# 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

# Contents

## 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 |

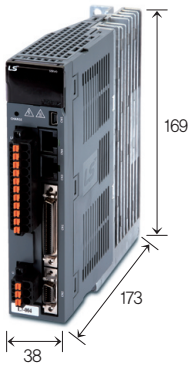
Compared with VS Drive — Max 52% Slim

Compared with competitor's drive — Max 5% Slim

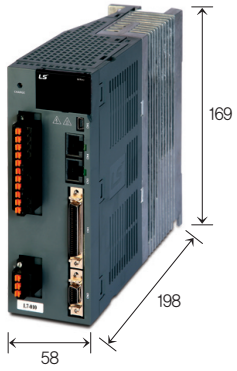
**The Minimized Width to 38mm!!! (400W)**

– Downsize Machine with Compact and Slim Design

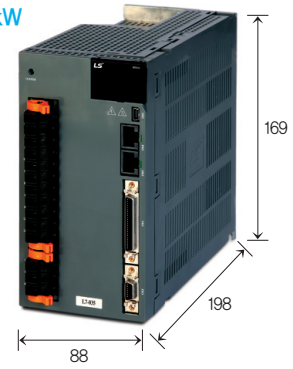
■ 400W




■ 1kW



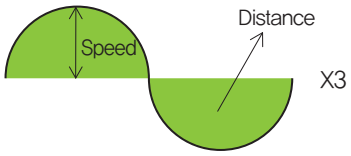

■ 3.5kW




### 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

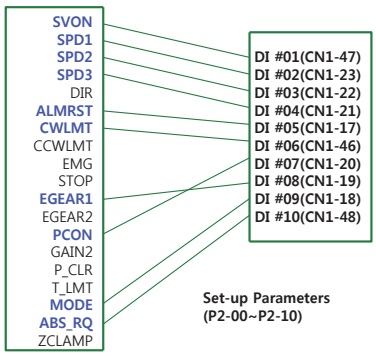
# Characteristics of L7 Series

## ● 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
  : United State Display(St-00), Input Pulse Frequency(St-06), Operation Over Load Factor(St-09), Regenerative Over Load Factor(St-13), Mechanical Angle(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 Inertia Estimating Function(Cn-05), Analog Input Adjusting(Cn-10~13), Manual JOG Operation(Cn-00), Forced Input/Output Function(Cn-07, Cn-08)

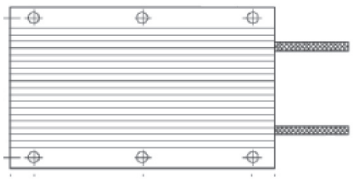
## ● Many I/O Contacts and Various Functions

- 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
- 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
- 1Phase 380 ~ 480Vac

## Characteristics of L7 Series

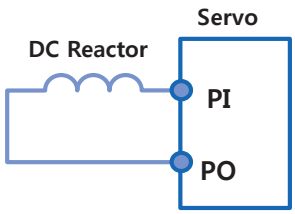
### Reliability

**● 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"**

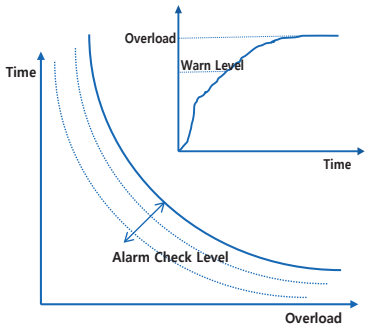
**● CE, RoHS Certificated(Planed : 2012. 2Q)**

**● 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 De-rating 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

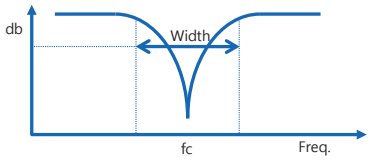
### ● Improved Speed Response Frequency

- About 1kHz
- Reduced Positioning Time

## Intelligent Control

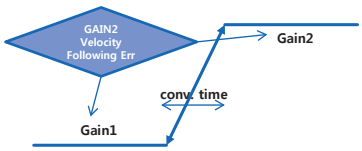
### ● Notch Filter for Resonance Control

- 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)

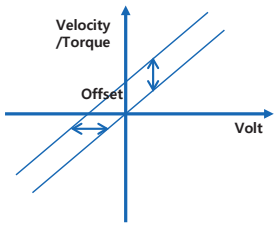



### ● Various Dynamic Brake Control Mode

- 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

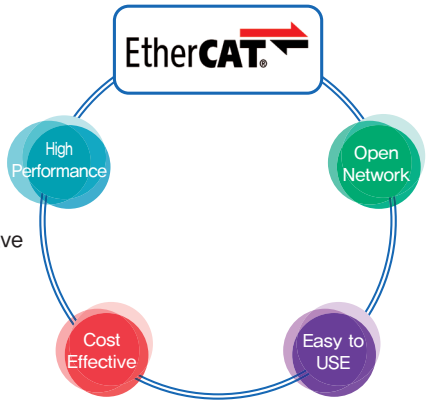
- Auto Adjusting for Speed Command(Cn-10)
- Auto Adjusting for Torque Command(Cn-11)
- Manual Adjusting for Speed Command(Cn-12)
- Manual Adjusting for Torque Command(Cn-13)




### ● Providing Trapezoid & S-Curve type Accel/Decel Pattern

## Characteristics of L7 Series

### Montion Network Type(EtherCAT) – L7N Series



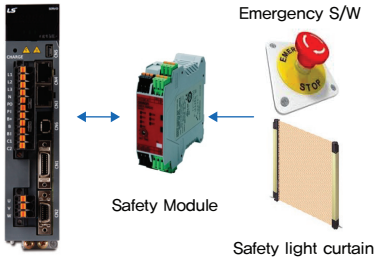

**● High Performance**
- High speed, Real-time capability and Synchronization mechanism

**● 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

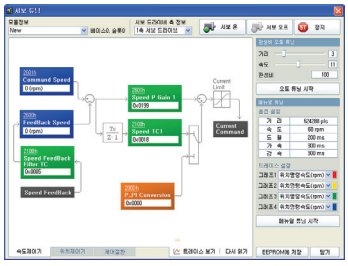
**● Safe Torque Off function**
- Forced torque off by HWBB signals without intervention of μP and FPGA(ASIC), International standard(IEC61508))


LS산전 XGT PLC + PN8B

**● Versatile I/O assignment by parameters**
- 6 inputs, 4 outputs

**● High speed position capture function**
- Touch probe function(PROBE1, PROBE2)

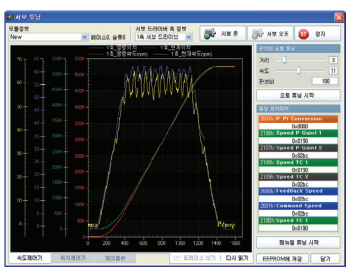
**● Provide specialized commissioning tools by LSIS's XGT PLC**
- Tune inertia ratio, velocity/position gains, gain conversion configuration



**● 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)



LS Mecapion

# 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 | A : 220VAC | 001 : 100W | A : Parallel (Pulse Type) | Exclusive Option Code |
| | N : Network Type | B : 400VAC | 002 : 200W | B : Serial (Communication Type) | |
| | | | 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) | | |

### Servo Motor Designation

| APM – | S | B | 04 | A | M | K | 1 |
|---|---|---|---|---|---|---|---|
| **Servo Motor** | **Motor Shaft** | **Flange Size** | **Motor Capacity** | **Rated Speed** | **Encoder Type** | **Shape of Shaft End** | **Oil Seal, Brake Type** |
| | S : Solid Shaft | A : 40 Flange | R3 : 30[W] | A : 3000[rpm] | A : Inc. 1024[P/R] | N : Straight | None : None |
| | F : Flat Type | B : 60 Flange | R5 : 50[W] | D : 2000[rpm] | B : Inc. 2000[P/R] | K : One side Round key (Standard) | 1 : Oil Seal Attached |
| | H : Hollow Shaft | C : 80 Flange | 01 : 100[W] | G : 1500[rpm] | C : Inc. 2048[P/R] | H : Hollow Shaft | 2 : Brake Attached |
| | L : Low Current Type | E : 130 Flange | 02 : 200[W] | M : 1000[rpm] | D : Inc. 2500[P/R] | | 3 : Oil Seal, Brake Attached |
| | | F : 180 Flange | 03 : 300[W] | | E : Inc. 3000[P/R] | | Note) Refer to Brake Specifications |
| | | G : 220 Flange | 04 : 400[W] | | N : 19bit S-Turn Abs. | | |
| | | | 07 : 650[W] | | M : 19bit M-Turn Abs. | | |
| | | | 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) | | | | |

# 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□A001 | *19Bit Serial Abs | IP65 |
| | | □60 | FB02A | L7□A002 | | |
| | | □60 | FB04A | L7□A004 | | |
| | | □80 | FC04A | L7□A004 | | |
| | | □80 | FC06A | L7□A008 | | |
| | | □80 | FC08A | L7□A008 | | |
| | | □80 | FC10A | L7□A010 | | |
| | | □130 | FE09A | L7□A010 | | |
| | | □130 | FE15A | L7□A020 | | |
| | | □130 | FE22A | L7□A020 | | |
| | | □130 | FE30A | L7□A035 | | |
| | | □180 | FF30A | L7□A035 | | |
| | | □180 | FF50A | L7□A050 | | |
| 2,000 | 3,000 | □80 | FC03D | L7□A004 | | |
| | | □80 | FC05D | L7□A008 | | |
| | | □80 | FC06D | L7□A008 | | |
| | | □80 | FC07D | L7□A008 | | |
| | | □180 | FE06D | L7□A008 | | |
| | | □180 | FE11D | L7□A010 | | |
| | | □180 | FE16D | L7□A020 | | |
| | | □180 | FE22D | L7□A020 | | |
| | | □180 | FF22D | L7□A020 | | |
| | | □180 | FF35D | L7□A035 | | |
| | | □180 | FF55D | L7□A050 | | |
| | | □180 | FF75D | L7□A075 | | |
| | | □220 | FG22D | L7□A020 | | |
| | | □220 | FG35D | L7□A035 | | |
| | | □220 | FG55D | L7□A050 | | |
| | | □220 | FG75D | L7□A075 | | |
| 1,500 | 3,000 | □130 | FE05G | L7□A008 | | |
| | | □130 | FE09G | L7□A010 | | |
| | | □130 | FE13G | L7□A020 | | |
| | | □130 | FE17G | L7□A020 | | |
| | | □180 | FF20G | L7□A020 | | |
| | | □180 | FF30G | L7□A035 | | |
| | | □180 | FF44G | L7□A050 | | |
| | | □180 | FF60G | L7□A075 | | |
| | | □180 | FF75G | L7□A075 | | |
| | | □220 | FG20G | L7□A020 | | |
| | | □220 | FG30G | L7□A035 | | |
| | | □220 | FG44G | L7□A050 | | |
| | | □220 | FG60G | L7□A075 | | |
| 1,000 | 2,000 | □130 | FE03M | L7□A004 | | |
| | | □130 | FE06M | L7□A008 | | |
| | | □130 | FE09M | L7□A010 | | |
| | | □130 | FE12M | L7□A020 | | |
| | | □180 | FF12M | L7□A020 | | |
| | | □180 | FF20M | L7□A020 | | |
| | | □180 | FF30M | L7□A035 | | |
| | | □180 | FF44M | L7□A050 | | |
| | | □220 | FG12M | L7□A020 | | |
| | | □220 | FG20M | L7□A020 | | |
| | | □220 | FG30M | L7□A035 | | |
| | | □220 | FG44M | L7□A050 | | |

Note) L7□A075 Servo Drive is Coming soon.

## Servo Motor & Drive Designations

### Servo Motor & Drive Selection Table

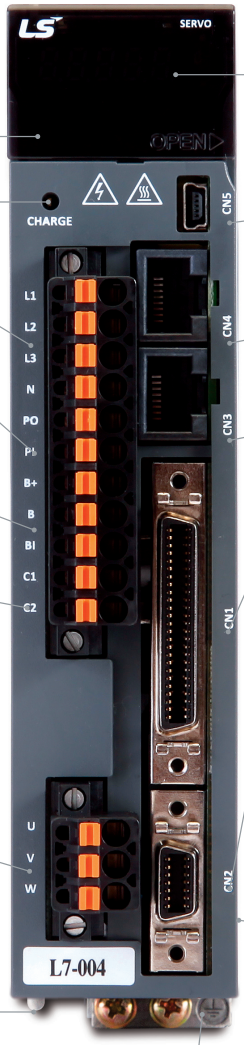
#### ● APM-S Series Selection

| Rated Speed (rpm) | Max. Speed (rpm) | Flange Size | Motor (APM) | Drive | Encoder Type Parallel Type | IP Grade |
|---|---|---|---|---|---|---|
| 3,000 | 5,000 | □40 | SAR3A | L7□A001 | *2,048 P/R | IP65 |
| | | □40 | SAR5A | L7□A001 | | |
| | | □40 | SA01A | L7□A001 | | |
| | | □40 | SA015A | L7□A002 | | |
| | | □60 | SB01A | L7□A002 | *3,000 P/R | IP65 |
| | | □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 | | |
| 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 | L7□A075 | | |
| | 3,000 | □220 | SG22D | L7□A020 | | |
| | | □220 | LG35D | L7□A035 | | |
| | | □220 | SG55D | L7□A050 | | |
| | 2,500 | □220 | SG75D | L7□A075 | | |
| 15,000 | 3,000 | □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 | | |
| | | □220 | SG44G | L7□A050 | | |
| | 2,500 | □220 | SG60G | L7□A075 | | |
| 1,000 | 2,000 | □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 | 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.

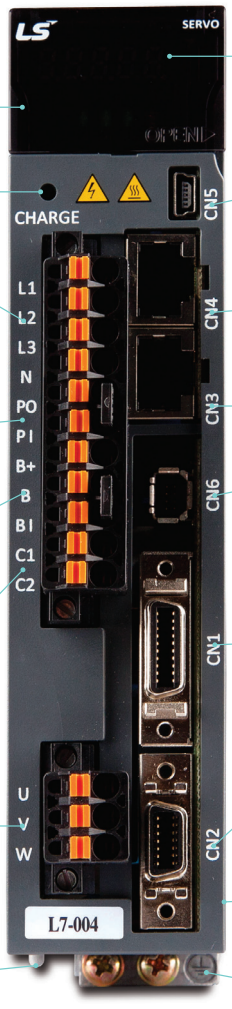
## Identifying the Parts of L7

### [L7S]




- Display
- Operation Key (Mode, Up, Down, Set)
- Charge Lamp
- CN5 : USB Connector
- Main Power Connector (L1, L2, L3)
- CN4 : RS-422 Communication Connector
- DC Reactor Connector(PO, P⊕) Short-Circuit when not used
- CN3 : RS-422 Communication Connector
- Regenerative Resistor Connector(B+, B, BI)
  - Short-Circuit B, BI terminals when standard type
  - Use B+, B terminals when using external resistor
- CN1 : Control Signal Connector
- Control Power Connector (C1, C2)
- CN2 : Encoder Signal Connector
- Motor Power Cable Connector (U, V, W)
- Front cover
- Heat Sink
- Ground

### [L7N]




- Display
- Mode, Key
- Charge Lamp
- CN5 : USB Connector
- Main Power Connector (L1, L2, L3)
- CN4 : EtherCAT Communication Port(Input)
- DC Reactor Connector(PO, P⊕) Short-Circuit when not used
- CN3 : EtherCAT Communication Port(Output)
- Regenerative Resistor Connector(B+, B, BI)
  - Short-Circuit B, BI terminals when standard type
  - Use B+, B terminals when using external resistor
- CN6 : STO Connector
- Control Power Connector (C1, C2)
- CN1 : Control Signal Connector
- Motor Power Connector (U, V, W)
- CN2 : Encoder Signal Connector
- Front cover
- Heat Sink
- Ground

## L7S Product Features

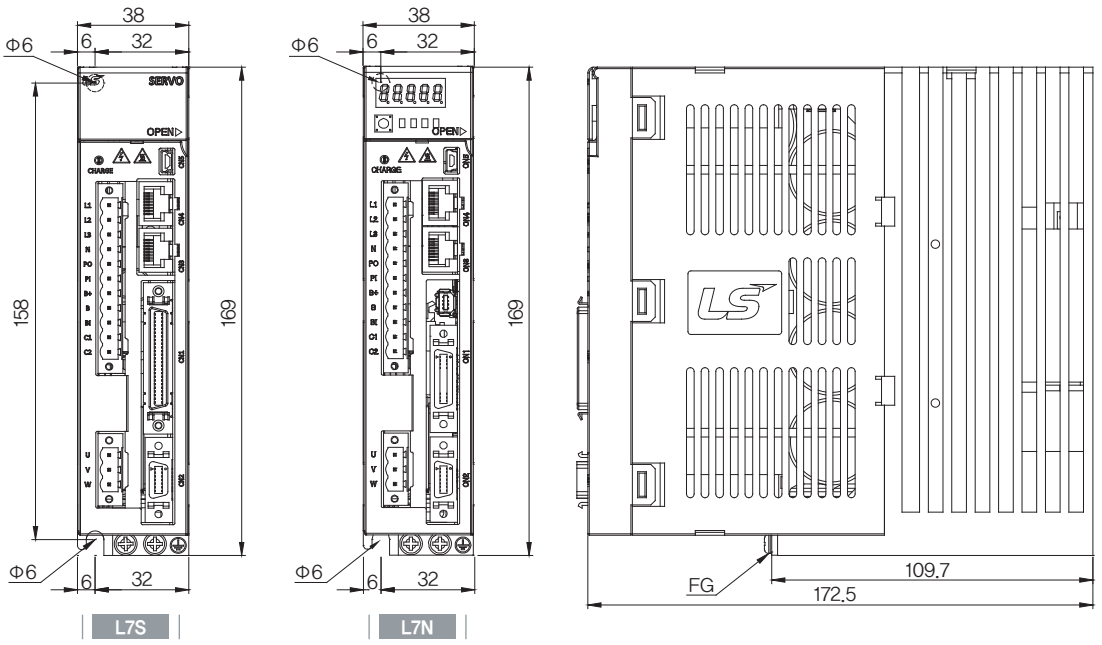
| Item \ Model | | | L7SA001□ | L7SA002□ | L7SA004□ | L7SA008□ | L7SA010□ | L7SA020□ | L7SA035□ | L7SA050□ |
|---|---|---|---|---|---|---|---|---|---|---|
| Input Power | Main Power Supply | | 3 Phase AC200 ~ 230[V](–15 ~ +10[%]), 50 ~ 60[Hz] | | | | | | | |
| | Control Power Supply | | Single Phase 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]<br>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%]<br>±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)<br>SVON, SPD1, SPD2, SPD3, ALMRST, DIR, CCWLIM, CWLIM, EMG, STOP, EGEAR1,<br>EGEAR2, PCON, GAIN2, P_CLR, T_LMT, MODE, ABS_RQ, ZCLAMP<br>Above 19 functions can be used selectively for assignment<br>Signal can be set as positive logic or negative logic | | | | | | | |
| | Digital Output | | Total 5 Channels(assignment available), 3 Channels(set as alarm code)<br>ALARM, READY, ZSPD, BRAKE, INPOS, TLMT, VLMT, INSPD, WARN<br>Above 9 outputs can be used selectively for assignment<br>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,<br>program JOG operation, analog–input auto Calibration function | | | | | | | |
| | Protective Function | | Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, contorl 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

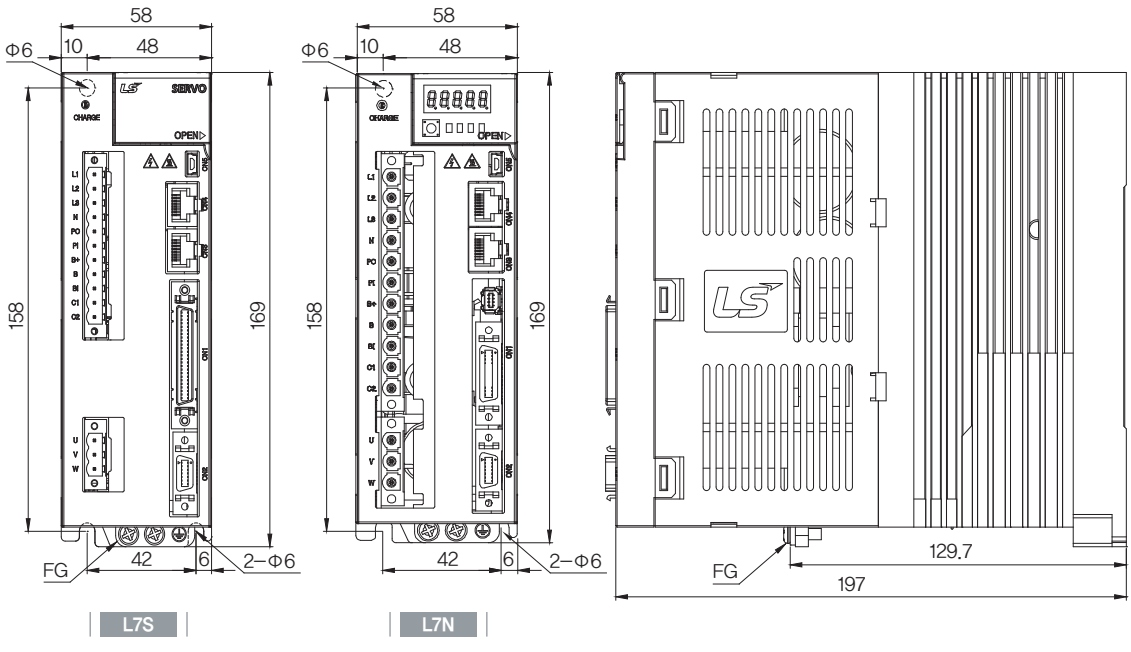
| Item \ Model | | | L7NA001B | L7NA002B | L7NA004B | L7NA008B | L7NA010B | L7NA020B | L7NA035B |
|---|---|---|---|---|---|---|---|---|---|
| Input Power | Main Power Supply | | 3-Phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz] | | | | | | |
| | Control Power Supply | | Single Phase AC200 ~ 230[V](-15 ~ +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%)<br>±0.1[%] or less(Temperature of 25℃[±10] | | | | | | |
| | | Torque Control Repetition Accuracy | Within ±1% | | | | | | |
| Supported Drive Modes (CiA402) | | | Profile Position Mode<br>Profile Velocity Mode<br>Profile Torque Mode<br>Interpolated Position Mode<br>Cyclic Synchronous Position Mode<br>Cyclic Synchronous Velocity Mode<br>Cyclic Synchronous Torque Mode<br>Homing Mode | | | | | | |
| Digital Input / Output | Digital Input | | Total 6 input channels(allocable)<br>PCON, GAIN2, ALMRST, HOME, P-OT, N-OT<br>Above 6 functions can be used selectively for assignment.<br>Signal can be set as positive logic or negative logic. | | | | | | |
| | Touch Probe Input | | There are 2 input channels.<br>Provides rising and falling edge detection functions for each channel. | | | | | | |
| | Digital Output | | Total 4 channels (allocable)<br>ALARM, READY, ZSPD, BRAKE, INPOS, INSPD, WARN<br>Above 7 outputs can be used selectively for assignment.<br>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 | | | | | | |
| | Protective Function | | Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, contorl 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. | | | | | | |

## External Dimensisons of Servo Drive

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

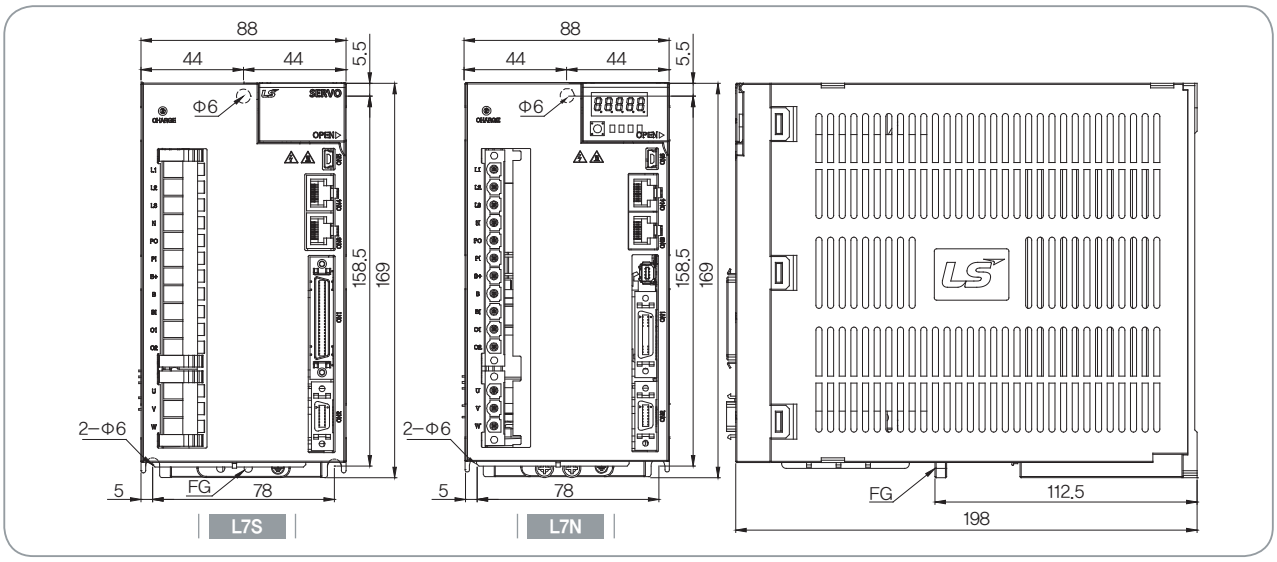



### ■ L7□A008□ ~ L7□A010□ [Weight : 1.5kg(Fan-Cooling included)]

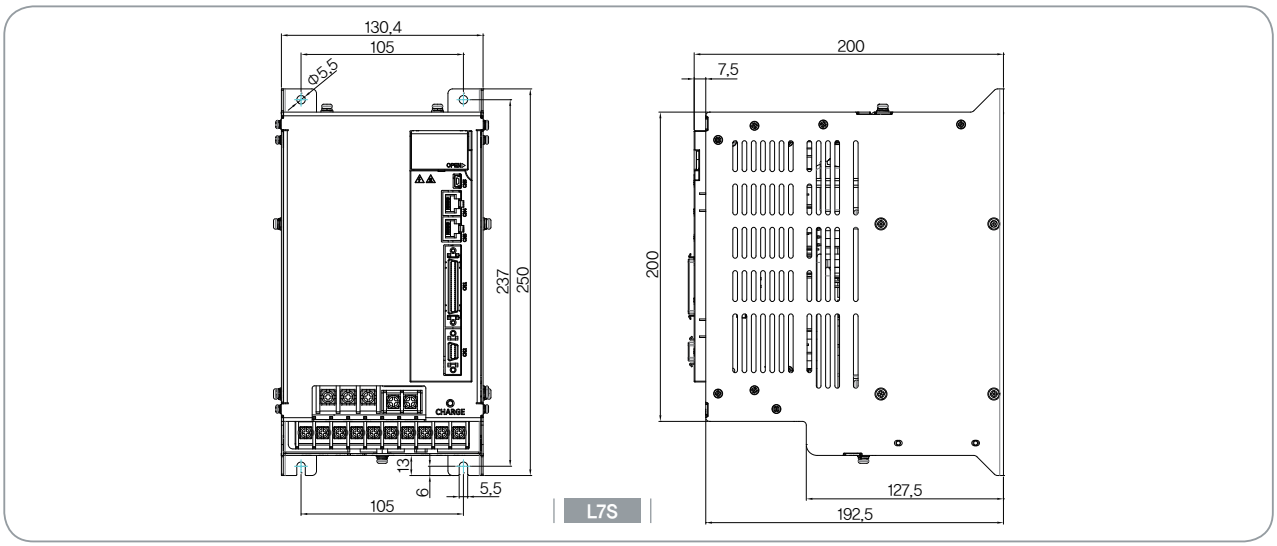


## External Dimensisons of Servo Drive

### L7□A020□ ~ L7□A035□ [Weight : 2.5kg(Fan-Cooling included)]




### 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℃

| APM-SA | APM-SA | APM-SB<br>APM-FB | APM-SC<br>APM-FC | APM-SE<br>APM-FE | APM-SF<br>APM-LF<br>APM-FF | APM-SG<br>APM-LG<br>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 Dimensisons 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)

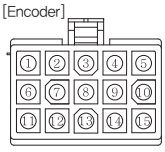
[Brake]

Spec.
: 172165-1
(Made by AMP)

| Pin No. | Signal |
|---|---|
| 1 | BK+ |
| 2 | BK- |

(Brake Connector Pin Table)

[Encoder]

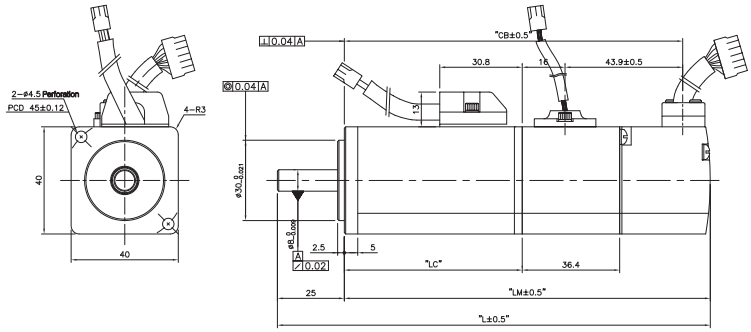


Spec. : 172171-1(Made by AMP)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | A | 9 | V |
| 2 | $\overline{A}$ | 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 | $\overline{U}$ | | |

(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.

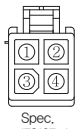



| Model | External Dimensions | | | | Weight(kg) |
|---|---|---|---|---|---|
| | L | LM | LC | CB | |
| SAR3A | 101.3(137.6) | 76.3(112.6) | 42.5(42.4) | 66.3(102.3) | 0.32(0.67) |
| SAR5A | 108.3(144.6) | 83.3(119.6) | 49.5(49.4) | 73.3(109.3) | 0.38(0.73) |
| SA01A | 125.3(161.6) | 100.3(136.6) | 66.5(66.4) | 90.3(126.3) | 0.5(0.85) |
| SA015A | 145.3 | 120.3 | 86.5 | 110.3 | 0.7 |

### SB Series

#### Plug Specifications

[Power]

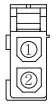


Spec.
: 172167-1
(Made by AMP)

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

(Power Connector Pin Table)

[Brake]

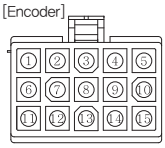


Spec.
: 172165-1
(Made by AMP)

| Pin No. | Signal |
|---|---|
| 1 | BK+ |
| 2 | BK- |

(Brake Connector Pin Table)

[Encoder]

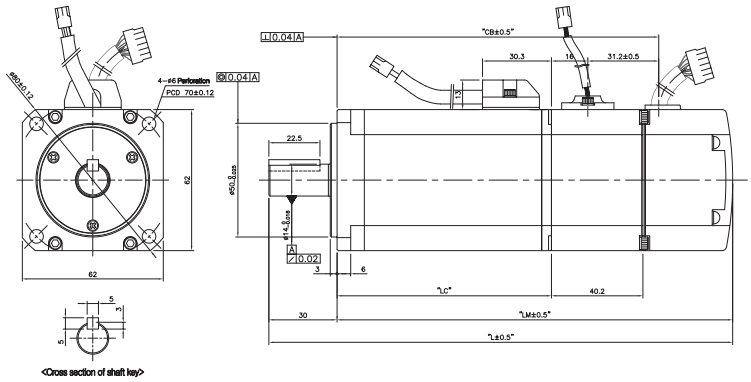


Spec. : 172171-1(Made by AMP)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | A | 9 | V |
| 2 | $\overline{A}$ | 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 | $\overline{U}$ | | |

(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 Dimensisons of Servo Motor

## SC 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)

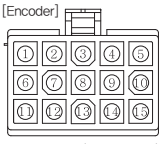
[Brake]

Spec.
: 172165-1
(Made by AMP)

| Pin No. | Signal |
|---|---|
| 1 | BK+ |
| 2 | BK- |

(Brake Connector Pin Table)

[Encoder]

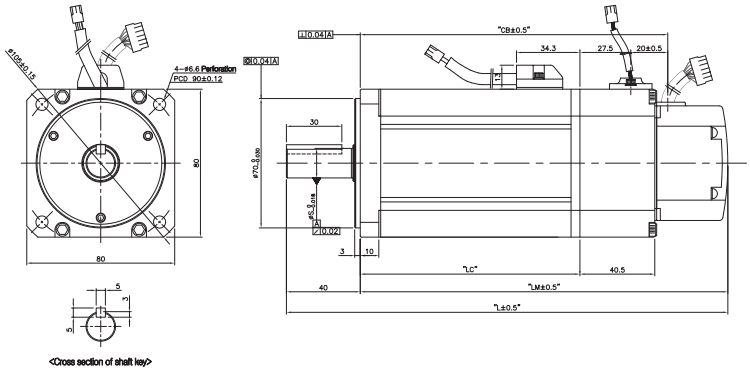


Spec. : 172171-1(Made by AMP)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | A | 9 | V |
| 2 | $\overline{A}$ | 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 | $\overline{U}$ | | |

(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.

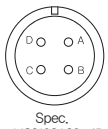



| Model | External Dimensions | | | | | Weight(kg) |
|---|---|---|---|---|---|---|
| | L | LM | LC | CB | S | |
| SC04A, SC03D | 158.5(198.8) | 118.5(158.8) | 79(78.8) | 86(126.3) | 14 | 1.88(2.92) |
| SC06A, SC05D | 178.5(218.8) | 138.5(178.8) | 99(98.8) | 106(146.3) | 16 | 2.52(3.56) |
| SC08A, SC06D | 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

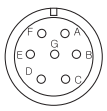
### Plug Specifications

[Power]



Spec.
: MS3102A20-4P
(Standard)

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

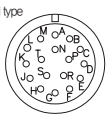


Spec.
: MS3102A20-15P
(Brake-attached type)

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

[Encoder]

1)Incremental type

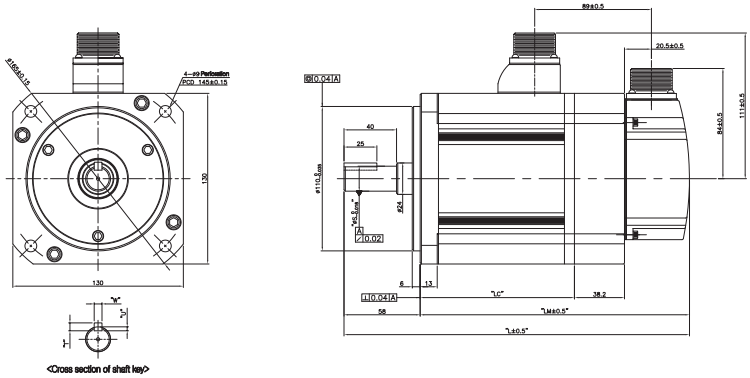


Spec.
: MS3102A20-29P

| 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 | $\overline{U}$ | | |

(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 Dimensisons of Servo Motor

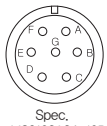
### SF, LF Series

#### Plug Specifications

[Power]

Spec.
: MS3102A22-22P
(Standard)

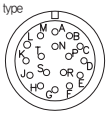
| Pin No. | Signal |
|---|---|
| A | U |
| B | V |
| C | W |
| D | Ground |



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

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

[Encoder]
1)Incremental type

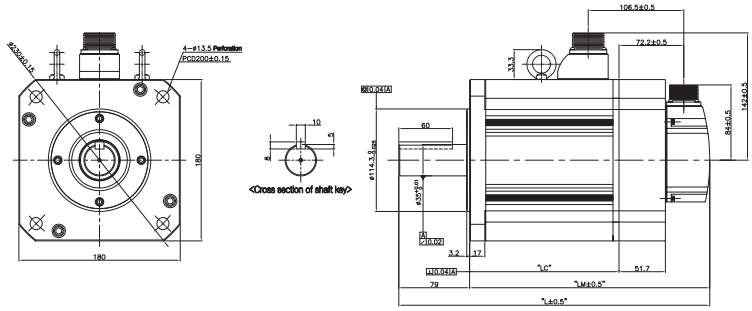


Spec.
: MS3102A20-29P

| 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 | $\overline{U}$ | | |

(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.

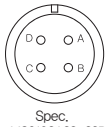



| Model | External Dimensions | | | | Key | | | | | Weight(kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | L | LM | LC | LR | S | QW | T | W | U | |
| SF30A, SF22D, SF20G, SF12M | 261.5(312.9) | 182.5(233.9) | 133(132.7) | 79 | $35^{+0.01}_{0}$ | 60 | 8 | 10 | 5 | 12.4(19.2) |
| SF50A, SF35D, 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 | 457.5 | 344.5 | 295 | 113 | $42^{0}_{-0.016}$ | 96 | 8 | 12 | 5 | 39.4 |

### SG, LG Series

#### Plug Specifications

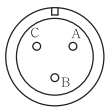
[Power]



Spec.
: MS3102A22-22P
(Standard)

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

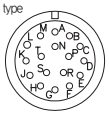
[Brack]



Spec.
: MS3102A14S-7P
(Brake-attached type)

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

[Encoder]
1)Incremental type

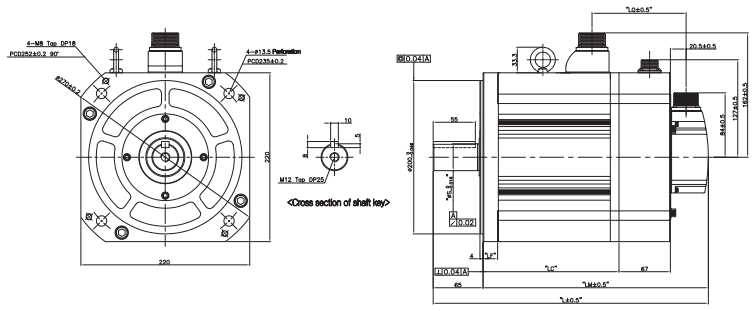


Spec.
: MS3102A20-29P

| 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 | $\overline{U}$ | | |

(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.




| 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 | 418.5(484.7) | 353.5(419.7) | 304(303.2) | 21 | 66(132.2) | 42 | |

# External Dimensisons of Servo Motor

## HB Series [Hollow Shaft type]

### Plug Specifications

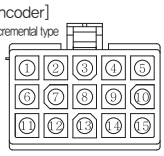
[Power]

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)

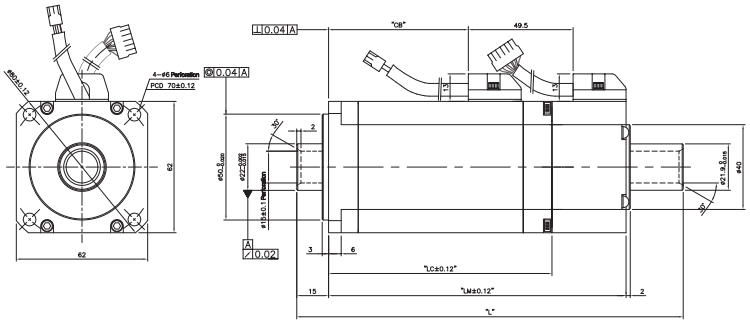
[Encoder]
1)Incremental type



Spec. : 172171-1(Made by AMP)

| 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 | $\overline{U}$ | | |

(Parallel Encoder Connector Pin Table)



| 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

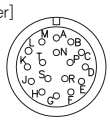
[Power]

Spec.
: MS3102A20-4P
(Standard)

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

(Power Connector Pin Table)

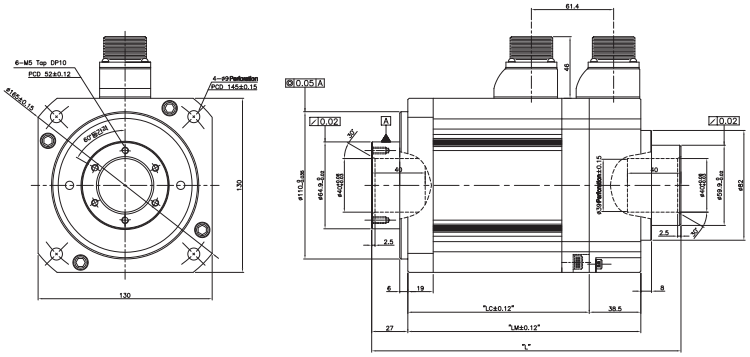
[Encoder]



Spec.
: MS3102A20-29P

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | A | M | V |
| B | $\overline{A}$ | 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 | $\overline{U}$ | | |

(Parallel Encoder Connector Pin Table)



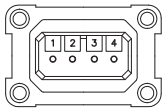
| Model | External Dimensions | | | | Weight(kg) |
|---|---|---|---|---|---|
| | L | LM | LC | Hollow Shaft | |
| HE09A | 207 | 150 | 111.5 | 40 | 5.82 |
| HE15A | 231 | 174 | 135.5 | 40 | 7.43 |
| HE30A | 279 | 222 | 183.5 | 40 | |

## External Dimensisons of Servo Motor

### FB Series

#### Plug Specifications

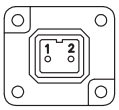
[Power]



| 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]

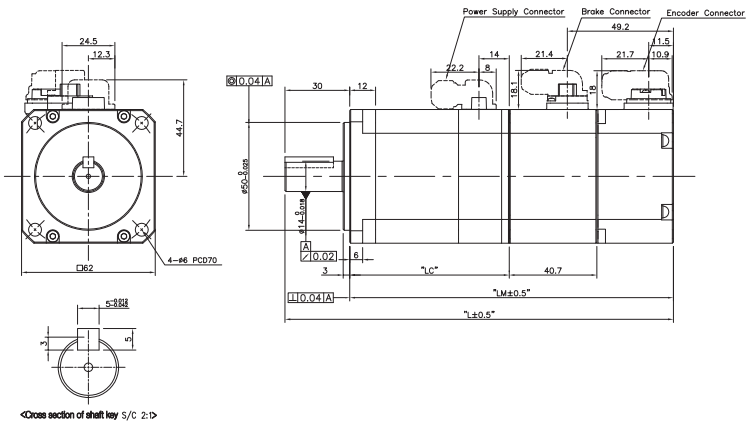
| Single Turn (N) | | Multi Turn (M) | |
|---|---|---|---|
| Pin No. | Signal | Pin No. | Signal |
| 1 | MA | 1 | MA |
| 2 | SLO | 2 | SLO |
| 3 | – | 3 | GND_B |
| 4 | 0V | 4 | 0V |
| 5 | SHIELD | 5 | SHIELD |
| 6 | $\overline{MA}$ | 6 | $\overline{MA}$ |
| 7 | $\overline{SLO}$ | 7 | $\overline{SLO}$ |
| 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.

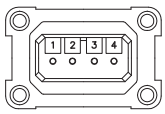



| Model | External Dimensions | | | Weight(kg) |
|---|---|---|---|---|
| | L | LM | LC | |
| FB01A | 109(149.2) | 79(119.2) | 43.5(43) | 0.72(1.27) |
| FB02A | 120(160.2) | 90(130.2) | 54.5(54) | 0.94(1.49) |
| FB04A | 140(180.2) | 110(150.2) | 74.5(74) | 1.32(1.87) |

### FC Series

#### Plug Specifications

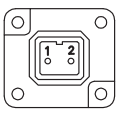
[Power]



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

(Power Connector Pin Table)

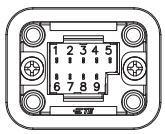
[Brake]



| Pin No. | Signal |
|---|---|
| 1 | BK+ |
| 2 | BK– |

(Brake Connector Pin Table)

[Encoder]



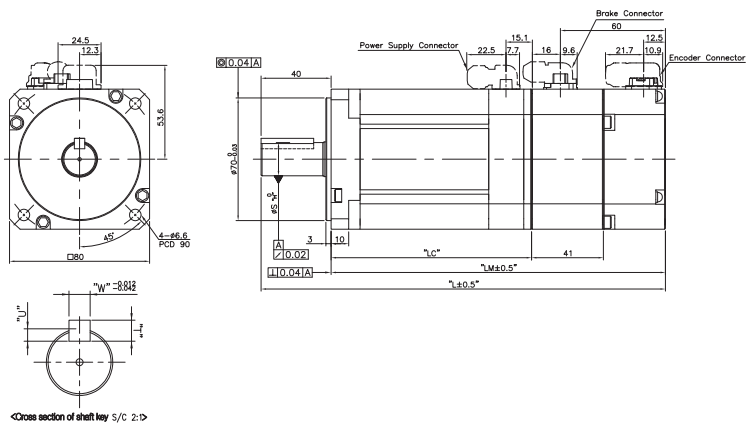
| Single Turn (N) | | Multi Turn (M) | |
|---|---|---|---|
| Pin No. | Signal | Pin No. | Signal |
| 1 | MA | 1 | MA |
| 2 | SLO | 2 | SLO |
| 3 | – | 3 | GND_B |
| 4 | 0V | 4 | 0V |
| 5 | SHIELD | 5 | SHIELD |
| 6 | $\overline{MA}$ | 6 | $\overline{MA}$ |
| 7 | $\overline{SLO}$ | 7 | $\overline{SLO}$ |
| 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 | T | W | U | |
| FC04A, FC03D | 136.5(177) | 96.5(137) | 61(60.5) | 14 | 5 | 5 | 3 | 1.56(2.71) |
| FC06A, FC05D | 154.5(195) | 114.5(155) | 79(78.5) | 19 | 6 | 6 | 3.5 | 2.18(3.33) |
| FC08A, FC06D | 172.5(213) | 132.5(173) | 97(96.5) | 19 | 6 | 6 | 3.5 | 2.72(3.87) |
| FC10A, FC07D | 190.5(231) | 150.5(191) | 115(114.5) | 19 | 6 | 6 | 3.5 | 3.80(4.94) |

# External Dimensisons of Servo Motor

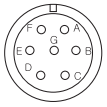
## FE Series

### Plug Specifications

[Power]

Spec.
: MS3102A20-4P
(Standard)

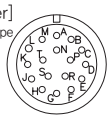
| Pin No. | Signal |
|---|---|
| A | U |
| B | V |
| C | W |
| D | Ground |



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

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

[Encoder]
2)Serial type



Spec.
: MS3102A20-29P

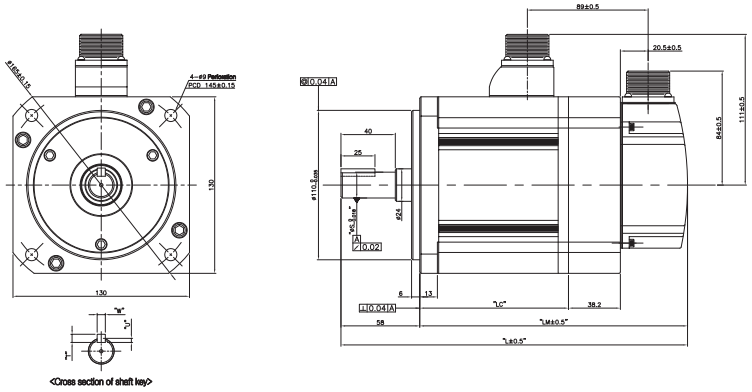
| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | MA | M | - |
| B | $\overline{MA}$ | N | - |
| C | SLO | P | - |
| D | $\overline{SLO}$ | R | - |
| E | - | H | +5V |
| F | - | G | 0V |
| K | - | J | SHIELD |
| L | - | | |

(Single Turn Encoder Connector Pin Table)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | MA | M | - |
| B | $\overline{MA}$ | N | - |
| C | SLO | P | - |
| D | $\overline{SLO}$ | 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.

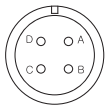



| Model | External Dimensions | | | | | | | Weight(kg) |
|---|---|---|---|---|---|---|---|---|
| | L | LM | LC | S | T | W | U | |
| FE09A, FE06D, FE05G, FE03M | 197.3(235.3) | 139.3(177.3) | 89.8(89.6) | 19 | 5 | 5 | 3 | 5.04(6.58) |
| FE15A, FE11D, FE09G, FE06M | 217.3(255.3) | 159.3(197.3) | 109.8(109.6) | 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(235.3) | 197.3(235.3) | 147.8(147.6) | 24 | 7 | 8 | 4 | 10.05(11.59) |

## FF Series

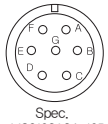
### Plug Specifications

[Power]



Spec.
: MS3102A22-22P
(Standard)

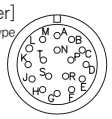
| Pin No. | Signal |
|---|---|
| A | U |
| B | V |
| C | W |
| D | Ground |



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

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

[Encoder]
2)Serial type



Spec.
: MS3102A20-29P

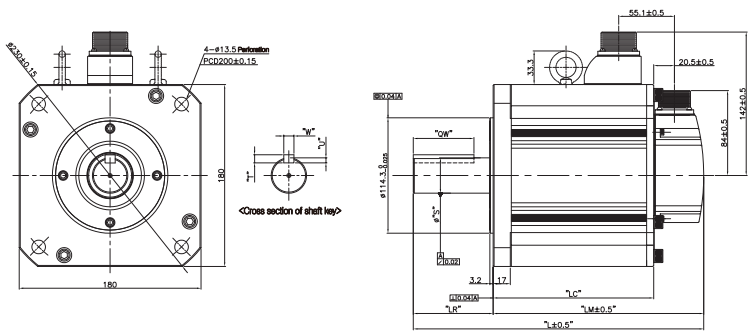
| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | MA | M | - |
| B | $\overline{MA}$ | N | - |
| C | SLO | P | - |
| D | $\overline{SLO}$ | R | - |
| E | - | H | +5V |
| F | - | G | 0V |
| K | - | J | SHIELD |
| L | - | | |

(Single Turn Encoder Connector Pin Table)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | MA | M | - |
| B | $\overline{MA}$ | N | - |
| C | SLO | P | - |
| D | $\overline{SLO}$ | 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.




| 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) | 79 | 35 +0.01 0 | 60 | 8 | 10 | 5 | 12.5(19.7) |
| FF50A, FF35D, FF30G, FF20M | 287.5(338.9) | 208.5(259.9) | 159(158.7) | | | | | | | 17.4(24.6) |
| FF55D, FF44G, FF30M | 331.5(382.9) | 252.5(303.9) | 203(202.7) | | | | | | | 25.2(32.4) |
| FF75D, FF60G, FF44M | 384.5(435.9) | 305.5(356.9) | 256(234.7) | 113 | 42 0 -0.016 | 96 | | 12 | | 33.8(41.0) |
| FF75G | 439.5 | 326.5 | 277 | | | | | | | 38.5(45.7) |

## External Dimensisons of Servo Motor

### FG Series

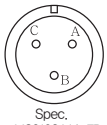
#### Plug Specifications

[Power]

Spec.
: MS3102A22-22P
(Standard)

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

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

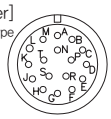


Spec.
: MS3102A14-7P
(Brake-attached type)

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| A | MA | M | – |
| B | $\overline{MA}$ | N | – |
| C | SLO | P | – |
| D | $\overline{SLO}$ | R | – |
| E | – | H | +5V |
| F | – | G | 0V |
| K | – | J | SHIELD |
| L | – | | |

(Single Turn Encoder Connector Pin Table)

[Encoder]
2)Serial type

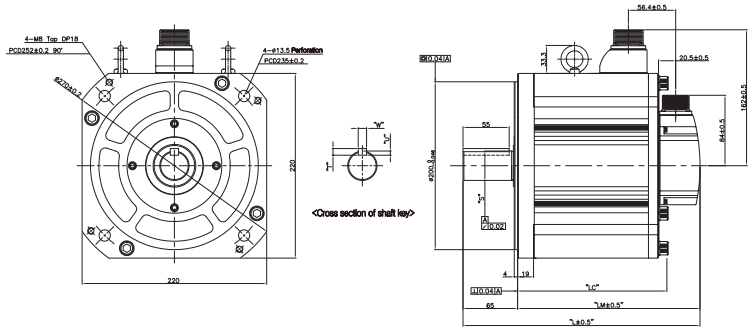


Spec.
: MS3102A20-29P

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

(Multi Turn Encoder Connector Pin Table)

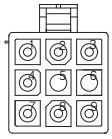
Note1) In case of SG, use DC[90V] for brake input power supply.
Note2) The ( ) is for brake-attached type.




| 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) |

### S Series Encoder Pin Map

#### SA, SB, SC Series

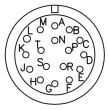


Plug Specification : 172169-1
(AMP)

| Single Turn (N) | | Multi Turn (M) | |
|---|---|---|---|
| Pin No. | Signal | Pin No. | Signal |
| 1 | MA | 1 | MA |
| 2 | $\overline{MA}$ | 2 | $\overline{MA}$ |
| 3 | SLO | 3 | SLO |
| 4 | $\overline{SLO}$ | 4 | $\overline{SLO}$ |
| 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



17 Pole Plug
(MS3102A20-29P)

| 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 | $\overline{MA}$ | N | – | B | $\overline{MA}$ | N | – |
| C | SLO | P | – | C | SLO | P | – |
| D | $\overline{SLO}$ | R | – | D | $\overline{SLO}$ | 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 | |
| 250 | 950×950×35 | |
| 280 | 950×950×35 | |

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

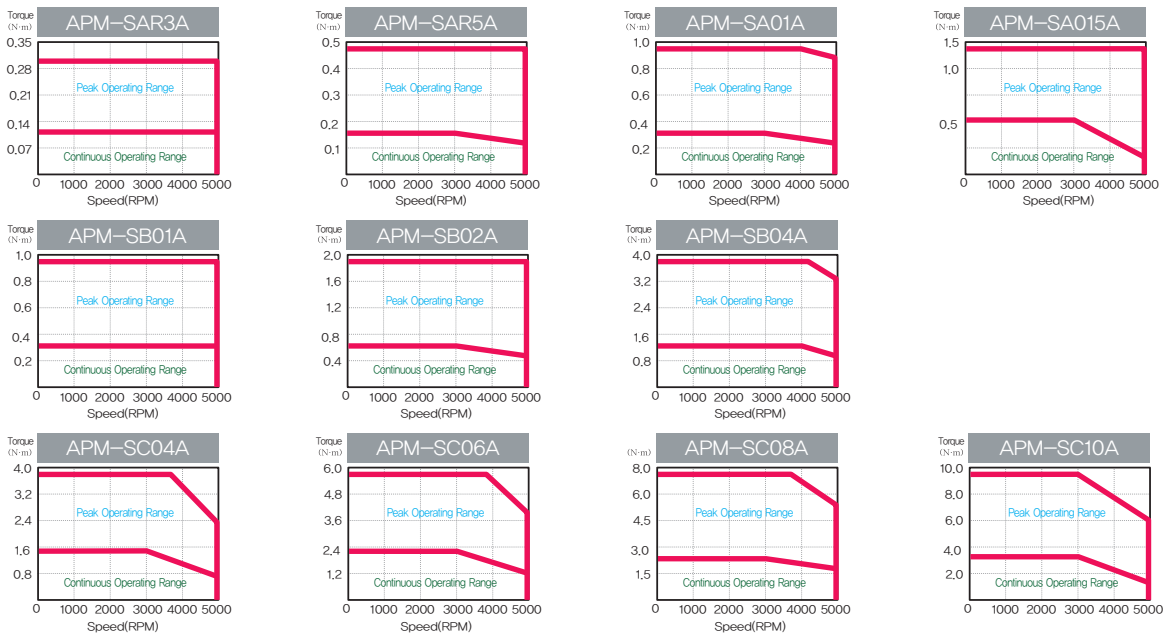
# Servo Motor Characteristics(S Series)

## 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(Note1) | Parallel, Type Incremental 2048[P/R] | | | | Parallel, Type Incremental 3000[P/R] | | | | | | |
| | Option | X | | | | 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 | Below 90[%](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 | Below 90[%](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

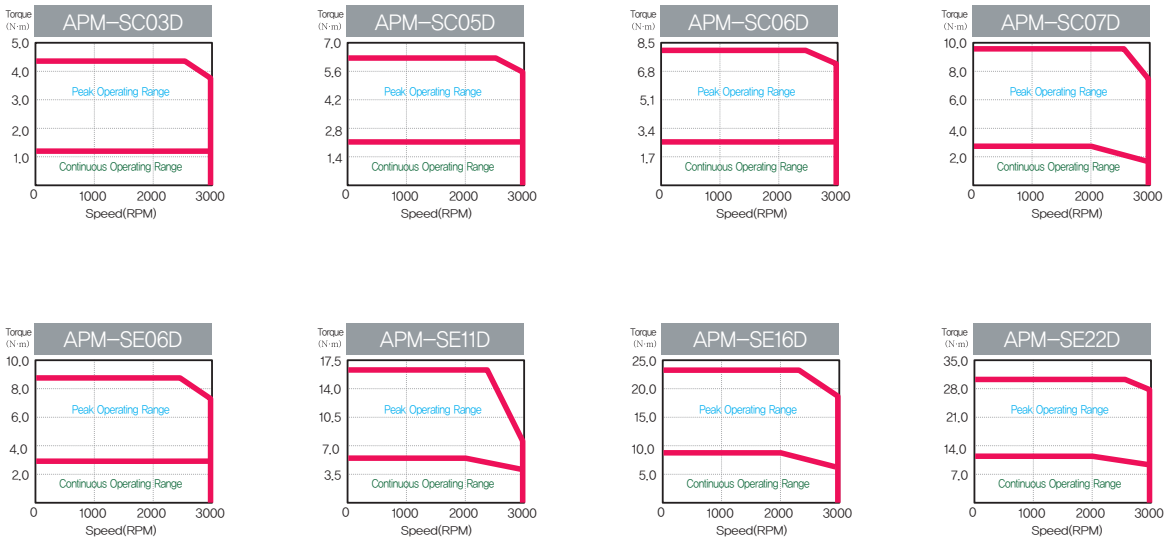
# Servo Motor Characteristics(S Series)

## 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 | Below 90[%](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



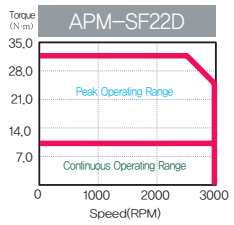
## Servo Motor Characteristics(S Series)

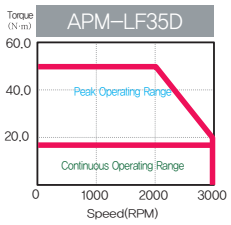
### Motor Specifications [Rated 2000r/min]

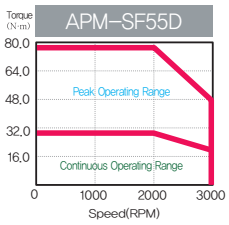
| Servo Motor (APM-□□□□) | | SF22D | LF35D | SF55D | SF75D | SG22D | LG35D | SG55D | SG75G |
|---|---|---|---|---|---|---|---|---|---|
| Applicable Drive | | L7□A020 | L7□A035 | L7□A050 | L7□A075 | L7□A020A | L7□A035A | L7□A050A | L7□A075A |
| Flange Size(□) | | □180 | | | | □220 | | | |
| Rated Output | [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 | Below 90[%](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 |

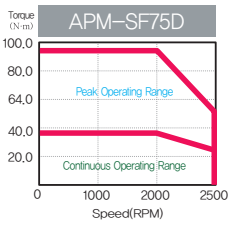
Note1) L7□A075 Servo Drive is Coming soon.

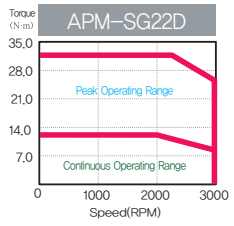
### Speed-Torque Characteristics

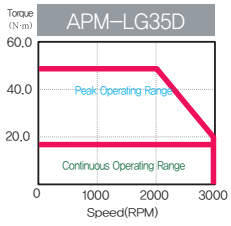


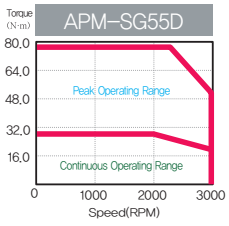



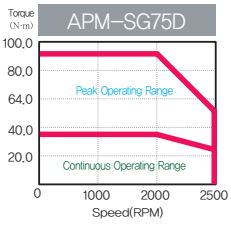



# Servo Motor Characteristics(S Series)

## 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×m²×10⁻⁴] | 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×s²] | 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 | Below 90[%](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[℃] Storage : -20 ~ 60[℃] | | | | | | | | | | | | |
| | Ambient Humidity | Below 90[%](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 | 17.0 | 22.0 | 30.8 | 37.5 | 66.2 |

Note1) L7□A075 Servo Drive is Coming soon.

### Speed-Torque Characteristics

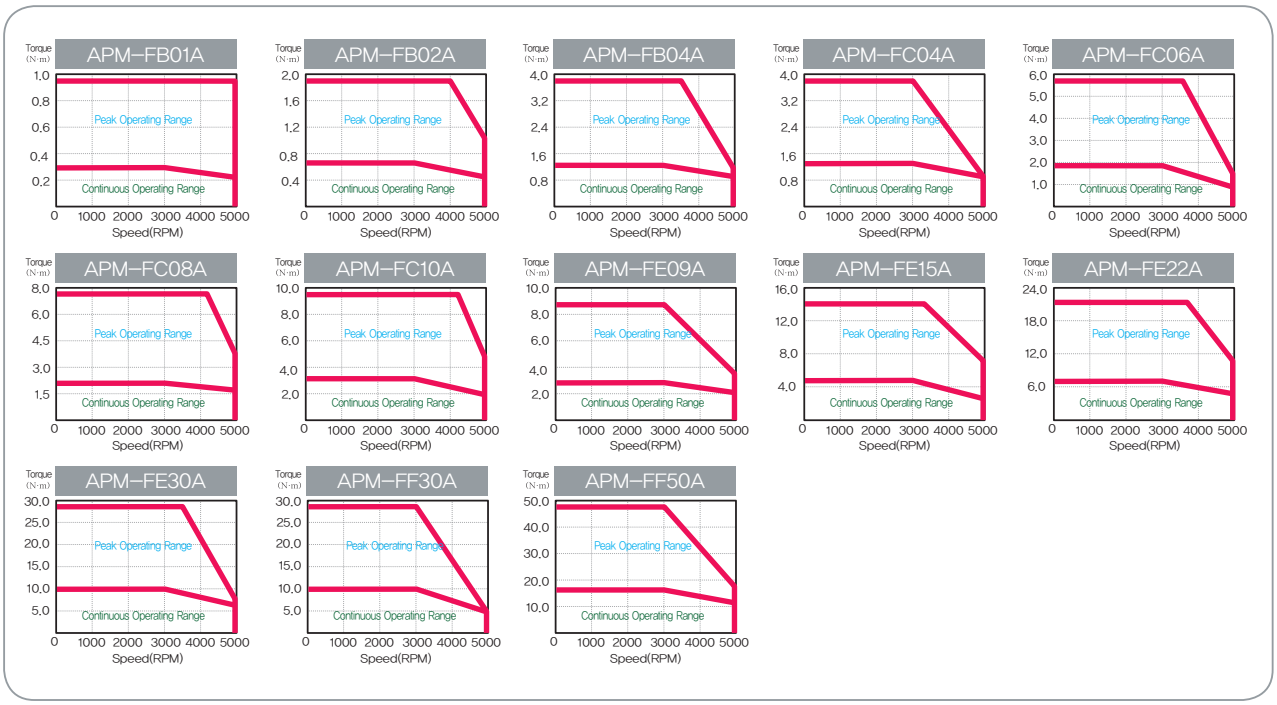
# Servo Motor Characteristics(F Series)

## 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 | 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 | 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 | 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 | 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 | 292.30 | 487.00 |
| Rated Speed | [r/min] | 3000 | | | | | | | | | | | | |
| Max. Speed | [r/min] | 5000 | | | | | | 4500 | 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 | 27.96 | 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 | 28.53 | 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 | 32.59 | 54.33 |
| 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[℃] Storage : -20 ~ 60[℃] | | | | | | | | | | | | |
| | Ambient Humidity | Below 90[%](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] | 0.72 | 0.94 | 1.32 | 1.56 | 2.18 | 2.72 | 3.80 | 5.04 | 6.74 | 8.48 | 10.05 | 12.5 | 17.4 |

Note1) L7□A075 Servo Drive is Coming soon.

## Speed-Torque Characteristics



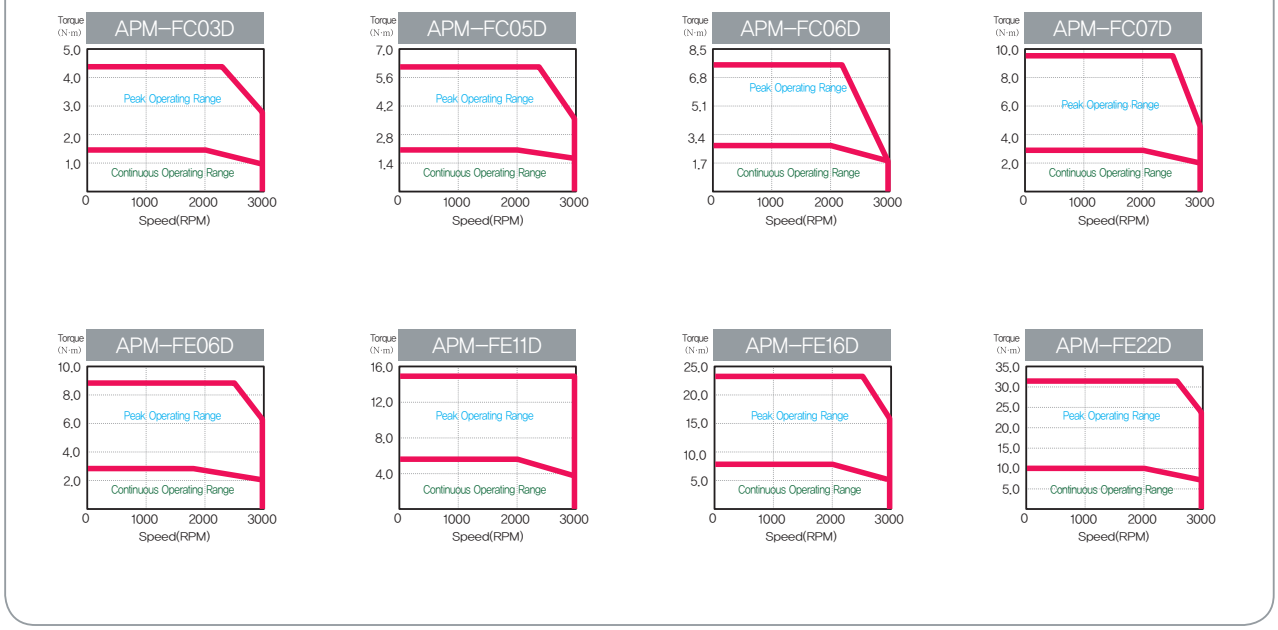
## Servo Motor Characteristics(F Series)

### 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(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[℃] Storage : -20 ~ 60[℃] | | | | | | | |
| | Ambient Humidity | Below 90[%](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×m²×10⁻⁴] | 27.96 | 46.56 | 73.85 | 106.70 | 41.13 | 71.53 | 117.72 | 149.40 |
| | [gf×cm×s²] | 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[℃] Storage : -20 ~ 60[℃] | | | | | | | |
| | Ambient Humidity | Below 90[%](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 |
| 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 | 6.0 |
| 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 | 38.20 |
| | [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 | 389.70 |
| 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 | 95.50 |
| | [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 | 974.30 |
| Rated Speed | [r/min] | 1500 | | | | | | | | | | | | |
| Max. Speed | [r/min] | 3000 | | | | | 2700 | 3000 | 2500 | 2200 | 3000 | 2700 | 3000 | 2500 |
| 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 | 149.40 |
| | [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 | 152.45 |
| 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 | 97.63 |
| 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[℃] Storage : -20 ~ 60[℃] | | | | | | | | | | | | |
| | Ambient Humidity | Below 90[%](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 | 38.5 | 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 1000r/min]

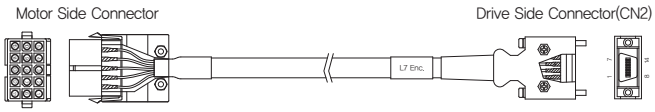
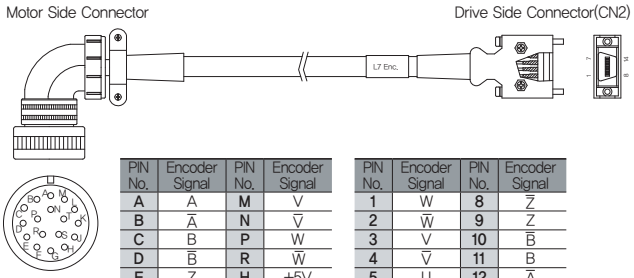
| Servo Motor (APM-□□□□) | | FE03M | FE06M | FE09M | FE12M | FF12M | FF20M | FF30M | FF44M | FG12M | FG20M | FG30M | FG44M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Applicable Drive | | L7□A004 | L7□A008 | L7□A010 | L7□A020 | | | L7□A035 | L7□A050 | L7□A020 | | L7□A035 | L7□A050 |
| 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×m²×10⁻⁴] | 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×s²] | 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[℃] Storage : -20 ~ 60[℃] | | | | | | | | | | | |
| | Ambient Humidity | Below 90[%](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 [Power 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 |  <br>〈Motor Side Connector〉<br>〈Driver Side Connector〉<br>1. Motor Side Connector<br>a. Cap Spec.(15 Position) : 172163-1(Made by AMP)<br>b. Socket Spec. : 170361-1(Made by AMP)<br>2. Driver Side Connector(CN2)<br>a. Case Spec. : 10314-52A0-008(Made by 3M)<br>b. Connector Spec. : 10114-3000VE(Made by 3M)<br>3. Cable Spec. : 7P×0.2SQ or 7P×AWG24 |
| 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 |  <br>〈Motor Side Connector〉<br>〈Driver Side Connector〉<br>1. Motor Side Connector(MS : Military Standard)<br>a. Plug Spec. : MS3108B20-29S<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314-52A0-008(Made by 3M)<br>b. Connector Spec. : 10114-3000VE(Made by 3M)<br>3. Cable Spec. : 7P×0.2SQ or 7P×AWG24 |




| PIN No. | Encoder Signal | PIN No. | Encoder 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 | $\overline{U}$ | | |

〈Motor Side Connector〉

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

〈Driver Side Connector〉

1. Motor Side Connector
   a. Cap Spec.(15 Position) : 172163-1(Made by AMP)
   b. Socket Spec. : 170361-1(Made by AMP)
2. Driver Side Connector(CN2)
   a. Case Spec. : 10314-52A0-008(Made by 3M)
   b. Connector Spec. : 10114-3000VE(Made by 3M)
3. Cable Spec. : 7P×0.2SQ or 7P×AWG24




| PIN No. | Encoder Signal | PIN No. | Encoder 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 | $\overline{U}$ | | |

〈Motor Side Connector〉

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

〈Driver Side Connector〉

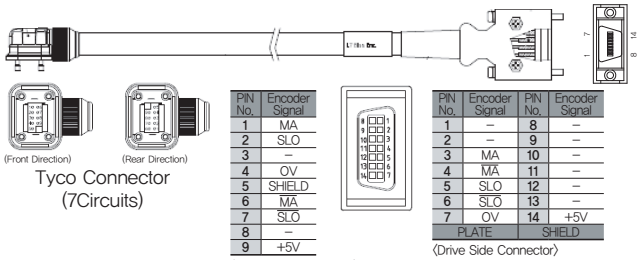
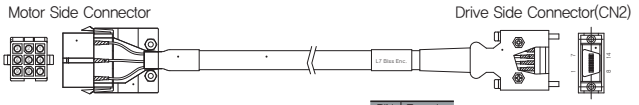
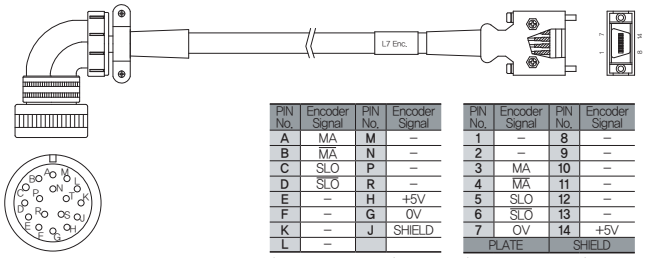
1. Motor Side Connector(MS : Military Standard)
   a. Plug Spec. : MS3108B20-29S
2. Drive Side Connector(CN2)
   a. Case Spec. : 10314-52A0-008(Made by 3M)
   b. Connector Spec. : 10114-3000VE(Made by 3M)
3. Cable Spec. : 7P×0.2SQ or 7P×AWG24

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]

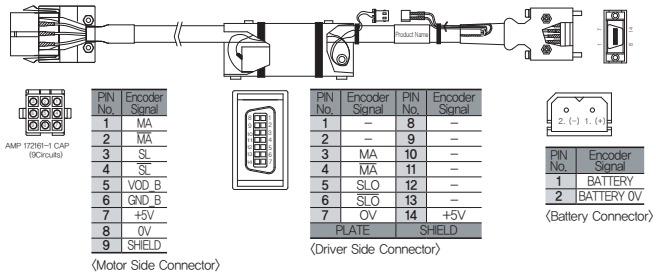
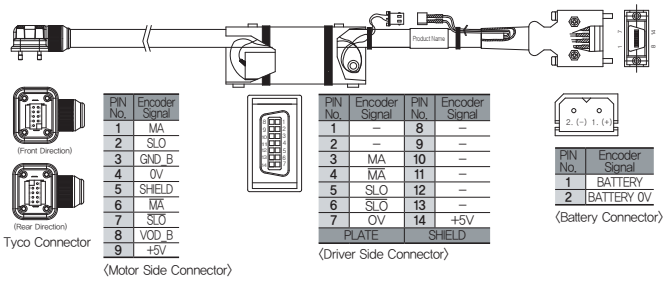
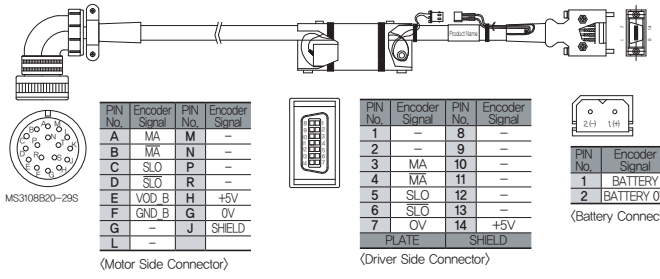
| Type | Product Type | Model Name (Note1) | Applicable Motor | Specifications |
|---|---|---|---|---|
| For Signal | Encoder Cable for Flat Motor (Small Capacity) | APCS–E□□□ES–□<br>Note)Model name for direction of Connector<br>Front : APCS–E□□□ES<br>Rear : APCS–E□□□ES–R | All Models of APM–FB APM–FC SERIES | Motor Side Connector / Drive Side Connector(CN2)<br>  <br>(Front Direction) (Rear Direction)<br>Tyco Connector (7Circuits)<br>〈Motor Side Connector〉 〈Drive Side Connector〉<br>1. Motor Side Connector<br>a. Cap Spec. : 2201825–1(Made by Tyco)<br>b. Socket Spec. : 2174065–4(Made by Tyco)<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314–52A0–008(Made by 3M)<br>b. Connector Spec. : 10114–3000VE(Made by 3M)<br>3. Cable Spec. : 4P×0.2SQ or 4P×24AWG |
| 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 / Drive Side Connector(CN2)<br>  <br>〈Motor Side Connector〉 〈Drive Side Connector〉<br>1. Motor Side Connector<br>a. Cap Spec.(9 Position) : 172161–1(Made by AMP)<br>b. Socket Spec. : 170361–1(Made by AMP)<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314–52A0–008(Made by 3M)<br>b. Connector Spec. : 10114–3000VE(Made by 3M)<br>3. Cable Spec. : 3P×0.2SQ or 3P×24AWG |
| 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 / Drive Side Connector(CN2)<br>  <br>〈Motor Side Connector〉 〈Drive Side Connector〉<br>1. Motor Side Connector(MS : Military Standard)<br>a. Plug Spec. : MS3108B20–29S<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314–52A0–008(Made by 3M)<br>b. Connector Spec. : 10114–3000VE(Made by 3M)<br>3. Cable Spec. : 4P×0.2SQ or 4P×24AWG |

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 |

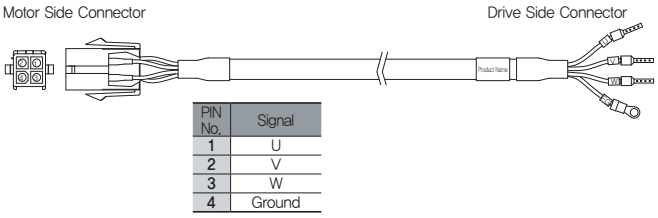
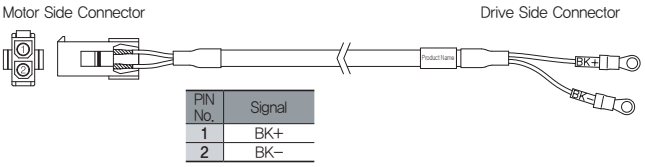
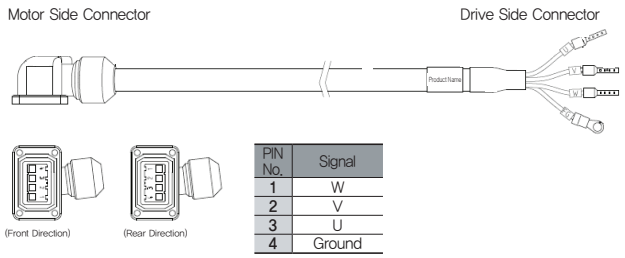
## Options and Peripherals

### 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 |  <br>〈Motor Side Connector〉<br>〈Driver Side Connector〉<br>〈Battery Connector〉<br>1. Motor Side Connector<br>a. Cap Spec.(9 Position) : 172161-1(Made by AMP)<br>b. Socket Spec. : 170361-1(Made by AMP)<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314-52A0-008(Made by 3M)<br>b. Connector Spec. : 10114-3000VE(Made by 3M)<br>3. Cable Spec. : 4P×0.2SQ or 4P×24AWG<br>4. Battery Connector Spec. : 5267-02A(Made by MOLEX) |
| For Signal | Encoder Cable for Multi-turn Serial Type (Small Capacity) | APCS-E□□□ES1-□<br>Note)Model name for direction of Connector<br>Front : APCS-E□□□ES1<br>Rear : APCS-E□□□ES1-R | All Models of APM-FB APM-FC SERIES |  <br>Tyco Connector<br>〈Motor Side Connector〉<br>〈Driver Side Connector〉<br>〈Battery Connector〉<br>1. Motor Side Connector<br>a. Cap Spec. : 2201825-1(Made by Tyco)<br>b. Socket Spec. : 2174065-4(Made by Tyco)<br>2. Drive Side Connector(CN2)<br>a. Cap Spec. : 10314-52A0-008(Made by 3M)<br>b. Connector Spec. : 10114-3000VE(Made by 3M)<br>3. Cable Spec. : 4P×0.2SQ or 4P×24AWG<br>4. Battery Connector Spec. : 5267-02A(Made by MOLEX) |
| 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 |  <br>〈Motor Side Connector〉<br>〈Driver Side Connector〉<br>〈Battery Connector〉<br>1. Motor Side Connector(MS : Military Standard)<br>a. Plug Spec. : MS3108B20-29S<br>2. Drive Side Connector(CN2)<br>a. Case Spec. : 10314-52A0-008(Made by 3M)<br>b. Connector Spec. : 10114-3000VE(Made by 3M)<br>3. Cable Spec. : 4P×0.2SQ(AWG24)<br>4. Battery Connector Spec. : 5267-02A(Made by MOLEX) |

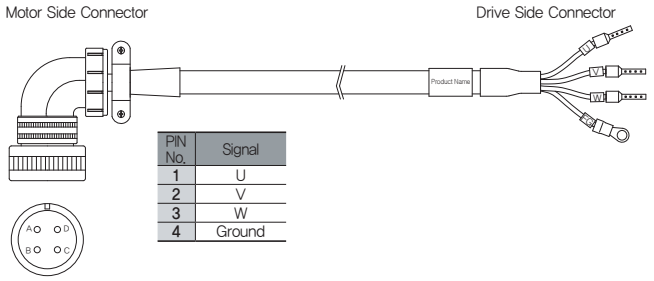
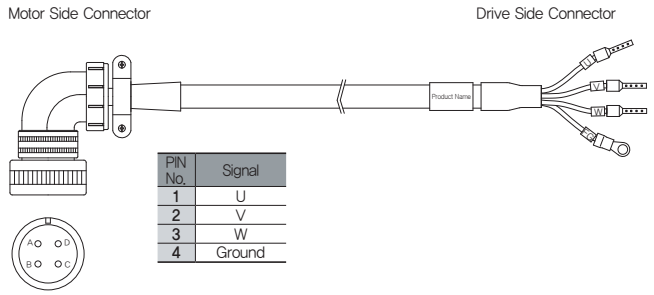
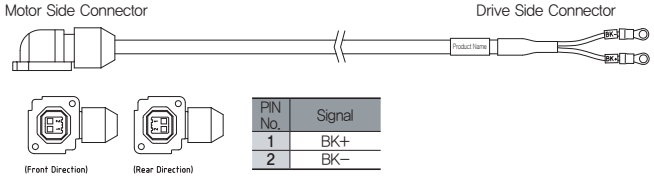
## Options and Peripherals

### 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 |  <br>PIN No. / Signal: 1 U; 2 V; 3 W; 4 Ground<br>1. Motor Side Connector<br>a. Cap Spec.(4 Position) : 172159–1(Made by AMP)<br>b. Socket Spec. : 170362–1(Made by AMP)<br>2. Drive Side Connector(U, V, W, FG)<br>a. U, V, W Pin Spec. : F1512<br>b. FG Pin Spec. : 1.54x4(Ring Terminal)<br>3. Cable Spec. : 4C×0.75SQ or 4C×18AWG |
| For Power | Brake Cable (Small Capacity) | APC–P□□□KB | All Models of APM–SA APM–SB APM–SC SERIES |  <br>PIN No. / Signal: 1 BK+; 2 BK–<br>1. Motor Side Connector<br>a. Cap Spec.(2 Position) : 172157–1(Made by AMP)<br>b. Socket Spec. : 170362–1(Made by AMP)<br>2. Drive Side Connector<br>a. Connecting terminal Spec. : 1.5–3(Rling Terminal)<br>3. Cable Spec. : 2C×0.75SQ or 2C×18AWG |
| For Power | Power Cable for Flat Motor (Small Capacity) | APCS–P□□□FS–□<br>Note)Model name for direction of Connector<br>Front : APCS–E□□□ES<br>Rear : APCS–E□□□FS–R | All Models of APM–FB APM–FC SERIES |  <br>PIN No. / Signal: 1 W; 2 V; 3 U; 4 Ground<br>1. Motor Side Connector<br>a. Plug Spec. : KN5FT04SJ1(Made by JAE)<br>b. Socket Spec. : ST–KN–S–C1B–3500(Made by JAE)<br>2. Drive Side Connector(U, V, W, FG)<br>a. U, V, W Pin Spec. : F1512<br>b. FG Pin Spec. : 1.5×4(Ring Terminal)<br>3. Cable Spec. : 4C×0.75SQ or 4C 18AWG |

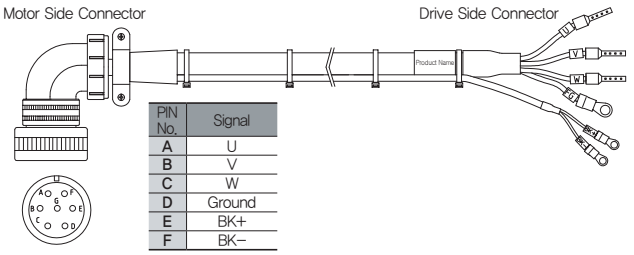
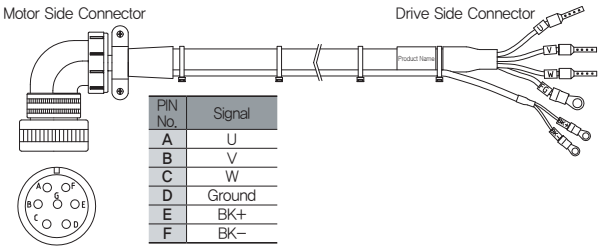
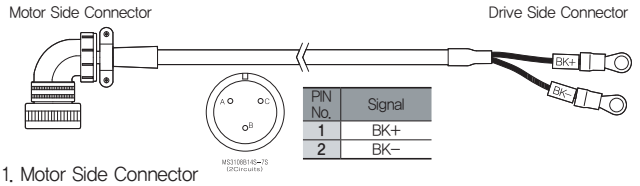
## Options and Peripherals

### Specifications for Options [Power Cable]

| Type | Product Type | Model Name(Note1) | Applicable Motor | Specifications |
|---|---|---|---|---|
| For Power | Power Cable (Middle Capacity) | APCS-P□□□HS | All Models of APM-SE APM-FE APM-HE SERIES |  <br>PIN No. / Signal<br>1 U<br>2 V<br>3 W<br>4 Ground<br>1. Motor Side Connector<br>a. Plug Spec. : MS3108B20-4S(Made by MS)<br>2. Drive Side Connector<br>a. U, V, W Pin Spec. : F2512<br>b. FG Pin Spec. : 2.5×4(Ring Terminal)<br>3. Cable Spec. : 4C×2.55SQ or 4C14AWG |
| For Power | Power Cable (Middle Capacity) | APCS-P□□□IS | All Models of APM-SF APM-SG APM-LF APM-LG APM-FF APM-FG SERIES<br>Note) Models of 3.5kW or below |  <br>PIN No. / Signal<br>1 U<br>2 V<br>3 W<br>4 Ground<br>1. Motor Side Connector<br>a. Plug Spec. : MS3108B22-22S(Made by MS)<br>2. Drive Side Connector<br>a. U, V, W Pin Spec. : F2512<br>b. FG Pin Spec. : 2.5×4(Ring Terminal)<br>3. Cable Spec. : 4C×2.55SQ or 4C14AWG |
| For Power | Brake Cable for Flat Motor (Small Capacity) | APCS-B□□□QS-□ | All Models of APM-FB APM-FC SERIES<br>Note)Model name for direction of Connector<br>Front : APCS-B□□□QS<br>Rear : APCS-B□□□QS-R |  <br>PIN No. / Signal<br>1 BK+<br>2 BK-<br>1. Motor Side Connector<br>a. Plug Spec. : KN5FT02SJ1<br>b. Socket Spec. : ST-KN-S-C1B-3500<br>2. Drive Side Connector<br>a. Connecting terminal Spec. : 1.5×3<br>3. Cable Spec. : 2C×0.75SQ or 2C×18AWG |

## Options and Peripherals

### Specifications for Options [Power Cable]

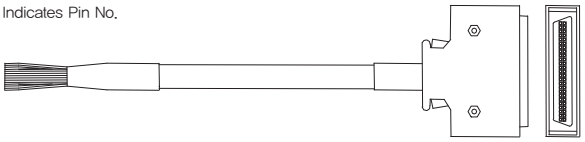
| Type | Product Type | Model Name (Note1) | Applicable Motor | Specifications |
|---|---|---|---|---|
| For Power | Power Cable (Brake Type) | APCS–P□□□NB | All Models of APM–SE APM–FE SERIES |  <br>1. Motor Side Connector<br>a. Plug Spec. : MS3108B20–15S(Made by MS)<br>2. Drive Side Connector<br>a. U, V, W Pin Spec. : F2012<br>b. Cable Spec. : 4C×2.5SQ or 4C×14AWG<br>c. FG Pin Spec. : 2.5×4(Ring Terminal)<br>3. Brake Power Connector<br>a. BK Pin Spec. : 1.5×3(Ring Terminal)<br>b. Cable Spec. : 2C×0.75SQ or 2C×18AWG |
| For Power | Power Cable (Brake Type) | APCS–P□□□PB | All Models of APM–SF APM–SG APM–LF APM–LG APM–FF APM–FG SERIES<br>Note) Models of 3.5kW or below |  <br>1. Motor Side Connector<br>a. PLUG Spec. : MS3108B24–10S(Made by MS)<br>2. Drive Side Connector<br>a. U, V, W Pin Spec. : F2512<br>b. Cable Spec. : 4C×2.5SQ or 4C×2.5AWG<br>c. FG Pin Spec. : 2.5×4(Ring Terminal)<br>3. Brake Power Connector<br>a. BK Pin Spec. : 1.5×3(Ring Terminal)<br>b. Cable Spec. : 2C×0.75S or 2C×18AWG |
| For Power | Power Cable (Brake Type) | APC–P□□□SB | All Models of APM–SG APM–LG APM–FG SERIES |  <br>1. Motor Side Connector<br>a. PLUG Spec. : MS3108B 14S–7S(Made by MS)<br>2. Drive Side Connector<br>a. Connecting terminal Spec. : 1.5×3(Ring Terminal)<br>3. Cable Spec. : 2C×0.75SQ or 2C×19AWG |

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]

<table>
<tr><th>Type</th><th>Product Type</th><th>Model Name(Note1)</th><th>Applicable Motor</th><th>Specifications</th></tr>
<tr><td rowspan="2">For Signal</td><td>CN1 Cable</td><td>APC–<br>CN1□□A</td><td>L7S SERIES</td><td rowspan="2">[Upper Controller] [Drive Side Connector CN1]<br>Indicates Pin No.<br>  <br>1. Drive Side Connector(CN1)<br>a. Case Spec. : 10350–52A0–008(Made by 3M)<br>b. Connector Spec. : 10150–3000VE(Made by 3M)<br>c. Cable Spec. : 20276–SB 25P(AWG28)</td></tr>
<tr><td colspan="3">〈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>TRQCOM</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>
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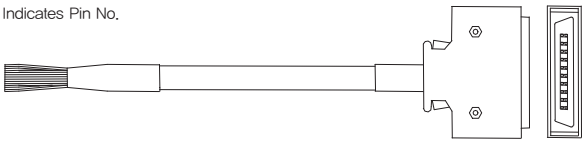
<tr><td>4</td><td>ZO</td><td>14</td><td>GAIN2(SEN)</td><td>24</td><td>GND</td><td>34</td><td>+15V</td><td>44</td><td>BRAKE</td></tr>
<tr><td>5</td><td>/ZO</td><td>15</td><td>PCLEAR</td><td>25</td><td>GND</td><td>35</td><td>–15V</td><td>45</td><td>INSPD/INPOS</td></tr>
<tr><td>6</td><td>SRO</td><td>16</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>GNDA</td><td>47</td><td>SVON</td></tr>
<tr><td>8</td><td>GNDA</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></td></tr>
<tr><td rowspan="2">For Signal</td><td>CN1 Cable</td><td>APCS–<br>CN1□□A</td><td>L7N SERIES</td><td rowspan="2">[Upper Controller] [Drive Side Connector CN1]<br>Indicates Pin No.<br>  <br>1. Drive Side Connector(CN1)<br>a. Case Spec. : 10320–52A0–008(Made by 3M)<br>b. Connector Spec. : 10120–3000VE(Made by 3M)</td></tr>
<tr><td colspan="3">〈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>
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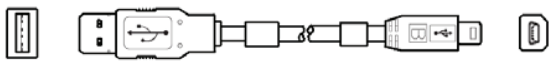
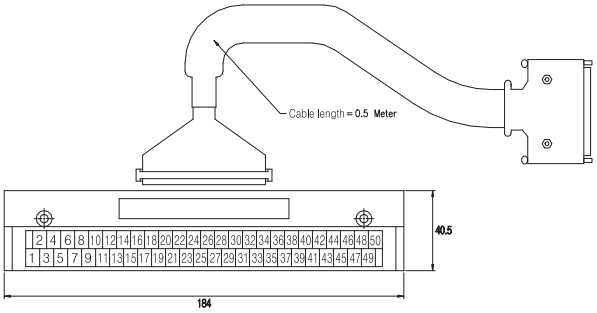
<tr><td>4</td><td>ALARM–</td><td>9</td><td>PROBE1</td><td>14</td><td>DI2</td><td>19</td><td>DO1+</td></tr>
<tr><td>5</td><td>Spare Pin</td><td>10</td><td>PROBE2</td><td>15</td><td>Spare Pin</td><td>20</td><td>DO1–</td></tr>
</table></td></tr>
<tr><td>For Signal</td><td>Communication Cable</td><td>APCS–<br>CN5L7U</td><td>All Models of L7 SERIES</td><td>[PC – USB Port] [Servo Drive – CN5]<br>  <br>1. PC Side Connector : USB A Plug<br>2. Drive Side Connector(CN5) : Mini USB 5P Plug<br>3. Electric Requirements Spec. :<br>Double shielded, Twisted Pair, EMI–filter attached type<br>(Ex. : KU–AMB518, Made by SANWA)</td></tr>
</table>

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]

<table>
<tr><th>Type</th><th>Product Type</th><th>Model Name(Note1)</th><th>Applicable Motor</th><th>Specifications</th></tr>
<tr><td rowspan="3">T/B</td><td>CN1<br>T/B</td><td>APC–<br>VSCN1T<br>–□□</td><td>L7S SERIES</td><td rowspan="2"> 

1. Extended CN1 T/B for VS/L7S<br>2. Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m], 3[m]</td></tr>
<tr><td colspan="3">〈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>
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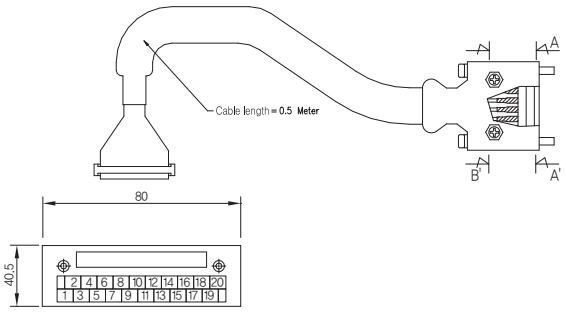
</table></td></tr>
<tr><td>CN1<br>T/B</td><td>APCS–<br>L7NCN1T<br>–□□</td><td>L7N SERIES</td><td> 

1. Extended CN1 T/B for L7N<br>2. Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m]</td></tr>
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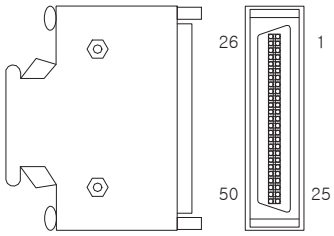
</table></td><td colspan="3"></td></tr>
<tr><td>CN</td><td>CN1<br>Connector</td><td>APC–<br>CN1NNA</td><td>L7S SERIES</td><td> 

1. Case Spec. : 10350–52A0–008(Made by 3M)<br>2. Connector Spec. : 10150–3000VE(Made by 3M)</td></tr>
</table>

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

**＊APC–VSCN1T**

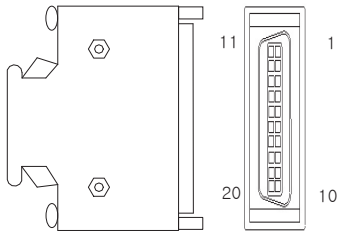
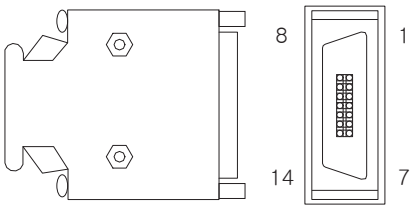
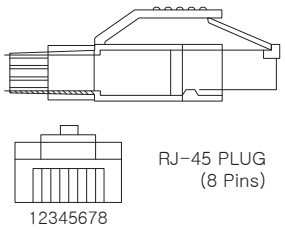
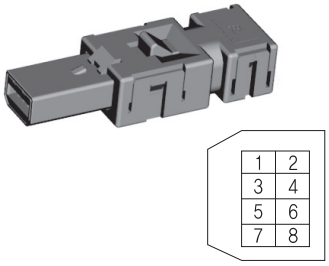
| Cable Length(m) | 0.5 | 1 | 1.5 | 2 | 3 |
|---|---|---|---|---|---|
| Declaration | None | 03 | 04 | 01 | 02 |

**＊APCS–L7NCN1T**

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

## Options and Peripherals

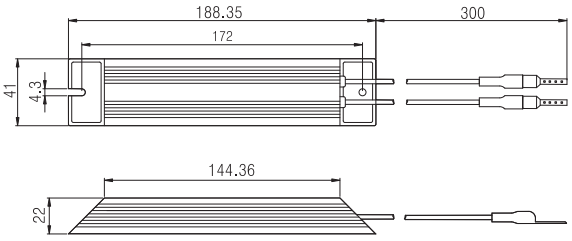
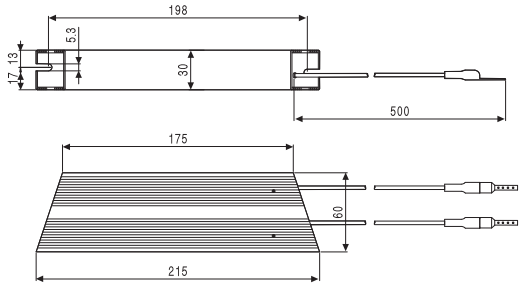
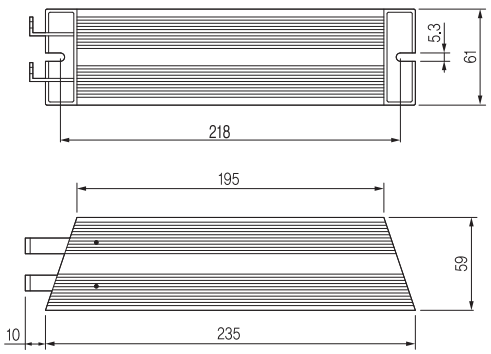
### Specifications for Options [Connector]

| Type | Product Type | Model Name | Applicable Motor | Specifications |
|---|---|---|---|---|
| CN | CN1 Connector | APC-CN2NNA | L7N SERIES |  <br>1. Case Spec. : 10320-52A0-008(Made by 3M)<br>2. Connector Spec. : 10120-3000VE(Made by 3M) |
| CN | CN2 Connector | APC-CN3NNA | All Models of L7 SERIES |  <br>1. Case Spec. : 10314-52A0-008(Made by 3M)<br>2. Connector Spec. : 10114-3000VE(Made by 3M) |
| CN | CN3 CN4 EtherCAT Connector | APCS-CN4NNA | L7N SERIES |  <br>RJ-45 PLUG (8 Pins)<br>PIN No. / Signal / Color<br>1 TX/RX0 Plus White/Orange<br>2 TX/RX0 Minus Orange<br>3 TX/RX1 Plus White/Orange<br>4 TX/RX2 Plus Blue<br>5 TX/RX2 Minus White/Blue<br>6 TX/RX1 Minus Rreen<br>7 TX/RX3 Plus White/Brown<br>8 TX/RX3 Minus Brown<br>Plate SHILDE<br>**Note)** EtherCAT use only 4wires(1, 2, 3, 6) |
| CN | CN6 Connector | APCS-CN6J | L7N SERIES |  <br>PIN No. / I/O Signal<br>1 NC<br>2 NC<br>3 HWBB1-<br>4 HWBB1+<br>5 HWBB2-<br>6 HWBB2+<br>7 EDM+<br>8 EDM-<br>1. Spec. : 2040008-1(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 Motor | Specifications |
|---|---|---|---|---|
| Resistor | Braking Resistor | APCS–140R50 | L7□A001□<br>L7□A002□<br>L7□A004□ |  <br>IRH 140W 50ohm |
| Resistor | Braking Resistor | APCS–300R30 | L7□A008□<br>L7□A010□ |  <br>IRV 300W 30ohm |
| Resistor | Braking Resistor | APC–600R30 | L7□A020□<br>L7□A035□ |  |
| | | APC–600R28 | L7□A050□<br>(4P) | IRV 600S 30ohm<br>* L7□A020□ – 2pcs<br>(Parallel Connection)<br>L7□A030□ – 3pcs<br>(Parallel Connection)<br><br>IRV 600S 28ohm<br>* L7□A050□ – 4pcs<br>(Parallel Connection)<br><br>**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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