



Moving towards tomorrow

MECAPION AC Servo Motor

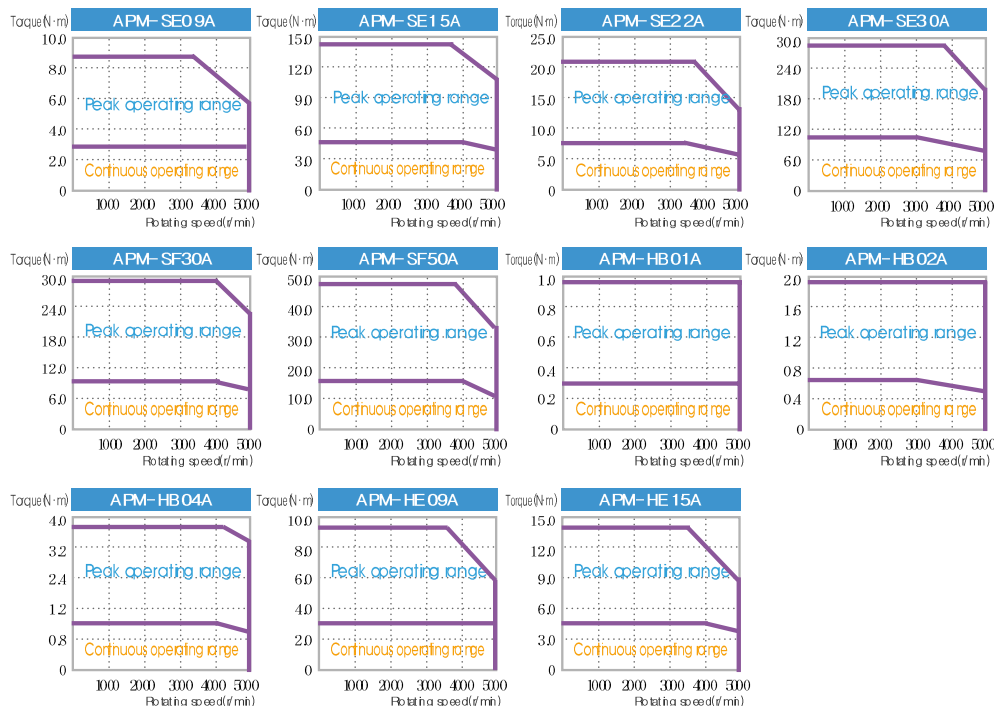
Servo Motor's Characteristics <Rated Speed 3000r/min>

Servo Motor Model (APM-□□□□□)	SE09A	SE15A	SE22A	SE30A	SF30A	SF50A	HB 01A	HB 02A	HB 04A	HE09A	HE15A	
Servo Drive Model (APD-□□□□□)	VS10	VS15	VS20	VS35	VS35	VS50	VS01	VS02	VS04	VS10	VS15	
Flange Size (□)	□130				□180		□60		□130			
Rated Power	[kW]	0.9	1.5	2.2	3.0	3.0	5.0	0.1	0.2	0.4	0.9	1.5
Rated Torque	[N·m]	2.86	4.77	7.0	9.55	9.55	15.91	0.318	0.637	1.274	2.86	4.77
	[kgf·cm]	29.2	48.7	71.4	97.4	97.4	162.3	3.25	6.50	13.0	29.2	48.7
Max. Instantaneous torque	[N·m]	8.59	14.32	21.01	28.65	28.64	47.74	0.955	1.912	3.822	8.59	14.32
	[kgf·cm]	87.7	146.1	214.3	292.2	292.2	487.0	9.74	19.5	39.0	87.7	146.1
Rated rpm	[r/min]	3,000										
Max. rpm	[r/min]	5,000										
Moment of inertia	[kg·m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	0.269	0.333	0.461	19.558	22.268
	[gf·cm ² ·s ²]	6.792	12.238	17.685	23.132	31.35	53.16	0.274	0.339	0.470	19.943	22.707
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia		10 times of motor inertia		5 times of motor inertia		
Rated Power Rate	[kW/S]	12.31	18.98	28.25	40.17	29.66	48.56	3.34	11.98	34.47	4.10	10.01
Speed, Position Transducer	Standard(Notel)	Incremental 3000[P/R]					Incremental 1024 [P/R]			Incremental 2048[P/R]		
	Option	Absolute, 11/13bit Manchester communication					-			-		
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors)										
	Rated Time	Continuous										
	Ambient Temp.	Operating Temp. : 0~40[°C] · Storage Temp. : -20~80[°C]										
	Ambient Temp.	Lower than 90[%] (Avoid condensation)										
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust										
EV	Elevation/Vibration 49[m/s ²] (5G)											
Weight	[kg]	5.5	7.54	9.68	11.78	12.11	17.7	0.89	1.16	1.69	5.82	7.43



Note) Standard Encoder specification is 5[V] Line Driver.

Rotation Speed-Torque's Characteristics





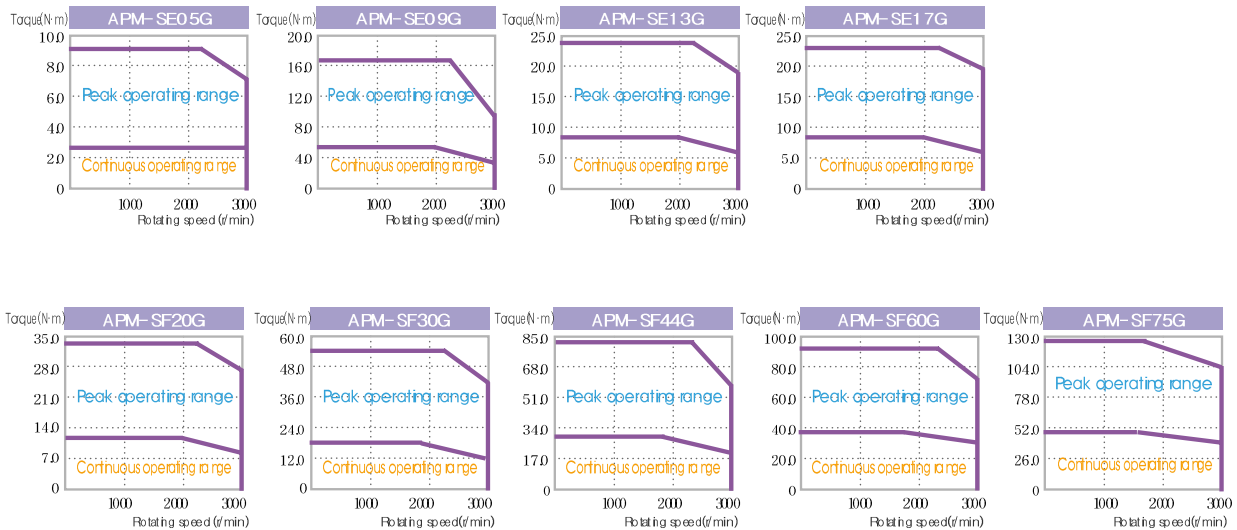
Characteristics of Servo Motor and Torque's Characteristics

Servo Motor's Characteristics <Rated Speed 1500r/min>

Servo Motor Model (APM-□□□□□)	SE05G	SE09G	SE13G	SE17G	SF20G	SF30G	SF44G	SF60G	SF75G	
Servo Drive Model (APD-□□□□□)	VS05	VS10	VS15	VS20	VS20	VS35	VS50	VS75	VS110	
Flange Size (□)	□130				□180					
Rated Power	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4	6.0	7.5
Rated Torque	[N · m]	2.86	5.41	8.27	10.82	11.45	18.46	28.0	38.2	47.7
	[kgf · cm]	29.22	55.19	84.41	110.38	116.88	188.3	285.7	389.8	487.2
Max. Instantaneous torque	[N · m]	8.59	16.23	24.82	32.46	34.35	55.38	84.03	95.5	128.8
	[kgf · cm]	87.66	165.57	253.23	331.14	350.64	564.9	857.1	974.9	1315.4
Rated rpm	[r/min]	1,500								
Max. rpm	[r/min]	3,000						2,500		
Moment of inertia	[kg · m ² × 10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	121.35	143.82
	[gf · cm · s ²]	6.792	12.238	17.685	23.132	31.35	53.16	85.24	123.74	146.76
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia				
Rated Power Rate	[kW/S]	12.28	24.39	39.54	51.61	42.70	65.36	93.84	120.32	158.48
Speed, Position Transducer	Standard(Notel)	Incremental 3000[P/R]								
	Option	Absolute, Manchester communication								
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)								
	Rated Time	Continuous								
	Ambient Temp.	Operating Temp. : 0~40[°C] · Storage Temp. : -20~80[°C]								
	Ambient Temp.	Lower than 90[%] (Avoid condensation)								
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust								
Weight	[kg]	Elevation/Vibration 49[m/s ²] (5G)								
		5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6	39.4

Note) Standard Encoder specification is 5[V] Line Driver.

Rotation Speed-Torque's Characteristics





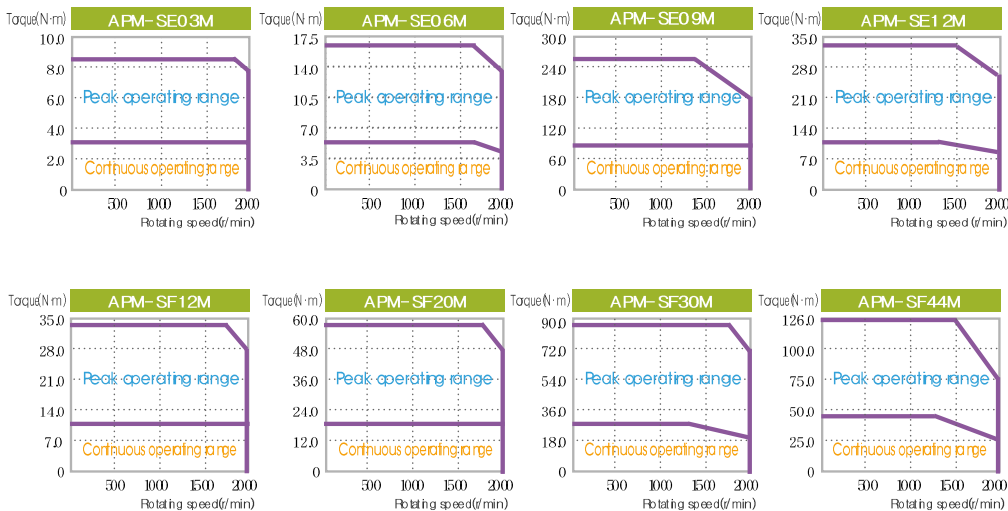
Characteristics of Servo Motor and Torque's Characteristics

Servo Motor's Characteristics <Rated Speed 1000r/min>

Servo Motor Model (APM-□□□□□)	SE03M	S06M	SE09M	SE12M	SF12M	SF20M	SF30M	SF44M	
Servo Drive Model (APD-□□□□□)	VS04	VS05	VS10	VS15	VS15	VS20	VS35	VS50	
Flange Size (□)	□130				□180				
Rated Power [kW]	0.3	0.6	0.9	1.2	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
	[kgf·cm]	29.2	58.4	87.7	116.9	116.9	194.8	292.2	428.7
Max. Instantaneous torque	[N·m]	8.59	17.18	25.77	34.22	34.38	57.29	85.94	126.05
	[kgf·cm]	87.7	175.3	262.9	349.1	350.7	584.4	876.6	1286.2
Rated rpm [r/min]	1,000								
Max. rpm [r/min]	2,000								
Moment of inertia	[kg·m ² ×10 ⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	121.35
	[gf·cm ² ·s ²]	6.792	12.238	17.685	23.132	31.35	53.16	85.24	123.74
Allowable Load Inertia Ratio	10 times of motor inertia				5 times of motor inertia				
Rated Power Rate [kW/S]	12.31	27.34	42.56	57.85	42.70	69.96	98.16	145.55	
Speed, Position Transducer	Standard(Notel)	Incremental 3000[P/R]							
	Option	Absolute, Manchester communication							
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)							
	Rated Time	Continuous							
	Ambient Temp.	Operating Temp. : 0~40[°C] · Storage Temp. : -20~80[°C]							
	Ambient Temp.	Lower than 90[%] (Avoid condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust							
Weight [kg]	E/V	Elevation/Vibration 49[m/s ²](5G)							
		5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6

Note) Standard Encoder specification is 5[V] Line Driver.

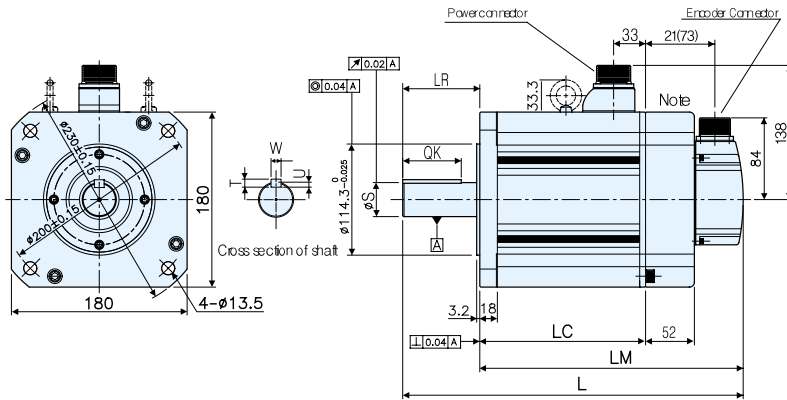
Rotation Speed-Torque's Characteristics





Servo Motor Dimension

SF Serise | **APM-SF30A, SF22D, SF20G, SF12M, APM-SF50A, SF35D, SF30G, SF20M, APM-SF55D, SF44G, SF30M, APM-SF75D, SF60G, SF44M, APM-SF75G**



Model	External Dimension				Shaft, Key					Weight (kg)
	L	LM	LC	LR	S	QK	T	W	U	
SF30A, SF22D, SF20G, SF12M	261.8(313.8)	182.8(234.8)	132.8	79	35 ^{+0.01}	60	8	10	5	12.4(19.2)
SF50A, SF35D, SF30G, SF20M	294.8(346.8)	215.8(267.8)	165.8	79	35 ^{+0.01}	60	8	10	5	17.7(24.9)
SF55D, SF44G, SF30M	344.8(396.8)	265.8(317.8)	215.8	79	35 ^{+0.01}	60	8	10	5	26.3(33.4)
SF75D, SF60G, SF44M	404.8(456.8)	325.8(377.8)	275.8	79	35 ^{+0.01}	60	8	10	5	35.6(42.8)
SF75G	458.9(510.8)	345.8(397.8)	295.8	113	42 ^{-0.0016}	96	8	12	5	39.4(45.1)

Plug Specification

Specification : MS3102A22-22P (Standard)

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

Specification : MS3102A24-10P (Brake attached type)

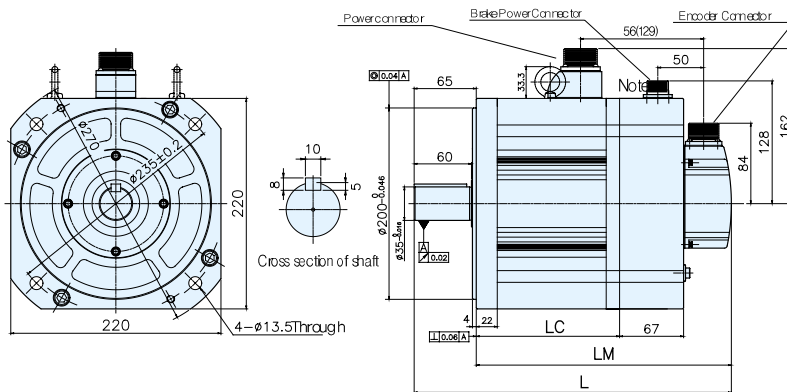
Pin No.	Phase	Pin No.	Phase
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Specification : 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		

Note 1) Use DC24V or DC90V for brake input supply depending on Brake specification
 2) The dimension in () is for Brake attached motor

SG Serise | **APM-SG22D, SG20G, SG12M, APM-SG35D, SG30G, SG20M, APM-SG55D, SG44G, SG30M, APM-SG75D, SG60G, SG44M**



Model	External Dimension			Weight (kg)
	L	LM	LC	
SG22D, SG20G, SG12M	237(303)	172(238)	122	16.95(30.76)
SG35D, SG30G, SG20M	257(323)	192(258)	142	21.95(35.7)
SG55D, SG44G, SG30M	293(359)	228(294)	178	30.8(44.94)
SG75D, SG60G, SG44M	321(387)	256(322)	206	37.52(50.94)

Plug Specification

Specification : MS3102A22-22P (Standard)

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

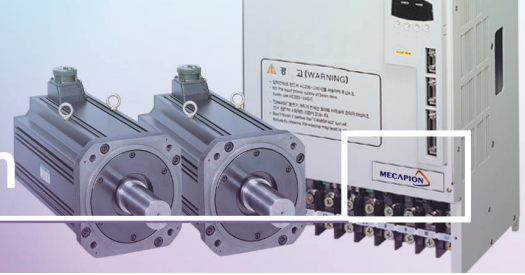
Specification : MS3102A14S-7P (Brake attached type)

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

Specification : 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		

Note 1) Use DC24V or DC90V for brake input supply depending on Brake specification
 2) The dimension in () is for Brake attached motor



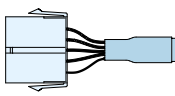
Options(Cable)

Incremental Encoder Cable

Model (★Note1) : **APC - E□□□AS**

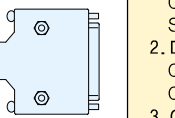
Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-SC Series, APM-HB Series

Motor Side Connector



AMP 172163-1 CAP
(15 Circuits)

Drive Side Connector(CN2)



3M 10320-52A0-008
(15 Circuits)

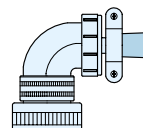
- Motor Side Connector**
CAP (15 Position) : 172163-1(Made by AMP)
SOCKET : 170861-1(Made by AMP)
- Drive Side Connector(CN2)**
CASE : 10320-52A0-008(Made by 3M)
CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**
7P×0.2SQ(AWG24)

PIN NO.	Encoder signal	PIN NO.	Encoder signal
1	A	9	V
2	\bar{A}	10	\bar{V}
3	B	11	W
4	\bar{B}	12	\bar{W}
5	Z	13	+5V
6	\bar{Z}	14	0V
7	U	15	SHIELD
8	\bar{U}		

Model (★Note1) : **APC-E□□□BS**

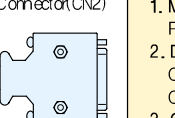
Applicable Motor : All models of APM-SE Series, APM-SF Series, APM-SG Series, APM-HE Series

Motor Side Connector



MS3108B20-29S
(15Circuits)

Drive Side Connector(CN2)



3M 10320-52A0-008
(15 Circuits)

- Motor Side Connector(MSMilitary Standard)**
PLUG : MS3108B(MS3106B) 20-29S
- Drive Side Connector(CN2)**
CASE : 10320-52A0-008(Made by 3M)
CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**
7P×0.2SQ(AWG24)

PIN NO.	Encoder signal	PIN NO.	Encoder signal
1	A	11	Z
2	\bar{A}	12	SHIELD
3	B	13	\bar{B}
4	\bar{B}	14	Z
5	U	15	\bar{A}
6	\bar{U}	16	B
7	-	17	-
8	-	18	A
9	0V	19	+5V
10	-	20	-

Note1) □□□ of model indicates the kind and length of cable, and notation is as below

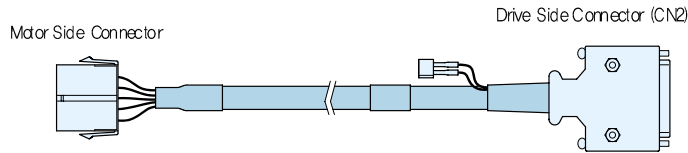
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20



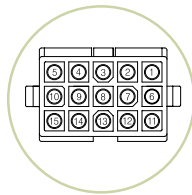
Absolute Encoder Cable

Model (★Note1) : **APC-E□□□AA**

Applicable Motor : All models of APM-SB Series, APM-SC Series

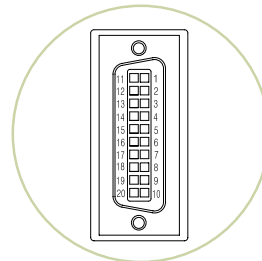


- Motor Side Connector**
 CAP (15 Position) : 172163-1(Made by AMP)
 SOCKET : 170361-1(Made by AMP)
- Drive Side Connector (CN2)**
 CASE : 10320-52A0-008(Made by 3M)
 CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**
 7P×0.25SQ(AWG24)
- BATTERY CONNECTOR**
 5267-02A(Made by MOLEX)



AMP 172163-1 CAP
(15Circuits)

Pin No.	Encoder Phase	Pin No.	Encoder Phase
1	A	9	BATTERY
2	Ā	10	BATTERY OV
3	B	11	RX
4	B̄	12	R̄X
5	Z	13	+5V
6	Z̄	14	OV
7	CLR	15	SHIELD
8	FG		

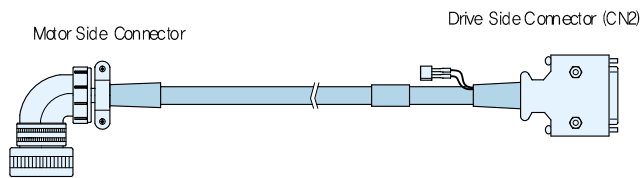


3M 10320-52A0-008
(15 Circuits)

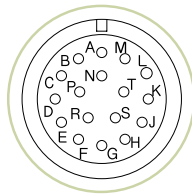
Pin No.	Encoder Phase	Pin No.	Encoder Phase
1	RX	11	Z̄
2	R̄X	12	SHIELD,FG
3	—	13	B̄
4	—	14	Z
5	—	15	Ā
6	—	16	B
7	—	17	—
8	—	18	A
9	OV	19	+5V
10	—	20	CLR

Model (★Note1) : **APC-E□□□BA**

Applicable Motor : All models of APM-SE Series, APM-SF Series, APM-SG Series

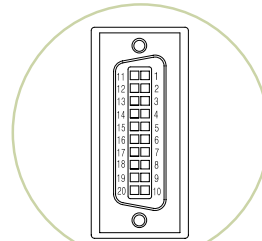


- Motor Side Connector (MS : Military Standard)**
 FLUG : MS3108B3106B20-29S
- Drive Side Connector (CN2)**
 CASE : 10320-52A0-008(Made by 3M)
 CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**
 7P×0.25SQ(AWG24)
- BATTERY CONNECTOR**
 5267-02A(Made by MOLEX)



MS3108B20-29S
(15Circuits)

Pin No.	Encoder Phase	Pin No.	Encoder Phase
A	A	M	CLR
B	Ā	N	FG
C	B	P	RX
D	B̄	R	R̄X
E	Z	H	+5V
F	Z̄	G	OV
K	BATTERY	J	SHIELD
L	BATTERY OV		



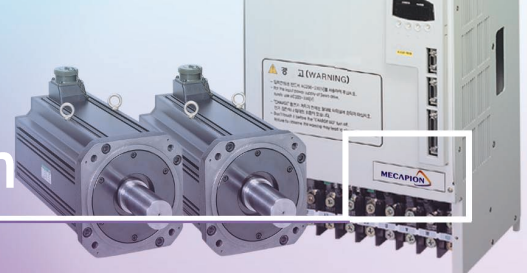
3M 10320-52A0-008
(15 Circuits)

Pin No.	Encoder Phase	Pin No.	Encoder Phase
1	RX	11	Z̄
2	R̄X	12	SHIELD,FG
3	—	13	B̄
4	—	14	Z
5	—	15	Ā
6	—	16	B
7	—	17	—
8	—	18	A
9	OV	19	+5V
10	—	20	CLR

Note1) □□ of model indicates the kind and length of cable, and notation is as below

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





Options(Cable)

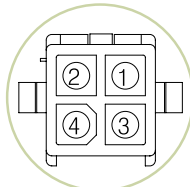
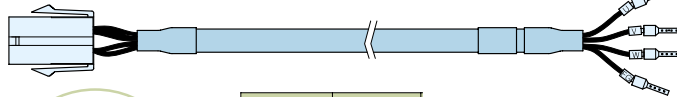
Power cable

Model (★Note1) : APC - P□□□CS

Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-HB Series / APM-SC04A, SC06A, SC03D, SC05D

Motor Side Connector

Drive Side Connector



AMP 172159-1 CAP
(4Circuits)

Pin No.	Phase
1	U
2	V
3	W
4	Ground

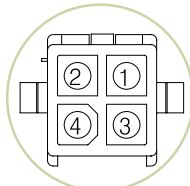
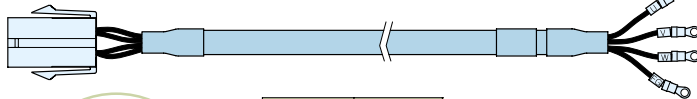
- Motor Side Connector**
CAP (4 Position) : 172159-1(Made by AMP)
SOCKET : 170362-1(Made by AMP)
- Drive Side Connector (U,V,W,FG)**
PIN : UA-F1512(Made by Suh-Il Electronic)
Compressor : UA-510A
(Made by Suh-Il Electronic)
- Cable**
4C×0.75SQ(AWG20)

Model (★Note1) : APC - P□□□DS

Applicable Motor : APM-SC08A, SC10A, SC06D, SC07D

Motor Side Connector

Drive Side Connector



AMP 172159-1 CAP
(4Circuits)

Pin No.	Phase
1	U
2	V
3	W
4	Ground

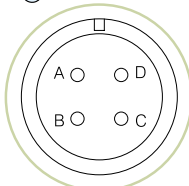
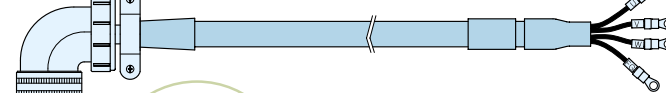
- Motor Side Connector**
CAP (4 Position) : 172159-1(Made by AMP)
SOCKET : 170362-1(Made by AMP)
- Drive Side Connector (U,V,W,FG)**
Connection terminals : 1.25×3(KET GP110012)
- Cable**
4C×0.75SQ(AWG18)

Model (★Note1) : APC - P□□□ES

Applicable Motor : All models of APM-SE Series, APM-HE Series

Motor Side Connector

Drive Side Connector



MS3108B20-4S
(4Circuits)

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

- Motor Side Connector(MS: Military Standard)**
PLUG : MS3108B(MS3106B)20-4S
- Drive Side Connector (U,V,W,FG)**
Connection terminals : 2.5×4(KET GP110721)
- Cable**
4C×2.0SQ(AWG14)



Note) For drive side connector of APM-SE03M Series cable, UA-F1512 pin is to be applied

Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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



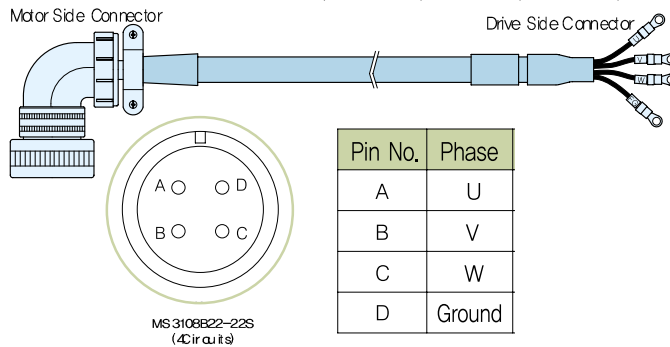
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MECAPION AC Servo System

Power cable

Model (★Note1) : **APC-P□□□FS**

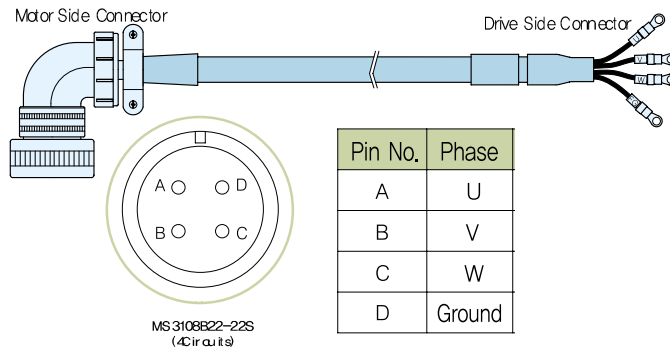
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M
SG22D, SG35D, SG20G, SG30G, SG12M, SG20M, SG30M



1. Motor Side Connector(MS: Military Standard)
PLUG : MS3108B(MS3106B)22-22S
2. Drive Side Connector(U, V, W, FG)
Connection terminals : 3.5x5(KET GP110028)
3. Cable
4Cx3.5SQ(AWG12)

Model (★Note1) : **APC-P□□□GS**

Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF75G, SF44M
SG55D, SG75D, SG44G, SG60G, SG44M



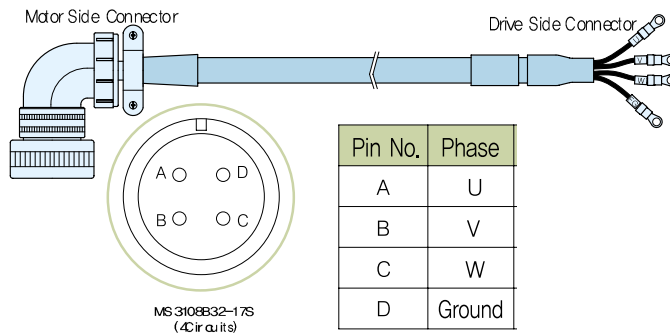
1. Motor Side Connector(MS: Military Standard)
PLUG : MS3108B(MS3106B)22-22S
2. Drive Side Connector(U, V, W, FG)
Connection terminals : 5.5x5(KET GP110028)
3. Cable
4Cx5.0SQ(AWG10)

Model (★Note1,2) : **APC-P□□□RS**

Applicable Motor : APM-SG110D, SG150G, SG60M

Model (★Note1,3) : **APC-P□□□SS**

Applicable Motor : SG85G, SG110G



★Note2

1. Motor Side Connector(MS: Military Standard)
PLUG : MS3108B(MS3106B)32-17S
2. Drive Side Connector(U, V, W, FG)
Connection terminals : 8.0x8(KET GP140841)
3. Cable
4Cx8.0SQ(AWG8)

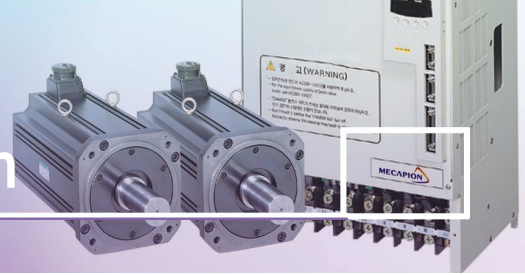
★Note3

1. Motor Side Connector(MS: Military Standard)
PLUG : MS3108B(MS3106B)32-17S
2. Drive Side Connector(U, V, W, FG)
Connection terminals : 11Cx8(KET GP140841)
3. Cable
4Cx14.0SQ(AWG6)

Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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



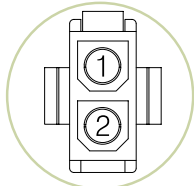
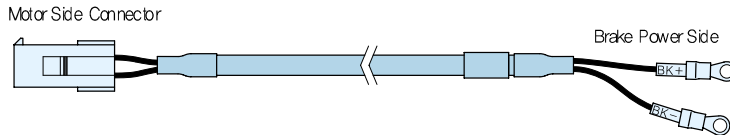


Options(Cable)

Brake cable

Model (★Note1) : APC-P□□□KB

Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-SC Series



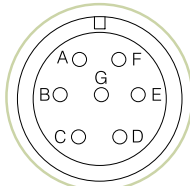
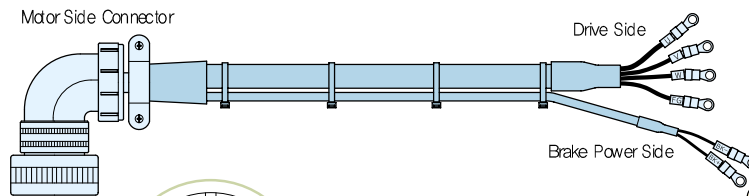
AMP 172157-1 CAP
(2Circuits)

Pin No.	Phase
1	BK+
2	BK-

- 1. Motor Side Connector**
CAP (2 Position) : 172157-1(Made by AMP)
SOCKET : 170362-1(Made by AMP)
- 2. Brake Power Side**
Connection terminals : 1.25×3(KET GP110012)
Cable : 2C×0.75SQ(AWG18)

Model (★Note1) : APC-P□□□MB

Applicable Motor : All models of APM-SE Series



MS 3108B20-15S
(6Circuits)

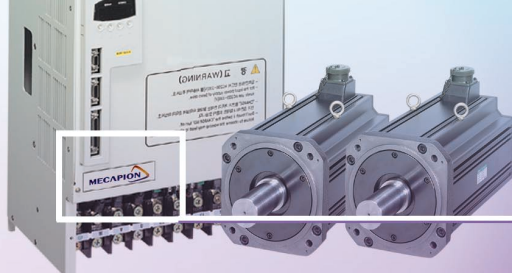
Pin No.	Phase
A	U
B	V
C	W
D	Ground
E	BK+
F	BK-

- 1. Motor Side Connector (MS Military Standard)**
PLUG : MS3108B(MS3106B)20-15S
- 2. Drive Side (U,V,W,FG)**
Connection terminals : 2.5×4(KET GP110721)
Cable : 4C×2.0SQ(AWG14)
- 3. Brake Power Side (+,-)**
Connection terminals : 1.25×3(KET GP110102)
Cable : 2C×0.75SQ(AWG18)

Note) For drive side connector of APM-SE03M Series cable, UA-F1512 pin is to be applied

Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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



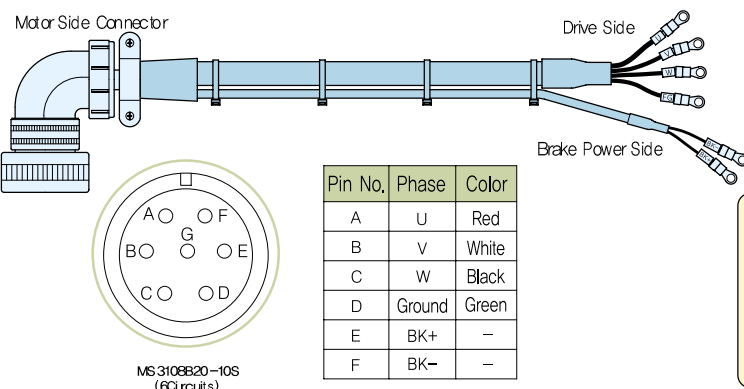
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MECAPION AC Servo System

Brake cable

Model (★Note1) : APC-P□□□NB

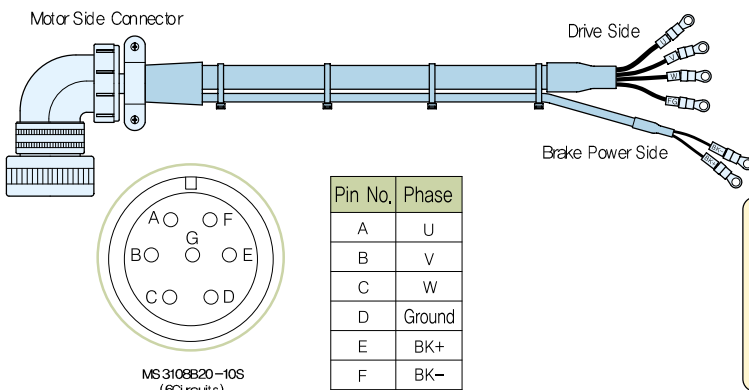
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M



1. Motor Side Connector (MS: Military Standard)
PLUG : MS3108B(MS3106B)24-10S
2. Drive Side (U,V,W,FG)
Connection terminals : 3.5x5(KET GP110028)
Cable : 4Cx3.5SQ(AWG12)
3. Brake Power Side (+,-)
Connection terminals : 1.25x3(KET GP110012)
Cable : 2Cx0.75SQ(AWG18)

Model (★Note1) : APC-P□□□PB

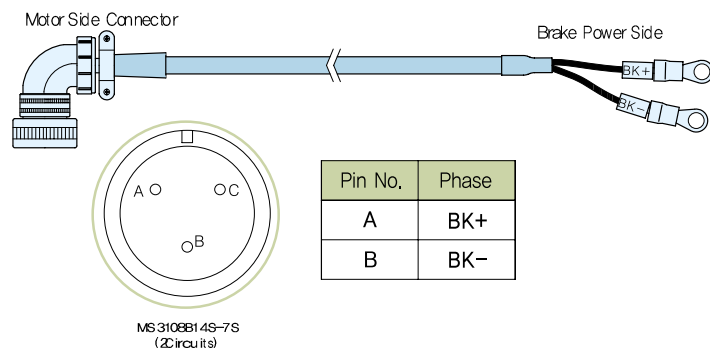
Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF75G, SF44M



1. Motor Side Connector (MS: Military Standard)
PLUG : MS3108B(MS3106B)24-10S
2. Drive Side (U,V,W,FG)
Connection terminals : 3.5x5(KET GP110028)
Cable : 4Cx5.5SQ(AWG10)
3. Brake power Side (+,-)
Connection terminals : 1.25x3(KET GP110012)
Cable : 2Cx0.75SQ(AWG18)

Model (★Note1) : APC-P□□□SB

Applicable Motor : All models of APM-SG Series



1. Motor Side Connector
PLUG : MS3108B(MS3106B)14S-7S
2. Brake Power Side (+,-)
Connection terminals : 1.25x3(KET GP110012)
3. Cable
2Cx0.75SQ(AWG18)

Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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

