



The World Class Leader in Automation System
Your Best Choice For Total Solution



L7 Drive

LS Mecapion's

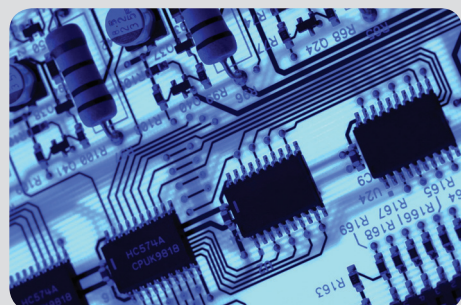
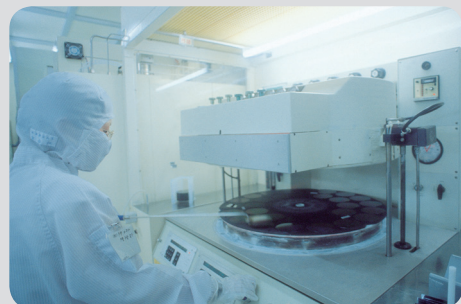
L7 Series will be the Best Partner for your Future Vision

Your reasonable selection for Total Solution



Contents

- 04 Characteristics of L7 Series
- 08 Introduction of L7N Drive (EtheCAT)
- 10 Servo Motor & Drive Designations
- 12 Servo Drive
- 14 External Dimensions of Servo Drive
- 16 External Dimensions of Servo Motor
- 21 Servo Motor Characteristics
- 28 Options and Peripherals



L7 SERIES SYSTEM

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

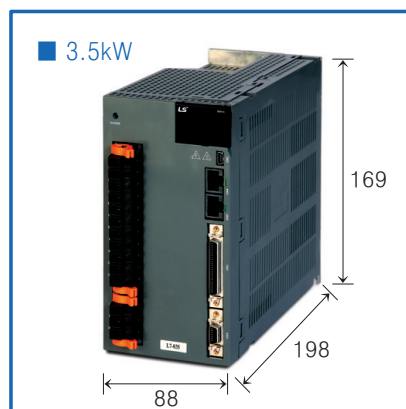
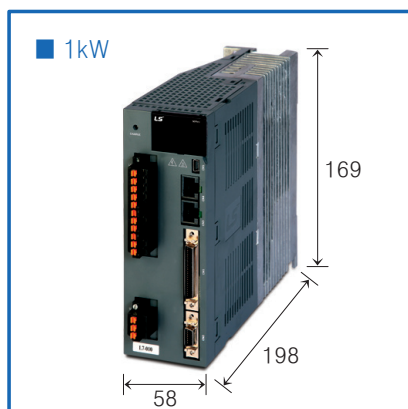
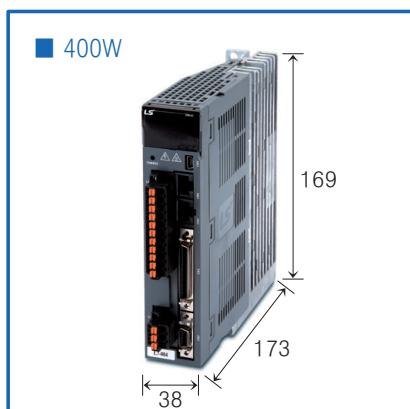
Max
52%
Slim

Compared with
competitor's drive

Max
5%
Slim

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

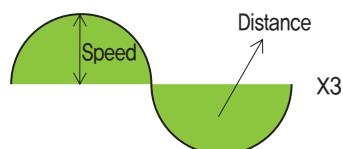
– Downsize Machine with Compact and Slim Design



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-Directional 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

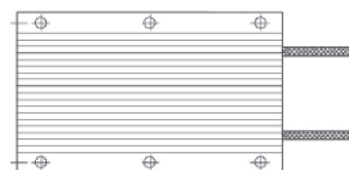
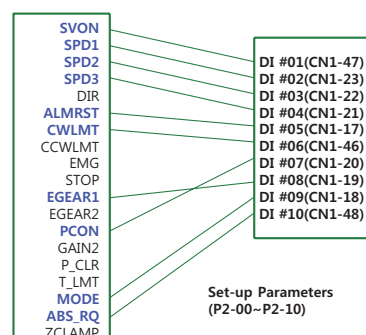
Characteristics of L7 Series

□ Easy Setting with Built-in Panel 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

L7 SERIES SYSTEM

Characteristics of L7 Series

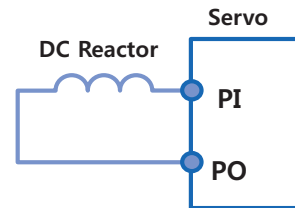
Reliability

□ 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 (Planned : 2012. 2Q)

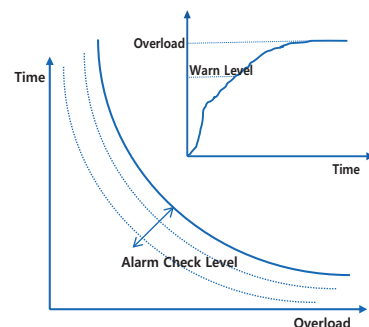


□ Upgraded Protection Function(I)

- 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 (~19Bit)

- 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

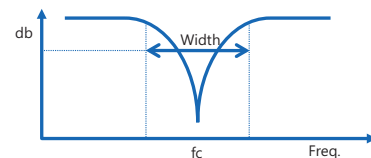
□ Improved Speed Response Frequency

- About 1kHz
- Reduced Positioning Time

Intelligent Control

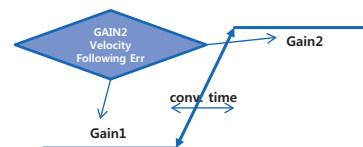
□ Notch Filter for Resonance Control

- Available Setting Frequency(P1-18) and Width(P1-19)



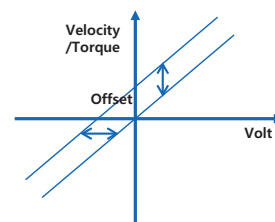
□ Various Gain Switching Mode for Improved Control Functions

- 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

L7 SERIES SYSTEM

Characteristics of L7 Series

Motion Network Type(EtherCAT) – L7N Series

□ High Performance

- High speed, Real-time capability and Synchronization mechanism

□ Open Network

- Global open protocol (> 1600 world wide members)

□ Cost Effective

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

□ Easy to Use

- Versatile topology, Diagnostics

□ L7 Drive with Built-in EtherCAT Interface

- 100BASE-TX(100Mbps) ethernet based real-time communication
- Support CiA402(IEC61800-7) drive profile
- Interoperability
- Max. 100m between nodes
- Have a precise synchronization mechanism(<1us)
- Freely settable process data length and mapping
- Four status indication LEDs(L/A0, L/A1, RUN, ERR)
- Standard RJ45 connector and cabling(CAT5)
- Have intrinsic functions of L7S series(same size)
- Support various homing modes
- Support full-closed control(2012' 2Q planned)

□ Support various operation modes

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

□ Safe Torque Off function

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

□ Versatile I/O assignment by parameters

- 6 inputs, 4 outputs

□ High speed position capture function

- Touch probe function(PROBE1, PROBE2)

□ Provide specialized commissioning tools by LSIS 's XGT PLC

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

□ Have conformity of EtherCAT device

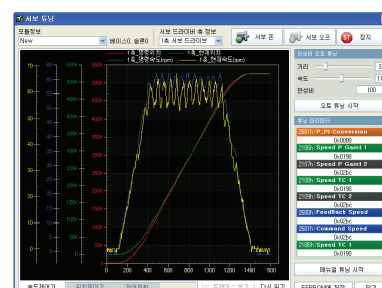
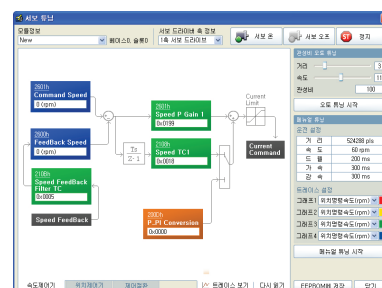
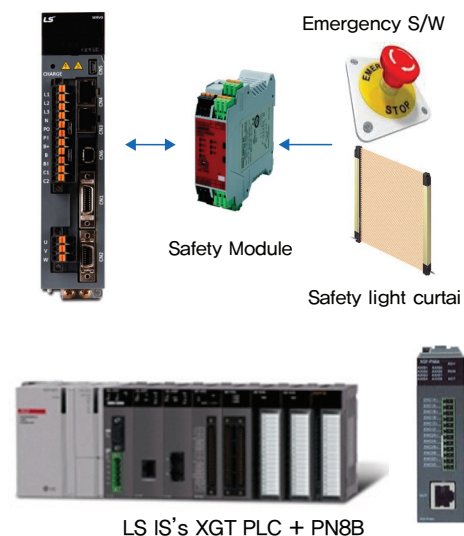
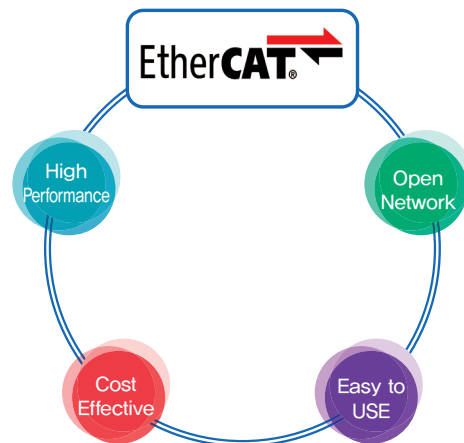
- In-house test using CTT(Conformance Test Tool)

□ Support scaling objects for position, velocity and acceleration

- Numerator and denominator

□ Provide Gain Tuning Tools and Commissioning Packages

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





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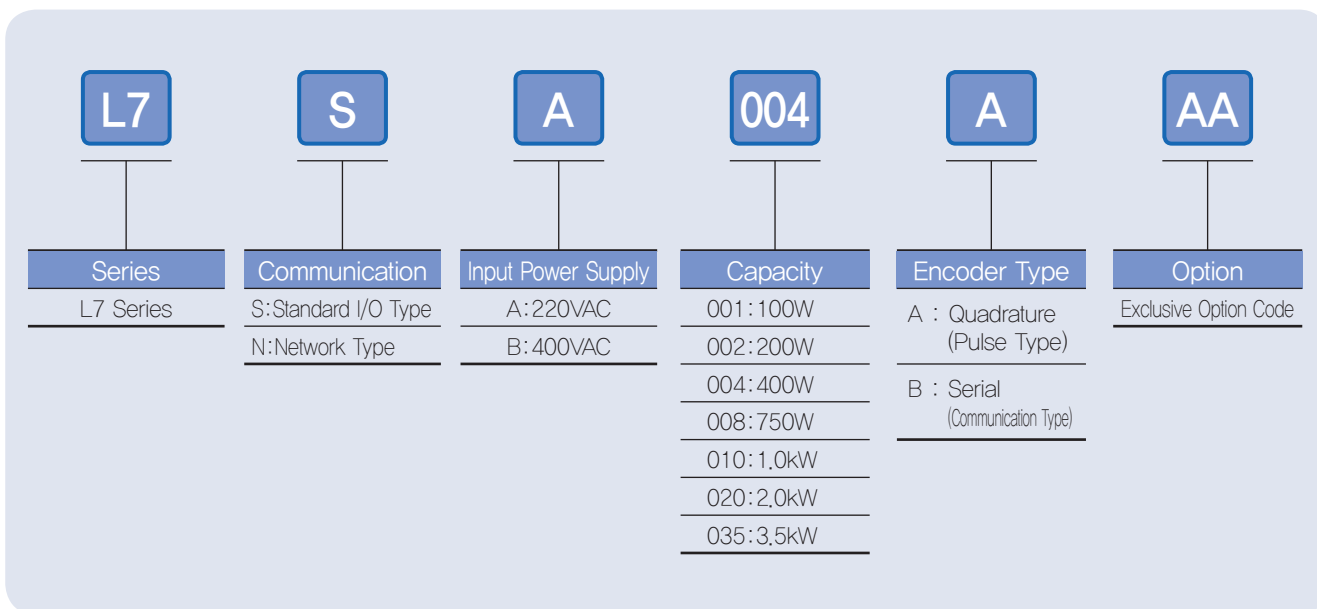
We will provide you the Total Solution for Price, Lead-time, Performance, Reliability, and Technical support at once.



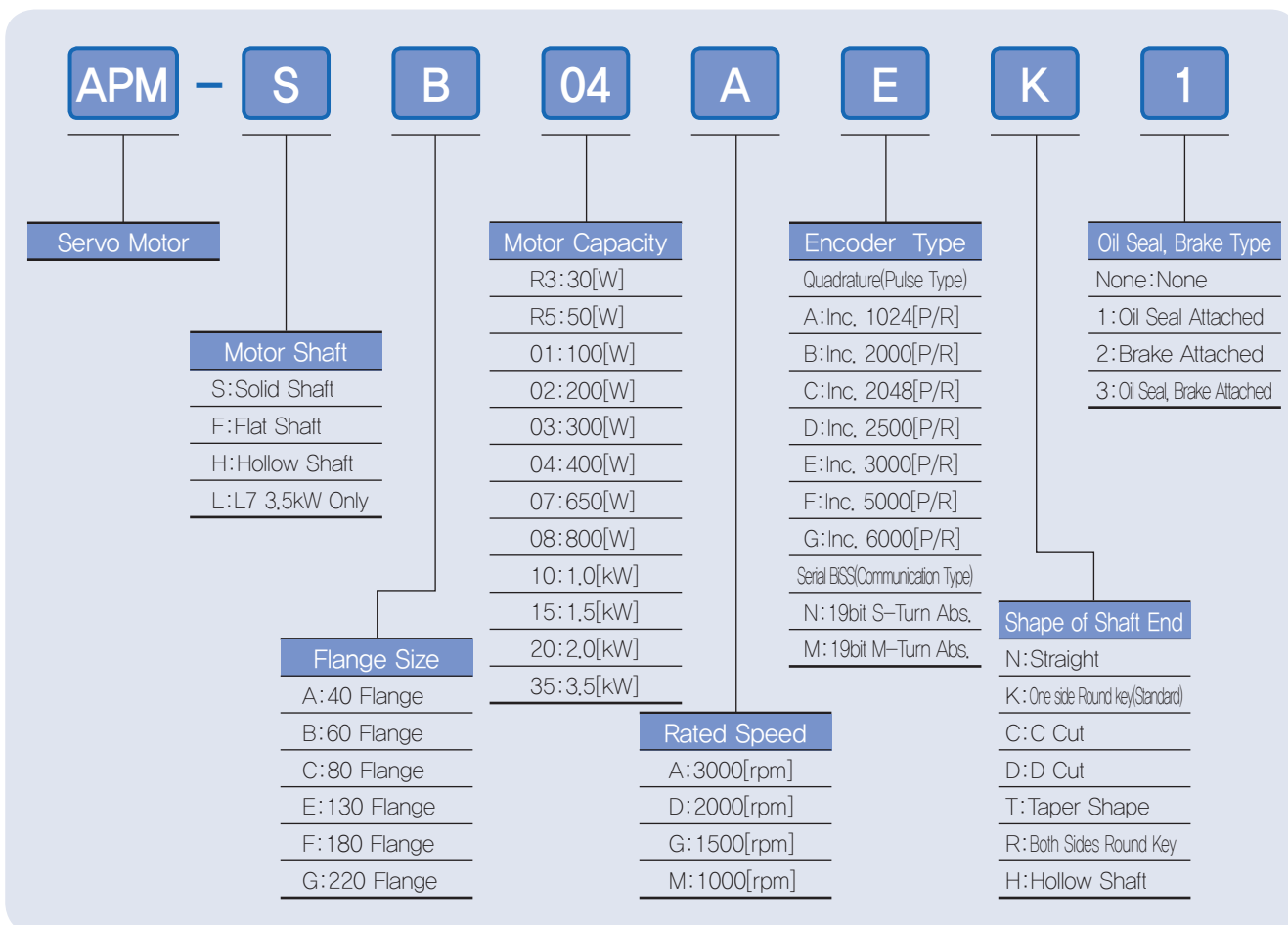
L7 SERIES SYSTEM

Servo Motor & Drive Designations

↳ Servo Drive Designation



↳ Servo Motor Designation



Servo Motor & Drive Designations

Servo Motor & Drive Selection Table

■ Standard type

Rated Speed (rpm)	Max. Speed (rpm)	Flange Size	Motor (APM)	Drive	Encoder Type		IP Grade				
					Incremental Type	Serial Type					
3,000	5,000	□ 40	SAR3A	L7 □ A001	* 2,048P/R	* Under Development	IP55				
		□ 40	SAR5A	L7 □ A001							
		□ 40	SA01A	L7 □ A001							
		□ 40	SA015A	L7 □ A002							
		□ 60	SB01A	L7 □ A002	* 2,500P/R	* Not Available					
		□ 60	SB02A	L7 □ A002							
		□ 60	SB04A	L7 □ A004							
		□ 80	SC04A	L7 □ A004							
		□ 80	SC06A	L7 □ A008							
		□ 80	SC08A	L7 □ A010							
		□ 80	SC10A	L7 □ A010							
		□ 130	SE09A	L7 □ A010							
		□ 130	SE15A	L7 □ A020	* 3,000P/R	* 19Bit Serial ABS					
		□ 130	SE22A	L7 □ A020							
		□ 130	SE30A	L7 □ A035							
		□ 180	SF30A	L7 □ A035							
2,000	3,000	□ 80	SC03D	L7 □ A004	* 2,500P/R	* Not Available	IP65				
		□ 80	SC05D	L7 □ A008							
		□ 80	SC06D	L7 □ A008							
		□ 80	SC07D	L7 □ A008							
		□ 130	SE06D	L7 □ A008		* 19Bit Serial ABS					
		□ 130	SE11D	L7 □ A010							
		□ 130	SE16D	L7 □ A020							
		□ 130	SE22D	L7 □ A020							
		□ 180	SF22D	L7 □ A020							
		□ 180	LF35D	L7 □ A035							
		□ 220	SG22D	L7 □ A020							
		□ 220	LG35D	L7 □ A035							
		1,500	3,000	□ 130				SE05G	L7 □ A008	* 3,000P/R	* 19Bit Serial ABS
				□ 130				SE09G	L7 □ A010		
				□ 130				SE13G	L7 □ A020		
				□ 130				SE17G	L7 □ A020		
□ 180	SF20G			L7 □ A035							
□ 180	LF30G			L7 □ A035							
□ 220	SG20G			L7 □ A020							
□ 220	LG30G			L7 □ A035							
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							
		□ 220	SG12M	L7 □ A020							
		□ 220	SG20M	L7 □ A035							
		□ 220	LG30M	L7 □ A035							
1,000	2,000	□ 60	HB01A	L7 □ A001	* 1,024P/R	* Not Available	IP55				
		□ 60	HB02A	L7 □ A002							
		□ 60	HB04A	L7 □ A004	* 2,048P/R						
		□ 130	HE09A	L7 □ A010							
		□ 130	HE15A	L7 □ A020							

* 15 wires for Incremental Encoder, and 9 wires for Serial Encoder

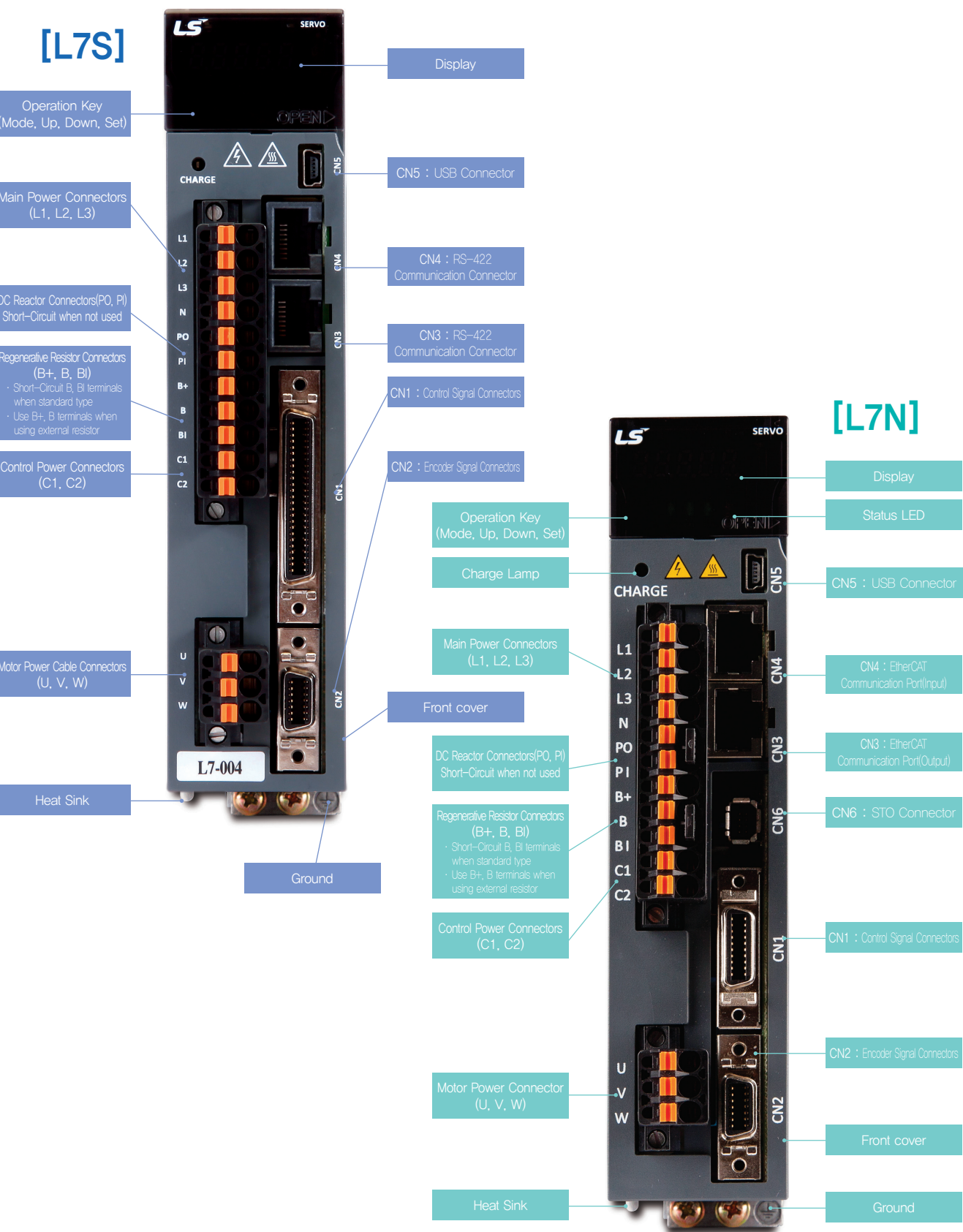
■ Flat Type

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	IP67
		□60	FB02A	L7□A002		
		□60	FB04A	L7□A004		
		□80	FC04A	L7□A004		
		□80	FC06A	L7□A008		
		□80	FC08A	L7□A010		
		□80	FC10A	L7□A010		
2,000	3,000	□80	FC03D	L7□A004		
		□80	FC05D	L7□A008		
		□80	FC06D	L7□A008		
		□80	FC07D	L7□A008		

L7 SERIES SYSTEM

Servo Drive

Identifying the Parts of L7



Servo Drive

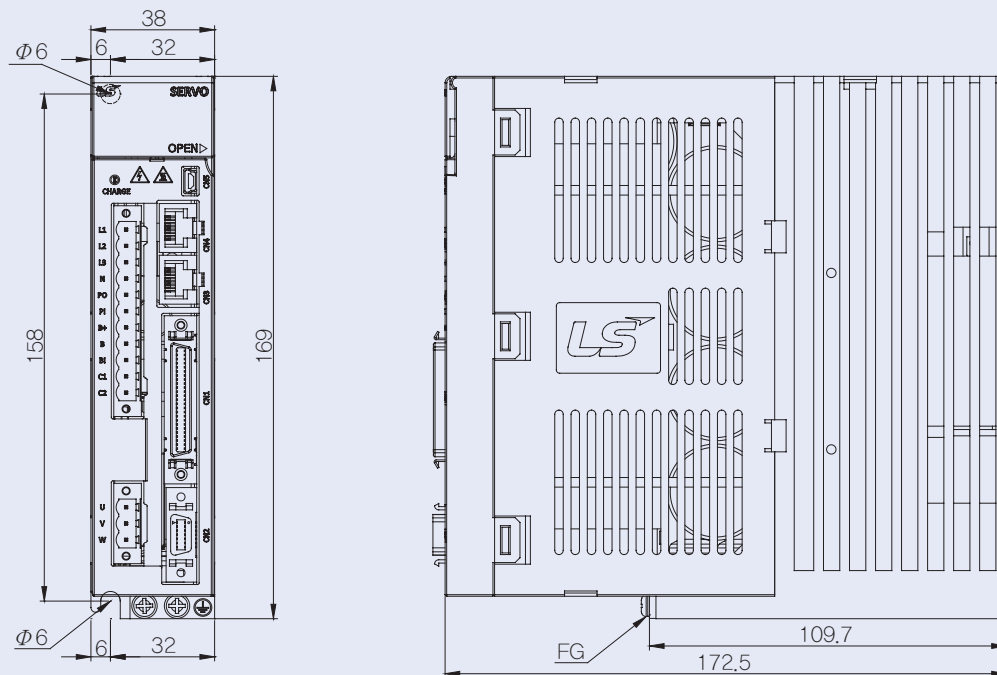
Product Features

Model			L7SA001□	L7SA002□	L7S004□	L7S008□	L7SA010□	L7SA020□	L7SA035□	
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			Quad, Type Incremental Line Driver Max 10000[P/R] Serial Type 19Bit							
Performance	Speed Control	Speed Control Range	Max. 1 : 5000							
		Frequency Response	Max. 1[kHz] or above (When using 19bit Serial Encoder)							
		Speed Command	DC−10[V]~+10[V] (Reverse rotation in case of − voltage)							
		Accel/Decel Time	Linear or S–Shape Accel/Decel. (0~10,000[ms], Setting 1[ms] is possible)							
		Speed Variation Ratio	±0.01[%] or less [at Load variation 0 ~ 100%] ±0.1[%] or less [at Temp. 25±10°C]							
	Position Control	Input Frequency	1[Mpps], Line Driver / 200[kpps], Open Collector							
		Input Pulse Type	+Pulse, CW+CCW, A/B Phase							
		Electric Gear Ratio	Setting and selecting 4 digital electric gear ratio, Precise adjustment is possible							
	Torque Control	Torque Command	DC −10 ~ +10[V] (Reverse rotation in case of − voltage)							
		Speed Limit	DC 0 ~ +10[V], within ±1[%] of internal speed command							
		Repeatability	±1[%] or less							
Input/Output Signal	Analog Input	Input Range	DC −10 ~ +10[V]							
		Resolution	12[bit]							
	Digital Input		Total 10 Input Channels (assignment available) SVON, SPD1, SPD2, SPD3, ALMRST, DIR, CCWLIM, CWLIM, EMG, STOP, EGEAR1, EGEAR2, PCON, GAIN2, P_CLR, T_LMT, MODE, ABS_RQ, ZCLAMP Above 19 functions can be inputted selectively for assignment Signal can be set as positive logic or negative logic							
	Digital Output		Total 5 Channels (assignment available), 3 Channels (set as alarm code) ALARM, READY, ZSPD, BRAKE, INPOS, TLMT, VLMT, INSPD, WARN Above 9 outputs can be inputted selectively for assignment Signal can be set as positive logic or negative logic							
	Communication	RS422		PC Software and RS422 Server are available						
USB		Status monitoring, JOG operation, parameter upload/download are available with PC Software								
Encoder			Compatible with Serial BiSS encoder, Quadrature encoder							
Encoder Output Type			Random pre–scale output by FPGA (Max. 6.4Mpps)							
Built-in Function	Dynamic Braking		Built–in type (operates when Servo alarm or Servo off)							
	Regenerative Braking		Built–in type, and also external connection is available							
	Display		7 segments (5DIGIT)							
	Setting Function		Loader ([SET], [MODE], [UP], [DOWN] key)							
	Additional Function		Automatic gain tuning function, Z–phase detection, manual JOG operation, program JOG operation, analog–input auto Calibration function							
Protective Function			Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, control power input problem, overspeed, motor cable, overheat(power module overheat, abnormal drive operation's temp), encoder problem, over–regenerative, sensor problem, communication problem							
Operation Environment			Temperature	0 ~ 50[°C]						
			Humidity	Below 90[%]RH (avoid dew–condensation)						
			Ambient Environment	Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.						

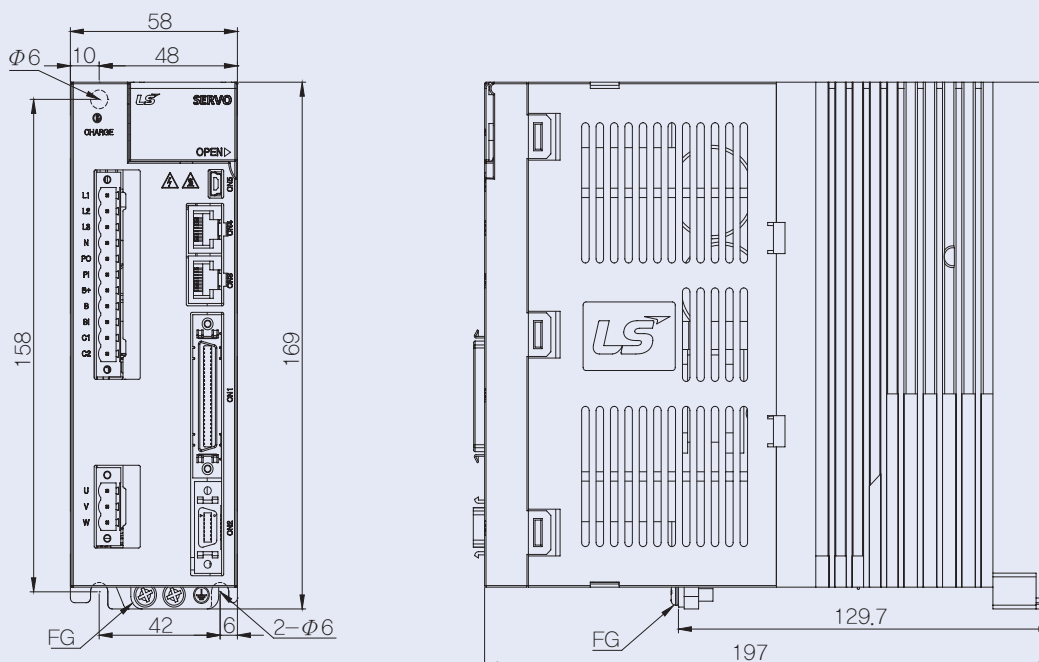
L7 SERIES SYSTEM

External Dimensions of Servo Drive

➤ L7SA001□ ~ L7SA004□ [Weight : 1,2kg]

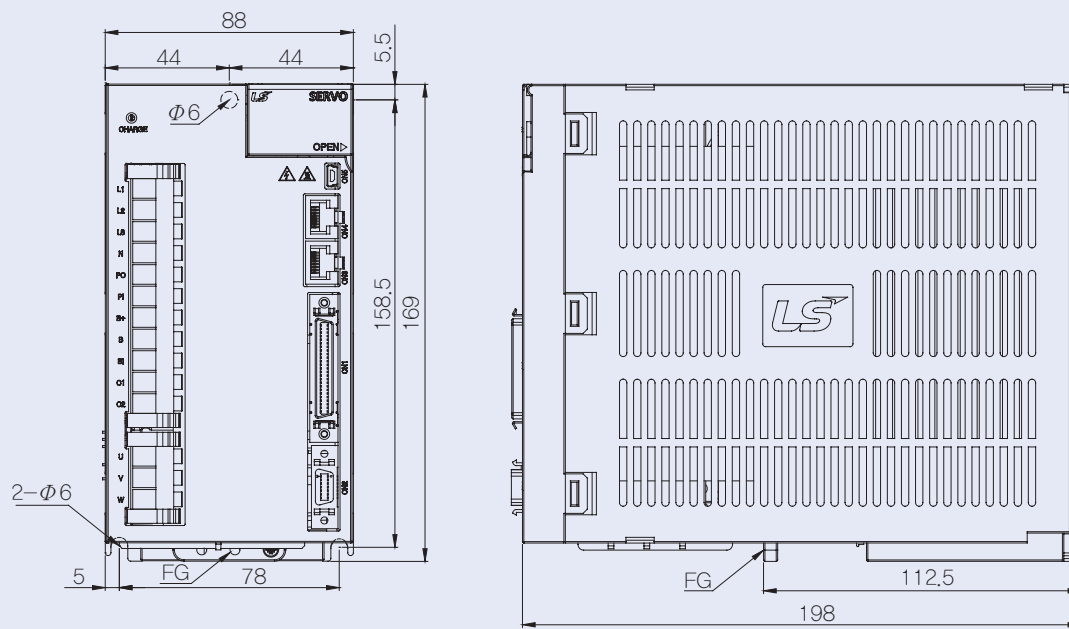


➤ L7SA008□ ~ L7SA010□ [Weight : 1,5kg(Fan-Cooling included)]



External Dimensions of Servo Drive

↙ L7SA020□ ~ L7SA035□ [Weight : 2.5kg(Fan-Cooling included)]



↙ Brake Specification

Motor Series	APM-SA	APM-SB APM-FB	APM-SC APM-FC	APM-SE	APM-SF APM-LF	APM-SG APM-LG
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

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

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

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

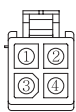
L7 SERIES SYSTEM

External Dimensions of Servo Motor

SA Series

Plug Specification

[Power]

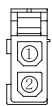


사양 : 172167-1
(Made by AMP)

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

(Power Connector Pin Table)

[Brake]

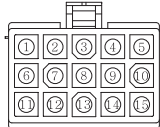


Spec. : 172165-1
(Made by AMP)

Pin No.	Phase
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]

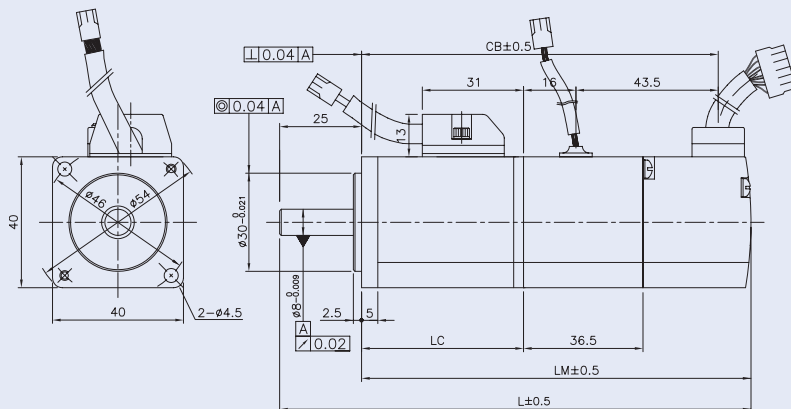


Spec. : 172171-1(Made by AMP) (Encoder Connector Pin Table)

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

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

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

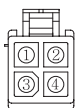


Model	External Dimensions				Weight(kg)
	L	LM	LC	CB	
SAR3A	101(137.5)	76(112.5)	42.5	66(102.5)	0.32(0.67)
SAR5A	108(144.5)	83(119.5)	49.5	73(109.5)	0.38(0.73)
SA01A	125(161.5)	100(136.5)	66.5	90(126.5)	0.5(0.85)
SA015A	145	120	86.5	110	0.7

SB Series

Plug Specifications

[Power]

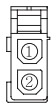


사양 : 172167-1
(Made by AMP)

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

(Power Connector Pin Table)

[Brake]

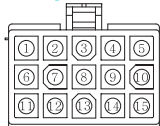


Spec. : 172165-1
(Made by AMP)

Pin No.	Phase
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



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

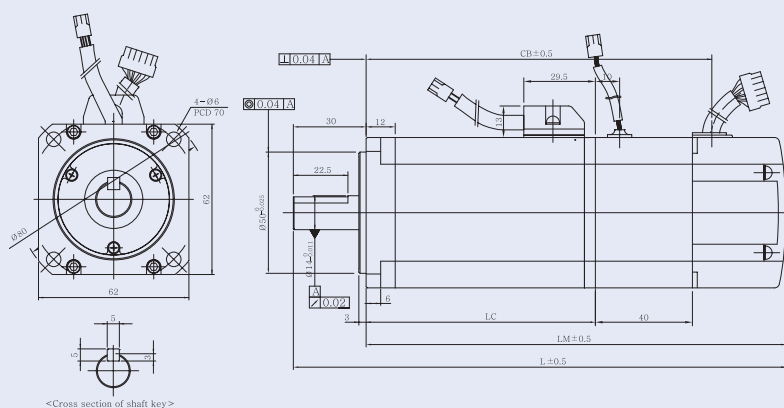
Pin No.	Phase	Pin No.	Phase
1	A	9	V
2	A	10	V
3	B	11	W
4	B	12	W
5	Z	13	+5V
6	Z	14	0V
7	U	15	SHIELD
8	U		

(Encoder Connector Pin Table)

Note1) Use DC[24] 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.

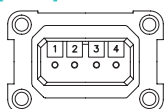


Model	External Dimensions				Weight(kg)
	L	LM	LC	CB	
SB01A	121.5(161.5)	91.5(131.5)	52.5	61(101)	0.82(1.4)
SB02A	135.5(175.5)	105.5(145.5)	66.5	75(115)	1.08(1.66)
SB04A	163.5(203.5)	133.5(173.5)	94.5	103(143)	1.58(2.16)

External Dimensions of Servo Motor

 FB Series Plug Specification

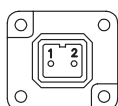
[Power]



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

(Power Connector Pin Table)

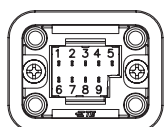
[Brake]



Pin No.	Phase
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



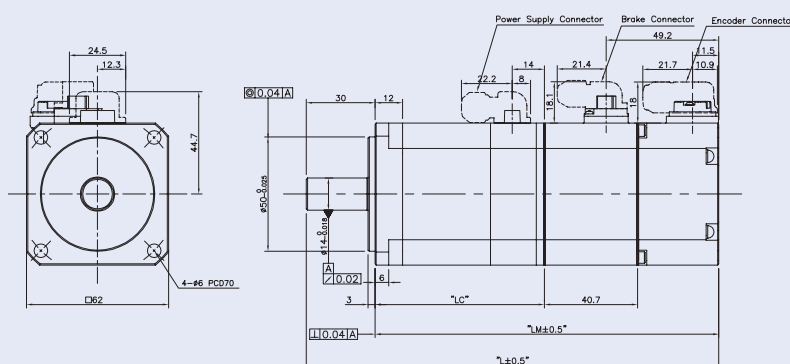
Pin No.	Phase
1	MA
2	SLO
3	—
4	0V
5	SHIELD
6	MA
7	SLO
8	—
9	+5V

(Encoder Connector Pin Table)

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

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

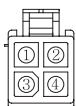
Note3) For external dimensions for oil-sealed type, please kindly contact us separately.



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

 SC Series Plug Specification

[Power]



시양
: 172167-1
(Made by AMP)

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

(Power Connector Pin Table)

[Brake]

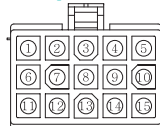


Spec.
: 172165-1
(Made by AMP)

Pin No.	Phase
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



Spec. : 172171-1 (Made by AMP)

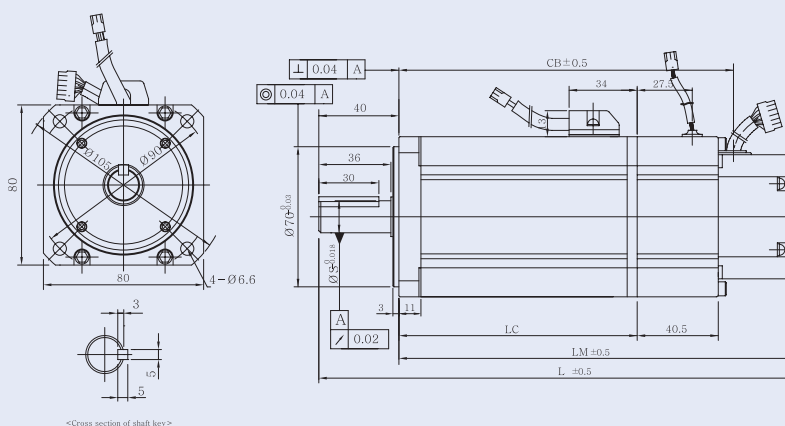
Pin No.	Phase	Pin No.	Phase
1	A	9	V
2	$\overline{A}$	10	$\overline{V}$
3	B	11	W
4	$\overline{B}$	12	$\overline{W}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	U	15	SHIELD
8	$\overline{U}$		

(Encoder Connector Pin Table)

Note1) Use DC[24] 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	CB	S	
SC04A, SC03D	158(198,5)	118(158,5)	79	87(127,5)	14	1,88(2,92)
SC06A, SC05D	178(218,5)	138(178,5)	99	107(147,5)	16	2,52(3,56)
SC08A, SC06D	198(238,5)	158(198,5)	119	127(167,5)	16	3,15(4,22)
SC10A, SC07D	218(258,5)	178(218,5)	139	147(187,5)	16	3,80(4,94)

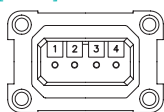
L7 SERIES SYSTEM

External Dimensions of Servo Motor

FC Series

Plug Specification

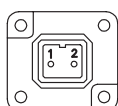
[Power]



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

(Power Connector Pin Table)

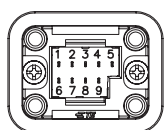
[Brake]



Pin No.	Phase
1	BK+
2	BK-

(Brake Connector Pin Table)

[Encoder]



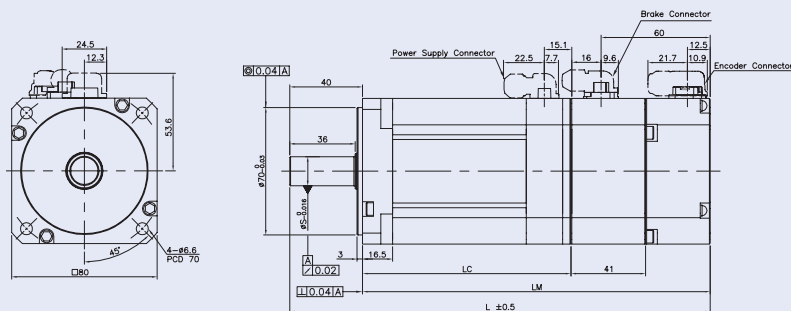
Pin No.	Phase
1	MA
2	SLO
3	-
4	0V
5	SHIELD
6	MA
7	SLO
8	-
9	+5V

(Encoder Connector Pin Table)

Note1) Use DC[24] 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.

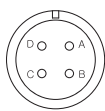


Model	External Dimensions				Weight(kg)
	L	LM	LC	S	
FC04A, FC03D	136.5(177)	96.5(137)	60.5	14	1.56(2.71)
FC06A, FC05D	154.5(195)	114.5(155)	87.5	16	2.18(3.33)
FC08A, FC06D	172.5(213)	132.5(173)	96.5	16	2.72(3.87)
FC10A, FC07D	190.5(231)	150.5(191)	114.5	16	3.30(4.45)

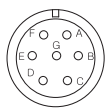
SE Series

Plug Specification

[Power]



Spec.
: MS3102A20-4P
(Standard)



Spec.
: 3102A20-15P
(Brake-attached type)

[Encoder]

1) Incremental type



Spec.
: MS3102A20-29P

2) Serial type



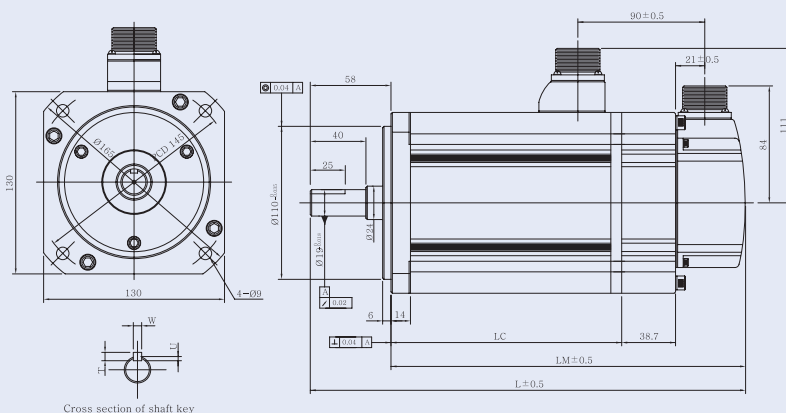
Spec.
: MS3102A20-29P

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

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

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

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



Cross section of shaft key

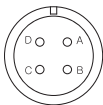
Model	External Dimensions				Key			Weight(kg)
	L	LM	LC	S	T	W	U	
SE09A, SE06D, SE05G, SE03M	201(240)	143(182)	94	19	5	5	3	5.5(7.04)
SE15A, SE11D, SE09G, SE06M	225(264)	167(206)	118	19	5	5	3	7.54(9.08)
SE22A, SE16D, SE13G, SE09M	249(288)	191(230)	142	22	6	6	3.5	9.68(11.22)
SE30A, SE22D, SE17G, SE12M	273(312)	215(254)	166	22	6	6	3.5	11.78(13.32)

External Dimensions of Servo Motor

SF, LF Series

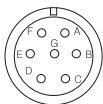
Plug 사양

[Power]



Spec.
: MS3102A22-22P
(Standard)

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



Spec.
: 3102A24-10P
(Brake-attached type)

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

[Encoder]

1) Incremental type



Spec.
: MS3102A20-29P

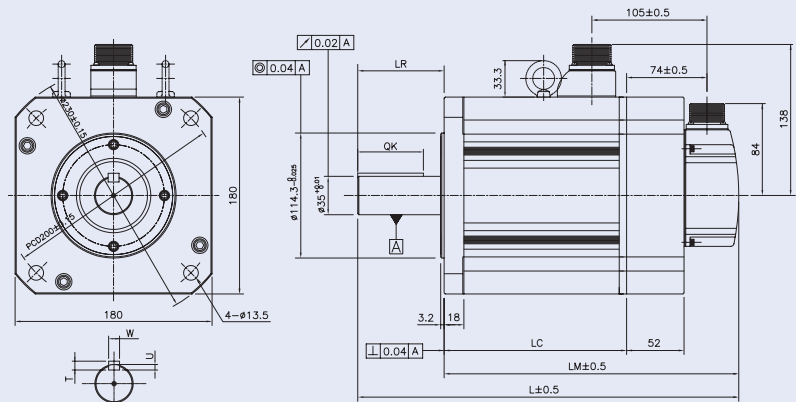
Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	A	N	V
C	B	P	W
D	B	R	W
E	Z	H	+5V
F	Z	G	0V
K	U	J	SHIELD
L	U		

2) Serial type



Spec.
: MS3102A20-29P

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



<축단 치수 상세도>

Model	External Dimensions			Key					Weight(kg)
	L	LM	LC/LR	S	QK	T	W	U	
SF30A, SF22D, SF20G, SF12M	262(315)	183(235)	133 79	35+0.01	60	8	10	5	12.4(19.2)
LF35D, LF30G, SF20M	296(348)	217(268)	167 79	35+0.01	60	8	10	5	17.7(24.9)
LF30M	346(398)	267(318)	217 79	35+0.01	60	8	10	5	26.3(33.4)

SG, LG Series

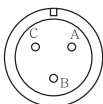
Plug 사양

[Power]



Spec.
: MS3102A22-22P
(Standard)

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



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

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

[Encoder]

1) Incremental type



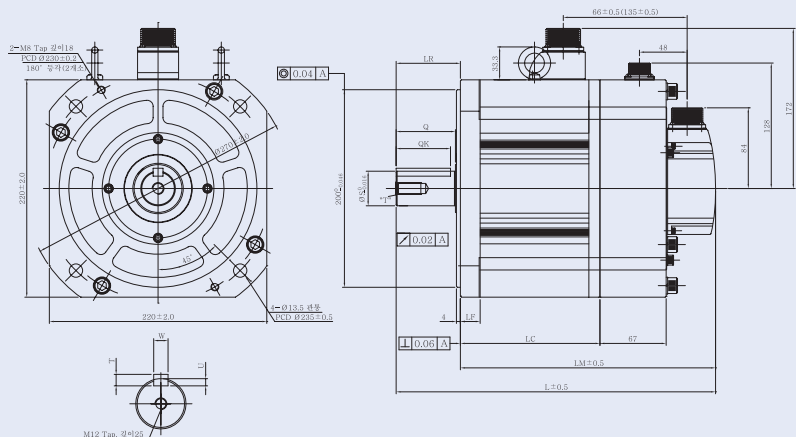
Spec.
: MS3102A20-29P

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

2) Serial type



Spec.
: MS3102A20-29P



Model	External Dimensions					Key						Weight(kg)
	L	LM	LC	LR	LF	S	Q	QK	T	W	U	
SG22D, SG20G, SG12M	237(303)	172(238)	122	65	22	35-0.016	60	55	8	10	5	16.95(30.76)
LG35D, LG30G, SG20M	257(323)	192(258)	142									21.95(35.7)
LG30M	293(359)	228(294)	178									30.8(44.94)

Note1) Use DC[24] 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.

External Dimensions of Servo Motor

 HB Series [Hollow Shaft type] Plug Specifications

[Power]



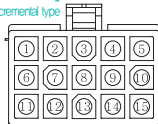
Spec.
: 172167-1
(Made by AMP)

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

(Power Connector Pin Type)

[Encoder]

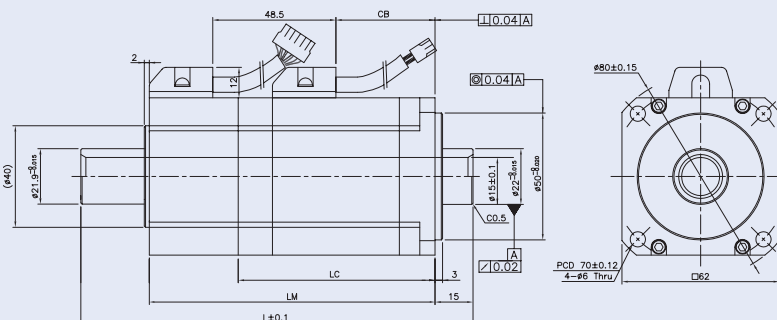
1) Incremental type



Spec. : 172171-1(Made by AMP)

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

(Encoder Connector 핀 배열)

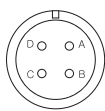


Model	External Dimensions					Weight(kg)
	L	LM	LC	CB	Hollow Shaft	
HB01A	140,5	98,5	63,5	25	15	0,89
HB02A	154,5	112,5	77,5	39	15	1,16
HB04A	182,5	140,5	105,5	67	15	1,69

 HE Series [Hollow Shaft type]

Plug Specifications

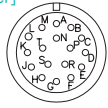
[Power]



Spec.
: MS3102A20-4P
(Standard)

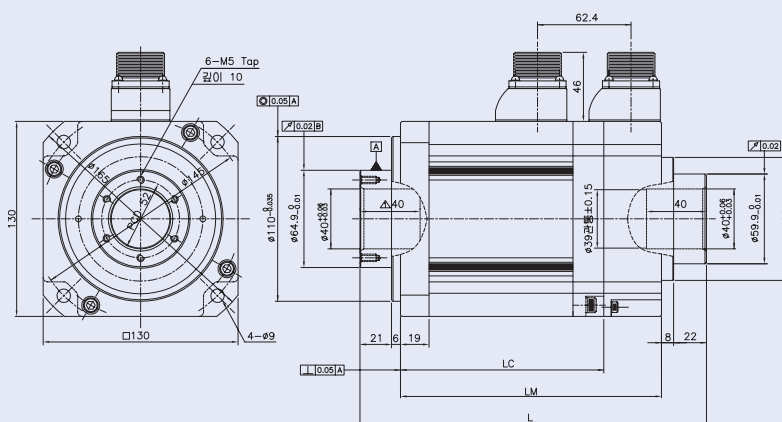
Pin No.	Phase
A	U
B	V
C	W
D	Ground

[Encoder]



Spec.
: MS3102A20-29P

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



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

Servo Motor Characteristics

Motor Specification [Rated 3000r/min]

Servo Motor (APM—□□□□)		SAR3A	SAR5A	SA01A	SA015A	SB01A	SB02A	SB04A	FB01A	FB02A	FB04A
Applicable Drive		L7□A001			L7□A002			L7□A004	L7□A001	L7□A002	L7□A004
Flange Size(□)		□40				□60					
Rated Output	[kW]	0.03	0.05	0.1	0.15	0.1	0.2	0.4	0.1	0.2	0.4
Rated Torque	[N・m]	0.095	0.159	0.318	0.477	0.318	0.637	1.273	0.318	0.637	1.273
	[kgf・cm]	0.97	1.62	3.25	4.87	3.25	6.50	12.99	3.25	6.50	12.99
Max. Instantaneous	[N・m]	0.286	0.477	0.955	1.432	0.955	1.91	3.82	0.955	1.91	3.82
	[kgf・cm]	2.92	4.87	9.74	14.62	9.74	19.49	38.98	9.74	19.49	38.98
Rated Speed	[r/min]	3000									
Max. Speed	[r/min]	5000									
Inertia	[kg・m ² ×10 ⁻⁴]	0.0164	0.024	0.0426	0.0638	0.114	0.182	0.321	0.089	0.145	0.246
	[gf・cm・s ²]	0.0167	0.0245	0.0435	0.0651	0.116	0.186	0.328	0.09	0.148	0.252
Allowable Load	Inertia Ratio	30 times of motor inertia			20 times of motor inertia						
Rated Power Rate	[kW/s]	5.56	10.55	23.78	35.8	8.89	22.26	50.49	11.38	27.95	65.90
Speed/Position Detector	Standard(Note1)	Quad. Type Incremental 2048[P/R]				Quad. Type Incremental 2500[P/R]			Serial Type 19[Bit]		
	Option	X									
Specifications & Features	Structure	Fully closed・Self cooling IP55 (excluding the shaft-through section)							Fully closed・Self cooling IP67 (excluding the shaft-through section)		
	Rated Time	Continuous									
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]									
	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/s ²](5G)									
Weight	[kg]	0.32	0.38	0.5	0.7	0.82	1.05	1.58	0.72	0.94	1.32

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



L7 SERIES SYSTEM

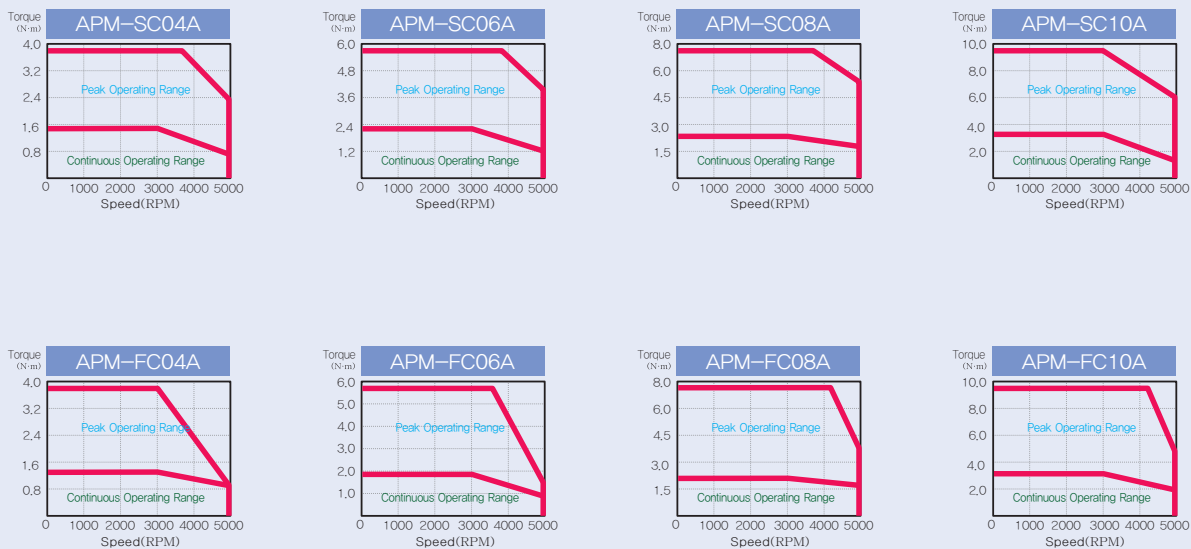
Servo Motor Characteristics

Motor Specification [Rated 3000r/min]

Servo Motor (APM-□□□□)		SC04A	SC06A	SC08A	SC10A	FC04A	FC06A	FC08A	FC10A
Applicable Drive		L7□A004	L7□A008	L7□A010		L7□A004	L7□A008	L7□A010	
Flange Size(□)		□80							
Rated Output	[kW]	0.4	0.6	0.8	1.0	0.4	0.6	0.8	1.0
Rated Torque	[N・m]	1.27	1.91	2.55	3.18	1.27	1.91	2.55	3.18
	[kgf・cm]	13.0	19.5	26.0	32.5	13.0	19.5	26.0	32.5
Max. Instantaneous	[N・m]	3.82	5.73	7.64	9.55	3.82	5.73	7.64	9.55
	[kgf・cm]	38.98	58.47	77.95	97.44	38.98	58.47	77.95	97.44
Rated Speed	[r/min]	3000							
Max. Speed	[r/min]	5000							
Inertia	[kg・m ² ×10 ⁻⁴]	0.674	1.092	1.509	1.927	0.497	0.875	1.245	1.615
	[gf・cm・s ²]	0.688	1.114	1.539	1.966	0.508	0.893	1.270	1.648
Allowable Load Inertia Ratio		15 times of motor inertia							
Rated Power Rate	[kW/s]	24.05	33.39	42.96	52.57	32.62	41.69	45.78	62.74
Speed/Position Detector	Standard(Note1)	Quande. Type Incremental 2500[P/R]				Serial Type 19[Bit]			
	Option	X							
Specifications & Features	Structure	Fully closed・Self cooling IP65 (excluding the shaft-through section)				Fully closed・Self cooling IP67 (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/s ²](5G)							
Weight	[kg]	1.88	2.52	3.15	3.80	1.56	2.18	2.72	3.30

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



Servo Motor Characteristics

Motor Specification [Rated 3000r/min]

Servo Motor (APM-□□□□)		SE09A	SE15A	SE22A	SE30A	SF30A	HB01A	HB02A	HB04A	HE09A	HE15A
Applicable Drive		L7□A010	L7□A020		L7□A035		L7□A001	L7□A002	L7□A004	L7□A010	L7□A020
Flange Size(□)		□130				□180	□60			□130	
Rated Output	[kW]	0.9	1.5	2.2	3.0	3.0	0.1	0.2	0.4	0.9	1.5
Rated Torque	[N・m]	2.87	4.78	7.0	9.55	9.55	0.318	0.637	1.273	2.87	4.78
	[kgf・cm]	29.2	48.7	71.5	97.4	97.4	3.25	6.50	12.99	29.2	48.7
Max. Instantaneous	[N・m]	8.59	14.32	21.01	28.65	28.65	0.955	1.91	3.82	8.59	14.32
	[kgf・cm]	87.7	146.1	214.4	292.3	292.3	9.74	19.49	38.98	87.7	146.1
Rated Speed	[r/min]	3000									
Max. Speed	[r/min]	5000									
Inertia	[kg・m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	0.269	0.335	0.466	19.558	22.268
	[gf・cm・s ²]	6.795	12,244	17,693	23,142	31.57	0.274	0.342	0.476	19,943	22,707
Allowable Load Inertia Ratio		모터이너셔의 10배				모터이너셔의 5배	모터이너셔의 20배			모터이너셔의 10배	
Rated Power Rate	[kW/s]	12.32	18.99	28.28	40.2	29.66	3.77	12.1	34.78	4.20	10.24
Speed/Position Detector	Standard(Note1)	Quad. Type Incremental 3000[P/R]					Quad. Type Incremental 1024[P/R]			Quad. 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[℃]								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	12.11	0.89	1.16	1.69	5.82	7.43

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



L7 SERIES SYSTEM

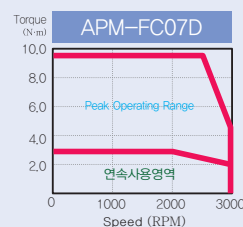
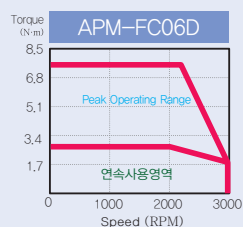
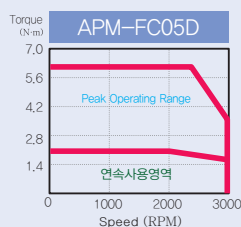
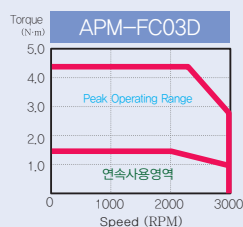
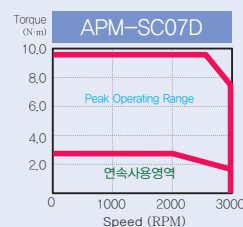
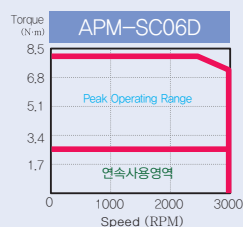
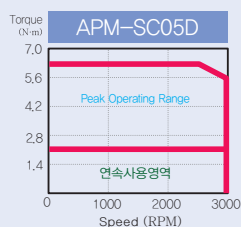
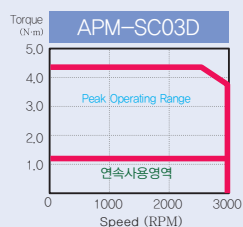
Servo Motor Characteristics

Motor Specification [Rated 2000r/min]

Servo Motor (APM-□□□□)		SC03D	SC05D	SC06D	SC07D	FC03D	FC05D	FC06D	FC07D
Applicable Drive		L7□A004	L7□A008			L7□A004	L7□A008		
Flange Size(□)		□80							
Rated Output	[kW]	0.3	0.45	0.55	0.65	0.3	0.45	0.55	0.65
Rated Torque	[N・m]	1.43	2.15	2.63	3.10	1.43	2.15	2.6	3.10
	[kgf・cm]	14.6	21.9	26.8	31.7	14.6	21.9	26.8	31.7
Max. Instantaneous	[N・m]	4.3	6.45	7.88	9.31	4.3	6.45	7.88	9.31
	[kgf・cm]	43.8	65.8	80.4	95.0	43.8	65.8	80.4	95.0
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000							
Inertia	[kg・m ² ×10 ⁻⁴]	0.674	1.092	1.509	1.927	0.497	0.875	1.245	1.615
	[gf・cm・s ²]	0.688	1.114	1.539	1.966	0.508	0.893	1.270	1.648
Allowable Load Inertia Ratio		모터이너셔의 15배							
Rated Power Rate	[kW/s]	30.43	42.27	45.69	49.97	41.28	52.76	55.39	59.64
Speed/Position Detector	Standard(Note1)	Quande. Type Incremental 2500[P/R]				Serial Type 19[Bit]			
	Option	X							
Specifications & Features	Structure	Fully closed・Self cooling IP65 (excluding the shaft-through section)				Fully closed・Self cooling IP67 (excluding the shaft-through section)			
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]							
	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]	1.85	2.52	3.18	3.90	1.56	2.18	2.72	3.30

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



Servo Motor Characteristics

Motor Specification [Rated 2000r/min]

Servo Motor (APM-□□□□)		SE06D	SE11D	SE16D	SE22D	SF22D	LF35D	SG22D	LG35D
Applicable Drive		L7□A008	L7□A010	L7□A020		L7□A020	L7□A035	L7□A020	L7□A035
Flange Size(□)		□130				□180		□220	
Rated Output	[kW]	0.6	1.1	1.6	2.2	2.2	3.5	2.2	3.5
Rated Torque	[N・m]	2.86	5.25	7.63	10.5	10.5	16.7	10.5	16.7
	[kgf・cm]	29.2	53.6	77.9	107.1	107.1	170.4	107.2	170.5
Max. Instantaneous	[N・m]	8.59	15.75	22.92	31.51	31.5	50.12	31.5	50.1
	[kgf・cm]	87.7	160.7	233.8	321.4	321.3	511.3	321.3	511.5
Rated Speed	[r/min]	2000							
Max. Speed	[r/min]	3000							
Inertia	[kg・m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	51.42	80.35
	[gf・cm・s ²]	6.795	12,244	17,685	23.132	31.35	53.16	52.47	81.99
Allowable Load Inertia Ratio		모터이너셔의 10배				모터이너셔의 5배			
Rated Power Rate	[kW/s]	12.31	22.97	33.63	48.61	35.88	53.56	21.45	34.75
Speed/Position Detector	Standard(Note1)	Quande. 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]	5.50	7.54	9.68	11.78	12.40	17.70	16.95	21.95

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



L7 SERIES SYSTEM

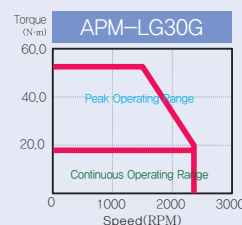
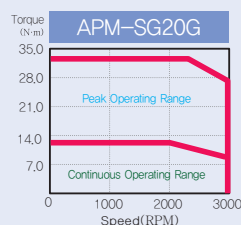
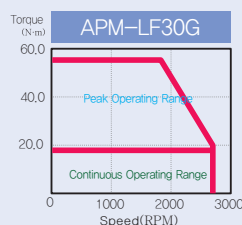
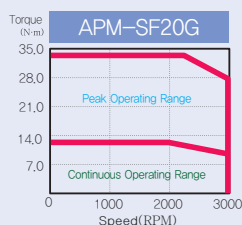
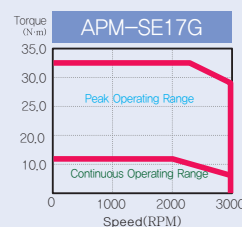
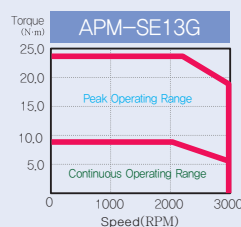
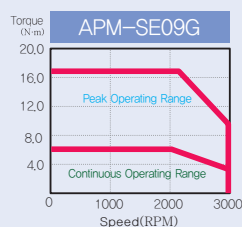
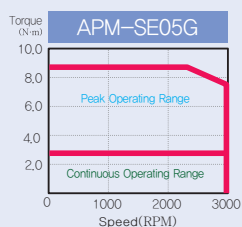
Servo Motor Characteristics

Motor Specification [Rated 1500r/min]

Servo Motor (APM—□□□□)		SE05G	SE09G	SE13G	SE17G	SF20G	LF30G	SG20G	LG30G
Applicable Drive		L7□A008	L7□A010	L7□A020		L7□A035		L7□A020	L7□A035
Flange Size(□)		□130				□180			
Rated Output	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	1.8	2.9
Rated Torque	[N・m]	2.86	5.41	8.27	10.82	11.45	18.46	11.5	18.5
	[kgf・cm]	29.22	55.19	84.41	110.38	116.88	188.3	116.9	188.4
Max. Instantaneous	[N・m]	8.59	16.23	24.82	32.46	34.35	55.38	34.4	55.4
	[kgf・cm]	87.66	165.57	253.23	331.14	350.64	564.9	350.8	565.1
Rated Speed	[r/min]	1500							
Max. Speed	[r/min]	3000					2700	3000	2700
Inertia	[kg・m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	51.42	80.35
	[gf・cm・s ²]	6.792	12,238	17,685	23,132	31,35	53.16	52.47	81.99
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia			
Rated Power Rate	[kW/s]	12.32	24.39	39.49	51.61	42.70	65.36	25.53	42.41
Speed/Position Detector	Standard(Note1)	Quade. Type Incremental 3000[P/R]							
	Option	Serial Type 19[Bit]							
Specifications & Features	Structure	Fully closed・Self cooling IP65 (excluding the shaft-through section)							
	Rated Time	Continuous							
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -20 ~ 60[°C]							
	Ambient Humidity	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	16.95	21.95

Note1) Standard Encoder : Incremental 5[V] Line Driver

Speed-Torque Characteristics



Servo Motor Characteristics

Motor Specification [Rated 1000r/min]

Servo Motor (APM-□□□□)	SE03M	SE06M	SE09M	SE12M	SF12M	SF20M	LF30M	SG12M	SG20M	LG30M	
Applicable Drive	L7□A004	L7□A008	L7□A010	L7□A020		L7□A035		L7□A020	L7□A035		
Flange Size(□)	□130					□180			□220		
Rated Output	[kW]	0.3	0.6	0.9	1.2	1.2	2.0	3.0	1.2	2.0	3.0
Rated Torque	[N・m]	2.86	5.72	8.59	11.46	11.46	19.09	28.64	11.5	19.1	28.6
	[kgf・cm]	29.2	58.4	87.7	116.9	116.9	194.8	292.2	116.9	194.9	292.3
Max. Instantaneous	[N・m]	8.59	17.18	25.77	34.22	34.38	57.29	85.94	34.4	57.3	85.9
	[kgf・cm]	87.7	175.3	262.9	349.1	350.7	584.4	876.6	350.8	584.6	876.9
Rated Speed	[r/min]	1000									
Max. Speed	[r/min]	2000						1700	2000		1700
Inertia	[kg・m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	51.42	80.35	132.41
	[gf・cm・s ²]	6.792	12.238	17.685	23.132	31.35	53.16	85.24	52.47	81.99	135.11
Allowable Load Inertia Ratio		모터이너셔의 10배				모터이너셔의 5배					
Rated Power Rate	[kW/s]	12.31	27.34	42.56	57.85	42.70	69.96	98.16	25.53	45.39	61.97
Speed/Position Detector	Standard(Note1)	Quade. 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/s ²](5G)									
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	16.95	21.95	30.8

Note1) Standard Encoder : Incremental 5[V] Line Driver

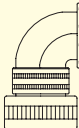
Speed-Torque Characteristics



L7 SERIES SYSTEM

Options and Peripherals

Specifications for Options [Incremental Encoder Cable]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications																																																																								
For Signal	Quadrature Type Cable for Incremental Encoder (for small power motor)	APCS— E□□□AS	All models of APM — SA APM — SB APM — SC APM — HB SERIES	Motor Side Connector Drive Side Connector(CN2) <table><tr><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>1</td><td>A</td><td>9</td><td>V</td><td>1</td><td>W</td><td>8</td><td>Z</td></tr><tr><td>2</td><td>A</td><td>10</td><td>V</td><td>2</td><td>W</td><td>9</td><td>Z</td></tr><tr><td>3</td><td>B</td><td>11</td><td>W</td><td>3</td><td>V</td><td>10</td><td>B</td></tr><tr><td>4</td><td>B</td><td>12</td><td>W</td><td>4</td><td>V</td><td>11</td><td>B</td></tr><tr><td>5</td><td>Z</td><td>13</td><td>+5V</td><td>5</td><td>U</td><td>12</td><td>A</td></tr><tr><td>6</td><td>Z</td><td>14</td><td>0V</td><td>6</td><td>U</td><td>13</td><td>A</td></tr><tr><td>7</td><td>U</td><td>15</td><td>SHIELD</td><td>7</td><td>0V</td><td>14</td><td>+5V</td></tr><tr><td>8</td><td>U</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> PLATE SHIELD 1. Motor Side Connector a. CAP Spec.(15 Position) : 172163-1(Made by AMP) b. SOCKET Spec. : 170361-1(Made by AMP) 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. : 7Px0.2SQ(AWG24)	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	1	A	9	V	1	W	8	Z	2	A	10	V	2	W	9	Z	3	B	11	W	3	V	10	B	4	B	12	W	4	V	11	B	5	Z	13	+5V	5	U	12	A	6	Z	14	0V	6	U	13	A	7	U	15	SHIELD	7	0V	14	+5V	8	U						
PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase																																																																					
1	A	9	V	1	W	8	Z																																																																					
2	A	10	V	2	W	9	Z																																																																					
3	B	11	W	3	V	10	B																																																																					
4	B	12	W	4	V	11	B																																																																					
5	Z	13	+5V	5	U	12	A																																																																					
6	Z	14	0V	6	U	13	A																																																																					
7	U	15	SHIELD	7	0V	14	+5V																																																																					
8	U																																																																											
For Signal	Quadrature Type Cable for Incremental Encoder (for middle power motor)	APCS— E□□□BS	All models of APM — SE APM — SF APM — SG APM — HE SERIES	Motor Side Connector Drive Side Connector(CN2)  <table><tr><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>A</td><td>A</td><td>M</td><td>V</td><td>1</td><td>W</td><td>8</td><td>Z</td></tr><tr><td>B</td><td>A</td><td>N</td><td>V</td><td>2</td><td>W</td><td>9</td><td>Z</td></tr><tr><td>C</td><td>B</td><td>P</td><td>W</td><td>3</td><td>V</td><td>10</td><td>B</td></tr><tr><td>D</td><td>B</td><td>R</td><td>W</td><td>4</td><td>V</td><td>11</td><td>B</td></tr><tr><td>E</td><td>Z</td><td>H</td><td>+5V</td><td>5</td><td>U</td><td>12</td><td>A</td></tr><tr><td>F</td><td>Z</td><td>G</td><td>0V</td><td>6</td><td>U</td><td>13</td><td>A</td></tr><tr><td>K</td><td>U</td><td>J</td><td>SHIELD</td><td>7</td><td>0V</td><td>14</td><td>+5V</td></tr><tr><td>L</td><td>U</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> PLATE SHIELD 1. Motor Side Connecto(MS : Military Standard) a. PLUG Spec. : MS3108A20-29S 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. : 7Px0.2SQ(AWG24)	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	A	A	M	V	1	W	8	Z	B	A	N	V	2	W	9	Z	C	B	P	W	3	V	10	B	D	B	R	W	4	V	11	B	E	Z	H	+5V	5	U	12	A	F	Z	G	0V	6	U	13	A	K	U	J	SHIELD	7	0V	14	+5V	L	U						
PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase	PIN No.	Encoder Phase																																																																					
A	A	M	V	1	W	8	Z																																																																					
B	A	N	V	2	W	9	Z																																																																					
C	B	P	W	3	V	10	B																																																																					
D	B	R	W	4	V	11	B																																																																					
E	Z	H	+5V	5	U	12	A																																																																					
F	Z	G	0V	6	U	13	A																																																																					
K	U	J	SHIELD	7	0V	14	+5V																																																																					
L	U																																																																											

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	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Options and Peripherals

Specifications for Options [Serial Encoder Cable]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications																																																																								
For Signal	Flat Motor Encoder Cable (For small power motor)	APCS— E□□□CS	All models of APM — FB APM — FC SERIES	Motor Side Connector Drive Side Connector(CN2) Tyco Connector (7Circuits) <table><tr><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>SLO</td></tr><tr><td>3</td><td>—</td></tr><tr><td>4</td><td>0V</td></tr><tr><td>5</td><td>SHIELD</td></tr><tr><td>6</td><td>MA</td></tr><tr><td>7</td><td>SLO</td></tr><tr><td>8</td><td>—</td></tr><tr><td>9</td><td>+5V</td></tr></table> <table><tr><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>1</td><td>—</td><td>8</td><td>—</td></tr><tr><td>2</td><td>—</td><td>9</td><td>—</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>—</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>—</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>—</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>—</td></tr><tr><td>7</td><td>0V</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> 1. Motor Side Connector a. CAP Spec. : Tyco 7Pin 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. : 4Px0.2SQ(AWG24)	PIN No.	Encoder Phase	1	MA	2	SLO	3	—	4	0V	5	SHIELD	6	MA	7	SLO	8	—	9	+5V	PIN No.	Encoder Phase	PIN No.	Encoder Phase	1	—	8	—	2	—	9	—	3	MA	10	—	4	MA	11	—	5	SLO	12	—	6	SLO	13	—	7	0V	14	+5V	PLATE		SHIELD																	
	PIN No.	Encoder Phase																																																																										
1	MA																																																																											
2	SLO																																																																											
3	—																																																																											
4	0V																																																																											
5	SHIELD																																																																											
6	MA																																																																											
7	SLO																																																																											
8	—																																																																											
9	+5V																																																																											
PIN No.	Encoder Phase	PIN No.	Encoder Phase																																																																									
1	—	8	—																																																																									
2	—	9	—																																																																									
3	MA	10	—																																																																									
4	MA	11	—																																																																									
5	SLO	12	—																																																																									
6	SLO	13	—																																																																									
7	0V	14	+5V																																																																									
PLATE		SHIELD																																																																										
For Signal	Cable for Serial Type Encoder (for middle power motor)	APCS— E□□□DS	All models of APM — SE APM — SF APM — LF APM — SG APM — LG APM — HE SERIES	Motor Side Connector Drive Side Connector(CN2) <table><tr><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>A</td><td>MA</td><td>M</td><td>—</td></tr><tr><td>B</td><td>MA</td><td>N</td><td>—</td></tr><tr><td>C</td><td>SLO</td><td>P</td><td>—</td></tr><tr><td>D</td><td>SLO</td><td>R</td><td>—</td></tr><tr><td>E</td><td>—</td><td>H</td><td>+5V</td></tr><tr><td>F</td><td>—</td><td>G</td><td>0V</td></tr><tr><td>K</td><td>—</td><td>J</td><td>SHIELD</td></tr><tr><td>L</td><td>—</td><td></td><td></td></tr></table> <table><tr><th>PIN No.</th><th>Encoder Phase</th><th>PIN No.</th><th>Encoder Phase</th></tr><tr><td>1</td><td>—</td><td>8</td><td>—</td></tr><tr><td>2</td><td>—</td><td>9</td><td>—</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>—</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>—</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>—</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>—</td></tr><tr><td>7</td><td>0V</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></table> 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. : 4Px0.2SQ(AWG24)	PIN No.	Encoder Phase	PIN No.	Encoder Phase	A	MA	M	—	B	MA	N	—	C	SLO	P	—	D	SLO	R	—	E	—	H	+5V	F	—	G	0V	K	—	J	SHIELD	L	—			PIN No.	Encoder Phase	PIN No.	Encoder Phase	1	—	8	—	2	—	9	—	3	MA	10	—	4	MA	11	—	5	SLO	12	—	6	SLO	13	—	7	0V	14	+5V	PLATE		SHIELD	
PIN No.	Encoder Phase	PIN No.	Encoder Phase																																																																									
A	MA	M	—																																																																									
B	MA	N	—																																																																									
C	SLO	P	—																																																																									
D	SLO	R	—																																																																									
E	—	H	+5V																																																																									
F	—	G	0V																																																																									
K	—	J	SHIELD																																																																									
L	—																																																																											
PIN No.	Encoder Phase	PIN No.	Encoder Phase																																																																									
1	—	8	—																																																																									
2	—	9	—																																																																									
3	MA	10	—																																																																									
4	MA	11	—																																																																									
5	SLO	12	—																																																																									
6	SLO	13	—																																																																									
7	0V	14	+5V																																																																									
PLATE		SHIELD																																																																										

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

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

L7 SERIES SYSTEM

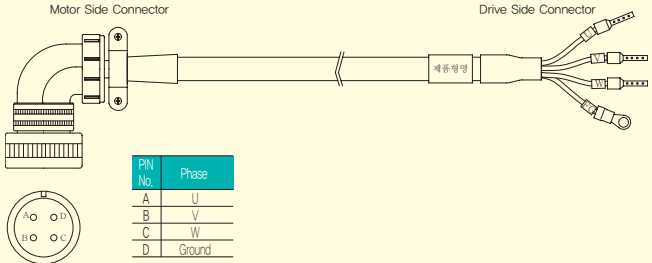
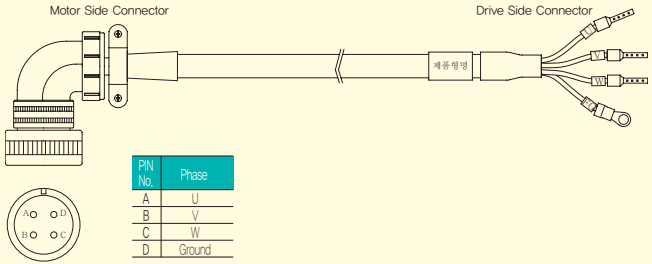
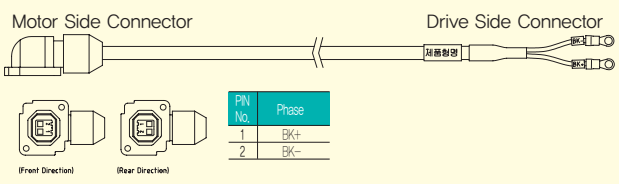
Options and Peripherals

Specifications for Options [Power Cable]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications										
For Power	Standard Motor Power Cable	APCS-P□□□GS	All models of APM – SA APM – SB APM – SC APM – HB SERIES	Motor Side Connector Drive Side Connector <table><tr><th>PIN No.</th><th>Phase</th></tr><tr><td>1</td><td>U</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>W</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. CAP Spec.(4 Position) : 172159-1(Made by AMP) b. SOCKET Spec. : 170362-1(Made by AMP) 2. Drive Side Connector(U, V, W, FG) a. U, V, W Pin Spec. : UA-F1512(Made by Suh-il Electronic) b. FG Pin Spec. : 1.25-4(Ring Terminal) 3. Cable Spec. : 4Cx0.75SQ(AWG18) (APM-SAR3A, SAR5A, SA01A, it will be 0.5SQ)	PIN No.	Phase	1	U	2	V	3	W	4	Ground
PIN No.	Phase													
1	U													
2	V													
3	W													
4	Ground													
For Power	Standard Motor Brake Cable	APC-P□□□KB	All models of APM – SA APM – SB APM – SC SERIES	Motor Side Connector Drive Side Connector <table><tr><th>PIN No.</th><th>Phase</th></tr><tr><td>1</td><td>BK+</td></tr><tr><td>2</td><td>BK-</td></tr></table> 1. Motor Side Connector a. CAP Spec.(6 Position) : 172157-1(Made by AMP) b. SOCKET Spec. : 170362-1(Made by AMP) 2. Drive Side Connector a. CONNECTOR Spec. : 1.25-3(Ring Terminal) 3. Cable Spec. : 2Cx0.75SQ(AWG18)	PIN No.	Phase	1	BK+	2	BK-				
PIN No.	Phase													
1	BK+													
2	BK-													
For Power	Flat Motor Power Cable (for small power motor)	APCS-P□□□FS	All models of APM – FB APM – FC SERIES	Motor Side Connector Drive Side Connector Front direction Rear direction <table><tr><th>PIN No.</th><th>Phase</th></tr><tr><td>1</td><td>W</td></tr><tr><td>2</td><td>V</td></tr><tr><td>3</td><td>U</td></tr><tr><td>4</td><td>Ground</td></tr></table> 1. Motor Side Connector a. PLUG Spec. : JN4AT04NJ1-R(Made by JAE) b. SOCKET Spec. : ST-TMH-S-C1B(Made by JAE) 2. Drive Side Connector(U, V, W, FG) a. U, V, W Pin Spec. : UA-F1512(Made by Suh-il Electronic) b. FG Pin Spec. : 1.25-4(Ring Terminal) 3. Cable Spec. : 4Cx0.75SQ(AWG18)	PIN No.	Phase	1	W	2	V	3	U	4	Ground
PIN No.	Phase													
1	W													
2	V													
3	U													
4	Ground													

Options and Peripherals

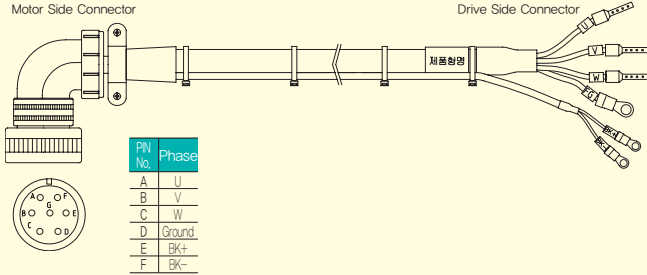
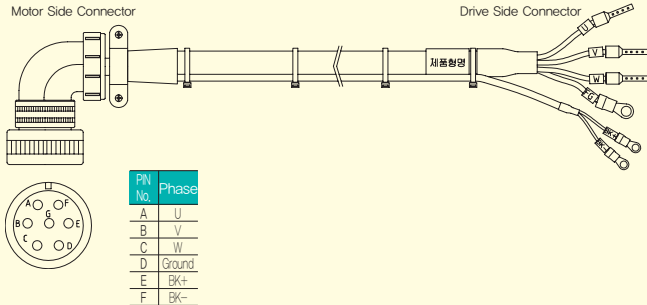
Specifications for Options [Power Cable]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications
For Power	Standard Motor Power Cable	APCS-P□□□HS	All models of APM - SE APM - HE SERIES	 1. Motor Side Connector a. PLUG Spec. : MS3108B20-4S(Made by MS) 2. Drive Side Connector a. U, V, W Pin Spec. : UA-F2012(Made by Suh-il Electronic) b. FG Pin Spec. : 2-4(Ring Terminal) 3. Cable Spec. : 4Cx2.0SQ(AWG14) Note) UA-F1512 Pin will be applied for the drive connection side of APM-SE03M Series cable.
For Power	Standard Motor Power Cable	APCS-P□□□IS	APM - SF30A APM - SF22D APM - SF35D APM - LF35D APM - SF20G APM - SF30G APM - LF30G APM - SF12M APM - SF20M APM - SF30M APM - LF30M APM - SG22D APM - SG35D APM - LG35D APM - SG20G APM - SG30G APM - LG30G APM - SG12M APM - SG20M APM - SG30M APM - LG30M	 1. Motor Side Connector a. PLUG Spec. : MS3108B22-22S(Made by MS) 2. Drive Side Connector a. U, V, W Pin Spec. : UA-F4012(Made by Suh-il Electronic) b. FG Pin Spec. : 3.5-4(Ring Terminal) 3. Cable Spec. : 4Cx3.5SQ(AWG12)
For Power	Flat Motor Brake Cable (for small power motor)	APCS-B□□□QS	All models of APM - FB APM - FC SERIES	 1. Motor Side Connector a. PLUG Spec. : JN4FT02SJ1-R b. SOCKET Spec. : ST-TMH-S-C1B 2. Drive Side Connector a. CONNECTOR Spec. : 1.25x3(KET GP110012) 3. Cable Spec. : 2Cx0.75SQ(AWG18)

L7 SERIES SYSTEM

Options and Peripherals

Specifications for Options [Power Cable]

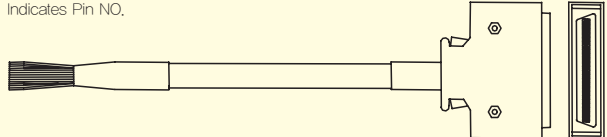
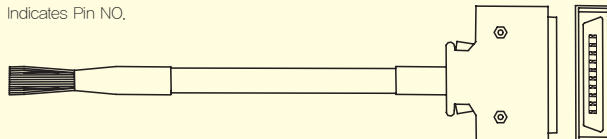
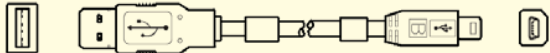
Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications
For Power	Standard Motor Power Cable (Brake Type)	APCS- P□□□NB	All models of APM – SE SERIES	 1. Motor Side Connector a. PLUG Spec. : MS3108B20–15S(Made by MS) 2. Drive Side Connector a. U, V, W Pin Spec. : UA–F2012(Made by Suh-il Electronic) b. Cable Spec. : 4Cx2.0SQ c. FG Pin Spec. : 2–4(Ring Terminal) 3. Brake Power Connector a. BK Pin Spec. : 1.25–3(Ring Terminal) b. Cable Spec. : 2Cx0.75SQ
For Power	Standard Motor Power Cable (Brake Type)	APCS- P□□□PB	All models of APM – SF SERIES	 1. Motor Side Connector a. PLUG Spec. : MS3108B24–10S(Made by MS) 2. Drive Side Connector a. U, V, W Pin Spec. : UA–F4012(Made by Suh-il Electronic) b. Cable Spec. : 4Cx3.5SQ c. FG Pin Spec. : 3.5–4(Ring Terminal) 3. Brake Power Connector a. BK Pin Spec. : 1.25–3(Ring Terminal) b. Cable Spec. : 2Cx0.75SQ

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	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Options and Peripherals

Specifications for Options [Signal Cable]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications
For Signal	CN1 Cable	APC- CN1□□A	L7S SERIES	[Upper Controller] [Drive Connection Side CN1] Indicates Pin NO.  1. Drive Connection Side(CN1) a. CASE Spec. : 10350-52A0-008(Made by 3M) b. CONNECTOR Spec. : 10150-3000VE(Made by 3M) c. CABLE Spec. : 20276-SB 25P(AWG28)
For Signal	CN1 Cable	APCS- CN1□□A	L7N SERIES	[Upper Controller] [Drive Connection Side CN1] Indicates Pin NO.  1. Drive Connection Side(CN1) a. CASE Spec. : 10320-52A0-008(Made by 3M) b. CONNECTOR Spec. : 10120-3000VE(Made by 3M)
For Signal	Communication Cable	APCS- CN5L7U	All models of L7 SERIES	[PC -USB Port] [Servo Drive - CN5]  1. PC Connection Side : USB A Plug 2. Drive Connection Side(CN5) : Mini USB 5P Plug 3. Electric Requirements : Double shielded, Twisted Pair, EMI-filter attached type (Ex. : SANWA社 KU-AMB518)

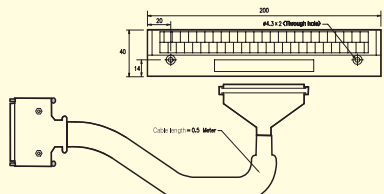
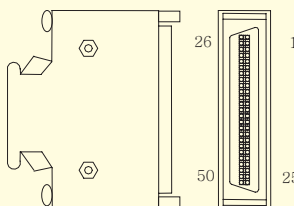
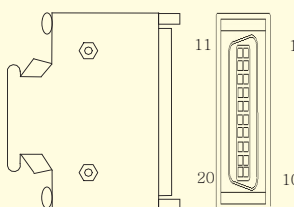
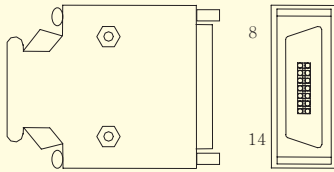
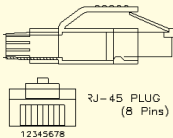
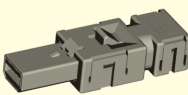
Note1) □□□ of Model Name indicates the kind and length of cable. And the declaration is as below

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

L7 SERIES SYSTEM

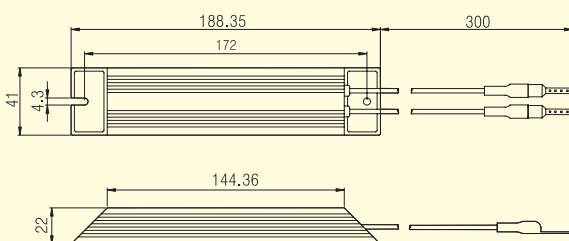
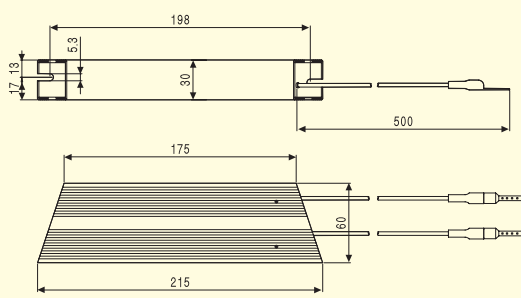
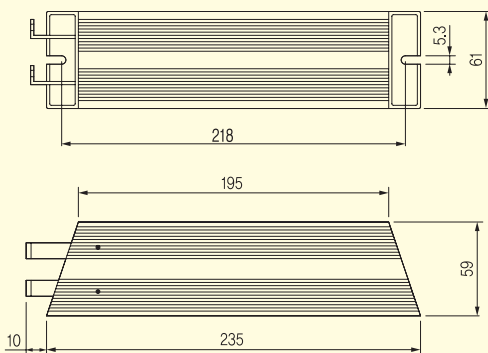
Options and Peripherals

Specifications for Options [Connector]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications																														
T/B	CN1 ㉔ T/B	APC-VSCN1T	L7S SERIES	 1. APC-VSCN1T : CN1 T/B for APD-VS 2. Cable length can be changed upon request 3. Standard Cable length : 0.5[m]																														
CN	CN1 Connector	APC-CN1NNA	L7S SERIES	 1. CASE Spec. : 10350-52A0-008(Made by 3M) 2. CONNECTOR Spec. : 10150-3000VE(Made by 3M)																														
CN	CN1 Connector	APC-CN2NNA	L7N SERIES	 1. CASE Spec. : 10320-52A0-008(Made by 3M) 2. CONNECTOR Spec. : 10120-3000VE(Made by 3M)																														
CN	CN2 Connector	APC-CN3NNA	All models of L7 SERIES	 1. CASE Spec. : 10314-52A0-008(Made by 3M) 2. CONNECTOR Spec. : 10114-3000VE(Made by 3M)																														
CN	CN3 CN4 EtherCAT Connector	APCS- CN4NNA	L7N SERIES	 <table><tr><th>Pin No.</th><th>Phase</th><th>Color</th></tr><tr><td>1</td><td>Tx/Rx0 Plus</td><td>White/Orange</td></tr><tr><td>2</td><td>Tx/Rx0 Minus</td><td>Orange</td></tr><tr><td>3</td><td>Tx/Rx1 Plus</td><td>White/Green</td></tr><tr><td>4</td><td>Tx/Rx2 Plus</td><td>Blue</td></tr><tr><td>5</td><td>Tx/Rx2 Minus</td><td>White/Blue</td></tr><tr><td>6</td><td>Tx/Rx1 Minus</td><td>Green</td></tr><tr><td>7</td><td>Tx/Rx3 Plus</td><td>White/Brown</td></tr><tr><td>8</td><td>Tx/Rx3 Minus</td><td>Brown</td></tr><tr><td>Plate</td><td></td><td>SHIELD</td></tr></table> Note) EtherCAT use only 4wires(1,2,3,6)	Pin No.	Phase	Color	1	Tx/Rx0 Plus	White/Orange	2	Tx/Rx0 Minus	Orange	3	Tx/Rx1 Plus	White/Green	4	Tx/Rx2 Plus	Blue	5	Tx/Rx2 Minus	White/Blue	6	Tx/Rx1 Minus	Green	7	Tx/Rx3 Plus	White/Brown	8	Tx/Rx3 Minus	Brown	Plate		SHIELD
Pin No.	Phase	Color																																
1	Tx/Rx0 Plus	White/Orange																																
2	Tx/Rx0 Minus	Orange																																
3	Tx/Rx1 Plus	White/Green																																
4	Tx/Rx2 Plus	Blue																																
5	Tx/Rx2 Minus	White/Blue																																
6	Tx/Rx1 Minus	Green																																
7	Tx/Rx3 Plus	White/Brown																																
8	Tx/Rx3 Minus	Brown																																
Plate		SHIELD																																
CN	CN6 Connector	APCS- CN6J	L7N SERIES	 <table><tr><th>Pin No.</th><th>V/I Phase</th></tr><tr><td>1</td><td>+12VA</td></tr><tr><td>2</td><td>-12VA</td></tr><tr><td>3</td><td>HWBBI-</td></tr><tr><td>4</td><td>HWBBI+</td></tr><tr><td>5</td><td>HWBBI-</td></tr><tr><td>6</td><td>HWBBI+</td></tr><tr><td>7</td><td>EDM+</td></tr><tr><td>8</td><td>EDM-</td></tr></table> 1. Spec. : 2040008-1(TE)	Pin No.	V/I Phase	1	+12VA	2	-12VA	3	HWBBI-	4	HWBBI+	5	HWBBI-	6	HWBBI+	7	EDM+	8	EDM-												
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Options and Peripherals

Specifications for Options [Braking Resistance]

Type	Product Type	Model Name(Note1)	Applicable Motor	Specifications
Resistance	Braking Resistance	APCS-140R50	L7□A001□ L7□A002□ L7□A004□	 IRH 140W 50ohm
Resistance	Braking Resistance	APCS-300R30	L7□A008□ L7□A010□	 IRV 300W 30ohm
Resistance	Braking Resistance	APC-600R30	L7□A020□ L7□A035□	 IRV 600S 30ohm * L7□A020□ – Connects 2pcs of resistance in parallel L7□A030□ – Connects 3pcs of resistance in parallel

□ Specifications of built-in braking resistance

Type	Drive	L7□A001	L7□A002	L7□A004	L7□A010	L7□A035
Braking Resistance		100[Ω]	100[Ω]	100[Ω]	40[Ω]	23[Ω]
Capacity		50[W]	50[W]	50[W]	100[W]	300[W]



LS^M

ecapion



LS Industrial Systems creates core automation solutions that cover everything from production facilities to information systems.

As a leader in automation solutions that introduced products like PLCs, Inverter, DCSs, and HMIs for the first time in Korea, LS Industrial Systems is developing and producing top Products that meet the most exacting standards in Korea and around the world.



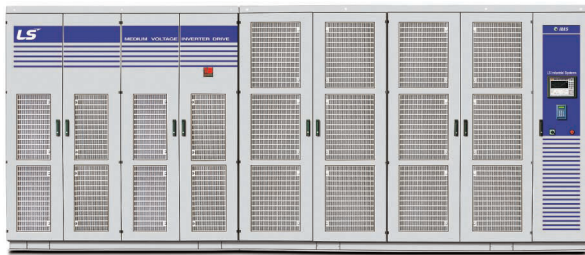
Ever since producing and supplying Korea's first programmable logic controller (PLC), LS Industrial Systems has played a pivotal role in the history of automation equipment in Korea. From the most diverse machines to large-sized process control, the company has created an optimum automation environment based on the country's highest levels of reliability and technology. While leading industrial automation and supplying optimum solutions for automobile companies, international airports, subways, power plants, and LCD production complexes,

LS Industrial Systems has had its industry-leading technology recognized by international certification organizations like CE and UL. As the first company to introduce a general-purpose AC Drives in Korea and the undisputed leader in the field of AC Drives, LS Industrial Systems developed iS7 AC Drives, which provide advanced embedded functions and PLC (K120S), and recently released next generation products such as Medium Voltage AC Drives through continuous technology development.

LS Industrial Systems

Inverter, AC Drive

Medium Voltage AC Drive



MV Drive

- 3kV 200kVA ~ 3,700kVA, 4kV 250kVA ~ 4,700kVA,
6kV 400kVA ~ 7,500kVA, 10kV 600kVA ~ 11,100kVA,
- Auto Cell Bypass Method allows an Easy Maintenance
 - FAN Speed Control by Inverter Internal Heat Value
 - New Algorithm for an Anti-Current Hunt
 - Built-in RS485(or Modbus-RTU) Communication
Optional : DeviceNet, Lonworks, CANopen, Profibus-DP, EtherNet-IP
 - Optimized Monitoring System for Users

Low Voltage AC Drive



Starvert-iG5A

- Powerful & compact sensorless vector control AC Drives
- 1 phase 0.4 ~ 1.5kW (0.5 ~ 2HP), 200 ~ 230V
 - 3 phase 0.4 ~ 22kW (0.5 ~ 30HP), 200 ~ 230V
 - 3 phase 0.4 ~ 22kW (0.5 ~ 30HP), 380 ~ 480V
 - Selectable V/F, sensorless vector control
 - Motor parameter auto-tuning
 - Powerful torque at overall speed range
 - IP20 enclosure, UL type 1 (option)
 - Built-in RS 485 (LS Bus/Modbus RTU) communication



Starvert-iS

- Precise vector control standard AC Drives
- 3 phase 0.75 ~ 55kW (1 ~ 75HP), 200 ~ 230V
 - 3 phase 0.75 ~ 75kW (1 ~ 100HP), 380 ~ 480V
 - Selectable V/F, sensorless, sensorless vector control (optional)
 - Optimum acceleration & deceleration for a maximum torque
 - Multi-function I/O terminal :
input : 27 functions/output: 21 functions
 - Communication options: Modbus RTU, Profibus-DP, DeviceNet, RS485 (LS Bus), Fnet



Starvert-iS7

- High torque performance and precise AC Drives
- 3 phase 0.75 ~ 22kW (1 ~ 30HP), 200 ~ 230V
 - 3 phase 0.75 ~ 160kW (1 ~ 250HP), 380 ~ 480V
 - Constant torque/variable torque dual rating
 - Selectable V/F, sensorless, sensorless vector control
 - Available IP54 enclosure (0.75 ~ 22kW[1 ~ 30HP]) as built-in option
 - Built-in RS485 (LS Bus/Modbus RTU) Communication
 - Available EMC filter & DC reactor as built-in option
EMC filter (0.75 ~ 22kW)/DC reactor (0.75 ~ 160kW)



Starvert-iP5A

- Fan & pump specialized AC Drives
- 3 phase 5.5 ~ 30kW (7.5 ~ 40HP), 200 ~ 230V
 - 3 phase 5.5 ~ 450kW (7.5 ~ 600HP), 380 ~ 480V
 - Specialized functions for fan & pump :
Advanced PID control (Pre-PID, Dual PID)
Multi motor control function (Up to 4 motors: 5.5~90kW)
 - Selectable V/F, sensorless vector control
 - Built-in RS485 (LS Bus) communication
 - Communication boards (optional) :
Modbus RTU, DeviceNet, Profibus-DP, Lonworks, Bactnet

Low Voltage AC Drive Panel



Low Voltage AC Drive Panel

- 3 phase 220V/380V/440V 0.75 ~ 450KW
- For HVAC/Plant, Vector system, Medium- Large size Specialized function for capacity and energy saving FAN/PUMP
 - Human Interface Design for user convenience
 - Circuit design consider electric noise consider provide various option and solution
 - Built-in optimal sequence for satisfied Operating Conditions
 - IEC standard safety design

Photovoltaic Inverter



Solarvert

- Outdoor : 1 phase 3kW (IP54 Enclosure)
- Max power point tracking (MPPT)
 - Low distortion
 - Compact & slim size
 - User friendly HMI
 - High efficiency
 - Remote monitoring with RS485 communication

PLCs(Programmable Logic Controllers)

XGT Series



XGR

- Base, power, CPU, network redundancy
- Processing speed : 42ns/step
- I/O points : max. 131,072
- Total memory : 32MB (program 7MB, data 2MB, reserved 7MB, flash 16MB)
- Max. 31 expansion base
- Switching over time : 4.3 ~ 22ms
- IEC 61131-3 standard language
- Enhanced maintenance via system history and network ring configuration



XGI

- Processing speed : 28ns/step
- I/O device point : 131,072 (remote I/O)
- Program capacity : 128K ~ 1Mbyte
- IEC61131-3 standard programming
 - LD (ladder), SFC (sequential function chart), ST (structuredtext), User defined FB (function block)
- Powerful built-in PID and process control
 - Max. 256 loops and variety of process functions



XGK

- Processing speed : 28ns/step
- High speed backplane (base) transfer
- Compact size (Module size 27x98x90)
- The system solution based on open network
- Setup and operation of each special modules without additional complicated user program



XGB(XBM)

- Processing speed : 160ns/step
- The smallest size among the same class (Basic unit: 30x90x60)
- Extension to as many as 7 layers, controlling as many as 256 points
- Best suited for medium and small system
- Maximum 5 channel communication available using built-in and extension communication modules



XGB(XBC)

- Processing speed : 83ns/step
- Extension to as many as 10 layers, controlling as many as 384 points
- Supporting floating-point arithmetic
- Built-in Cnet, HSC, PID, Positioning, Pulse Catch, Input Filter, External Interrupt
- Download port: serial, USB



LS Industrial Systems

HMI's(Human Machine Interfaces)

SMART I/O Series



Block Type SMART I/O

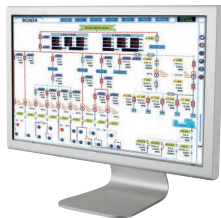
- Compatible with Modbus, Profibus DP, DeviceNet, Rnet
- Suited for medium and small scale network system
- Small size



Extension Type SMART I/O

- Open protocol Profibus-DP, DeviceNet, EtherNet/IP, Modbus/TCP, Rnet
- Suited for medium and large scale system
- Wide extension of input/output
- Maximum 256 points
- 100% compatible with XGB I/O module

XGT InfoU



XGT InfoU (Powerful & Trendy HMI Software)

- Integrated development environment for interactive user interface
- Direct import tag database for LS PLC software
- Open architecture meets industrial standards (OPC, OLE DB, etc.)
- Easy to use
- Program development environment
- for simple application

XGT Panel Series



XP80-TTA

- Screen size : 31cm (12.1")
- TFT color : SVGA (800 x 600)
- Display color : 65,536 color
- 8-wire system, analog
- 10/100 BASE-T Ethernet, USB
- RS232C, RS422/485
- CF memory card

XGT Panel Series



XP70-TTA

- Screen size: 26cm (10.4")
- TFT color: VGA (640 x 480)
- Display color: 65,536 color
- 8-wire system, analog
- 10/100 BASE-T Ethernet, USB
- RS232C, RS422/485
- CF memory card



XP50-TTA

- Screen size: 21cm (8.4")
- TFT color: VGA (640 x 480)
- Display color: 65,536 color
- 8-wire system, analog
- 10/100 BASE-T Ethernet, USB
- RS232C, RS422/485
- CF memory card

MEMO

LS Mecapion

MEMO

LS Mecapion



Safety Instructions

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

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