	10.50	16.71	26.25	35.81
	[kgf・cm]	107.10	170.40	267.80	365.40	107.10	170.40	267.80	365.40
Max. Instantaneous	[N・m]	31.50	50.10	78.76	89.53	31.51	50.12	78.76	89.53
	[kgf・cm]	321.30	511.40	803.40	913.50	321.30	511.30	803.40	913.50
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000			2500	3000	2700	3000	2500
Inertia	[kg・m ² ×10 ⁻⁴]	27.96	46.56	73.85	106.70	41.13	71.53	117.72	149.40
	[gf・cm×s ²]	28.53	47.51	75.36	108.90	41.97	72.99	120.12	152.45
Allowable Load Inertia Ratio		5 times of motor inertia							
Rated Power Rate	[kW/s]	39.43	59.89	93.27	120.15	26.78	38.99	58.51	85.83
Speed/Position Detector	Standard(Note1)	Serial Type 19[Bit]							
	Option	X							
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)							
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]							
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.							
	E/V	Elevation/vibration 49[m/s2](5G)							
Weight	[kg]	12.5	17.4	25.2	33.8	15.42	20.22	28.02	33.45

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



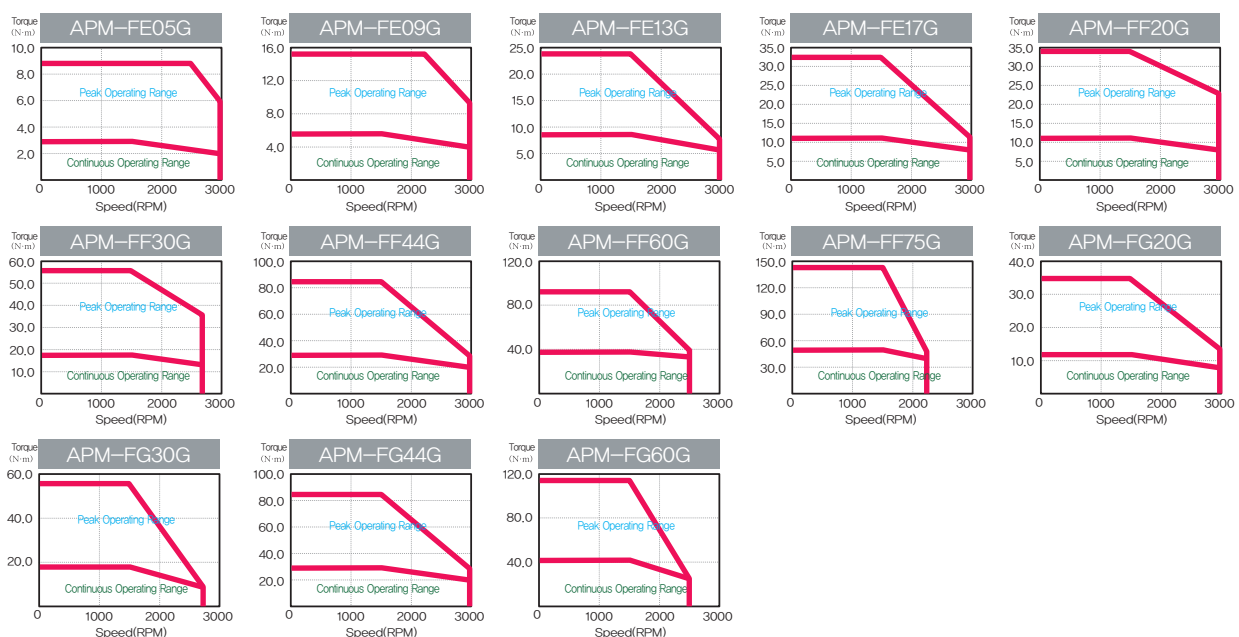
Servo Motor Characteristics(F Series)

Motor Specifications [Rated 1500r/min]

Servo Motor (APM-□□□□)	FE05G	FE09G	FE13G	FE17G	FF20G	FF30G	FF44G	FF60G	FF75G	FG20G	FG30G	FG44G	FG60G
Applicable Drive	L7□A008	L7□A010	L7□A020	L7□A020	L7□A035	L7□A050	L7□A075	L7□A020	L7□A035	L7□A050	L7□A075	L7□A020	L7□A035
Flange Size(□)	□130				□180				□220				
Rated Output	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4	6.0	7.5	1.8	2.9	4.4
Rated Torque	[N · m]	2.86	5.41	8.27	10.82	11.45	18.46	28.00	38.20	47.70	11.50	18.50	28.00
	[kgf · cm]	29.22	55.19	84.41	110.38	116.90	188.30	285.70	389.80	487.20	116.90	188.40	285.80
Max. Instantaneous	[N · m]	8.59	16.23	24.82	32.46	34.35	55.38	84.03	95.50	143.20	34.40	55.40	84.00
	[kgf · cm]	87.66	165.57	253.23	331.14	350.60	564.90	857.10	974.90	1462.00	350.80	565.10	857.40
Rated Speed	[r/min]	1500											
Max. Speed	[r/min]	3000				2700		3000	2500	2200	3000	2700	3000
Inertia	[kg · m ² × 10 ⁻⁴]	5.66	10.18	14.62	19.04	27.96	46.56	73.85	106.70	131.30	41.97	71.53	117.72
	[gf · cm × s ²]	5.77	10.39	14.92	19.43	28.53	47.51	75.36	108.90	134.00	41.97	72.99	120.12
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia							
Rated Power Rate	[kW/s]	14.49	28.74	46.81	61.46	46.92	73.14	106.15	136.73	173.63	31.91	47.66	66.64
Speed/Position Detector	Standard(Notet)	Serial Type 19[Bit]											
	Option	X											
Specifications & Features	Structure	Fully closed · Self cooling IP65(excluding the shaft-through section)											
	Rated Time	Continuous											
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]											
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
Weight	E/V	Elevation/vibration 49[m/s ²](5G)											
	[kg]	5.04	6.74	8.48	10.05	12.5	17.4	25.2	33.8	38.5	15.42	20.22	28.02

Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



Servo Motor Characteristics(F Series)

Motor Specifications [Rated 1000r/min]

Servo Motor (APM-□□□□)		FE03M	FE06M	FE09M	FE12M	FF12M	FF20M	FF30M	FF44M	FG12M	FG20M	FG30M	FG44M
Applicable Drive		L7□A004	L7□A008	L7□A010	L7□A020			L7□A035	L7□A050	L7□A020		L7□A035	L7□A050
Flange Size(□)		□130				□180				□220			
Rated Output	[kW]	0.3	0.6	0.9	1.2	1.2	2.0	3.0	4.4	1.2	2.0	3.0	4.4
Rated Torque	[N・m]	2.86	5.72	8.59	11.46	11.46	19.09	28.64	42.02	11.50	19.10	28.60	42.00
	[kgf・cm]	29.22	58.40	87.70	116.90	116.90	194.80	292.20	428.70	116.90	194.90	292.30	428.70
Max. Instantaneous	[N・m]	8.59	17.18	25.77	34.22	34.38	57.29	85.94	126.10	34.40	57.30	85.90	126.00
	[kgf・cm]	87.66	175.30	262.90	349.10	350.70	584.40	876.60	1286.00	350.80	584.60	876.90	1286.10
Rated Speed	[r/min]	1000											
Max. Speed	[r/min]	2000						1700	2000			1700	2000
Inertia	[kg・m ² ×10 ⁻⁴]	5.66	10.18	14.62	19.04	27.96	46.56	73.85	106.70	41.13	71.53	117.72	149.40
	[gf・cm×s ²]	5.77	10.39	14.92	19.43	28.53	47.51	75.36	108.90	41.97	72.99	120.12	152.45
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia							
Rated Power Rate	[kW/s]	14.49	32.22	50.48	68.91	46.94	78.27	111.04	165.38	31.91	51	69.7	118.14
Speed/Position Detector	Standard(Note1)	Serial Type 19[Bit]											
	Option	X											
Specifications & Features	Structure	Fully closed・Self cooling IP65(excluding the shaft-through section)											
	Rated Time	Continuous											
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]											
	Ambient Humidity	20 ~ 80[%](avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
	E/V	Elevation/vibration 49[m/s2](5G)											
Weight	[kg]	5.04	6.74	8.48	10.05	12.5	17.4	25.2	33.8	15.4	20.22	28.02	33.45

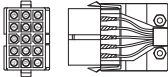
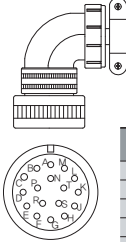
Note1) L7□A075 Servo Drive is Coming soon.

Speed-Torque Characteristics



Options and Peripherals

Specifications for Options [Parallel Encoder Cable]

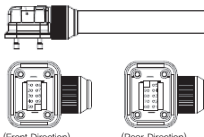
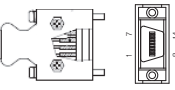
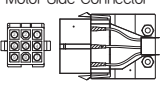
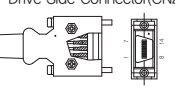
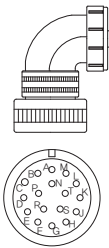
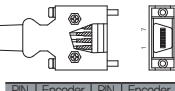
Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications																																																																								
For Signal	Parallel Encoder Cable (Small Capacity)	APCS— E□□□AS	All Models of APM—SA APM—SB APM—SC APM—HB SERIES	Motor Side Connector  Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>A</td><td>9</td><td>V</td></tr><tr><td>2</td><td>$\bar{A}$</td><td>10</td><td>$\bar{V}$</td></tr><tr><td>3</td><td>B</td><td>11</td><td>W</td></tr><tr><td>4</td><td>$\bar{B}$</td><td>12</td><td>$\bar{W}$</td></tr><tr><td>5</td><td>Z</td><td>13</td><td>+5V</td></tr><tr><td>6</td><td>$\bar{Z}$</td><td>14</td><td>0V</td></tr><tr><td>7</td><td>U</td><td>15</td><td>SHIELD</td></tr><tr><td>8</td><td>$\bar{U}$</td><td></td><td></td></tr></table> 〈Motor Side Connector〉 <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>W</td><td>8</td><td>Z</td></tr><tr><td>2</td><td>$\bar{W}$</td><td>9</td><td>$\bar{Z}$</td></tr><tr><td>3</td><td>V</td><td>10</td><td>B</td></tr><tr><td>4</td><td>$\bar{V}$</td><td>11</td><td>$\bar{B}$</td></tr><tr><td>5</td><td>U</td><td>12</td><td>A</td></tr><tr><td>6</td><td>$\bar{U}$</td><td>13</td><td>$\bar{A}$</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> 〈Driver Side Connector〉 1. Motor Side Connector a. Cap Spec.(15 Position) : 172163-1(AMP) b. Socket Spec. : 170361-1(AMP) 2. Driver Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 7P×0.2SQ or 7P×AWG24	PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	A	9	V	2	$\bar{A}$	10	$\bar{V}$	3	B	11	W	4	$\bar{B}$	12	$\bar{W}$	5	Z	13	+5V	6	$\bar{Z}$	14	0V	7	U	15	SHIELD	8	$\bar{U}$			PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	W	8	Z	2	$\bar{W}$	9	$\bar{Z}$	3	V	10	B	4	$\bar{V}$	11	$\bar{B}$	5	U	12	A	6	$\bar{U}$	13	$\bar{A}$	7	OV	14	+5V	PLATE		SHIELD	
				PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																					
1	A	9	V																																																																									
2	$\bar{A}$	10	$\bar{V}$																																																																									
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6	$\bar{Z}$	14	0V																																																																									
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PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																									
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2	$\bar{W}$	9	$\bar{Z}$																																																																									
3	V	10	B																																																																									
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6	$\bar{U}$	13	$\bar{A}$																																																																									
7	OV	14	+5V																																																																									
PLATE		SHIELD																																																																										
For Signal	Parallel Encoder Cable (Middle Capacity)	APCS— E□□□BS	All Models of APM—SE APM—SF APM—SG APM—LF APM—LG APM—HE SERIES	Motor Side Connector  Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>A</td><td>A</td><td>M</td><td>V</td></tr><tr><td>B</td><td>$\bar{A}$</td><td>N</td><td>$\bar{V}$</td></tr><tr><td>C</td><td>B</td><td>P</td><td>W</td></tr><tr><td>D</td><td>$\bar{B}$</td><td>R</td><td>$\bar{W}$</td></tr><tr><td>E</td><td>Z</td><td>H</td><td>+5V</td></tr><tr><td>F</td><td>$\bar{Z}$</td><td>G</td><td>0V</td></tr><tr><td>K</td><td>U</td><td>J</td><td>SHIELD</td></tr><tr><td>L</td><td>$\bar{U}$</td><td></td><td></td></tr></table> 〈Motor Side Connector〉 <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>W</td><td>8</td><td>Z</td></tr><tr><td>2</td><td>$\bar{W}$</td><td>9</td><td>$\bar{Z}$</td></tr><tr><td>3</td><td>V</td><td>10</td><td>B</td></tr><tr><td>4</td><td>$\bar{V}$</td><td>11</td><td>$\bar{B}$</td></tr><tr><td>5</td><td>U</td><td>12</td><td>A</td></tr><tr><td>6</td><td>$\bar{U}$</td><td>13</td><td>$\bar{A}$</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> 〈Driver Side Connector〉 1. Motor Side Connector(MS : Military Standard) a. Plug Spec. : MS3108B20-29S 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 7P×0.2SQ or 7P×AWG24	PIN No.	Encoder Signal	PIN No.	Encoder Signal	A	A	M	V	B	$\bar{A}$	N	$\bar{V}$	C	B	P	W	D	$\bar{B}$	R	$\bar{W}$	E	Z	H	+5V	F	$\bar{Z}$	G	0V	K	U	J	SHIELD	L	$\bar{U}$			PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	W	8	Z	2	$\bar{W}$	9	$\bar{Z}$	3	V	10	B	4	$\bar{V}$	11	$\bar{B}$	5	U	12	A	6	$\bar{U}$	13	$\bar{A}$	7	OV	14	+5V	PLATE		SHIELD	
				PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																					
A	A	M	V																																																																									
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PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																									
1	W	8	Z																																																																									
2	$\bar{W}$	9	$\bar{Z}$																																																																									
3	V	10	B																																																																									
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7	OV	14	+5V																																																																									
PLATE		SHIELD																																																																										

Note1) □□□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20
General Cable(N)	N03	N05	N10	N20

Options and Peripherals

Specifications for Options [Serial Encoder Cable]

Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications																																
For Signal	Encoder Cable for Flat Motor (Small Capacity)	APCS- E□□□ES -□ Note)Model name for direction of Connector Front : APCS-E□□□ES Rear : APCS-E□□□ES-R	All Models of APM-FB APM-FC SERIES	Motor Side Connector  Tyco Connector (7Circuits) <table><tr><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>SLO</td></tr><tr><td>3</td><td>-</td></tr><tr><td>4</td><td>OV</td></tr><tr><td>5</td><td>SHIELD</td></tr><tr><td>6</td><td>MA</td></tr><tr><td>7</td><td>SLO</td></tr><tr><td>8</td><td>-</td></tr><tr><td>9</td><td>+5V</td></tr></table> 1. Motor Side Connector a. Cap Spec. : 2201825-1(Tyco) b. Socket Spec. : 2174065-4(Tyco) 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 3P×0.2SQ or 3P×24AWG	PIN No.	Encoder Signal	1	MA	2	SLO	3	-	4	OV	5	SHIELD	6	MA	7	SLO	8	-	9	+5V												
		PIN No.		Encoder Signal																																
1	MA																																			
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Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>-</td><td>8</td><td>-</td></tr><tr><td>2</td><td>-</td><td>9</td><td>-</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>-</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>-</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>-</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>-</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> (Drive Side Connector)	PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	-	8	-	2	-	9	-	3	MA	10	-	4	MA	11	-	5	SLO	12	-	6	SLO	13	-	7	OV	14	+5V	PLATE		SHIELD	
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																	
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2	-	9	-																																	
3	MA	10	-																																	
4	MA	11	-																																	
5	SLO	12	-																																	
6	SLO	13	-																																	
7	OV	14	+5V																																	
PLATE		SHIELD																																		
For Signal	Encoder Cable for Serial Type (Small Capacity)	APCS- E□□□CS	All Models of APM-SA APM-SB APM-SC SERIES	Motor Side Connector  1. Motor Side Connector a. Cap Spec.(9 Position) : 172161-1(AMP) b. Socket Spec. : 170361-1(AMP) 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 3P×0.2SQ or 3P×24AWG																																
		Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>1</td><td>-</td><td>8</td><td>-</td></tr><tr><td>2</td><td>-</td><td>9</td><td>-</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>-</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>-</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>-</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>-</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> (Drive Side Connector)		PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	-	8	-	2	-	9	-	3	MA	10	-	4	MA	11	-	5	SLO	12	-	6	SLO	13	-	7	OV	14	+5V	PLATE
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																	
1	-	8	-																																	
2	-	9	-																																	
3	MA	10	-																																	
4	MA	11	-																																	
5	SLO	12	-																																	
6	SLO	13	-																																	
7	OV	14	+5V																																	
PLATE		SHIELD																																		
For Signal	Encoder Cable for Serial Type (Middle Capacity)	APCS- E□□□DS	All Models of APM-SE APM-SF APM-SG APM-LF APM-LG APM-FE APM-FF APM-FG SERIES	Motor Side Connector  1. Motor Side Connector(MS : Military Standard) a. Plug Spec. : MS3108B20-29S 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 3P×0.2SQ or 3P×24AWG																																
		Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr><tr><td>A</td><td>MA</td><td>M</td><td>-</td></tr><tr><td>B</td><td>MA</td><td>N</td><td>-</td></tr><tr><td>C</td><td>SLO</td><td>P</td><td>-</td></tr><tr><td>D</td><td>SLO</td><td>R</td><td>-</td></tr><tr><td>E</td><td>-</td><td>H</td><td>+5V</td></tr><tr><td>F</td><td>-</td><td>G</td><td>OV</td></tr><tr><td>K</td><td>-</td><td>J</td><td>SHIELD</td></tr><tr><td>L</td><td>-</td><td></td><td></td></tr></table> (Drive Side Connector)		PIN No.	Encoder Signal	PIN No.	Encoder Signal	A	MA	M	-	B	MA	N	-	C	SLO	P	-	D	SLO	R	-	E	-	H	+5V	F	-	G	OV	K	-	J	SHIELD	L
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																	
A	MA	M	-																																	
B	MA	N	-																																	
C	SLO	P	-																																	
D	SLO	R	-																																	
E	-	H	+5V																																	
F	-	G	OV																																	
K	-	J	SHIELD																																	
L	-																																			

Note1) □□□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20
General Cable(N)	N03	N05	N10	N20

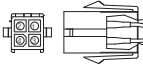
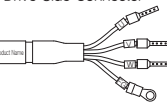
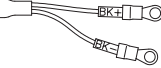
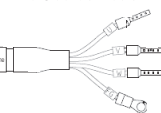
Options and Peripherals

Specifications for Options [Serial Encoder Cable]

Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications																																																																												
For Signal	Encoder Cable for Multi-turn Serial Type (AMP Type—Small Capacity)	APCS— E□□□CS1	All Models of APM—SA APM—SB APM—SC SERIES	Motor Side Connector  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>MA</td></tr><tr><td>3</td><td>SL</td></tr><tr><td>4</td><td>SL</td></tr><tr><td>5</td><td>VOD B</td></tr><tr><td>6</td><td>GND B</td></tr><tr><td>7</td><td>+5V</td></tr><tr><td>8</td><td>OV</td></tr><tr><td>9</td><td>SHIELD</td></tr></tbody></table> (AMP 172161-1 CAP (9Pin)) Drive Side Connector(CN2)  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>BATTERY</td></tr><tr><td>2</td><td>BATTERY OV</td></tr></tbody></table> (Battery Connector) 1. Motor Side Connector a. Cap Spec.(9 Position) : 172161-1(AMP) b. Socket Spec. : 170361-1(AMP) 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 4P×0.2SQ or 4P×24AWG 4. Battery Connector Spec. : 5267-02A(MOLEX)	PIN No.	Encoder Signal	1	MA	2	MA	3	SL	4	SL	5	VOD B	6	GND B	7	+5V	8	OV	9	SHIELD	PIN No.	Encoder Signal	1	BATTERY	2	BATTERY OV																																																		
				PIN No.	Encoder Signal																																																																											
1	MA																																																																															
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PIN No.	Encoder Signal																																																																															
1	BATTERY																																																																															
2	BATTERY OV																																																																															
For Signal	Encoder Cable for Multi-turn Serial Type (Small Capacity)	APCS— E□□□ES1 —□ Note)Model name for direction of Connector Front : APCS— E□□□ES1 Rear : APCS— E□□□ES1-R	All Models of APM—FB APM—FC SERIES	Motor Side Connector  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>SLO</td></tr><tr><td>3</td><td>GND B</td></tr><tr><td>4</td><td>OV</td></tr><tr><td>5</td><td>SHIELD</td></tr><tr><td>6</td><td>MA</td></tr><tr><td>7</td><td>SLO</td></tr><tr><td>8</td><td>VOD B</td></tr><tr><td>9</td><td>+5V</td></tr></tbody></table> (Front Direction)  (Rear Direction) Tyco Connector (Motor Side Connector) Drive Side Connector(CN2)  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>BATTERY</td></tr><tr><td>2</td><td>BATTERY OV</td></tr></tbody></table> (Battery Connector) 1. Motor Side Connector a. Cap Spec. : 2201825-1(Tyco) b. Socket Spec. : 2174065-4(Tyco) 2. Drive Side Connector(CN2) a. Cap Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 4P×0.2SQ or 4P×24AWG 4. Battery Connector Spec. : 5267-02A(MOLEX)	PIN No.	Encoder Signal	1	MA	2	SLO	3	GND B	4	OV	5	SHIELD	6	MA	7	SLO	8	VOD B	9	+5V	PIN No.	Encoder Signal	1	BATTERY	2	BATTERY OV																																																		
				PIN No.	Encoder Signal																																																																											
1	MA																																																																															
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2	BATTERY OV																																																																															
For Signal	Encoder Cable for Multi-turn Serial Type (Middle Capacity)	APCS— E□□□DS1	All Models of APM—SE APM—SF APM—SG APM—LF APM—LG APM—FE APM—FF APM—FG SERIES	Motor Side Connector  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>A</td><td>MA</td><td>M</td><td>—</td></tr><tr><td>B</td><td>MA</td><td>N</td><td>—</td></tr><tr><td>C</td><td>SLO</td><td>P</td><td>—</td></tr><tr><td>D</td><td>SLO</td><td>R</td><td>—</td></tr><tr><td>E</td><td>VOD B</td><td>H</td><td>+5V</td></tr><tr><td>F</td><td>GND B</td><td>G</td><td>OV</td></tr><tr><td>G</td><td>—</td><td>J</td><td>SHIELD</td></tr><tr><td>L</td><td>—</td><td>—</td><td>—</td></tr></tbody></table> (MS3108B20-29S) (Motor Side Connector) Drive Side Connector(CN2)  <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>—</td><td>8</td><td>—</td></tr><tr><td>2</td><td>—</td><td>9</td><td>—</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>—</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>—</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>—</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>—</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></tbody></table> (Battery Connector) (Driver Side Connector) 1. Motor Side Connector(MS : Military Standard) a. Plug Spec. : MS3108B20-29S 2. Drive Side Connector(CN2) a. Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) b. Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 4P×0.2SQ or 4P×24AWG 4. Battery Connector Spec. : 5267-02A(MOLEX)	PIN No.	Encoder Signal	PIN No.	Encoder Signal	A	MA	M	—	B	MA	N	—	C	SLO	P	—	D	SLO	R	—	E	VOD B	H	+5V	F	GND B	G	OV	G	—	J	SHIELD	L	—	—	—	PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	—	8	—	2	—	9	—	3	MA	10	—	4	MA	11	—	5	SLO	12	—	6	SLO	13	—	7	OV	14	+5V	—	—	—	—	—	—	—	—
				PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																									
A	MA	M	—																																																																													
B	MA	N	—																																																																													
C	SLO	P	—																																																																													
D	SLO	R	—																																																																													
E	VOD B	H	+5V																																																																													
F	GND B	G	OV																																																																													
G	—	J	SHIELD																																																																													
L	—	—	—																																																																													
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																													
1	—	8	—																																																																													
2	—	9	—																																																																													
3	MA	10	—																																																																													
4	MA	11	—																																																																													
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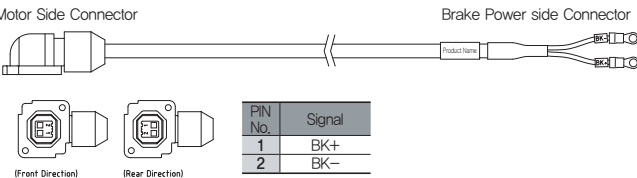
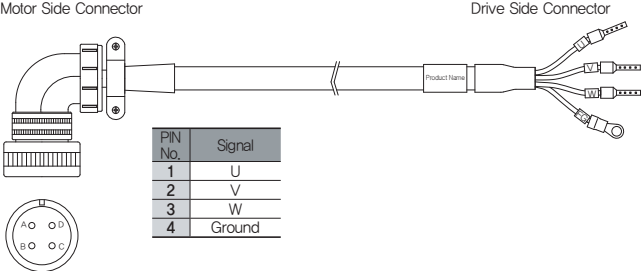
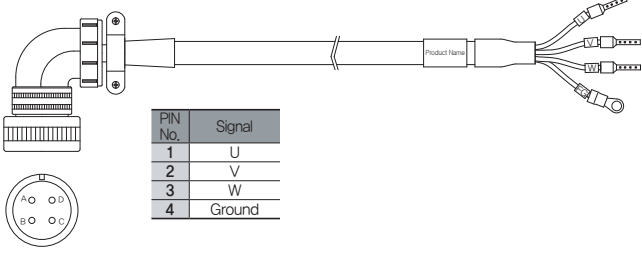
Options and Peripherals

Specifications for Options [Power Cable]

Type	Product Type	Model Name (Note1)	Applicable Motor	Specifications										
For Power	Power Cable (Small Capacity)	APCS- P□□□GS	All Models of APM-SA APM-SB APM-SC APM-HB SERIES	Motor Side Connector  Drive Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Cap Spec.(4 Position) : 172159-1(AMP) b. Socket Spec. : 170362-1(AMP) 2. Drive Side Connector(U, V, W, FG) a. U, V, W Pin Spec. : F1512 b. FG Pin Spec. : 1.54x4(Ring Terminal) 3. Cable Spec. : 4C×0.75SQ or 4C×18AWG	PIN No.	Signal	1	U	2	V	3	W	4	Ground
				PIN No.	Signal									
1	U													
2	V													
3	W													
4	Ground													
For Power	Brake Cable (Small Capacity)	APC- P□□□KB	All Models of APM-SA APM-SB APM-SC SERIES	Motor Side Connector  Drive Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>BK+</td></tr><tr><td>2</td><td>BK-</td></tr></table> 1. Motor Side Connector a. Cap Spec.(2 Position) : 172157-1(AMP) b. Socket Spec. : 170362-1(AMP) 2. Drive Side Connector a. Connecting terminal Spec. : 1.5-3(Riing Terminal) 3. Cable Spec. : 2C×0.75SQ or 2C×18AWG	PIN No.	Signal	1	BK+	2	BK-				
				PIN No.	Signal									
1	BK+													
2	BK-													
For Power	Power Cable for Flat Motor (Small Capacity)	APCS- P□□□FS -□	All Models of APM-FB APM-FC SERIES	Motor Side Connector  Drive Side Connector   (Front Direction)  (Rear Direction) <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>W</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>U</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Plug Spec. : KN5FT04SJ1(JAE) b. Socket Spec. : ST-KN-S-C1B-3500(JAE) 2. Drive Side Connector(U, V, W, FG) a. U, V, W Pin Spec. : F1512 b. FG Pin Spec. : 1.5×4(Ring Terminal) 3. Cable Spec. : 4C×0.75SQ or 4C×18AWG	PIN No.	Signal	1	W	2	V	3	U	4	Ground
		PIN No.		Signal										
1	W													
2	V													
3	U													
4	Ground													

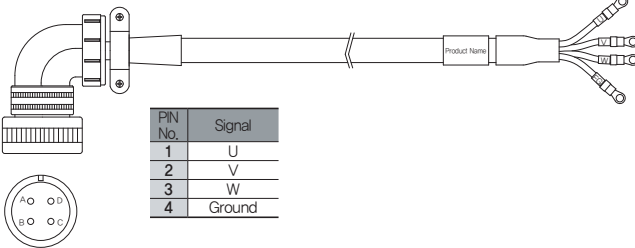
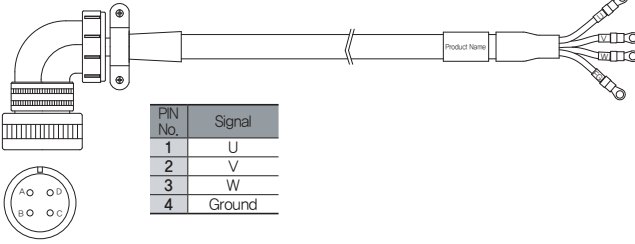
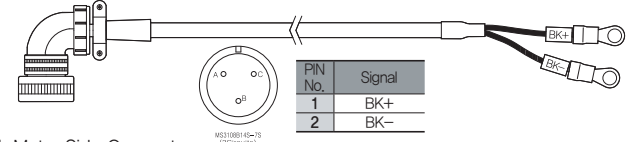
Options and Peripherals

Specifications for Options [Power Cable]

Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications										
For Power	Brake Cable for Flat Motor (Small Capacity)	APCS— B□□□QS —□	All Models of APM—FB APM—FC SERIES Note)Model name for direction of Connector Front : APCS— B□□□QS Rear : APCS— B□□□QS—R	Motor Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>BK+</td></tr><tr><td>2</td><td>BK—</td></tr></table> 1. Motor Side Connector a. Plug Spec. : KN5FT02SJ1 b. Socket Spec. : ST—KN—S—C1B—3500 2. Drive Side Connector a. Connecting terminal Spec. : 1.5×3(Ring Terminal) 3. Cable Spec. : 2C×0.75SQ or 2C×18AWG	PIN No.	Signal	1	BK+	2	BK—				
				PIN No.	Signal									
1	BK+													
2	BK—													
For Power	Power Cable (Middle Capacity)	APCS— P□□□HS	All Models of APM—SE APM—FE APM—HE SERIES	Motor Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Plug Spec. : MS3108B20—4S(MS) 2. Drive Side Connector a. U, V, W Pin Spec. : F2512 b. FG Pin Spec. : 2.5×4(Ring Terminal) 3. Cable Spec. : 4C×2.5SQ or 4C×14AWG	PIN No.	Signal	1	U	2	V	3	W	4	Ground
				PIN No.	Signal									
1	U													
2	V													
3	W													
4	Ground													
For Power	Power Cable (Middle Capacity)	APCS— P□□□IS	APM—SF30A SF22D, LF35D SF20G, LF30G SF12M, SF20M LF30M, SG22D LG35D, SG20G LG30G, SG12M SG20M, LG30M FF30A, FF22D FF35D, FF20G FF30G, FF12M FF20M, FF30M FG22D, FG35D FG20G, FG30G FG12M, FG20M FG30M	Motor Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Plug Spec. : MS3108B22—22S(MS) 2. Drive Side Connector a. U, V, W Pin Spec. : F2512 b. FG Pin Spec. : 2.5×4(Ring Terminal) 3. Cable Spec. : 4C×2.5SQ or 4C×14AWG	PIN No.	Signal	1	U	2	V	3	W	4	Ground
				PIN No.	Signal									
1	U													
2	V													
3	W													
4	Ground													

Options and Peripherals

Specifications for Options [Power Cable]

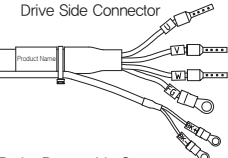
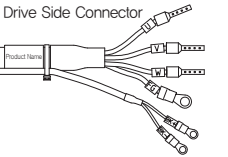
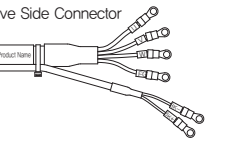
Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications													
For Power	Power Cable (Middle Capacity)	APC— P□□□JS	APM—SF50A SF55D, SF75D SF44G, SF60G SF44M, SG55D SG75D, SG44G SG60G, SG44M FF50A, FF50D FF75D, FF44G FF60G, FF44M FG55D, FG75D FG44G, FG60G FG44M	Motor Side Connector Drive Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Plug Spec. : MS3108B22—22S(MS) 2. Drive Side Connector a. Connecting terminal Spec. : 6×5(Ring Terminal) 3. Cable Spec. : 4C×6SQ or 4C×10AWG	PIN No.	Signal	1	U	2	V	3	W	4	Ground			
			PIN No.	Signal													
			1	U													
			2	V													
			3	W													
			4	Ground													
			For Power	Power Cable (Middle Capacity)	APC— P□□□MS	APM—SG60M SF75G, FF75G	Motor Side Connector Drive Side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. Plug Spec. : MS3108B32—17S(MS) 2. Drive Side Connector a. Connecting terminal Spec. : 10×8(Ring Terminal) 3. Cable Spec. : 4C×10SQ or 4C×8AWG	PIN No.	Signal	1	U	2	V	3	W	4	Ground
						PIN No.	Signal										
						1	U										
						2	V										
3	W																
4	Ground																
For Power	Power Cable (Brake Type)	APC— P□□□SB				All Models of APM—SG APM—LG APM—FG SERIES	Motor Side Connector Brake Power side Connector  <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>BK+</td></tr><tr><td>2</td><td>BK-</td></tr></table> 1. Motor Side Connector a. PLUG Spec. : MS3108B 14S—7S(MS) 2. Drive Side Connector a. Connecting terminal Spec. : 1.5×3(Ring Terminal) 3. Cable Spec. : 2C×0.75SQ or 2C×19AWG	PIN No.	Signal	1	BK+	2	BK-				
						PIN No.	Signal										
						1	BK+										
						2	BK-										

Note1) □□□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20
General Cable(N)	N03	N05	N10	N20

Options and Peripherals

Specifications for Options [Pareller Encoder Cable]

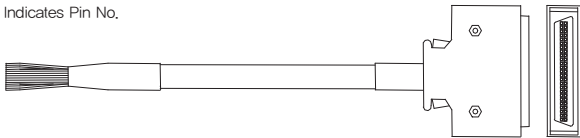
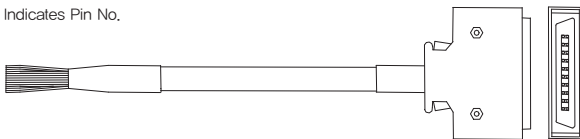
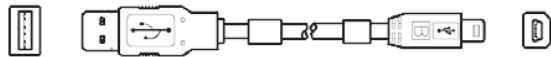
Type	Product Type	Model Name ^(Note1)	Applicable Motor	Specifications														
For Power	Power Cable (Brake Type)	APCS- P□□□NB	All Models of APM-SE APM-FE SERIES	Motor Side Connector  Drive Side Connector  Brake Power side Connector  <table><thead><tr><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></tbody></table> 1. Motor Side Connector a. Plug Spec. : MS3108B20-15S(MS) 2. Drive Side Connector a. U, V, W Pin Spec. : F2012 b. Cable Spec. : 4C×2.5SQ or 4C×14AWG c. FG Pin Spec. : 2.5×4(Ring Terminal) 3. Brake Power side Connector a. BK Pin Spec. : 1.5×3(Ring Terminal) b. Cable Spec. : 2C×0.75SQ or 2C×18AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground	E	BK+	F	BK-
				PIN No.	Signal													
A	U																	
B	V																	
C	W																	
D	Ground																	
E	BK+																	
F	BK-																	
For Power	Power Cable (Brake Type)	APCS- P□□□PB	APM-SF30A SF22D, LF35D SF20G, LF30G SF12M, SF20M LF30M, FF30A FF22D, FF35D FF20G, FF30G FF12M, FF20M FF30M	Motor Side Connector  Drive Side Connector  Brake Power side Connector  <table><thead><tr><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></tbody></table> 1. Motor Side Connector a. PLUG Spec. : MS3108B24-10S(MS) 2. Drive Side Connector a. U, V, W Pin Spec. : F2512 b. Cable Spec. : 4C×2.5SQ or 4C×2.5AWG c. FG Pin Spec. : 2.5×4(Ring Terminal) 3. Brake Power side Connector a. BK Pin Spec. : 1.5×3(Ring Terminal) b. Cable Spec. : 2C×0.75S or 2C×18AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground	E	BK+	F	BK-
				PIN No.	Signal													
A	U																	
B	V																	
C	W																	
D	Ground																	
E	BK+																	
F	BK-																	
For Power	Power Cable (Brake Type)	APC- P□□□LB	APM-SF50A SF55D, SF75D SF44G, SF60G SF44M, FF50A FF50D, FF75D FF44G, FF60G FF40M	Motor Side Connector  Drive Side Connector  Brake Power side Connector  <table><thead><tr><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></tbody></table> 1. Motor Side Connector a. PLUG Spec. : MS3108A24-10S(MS) 2. Drive Side Connector a. Connecting terminal Spec. : 5.5×5(KEP GP110028) b. 4C×5.5SQ or 4C×10AWG 3. Brake Power side Connector a. Connecting terminal Spec. : 1.25×3(Ring Terminal) b. Cable Spec. : 2C×0.75SQ or 2C×8AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground	E	BK+	F	BK-
				PIN No.	Signal													
A	U																	
B	V																	
C	W																	
D	Ground																	
E	BK+																	
F	BK-																	

Note1) □□□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20
General Cable(N)	N03	N05	N10	N20

Options and Peripherals

Specifications for Options [Signal Cable]

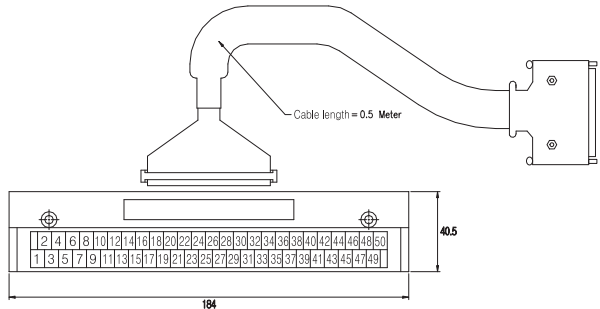
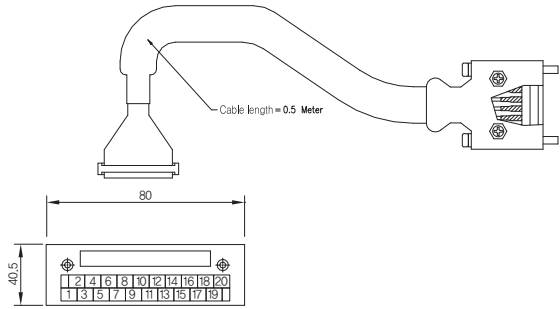
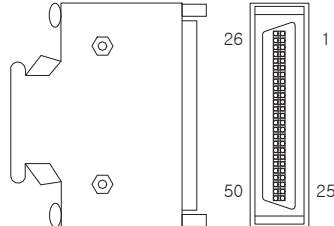
Type	Product Type	Model Name ^(Note1)	Applicable Drive	Specifications																																																																																																													
For Signal	CN1 Cable	APC— CN1□□A	L7S SERIES	[Upper Controller] [Drive Side Connector CN1] Indicates Pin No.  1. Drive Side Connector(CN1) a. Case Spec. : 10350—52A0—008(3M) b. Connector Spec. : 10150—3000VE(3M) c. Cable Spec. : 20276—SB 25P(AWG28)																																																																																																													
	(Pin No. Display) <table><tr><th>CN1</th><th>I/O Signal</th><th>CN1</th><th>I/O Signal</th><th>CN1</th><th>I/O Signal</th><th>CN1</th><th>I/O Signal</th><th>CN1</th><th>I/O Signal</th></tr><tr><td>1</td><td>TROCOM</td><td>11</td><td>PR+</td><td>21</td><td>SPD3</td><td>31</td><td>/BO</td><td>41</td><td>RDY—</td></tr><tr><td>2</td><td>REFCOM</td><td>12</td><td>PR—</td><td>22</td><td>SPD2</td><td>32</td><td>AO</td><td>42</td><td>TLOUT</td></tr><tr><td>3</td><td>PZO</td><td>13</td><td>PCON</td><td>23</td><td>SPD1</td><td>33</td><td>/AO</td><td>43</td><td>ZSPD</td></tr><tr><td>4</td><td>ZO</td><td>14</td><td>GAIN2(SEN)</td><td>24</td><td>GND</td><td>34</td><td>+15V</td><td>44</td><td>BRAKE</td></tr><tr><td>5</td><td>/ZO</td><td>15</td><td>PCLEAR</td><td>25</td><td>GND</td><td>35</td><td>—15V</td><td>45</td><td>INSPD/INPOS</td></tr><tr><td>6</td><td>SRO</td><td>16</td><td>TLIMIT</td><td>26</td><td>SETCOM</td><td>36</td><td>GND</td><td>46</td><td>DIR</td></tr><tr><td>7</td><td>/SRO</td><td>17</td><td>ALMRST</td><td>27</td><td>SPDCOM</td><td>37</td><td>GND</td><td>47</td><td>SVON</td></tr><tr><td>8</td><td>GND</td><td>18</td><td>EMG</td><td>28</td><td>MONIT1</td><td>38</td><td>ALARM+</td><td>48</td><td>STOP</td></tr><tr><td>9</td><td>RF+</td><td>19</td><td>CWLIM</td><td>29</td><td>MONIT2</td><td>39</td><td>ALARM—</td><td>49</td><td>PULCOM</td></tr><tr><td>10</td><td>PF—</td><td>20</td><td>CCWLIM</td><td>30</td><td>BO</td><td>40</td><td>RDY+</td><td>50</td><td>+24Vin</td></tr></table>			CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal	1	TROCOM	11	PR+	21	SPD3	31	/BO	41	RDY—	2	REFCOM	12	PR—	22	SPD2	32	AO	42	TLOUT	3	PZO	13	PCON	23	SPD1	33	/AO	43	ZSPD	4	ZO	14	GAIN2(SEN)	24	GND	34	+15V	44	BRAKE	5	/ZO	15	PCLEAR	25	GND	35	—15V	45	INSPD/INPOS	6	SRO	16	TLIMIT	26	SETCOM	36	GND	46	DIR	7	/SRO	17	ALMRST	27	SPDCOM	37	GND	47	SVON	8	GND	18	EMG	28	MONIT1	38	ALARM+	48	STOP	9	RF+	19	CWLIM	29	MONIT2	39	ALARM—	49	PULCOM	10	PF—	20	CCWLIM	30	BO	40	RDY+	50	+24Vin
CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal	CN1	I/O Signal																																																																																																								
1	TROCOM	11	PR+	21	SPD3	31	/BO	41	RDY—																																																																																																								
2	REFCOM	12	PR—	22	SPD2	32	AO	42	TLOUT																																																																																																								
3	PZO	13	PCON	23	SPD1	33	/AO	43	ZSPD																																																																																																								
4	ZO	14	GAIN2(SEN)	24	GND	34	+15V	44	BRAKE																																																																																																								
5	/ZO	15	PCLEAR	25	GND	35	—15V	45	INSPD/INPOS																																																																																																								
6	SRO	16	TLIMIT	26	SETCOM	36	GND	46	DIR																																																																																																								
7	/SRO	17	ALMRST	27	SPDCOM	37	GND	47	SVON																																																																																																								
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9	RF+	19	CWLIM	29	MONIT2	39	ALARM—	49	PULCOM																																																																																																								
10	PF—	20	CCWLIM	30	BO	40	RDY+	50	+24Vin																																																																																																								
For Signal	CN1 Cable	APCS— CN1□□A	L7N SERIES	[Upper Controller] [Drive Side Connector CN1] Indicates Pin No.  1. Drive Side Connector(CN1) a. Case Spec. : 10320—52A0—008(3M) b. Connector Spec. : 10120—3000VE(3M) c. Cable Spec. : ROW—SB0.1Cx20C(AWG28)																																																																																																													
	(Pin No. Display) <table><tr><th>NO</th><th>Signal</th><th>NO</th><th>Signal</th><th>NO</th><th>Signal</th><th>NO</th><th>Signal</th></tr><tr><td>1</td><td>BRAKE+</td><td>6</td><td>24V</td><td>11</td><td>HOME</td><td>16</td><td>Spare Pin</td></tr><tr><td>2</td><td>BRAKE—</td><td>7</td><td>CWL</td><td>12</td><td>ALMRST</td><td>17</td><td>RDY+</td></tr><tr><td>3</td><td>ALARM+</td><td>8</td><td>CCWL</td><td>13</td><td>DI1</td><td>18</td><td>RDY—</td></tr><tr><td>4</td><td>ALARM—</td><td>9</td><td>PROBE1</td><td>14</td><td>DI2</td><td>19</td><td>DOI+</td></tr><tr><td>5</td><td>Spare Pin</td><td>10</td><td>PROBE2</td><td>15</td><td>Spare Pin</td><td>20</td><td>DOI—</td></tr></table>			NO	Signal	NO	Signal	NO	Signal	NO	Signal	1	BRAKE+	6	24V	11	HOME	16	Spare Pin	2	BRAKE—	7	CWL	12	ALMRST	17	RDY+	3	ALARM+	8	CCWL	13	DI1	18	RDY—	4	ALARM—	9	PROBE1	14	DI2	19	DOI+	5	Spare Pin	10	PROBE2	15	Spare Pin	20	DOI—																																																														
NO	Signal	NO	Signal	NO	Signal	NO	Signal																																																																																																										
1	BRAKE+	6	24V	11	HOME	16	Spare Pin																																																																																																										
2	BRAKE—	7	CWL	12	ALMRST	17	RDY+																																																																																																										
3	ALARM+	8	CCWL	13	DI1	18	RDY—																																																																																																										
4	ALARM—	9	PROBE1	14	DI2	19	DOI+																																																																																																										
5	Spare Pin	10	PROBE2	15	Spare Pin	20	DOI—																																																																																																										
For Signal	Communication Cable	APCS— CN5L7U	All Models of L7 SERIES	[PC—USB Port] [Servo Drive—CN5]  1. PC Side Connector : USB A Plug 2. Drive Side Connector(CN5) : Mini USB 5P Plug 3. Electric Requirements Spec. : Double shielded, Twisted Pair, EMI—filter attached type (Ex. : KU—AMB518, SANWA) 4. Only 1.8m length of cable is available to use.																																																																																																													

Note1) □□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	1	2	3	5
Declaration	01	02	03	05

Options and Peripherals

Specifications for Options [Connector]

Type	Product Type	Model Name ^(Note1)	Applicable Drive	Specifications
T/B	CN1 T/B	APC- VSCN1T -□□	L7S SERIES	 1. Extended CN1 T/B for VS/L7S 2. Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m], 3[m]
	CN1 T/B	APCS- L7NCN1T -□□	L7N SERIES	 1. Extended CN1 T/B for L7N 2. Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m]
CN	CN1 Connector	APC- CN1NNA	L7S SERIES	 1. Case Spec. : 10350-52A0-008(3M) 2. Connector Spec. : 10150-3000VE(3M)

Note1) □□ of Model Name indicates the kind and length of cable. And the declaration is as below.

*APC-VSCN1T

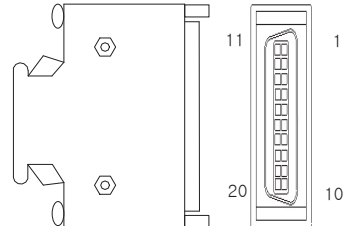
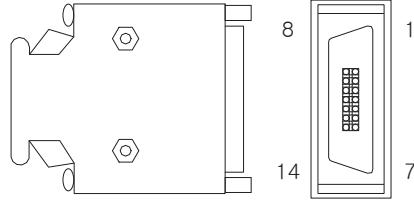
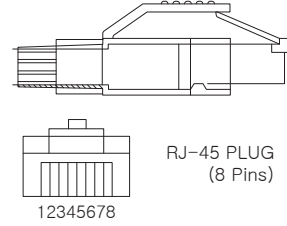
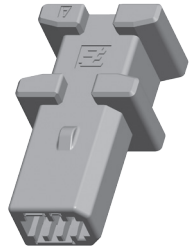
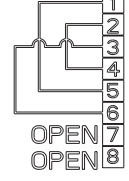
Cable Length(m)	0.5	1	1.5	2	3
Declaration	None	03	04	01	02

*APCS-L7NCN1T

Cable Length(m)	0.5	1	1.5	2
Declaration	01	02	03	04

Options and Peripherals

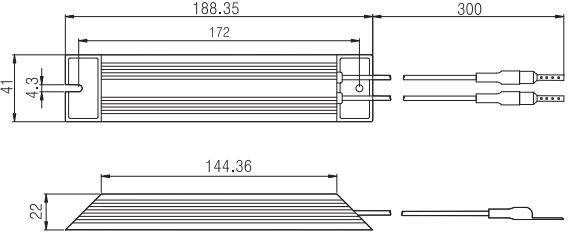
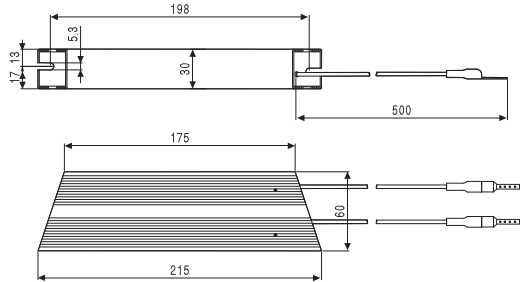
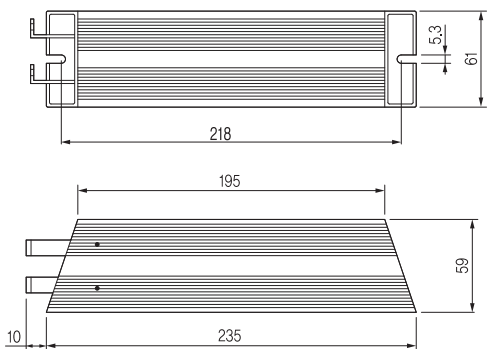
Specifications for Options [Connector]

Type	Product Type	Model Name	Applicable Drive	Specifications																														
CN	CN1 Connector	APC-CN2NNA	L7N SERIES	 1. Case Spec. : 10320-52A0-008(3M) 2. Connector Spec. : 10120-3000VE(3M)																														
CN	CN2 Connector	APC-CN3NNA	All Models of L7 SERIES	 1. Case Spec. : 10314-52A0-008(3M) 2. Connector Spec. : 10114-3000VE(3M)																														
CN	CN3 CN4 EtherCAT Connector	APCS-CN4NNA	L7N SERIES	 RJ-45 PLUG (8 Pins) 12345678 <table><tr><th>PIN No.</th><th>Signal</th><th>Color</th></tr><tr><td>1</td><td>TX/RX0 Plus</td><td>White/Orange</td></tr><tr><td>2</td><td>TX/RX0 Minus</td><td>Orange</td></tr><tr><td>3</td><td>TX/RX1 Plus</td><td>White/Orange</td></tr><tr><td>4</td><td>TX/RX2 Plus</td><td>Blue</td></tr><tr><td>5</td><td>TX/RX2 Minus</td><td>White/Blue</td></tr><tr><td>6</td><td>TX/RX1 Minus</td><td>Green</td></tr><tr><td>7</td><td>TX/RX3 Plus</td><td>White/Brown</td></tr><tr><td>8</td><td>TX/RX3 Minus</td><td>Brown</td></tr><tr><td>Plate</td><td></td><td>SHILDE</td></tr></table> Note) EtherCAT use only 4wires(1, 2, 3, 6)	PIN No.	Signal	Color	1	TX/RX0 Plus	White/Orange	2	TX/RX0 Minus	Orange	3	TX/RX1 Plus	White/Orange	4	TX/RX2 Plus	Blue	5	TX/RX2 Minus	White/Blue	6	TX/RX1 Minus	Green	7	TX/RX3 Plus	White/Brown	8	TX/RX3 Minus	Brown	Plate		SHILDE
PIN No.	Signal	Color																																
1	TX/RX0 Plus	White/Orange																																
2	TX/RX0 Minus	Orange																																
3	TX/RX1 Plus	White/Orange																																
4	TX/RX2 Plus	Blue																																
5	TX/RX2 Minus	White/Blue																																
6	TX/RX1 Minus	Green																																
7	TX/RX3 Plus	White/Brown																																
8	TX/RX3 Minus	Brown																																
Plate		SHILDE																																
CN	CN6 Connector	APCS-CN6K	L7N SERIES	 PIN NO.  WIRING SCHEMATIC 1. MINI I/O By-Pass Connector : 1971153(TE)																														

Options and Peripherals

Specifications for Options [Braking Resistor]

* Option braking resistors are selectable items for user's need.

Type	Product Type	Model Name ^(Note1)	Applicable Drive	Specifications
Resistor	Braking Resistor	APCS-140R50	L7□A001□ L7□A002□ L7□A004□	 IRH 140W 50ohm
Resistor	Braking Resistor	APCS-300R30	L7□A008□ L7□A010□	 IRV 300W 30ohm
Resistor	Braking Resistor	APC-600R30	L7□A020□ L7□A035□	
		APC-600R28	L7□A050□ (4P)	IRV 600S 30ohm * L7□A020□ – 2pcs (Parallel Connection) L7□A030□ – 3pcs (Parallel Connection) IRV 600S 28ohm * L7□A050□ – 4pcs (Parallel Connection) Note) IRV 600S 30ohm and 600S 28ohm have the same external dimensions.

Note1) L7 Series 100W~7.5kW has the internal basic braking resistor. If the machine requires short deceleration time frequently, refer to table above and apply the appropriate braking resistor.

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