



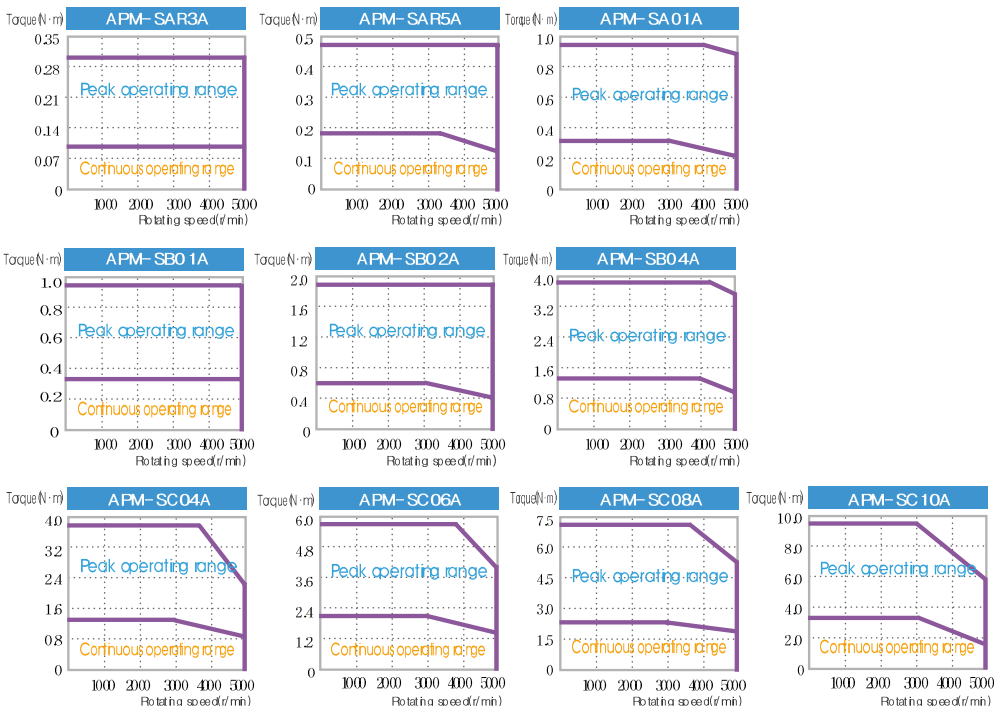
## Characteristics of Servo Motor and Torque's Characteristics

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

Servo Motor Model (APM-□□□□□)	SAR3A	SAR5A	SA01A	SB01A	SB02A	SB04A	SC04A	SC06A	SC08A	SC10A	
Servo Drive Model (APD-□□□□□)	VSR 5			VS01	VS01	VS02	VS04	VS04		VS10	
Flange Size (□)	□40			□60			□80				
Rated Power [kW]	0.03	0.05	0.1	0.1	0.2	0.4	0.4	0.6	0.8	1.0	
Rated Torque	[N·m]	0.095	0.159	0.318	0.318	0.637	1.274	1.27	1.91	2.55	3.19
	[kgf·cm]	0.97	1.62	3.25	3.25	6.50	13.0	13.0	19.5	26.0	32.5
Max. Instantaneous torque	[N·m]	0.286	0.477	0.955	0.955	1.912	3.822	3.82	5.34	6.88	9.56
	[kgf·cm]	2.92	4.87	9.74	9.74	19.5	39.0	39.0	54.5	70.2	97.5
Rated rpm	3,000										
Max. rpm	5,000										
Moment of inertia	[kg·m <sup>2</sup> × 10 <sup>-4</sup> ]	0.011	0.021	0.045	0.114	0.182	0.321	0.674	1.092	1.509	1.927
	[gf·cm <sup>2</sup> · s <sup>2</sup> ]	0.0112	0.0214	0.0459	0.116	0.186	0.327	0.687	1.114	1.539	1.966
Allowable Load Inertia Ratio	30times of motor inertia			20times of motor inertia			15times of motor inertia				
Rated Power Rate [kW/S]	5.57	10.52	23.80	8.92	22.26	50.65	24.07	33.45	43.02	52.65	
Speed, Position Transducer	Standard(Notel)	Incremental 2048 [P/R]			Incremental 2500 [P/R]						
	Option	-			Absolute, 11/13bit Manchester communication						
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP55(Excluding the shaft-through section and connectors)					Totally enclosed, Non ventilated P65(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 <sup>2</sup> ] (5G)										
		0.32	0.38	0.5	0.82	1.08	1.58	1.88	2.52	3.18	3.90

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

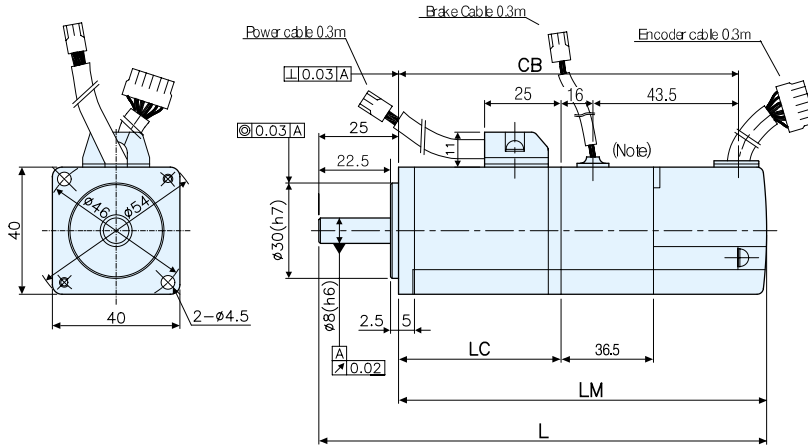
### Rotation Speed-Torque's Characteristics





## Servo Motor Dimension

### SA Serie | APM-SAR3A, APM-SAR5A, APM-SA01A



Model	External Dimension				Weight (kg)
	L	LM	LC	CB	
SAR3A	100.5(137)	75.5(112)	42.5	65.5(102)	0.32(0.67)
SAR5A	107.5(144)	82.5(119)	49.5	72.5(109)	0.38(0.73)
SA01A	124.5(161)	99.5(136)	66.5	89.5(126)	0.5(0.85)

### Plug Specification



Plug Specification : 172167-1  
(Made by AMP)

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

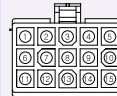
(Power connector Pin)



Plug Specification : 172165-1  
(Made by AMP)

Pin No.	Color	Phase
1	Red	BK+
2	White	BK-

(Brake connector Pin)



Plug Specification : 172171-1  
(Made by AMP)

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		

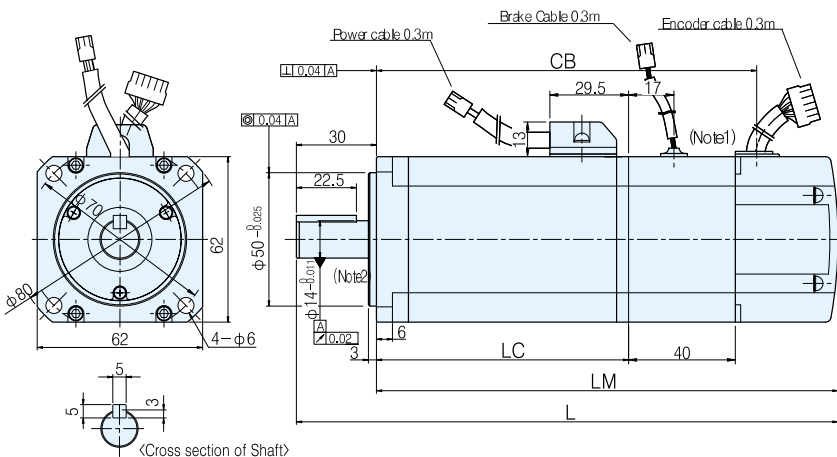
(Encoder connector Pin)



Note

- 1) Use DC24V for brake input supply
- 2) The dimension in ( ) is for Brake attached motor

### SB Serie | APM-SB01A, APM-SB02A, APM-SB04A



Model	External Dimension				Weight (kg)
	L	LM	LC	CB	
SB01A	122(162)	92(132)	52	59.5(99.5)	0.82(1.4)
SB02A	136(176)	106(146)	66	73.5(113.5)	1.08(1.66)
SB04A	164(204)	134(174)	94	101.5(141.5)	1.58(2.16)

### Plug Specification



Plug Specification : 172167-1  
(Made by AMP)

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

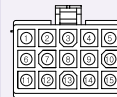
(Power connector Pin)



Plug Specification : 172165-1  
(Made by AMP)

Pin No.	Color	Phase
1	Red	BK+
2	White	BK-

(Brake connector Pin)



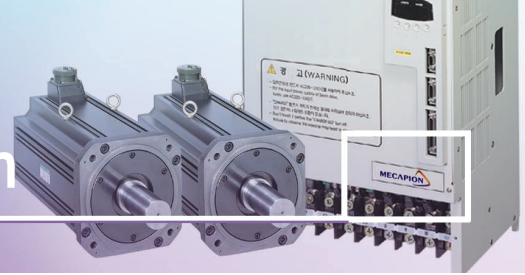
Plug Specification : 172171-1  
(Made by AMP)

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)



- 1) Use DC24V for brake input supply
- 2) The dimension in ( ) is for Brake attached motor
- 3) When Drawing for oil seal attached type motor is needed, Please contact to Us. The dimension for Oil seal attached motor is different with standard motor.



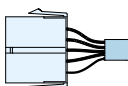
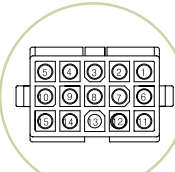
## Options(Cable)

### Incremental Encoder Cable

Model (★Note1) : **APC - E□□□AS**

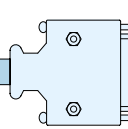
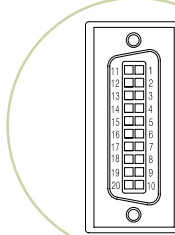
Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-SC Series, APM-HB Series

Motor Side Connector

AMP 172163-1 CAP  
(15 Circuits)

Drive Side Connector(CN2)

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

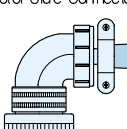
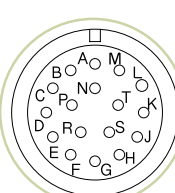
- Motor Side Connector**  
CAP (15 Position) : 172163-1(Made by AMP)  
SOCKET : 170861-1(Made by AMP)
- Drive Side Connector(CN2)**  
CASE : 10320-52A0-008(Made by 3M)  
CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**  
7P×0.2SQ(AWG24)

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**

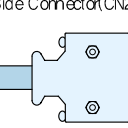
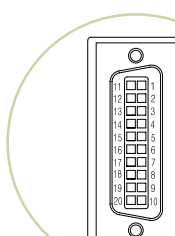
Applicable Motor : All models of APM-SE Series, APM-SF Series, APM-SG Series, APM-HE Series

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	V
2	$\bar{A}$	12	$\bar{V}$
3	B	13	W
4	$\bar{B}$	14	$\bar{W}$
5	Z	15	+5V
6	$\bar{Z}$	16	0V
7	U	17	SHIELD
8	$\bar{U}$		

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

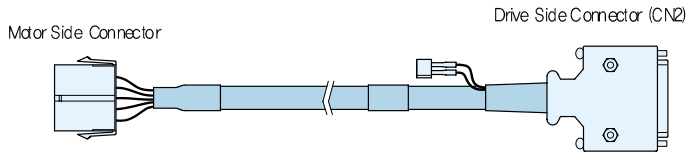
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20



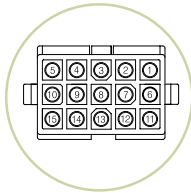
## Absolute Encoder Cable

Model (★Note1) : **APC-E□□□AA**

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

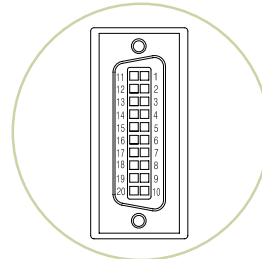


- Motor Side Connector**  
 CAP (15 Position) : 172163-1(Made by AMP)  
 SOCKET : 170361-1(Made by AMP)
- Drive Side Connector (CN2)**  
 CASE : 10320-52A0-008(Made by 3M)  
 CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**  
 7P×0.25SQ(AWG24)
- BATTERY CONNECTOR**  
 5267-02A(Made by MOLEX)



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		

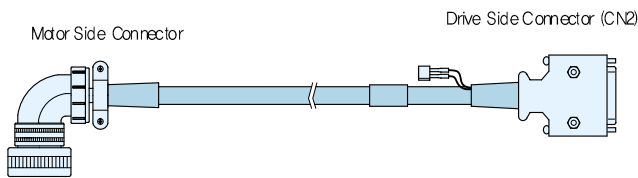


3M 10320-52A0-008  
(15 Circuits)

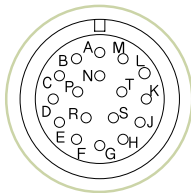
Pin No.	Encoder Phase	Pin No.	Encoder Phase
1	RX	11	Z̄
2	R̄X	12	SHIELD,FG
3	—	13	B̄
4	—	14	Z
5	—	15	Ā
6	—	16	B
7	—	17	—
8	—	18	A
9	OV	19	+5V
10	—	20	CLR

Model (★Note1) : **APC-E□□□BA**

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

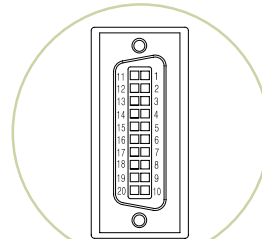


- Motor Side Connector (MS : Military Standard)**  
 FLUG : MS3108B3106B)20-29S
- Drive Side Connector (CN2)**  
 CASE : 10320-52A0-008(Made by 3M)  
 CONNECTOR : 10120-3000VE(Made by 3M)
- Cable**  
 7P×0.25SQ(AWG24)
- BATTERY CONNECTOR**  
 5267-02A(Made by MOLEX)



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		



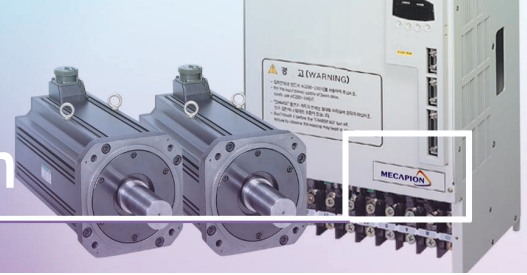
3M 10320-52A0-008  
(15 Circuits)

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)

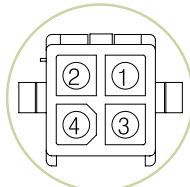
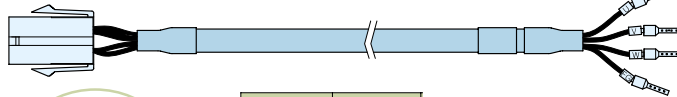
### Power cable

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

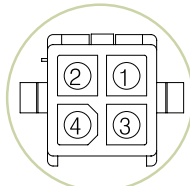
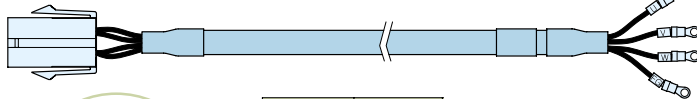
- Motor Side Connector**  
CAP (4 Position) : 172159-1(Made by AMP)  
SOCKET : 170362-1(Made by AMP)
- Drive Side Connector (U,V,W,FG)**  
PIN : UA-F1512(Made by Suh-Il Electronic)  
Compressor : UA-510A  
(Made by Suh-Il Electronic)
- Cable**  
4C×0.75SQ(AWG20)

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

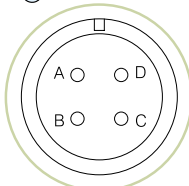
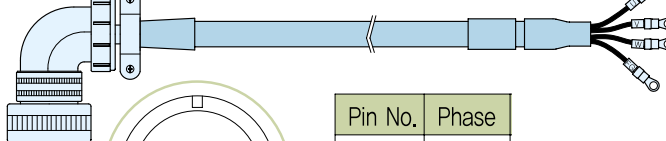
- Motor Side Connector**  
CAP (4 Position) : 172159-1(Made by AMP)  
SOCKET : 170362-1(Made by AMP)
- Drive Side Connector (U,V,W,FG)**  
Connection terminals : 1.25×3(KET GP110012)
- Cable**  
4C×0.75SQ(AWG18)

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×20SQ(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



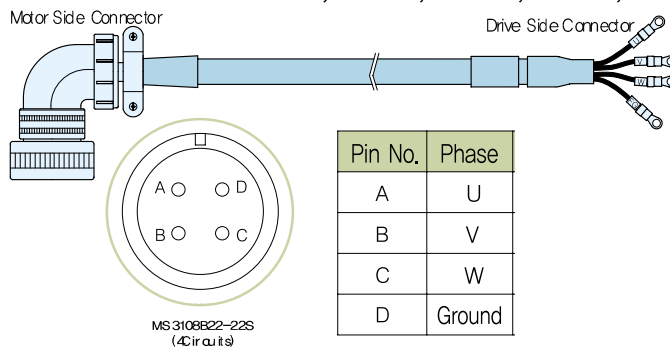
Moving towards tomorrow

# MECAPION AC Servo System

## Power cable

Model (★Note1) : **APC-P□□□FS**

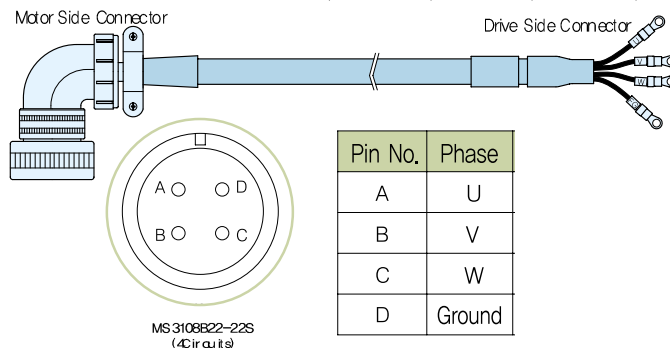
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M  
SG22D, SG35D, SG20G, SG30G, SG12M, SG20M, SG30M



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



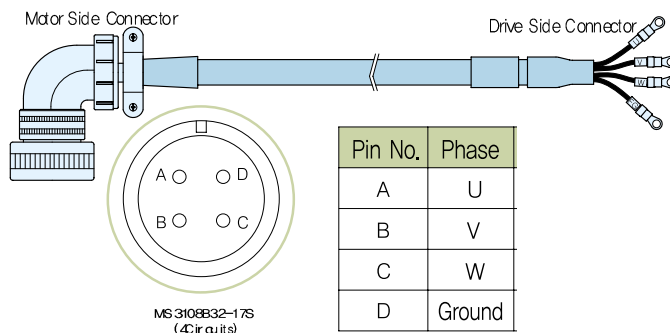
1. Motor Side Connector(MS: Military Standard)  
PLUG : MS3108B(MS3106B)22-22S
2. Drive Side Connector(U, V, W, FG)  
Connection terminals : 5.5x5(KET GP110028)
3. Cable  
4Cx5.0SQ(AWG10)

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)

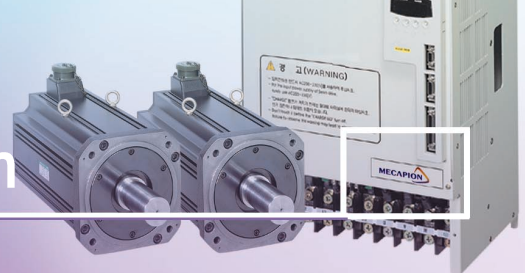
### ★Note3

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



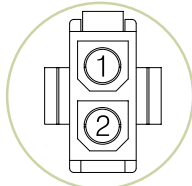
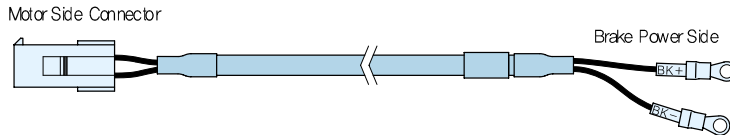


## Options(Cable)

### Brake cable

Model (★Note1) : APC-P□□□KB

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



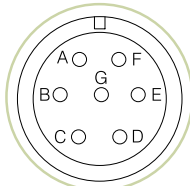
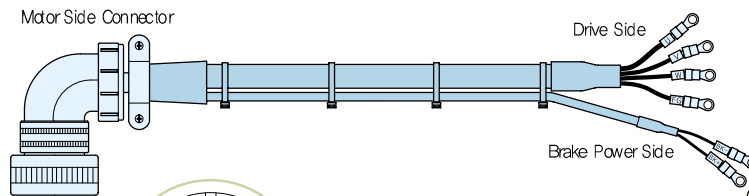
AMP 172157-1 CAP  
(2Circuits)

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 (MSMilitary 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 GP11012)  
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



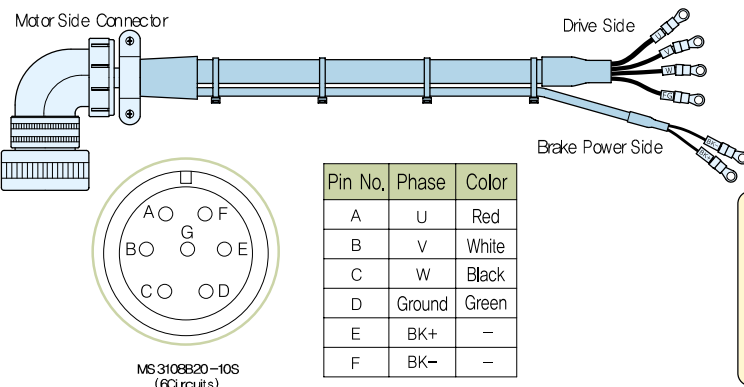
Moving towards tomorrow

# MECAPION AC Servo System

## Brake cable

Model (★Note1) : APC-P□□□NB

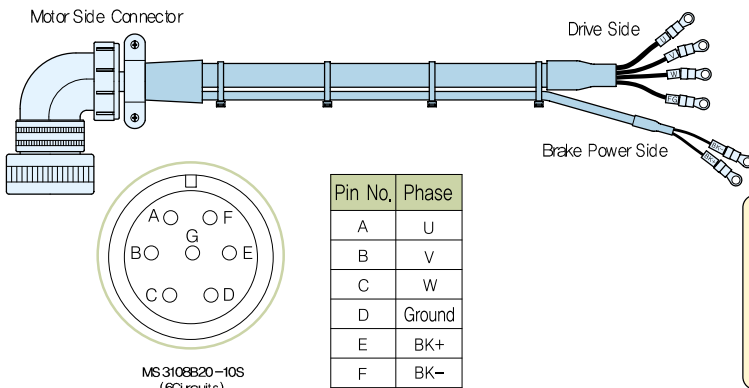
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M



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

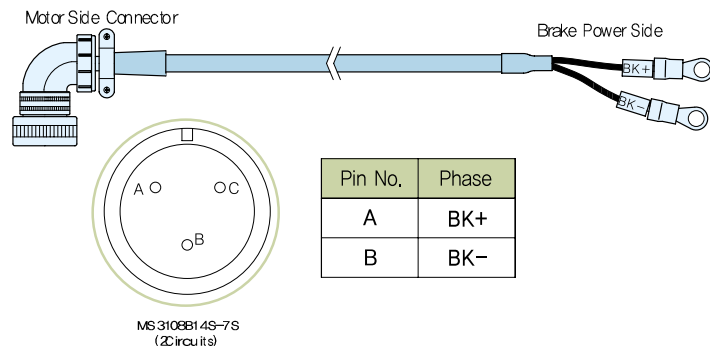
Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF75G, SF44M



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

