Wide range of Motor

- 30W(Flange : 40) ~ 37KW(Flange : 280) VS series
- Hollow shaft Motor(Ø40 ~ Ø130mm Flange)available

Precise control

- 17Bit serial encoder adopted(VN series)
- Full Closed control through Dual Encoder Port(VN series)
- High performance motor by Neodymium magnet and Split Core

High performance

- Auto tuning
- Overshoot suppression(P(->)PI control)
- Fast Positioning time through Feed-forward compensation function
- Anti-vibration at stop

Easy & Convenience

- Built-in communication(RS-422)
- Parameter download/upload and monitor through PC Loader

Application

- All FA Machine
- Semiconductor Machine
- Injection Molding Machine
- Servo Press Machine
- Machine Tools
- Textile Machine
- Steel Processing Machine

Contents

Comprehensive ranges of the products

30W(Flange: 40) ~ 37kW(Flange: 280) Hollow shaft type(Ø40 ~ Ø130mm Flange)

AC Servo Motor

30W~37kW Servo Motor & Drive released

- Provide a wide range of selection with various series
- 40 Flange 30W ~ 280 Flange 37kW
- Adopted core-dividing type by using the most advanced tooling technology
- Realized high efficiency & compact size by adopting high precision winding
- Motor's life extended by the use of F-class insulation against B-class temperature rise
- Suitable for high precision control thanks to the high-precision fabricating technology & quality control
- High torque output is possible at a smaller size by adopting neodymium permanent magnet of highest-performance in its class
- Provide exclusive models with various structures & characteristics

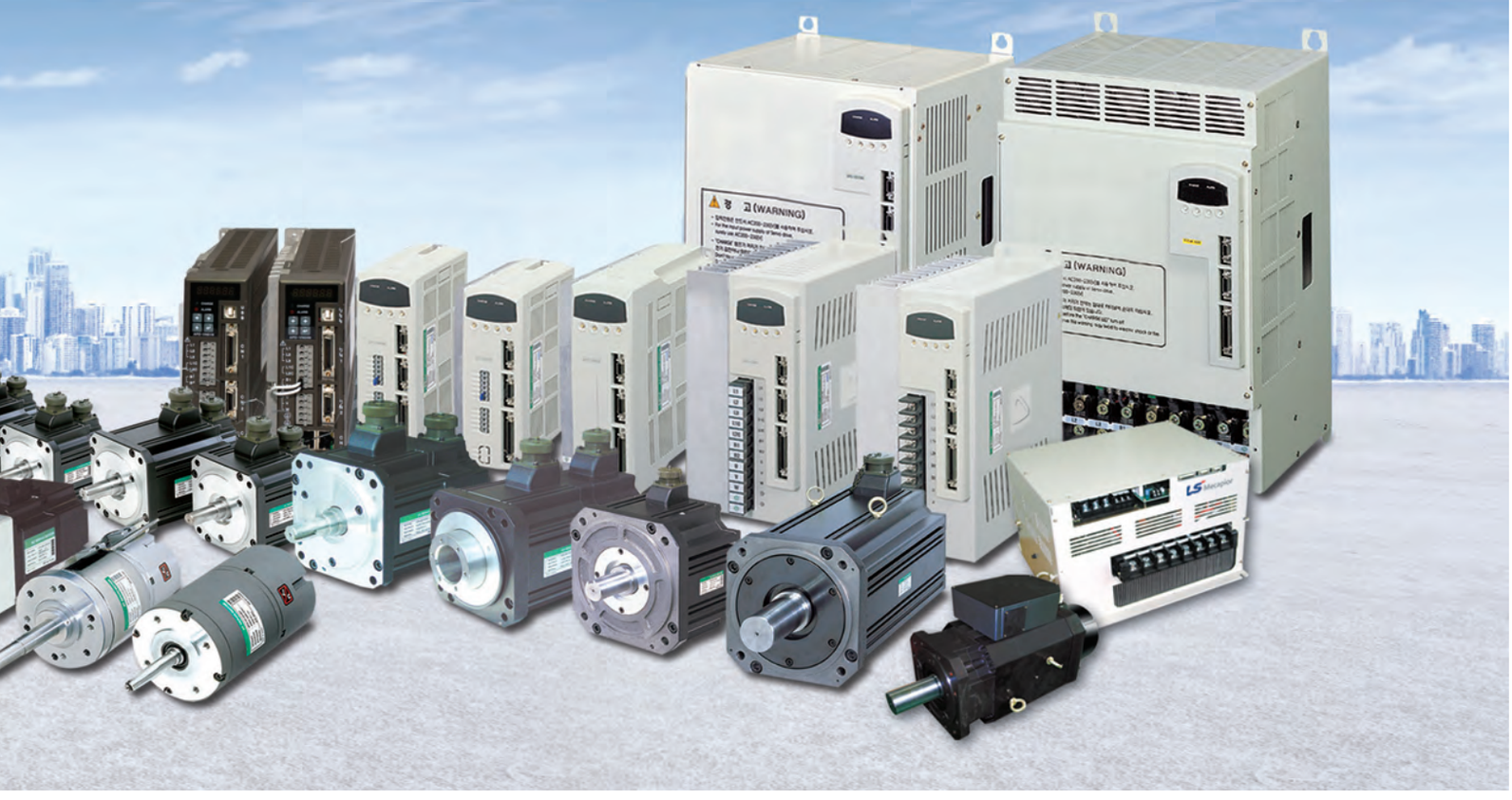
Spinner Motor

- Spinner Motor for semi-conductor equipment 8" & 12" developed
- Used at Coater, Developer & Scrubber
- Realized high instantaneous acceleration characteristic-higher than 100,000 rps
- Manufactured custom made-spinner motor in response to customer's demands
- Secured various diameters of hollow shaft as per customer's requirement
- Environment-resistance strengthened by adopting magnetic fluid seal
- Anti-corrosion strengthened by the special coating process on the surface

Hollow Shaft Motor

- Provide various diameters of hollow shaft (Max.Ø40-Ø130mm Flange)
- Realized a compact size by the use of high-performance permanent magnet
- Compact design by adopting an exclusive encoder
- Motor's life extended by the use of F-class insulation against B-class temperature rise
- Designing various shapes of Exclusive Motor(customized type) is provided for customer's requirement

System Drive



AC Servo Drive

The Rated Specifications of Standard Servo Drive

- High-efficiency power transformation technologies realized by developing dedicated ASIC featuring latest control theory.
- Diversified functions added and convenience of use stregthened by the use of large-capacity flash memory.
- Precision control realized by the application of high-performance control algorithm.
- Additional services provided through various kinds of communication options. (PC Communication, Touch Screen, High-order Network Communication)
- Loader(6 digits) is basically mounted for the convenience of use
- Various menu function that is applied instantly after changing.

Advanced Servo Drive 「APD - VN Series」

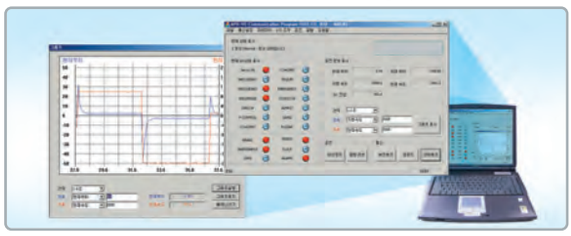
- Quick : Hi-Performance, Hi-Response, Hi-Efficiency.
- Simple : Position Control, Digital Speed Control.
- Easy Operation.

PC Loader

PC communication software also provides the graphic function in which the operation by using a computer. Reading/writing the menu data and displaying speed & torque information are all possible

Characteristics

- Display the current status information (Motor Speed, Load Rate, I/O contacts status, etc.)
- Saving the menu data & download function.
- Display the motor speed & torque with a graph.
- Display function of Alarm status • Easy changing of mode & menu data.
- Operation handling function by using communication protocol
- Data editing function by using communication-code
- PC Specifications : Window 98,WindowXP • Auto Jog operation test function



High-performance control function

Compact

Auto tuning, Over-shoot protection,
Feed-forward compensation function,
Anti-vibration function, etc.

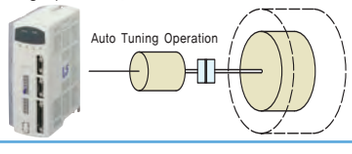
Optimum operating environment by various functions and precise control

Built-In Loader Installation

Loader indicating 7 segments of 6 digits is installed for user's convenience.

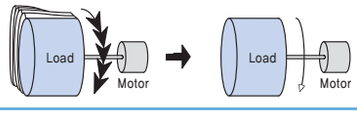
Auto Tuning Operation

Load inertia, speed gain and integral time constant are set up automatically by auto tuning operation.



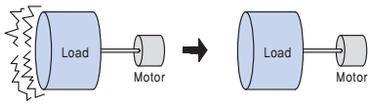
Anti-vibration during Operation

When noise is occurred by the vibration of shaft during operation, the noise can be reduced by setting the filter of speed control part.



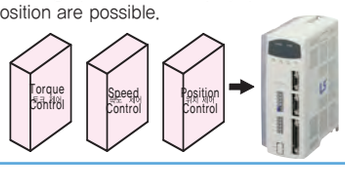
Anti-vibtation at Stop

At motor's stop, it prevents the noise caused produced by vibration and the damage of machine.



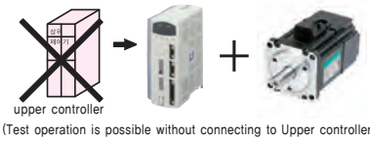
Position, Speed, Torque are All in One.

With a unit, individual control and switching operation for torque, speed and position are possible.



Test Operation

By Servo only, test operation is possible without upper controller.



(Test operation is possible without connecting to Upper controller)

Technology

RS-422

High Performance

USB

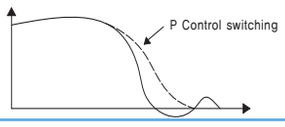
Upgrade

Low Cost

Enhanced System stability and responsibility through the reinforced high performance

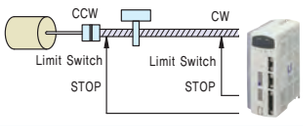
Anti-Overshoot

By switching PI control and P control in order to improve the transitional characteristic at acceleration/deceleration, it is possible to control the overshoot and undershoot.



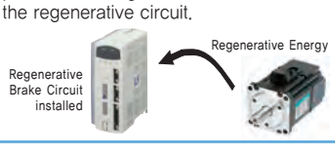
Preventing Over-Trouble

If the moving part of motor outruns the movable area, it prevents the machine from damaging by stopping the rotation of motor.



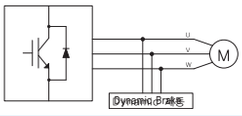
Bulit-in Regenerative Brake Function

Stable decelerating operation is possible by consuming the regenerative energy that is produced during motor deceleration through the regenerative circuit.



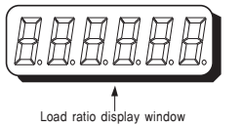
Built-in Dynamic Brake

At a sudden electricity failure or emergency stop, sudden braking operation is possible by consuming the generating energy of motor to prevent the machine from damaging.



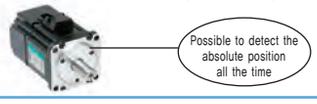
Various Load Ratio Display Function

Display the current load ratio, instantaneous maximum load ratio and the average load ratio for 5 seconds during servo operation.



Applying an Absolute Encoder

Using an absolute encoder, the current position is always recognized even at an electricity failure, and the returning operation to the starting point is not necessary. And at power ON, the immediate operation is possible.



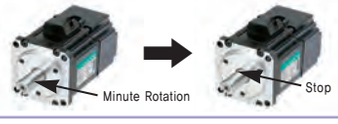
The interface of the convenient and user oriented function

Enhanced user friendly function though Serial communication(RS-422), Parameter transmissioning PC loader, etc.

Convenient User oriented design

Zero Clamp Function

Motor might be rotated by the minute noise voltage even at 0[V] of analog command voltage.
This function prevents it and stops the motor.



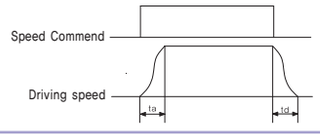
Selecting Various Speed

Analog command and 7 internal speed commands could be selected by external contact.

	SPD3	SPD2	SPD1
AnalogSpeed	off	off	off
Internal Speed 1	off	off	on
Internal Speed 2	off	on	off
Internal Speed 3	off	on	on
Internal Speed 4	on	off	off
Internal Speed 5	on	off	on
Internal Speed 6	on	on	off
Internal Speed 7	on	on	on

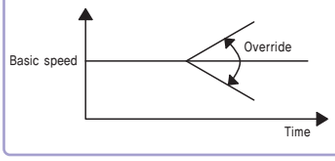
Smooth Acceleration/Deceleration Operation

Can select Linear acceleration/deceleration and S-shape acceleration/deceleration operation with 0~100[second].



Speed Override Operation

The speed by analog voltage command could be piled up on the basic setting speed



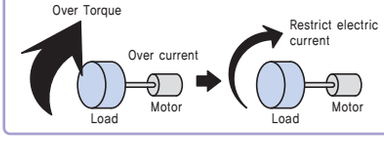
Switching Function of the Rotating Direction

Switching the rotating direction by external contact could be possible without any changing of wiring of motor or encoder

	DIR Contact off	DIR Contact on
CW command	CCW	CW
CCW command	CW	CCW

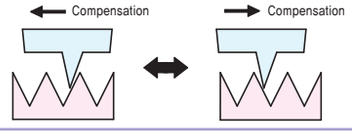
Torque Limit Function

Restrict excessive torque by control maximum electric current of motor.
It prevents mechanical damage of motor.



Backlash Compensation

Compensate the repeatedly swerved position that is caused by backlash of mechanical part at forward/reverse operation.



Various Positon Command Pulse

Various command pulse could be applicable

Pulse		negative logic		positive logic	
		CW	CCW	CW	CCW
A+B phase	PF				
	PR				
Forward/ Reverse	PF				
	PR				
Pulse+Dir	PF				
	PR				

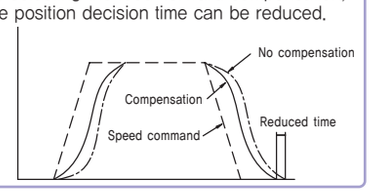
Selecting Electronic Gear Ratio & Offset Function

Can select 4 of electronic gear ratios with the input contact. And Minute Offset can also be controlled.

	EGEAR2	EGEAR1
Electronic gear ratio1	off	off
Electronic gear ratio2	off	on
Electronic gear ratio3	on	off
Electronic gear ratio4	on	on

Feed-Forward Compensation

By selecting the feed-forward compensation, the position decision time can be reduced.



The Origin Point Searching Function

It is possible to stop at origin(Z phase)within a rotation of motor. It is used at combining shaft of motor with machine.

Speed Limit Function at Torque's Operation

4 of speed limit setting is possible at torque control operation.

	SPD2	SPD1
Analog Speed	off	off
Internal Speed 1	off	on
Internal Speed 2	on	off
Internal Speed 3	on	on

Servo Motor and Drive designations

Servo Motor

Encoder and Servo Motor Provide the Optimized Servo System for Customer needs with various Design and Characteristics

APM-SB04AD K 1 G2 3

Motor Shaft
S : Solid Shaft
H : Hollow Shaft

Flange Size
R3 : 30W
R5 : 50W
01 : 100W
02 : 200W
04 : 400W
05 : 450W
06 : 550W/600W
07 : 650W
08 : 750W/800W
09 : 850W/900W
10 : 1,000W
.
.
.
110 : 11,000W
150 : 15,000W
220 : 22,000W
300 : 30,000W
370 : 37,000W

Encoder Type (Note1)
A : Inc. 1,024 P/R(15 Lines)
B : Inc. 2,000 P/R(15 Lines)
C : Inc. 2,048 P/R(15 Lines)
D : Inc. 2,500 P/R(15 Lines)
E : Inc. 3,000 P/R(15 Lines)
F : Inc. 5,000 P/R(15 Lines)
G : Inc. 6,000 P/R(15 Lines)
K : Abs.2,048 P/R
S : Inc. 2,000 P/R(9 Lines)
T : Inc. 2,048 P/R(9 Lines)
U : Inc. 2,500 P/R(9 Lines)
V : Inc. 3,000 P/R(9 Lines)

Existence of Oil Seal, Brake (Note2)
None : None
1 : Oil Seal Attached
2 : Brake Attached(DC 24[V])
3 : Oil Seal, Brake Attached(DC 24[V])

Reduction ratio
3 : 1/3
10 : 1/10
.
.

Flange Size
A : 40 Flange
B : 60 Flange
C : 80 Flange
E : 130 Flange
F : 180 Flange
G : 220 Flange
H : 250 Flange
J : 280 Flange

Rated Rotation Speed
A : 3000 rpm
D : 2000 rpm
G : 1500 rpm
M : 1000 rpm

Shape of Shaft
N : Straight
K : One Side Round Key (Standard)
L : L Cut
D : D Cut
T : Taper Shape
R : Both Sides Round Key
H : Hollow Shaft

Speed Reducer (Gearbox)
None : No Reducer
G2 : For General Industry (Flange Mount)
G3 : Precision Gearbox (Flange Mount)

Note1) Standard. Encoder type for Motor Inc. 3,000P/R(15 Lines)
- 40 Flange : Inc. 2048 P/R(15Lines)
- 60, 80 Flange : Inc. 2,500P/R(15Lines)
- 130, 180, 220, 250, 280 Flange : Inc. 3,000P/R(15Lines)

Note2) Brake Power Supply
- 40,60,80,130,180 Flange : DC 24[V]
- 220 Flange : DC 90[V]

Note3) SA,SB,SC,SE Models : Approved by UL

Note4) Gearheaded Motor : Contact to LS Mecapion

Servo Drive

Provide The Optimized Control System with 32bit High-Performance DSP and Various Interface Communication for Multi-Function control parts and High Credibility and Self-Protective Function for IPM Power Module

APD-VS 04 N A4

Type Classification
VS : Standand
VP : Controller – embedded
VN : Advanced generation

Drive Capacity	
R5 :	50W
01 :	100W
02 :	200W
04 :	400W
05 :	500W
10 :	1KW
15 :	1.5KW
20 :	2KW
35 :	3.5KW
50 :	5KW
75 :	7.5KW
110 :	11KW
150 :	15KW
220 :	22KW
300 :	30KW
370 :	37KW

Encoder Type
N : Incremental
A : Absolute

Exclusive Code	
VS	Exclusive Option Code
	AS per the operating software
	1. Linear coordinates position drive
	2. Rotary coordinates position drive
VP	3. Feeder and sensor-input position type
	5. Program operation drive

Note1) VS Drive : 50W~37KW
VP Drive : 50W~15KW
VN Drive : 100W~1.5KW

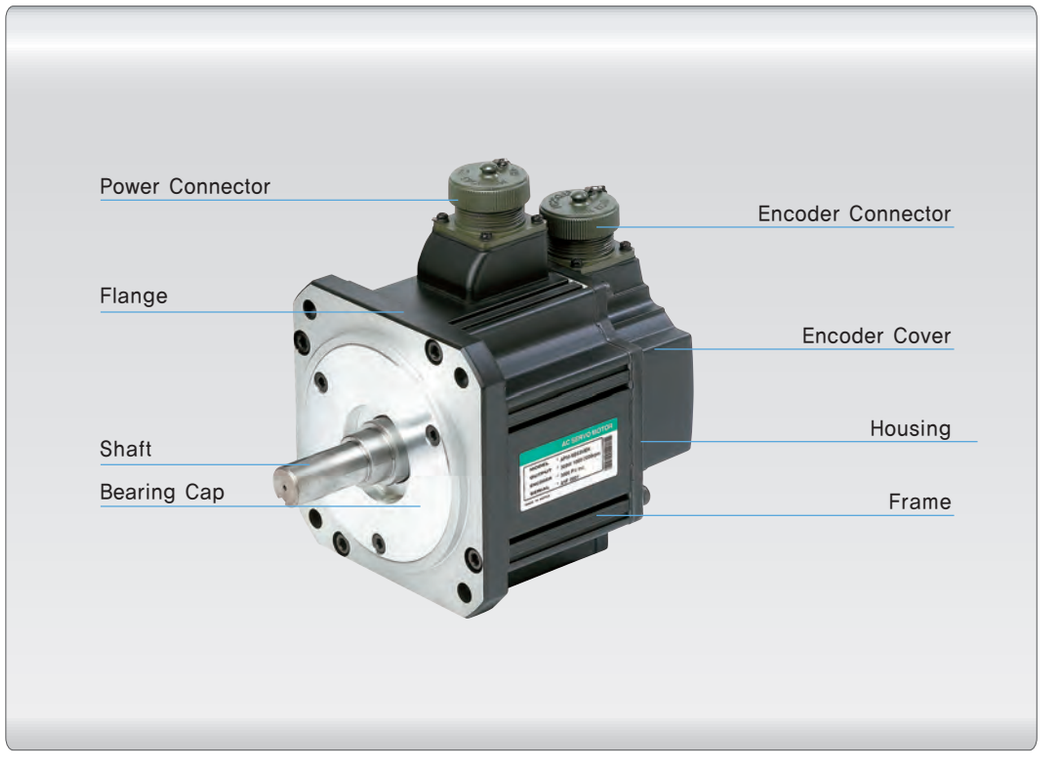
Servo Motor and Drive combination

Servo Motor					Applicable drive	Encoder		IP grade
Rated Speed (r/min)	Maximum Speed (r/min)	Flange	Capacity (kW)	Model (APM-)	Model (APD-)	Incremental	Absolute	
3,000	5,000	□40	0.03	SAR3A	VSR5/VN01	·15pin type ·2048 P/R	·N/A	IP 55
			0.05	SAR5A	VSR5/VN01			
			0.1	SA01A	VS/VN01N			
			0.15	SA015A	VS02/VN02N			
		□60	0.1	SB01A	VS/VN01N	·15pin type ·2,500 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 55
			0.2	SB02A	VS/VN02N			
			0.4	SB04A	VS/VN04N			IP 65
		□80	0.4	SC04A	VS/VN04N			
			0.6	SC06A	VS/VN04N			
			0.8	SC08A	VS/VN07N			
			1.0	SC10A	VS/VN10N			
		□130	0.9	SE09A	VS/VN10N	·15pin type ·3,000 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 65
			1.5	SE15A	VS/VN15N			
			2.2	SE22A	VS20			
			3.0	SE30A	VS35			
		□180	3.0	SF30A	VS35			
			5.0	SF50A	VS50			
2,000	3,000	□80	0.3	SC03D	VS/VN04N	·15pin type ·2,500 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 65
			0.45	SC05D	VS/VN04N			
			0.55	SC06D	VS/VN07N			
			0.65	SC07D	VS/VN07N			
		□130	0.6	SE06D	VS/VN07N	·15pin type ·3,000 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 65
			1.1	SE11D	VS/VN10N			
			1.6	SE16D	VS/VN15N			
			2.2	SE22D	VS20			
		□180	2.2	SF22D	VS20			
			3.5	SF35D	VS35			
			5.5	SF55D	VS50			
	2,500		7.5	SF75D	VS75			
	3,000	□220	2.2	SG22D	VS20			
			3.5	SG35D	VS35			
	2,500		5.5	SG55D	VS50			
			7.5	SG75D	VS75			
			11.0	SG110D	VS110			
1,500	3,000	□130	0.45	SE05G	VS/VN07N	·15pin type ·3,000 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 65
			0.85	SE09G	VS/VN10N			
			1.3	SE13G	VS/VN15N			
			1.7	SE17G	VS20			
		□180	1.8	SF20G	VS20			
			2.9	SF30G	VS35			
			4.4	SF44G	VS50			
	2,500		6.0	SF60G	VS75			
			7.5	SF75G	VS110			
	3,000	□220	2.0	SG20G	VS20			
			3.0	SG30G	VS35			
			4.4	SG44G	VS50			
	2,500		6.0	SG60G	VS75			
			8.5	SG85G	VS110			
	2,000		11.0	SG110G	VS150			
			15.0	SG150G	VS150			
		□250	22.0	SH220G	VS220		·N/A	IP 55
			30.0	SH300G	VS300			
		□280	37.0	SJ370G	VS370			
1,000	2,000	□130	0.3	SE03M	VS/VN04N	·15pin type ·3,000 P/R	·15pin type ·2,048 P/R ·11/13bit	IP 65
			0.6	SE06M	VS/VN07N			
			0.9	SE09M	VS/VN10N			
			1.2	SE12M	VS/VN15N			
		□180	1.2	SF12M	VS/VN15N			
			2.0	SF20M	VS20			
			3.0	SF30M	VS35			
			4.4	SF44M	VS50			
		□220	1.2	SG12M	VS15			
			2.0	SG20M	VS20			
			3.0	SG30M	VS35			
			4.4	SG44M	VS50			
			6.0	SG60M	VS75			
3,000	5,000	□60	0.1	HB01A	VS01/VN01	·15pin type ·1,024 P/R	·N/A	IP 55
			0.2	HB02A	VS02/VN02			
			0.4	HB04A	VS04/VN04			
		□130	0.9	HE09A	VS10/VN10			
			1.5	HE15A	VS15/VN15			

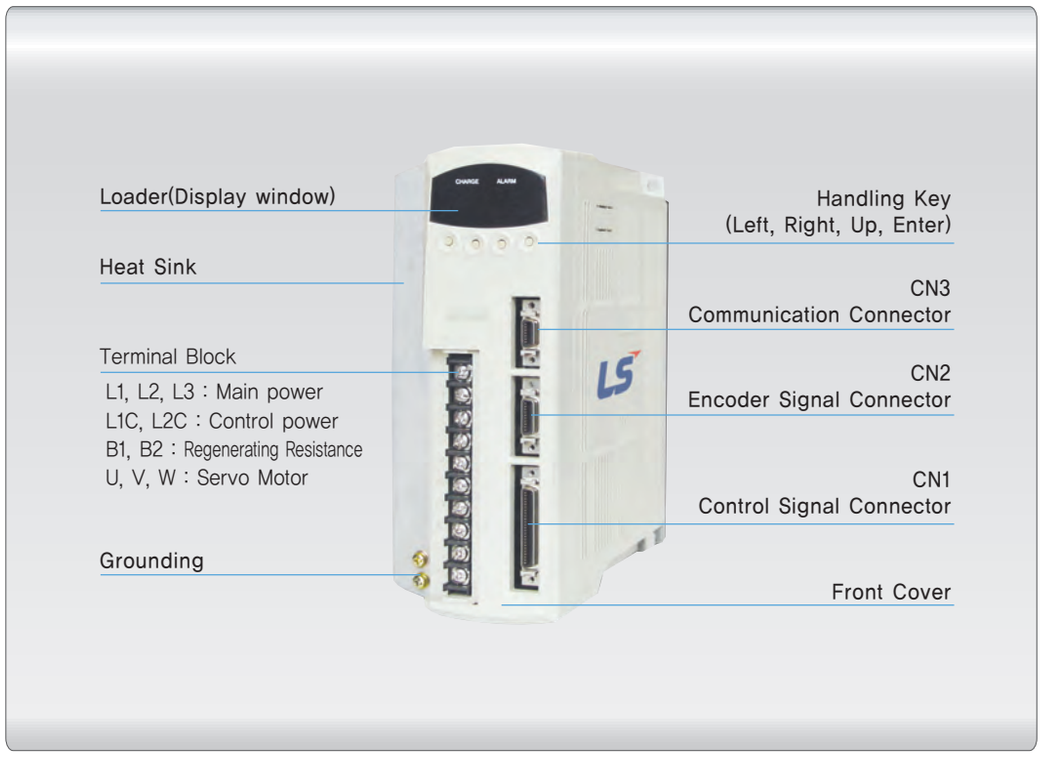
Note1) IP grade of Servo Motor excludes the shaft section.

Part names

Motor

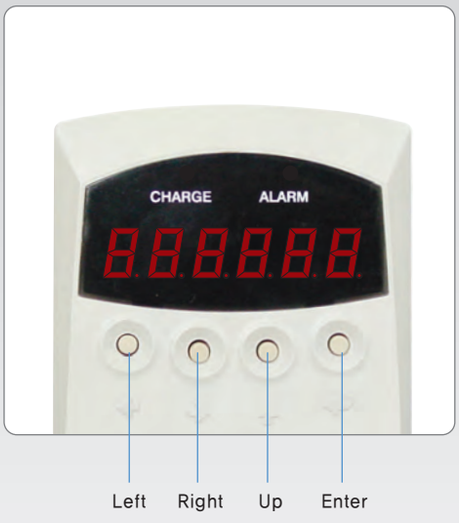


Drive



PC Loader, Handy Loader

Built-in Loader Designation and Handling key function



Left ① Menu display window : decreases menu number
② Data display window : shifts the row to the left

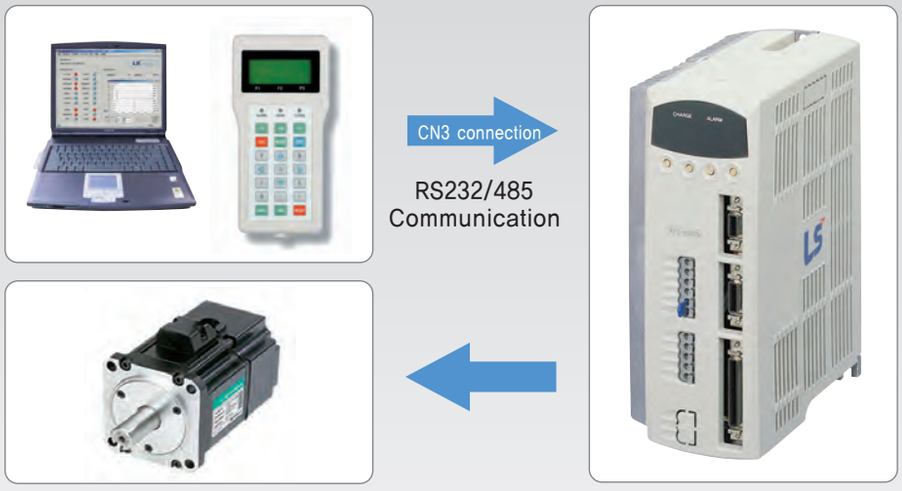
Right ① Menu display window : increses menu number
② Data display window : shifts the row to the right

Up ① Menu display window : increases menu group number
② Data display window : increases the current low number

Enter ① Menu display window : converts to the data display window
② Data display window : saves the current data

PC Loader Handy Loader

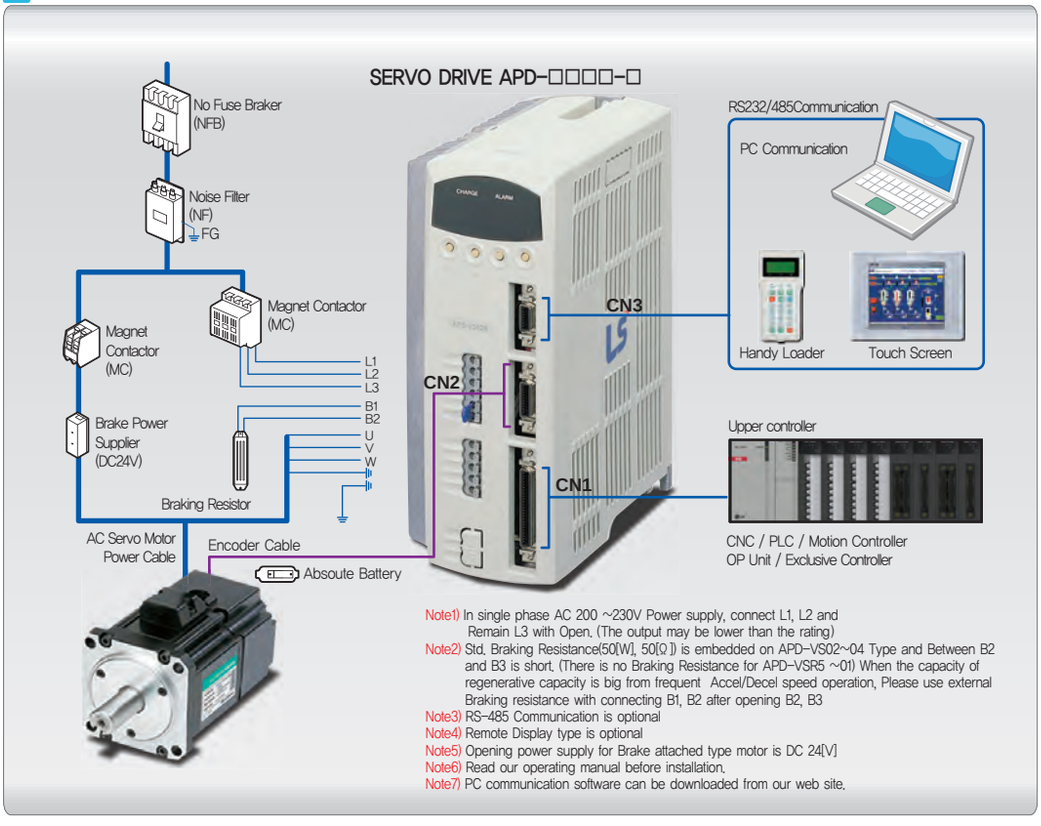
PC software provides the graphic function to read, write and display the data such as Menu, Speed and Torque information



System Configuration

Below 400W

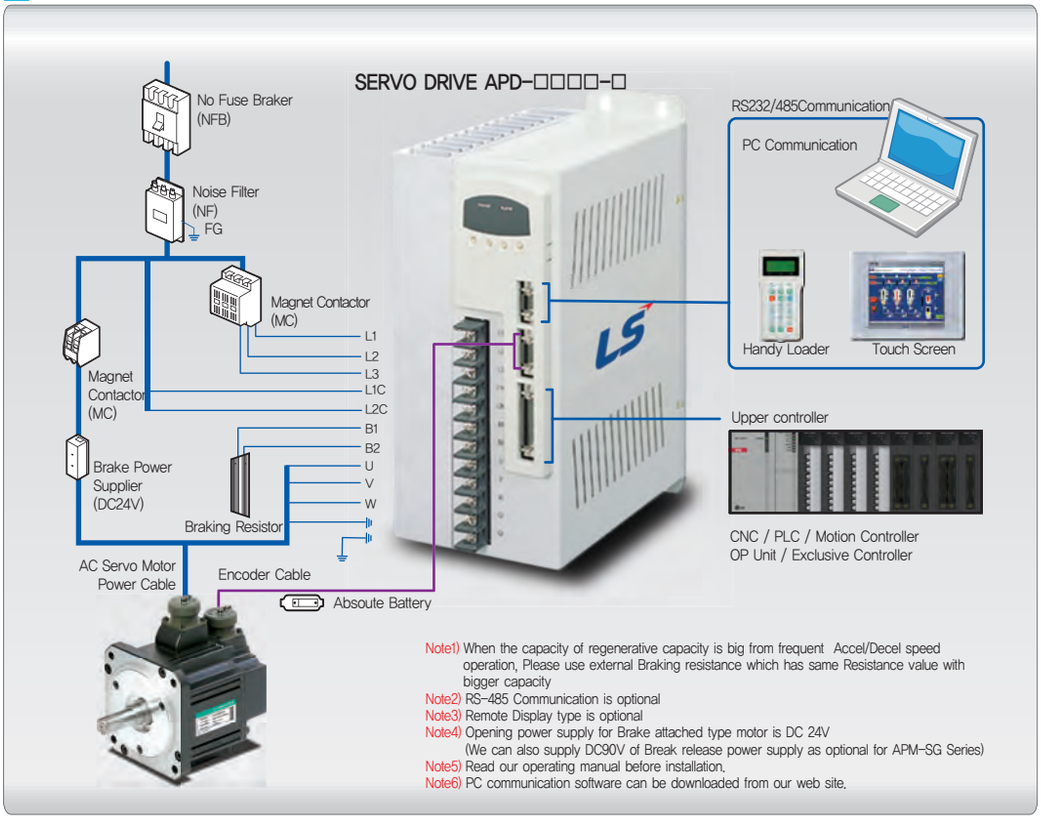
3 Phase AC 200-230[V] +10%, -15% (50/60Hz)



Note1) In single phase AC 200 ~230V Power supply, connect L1, L2 and Remain L3 with Open. (The output may be lower than the rating)
Note2) Std. Braking Resistance(50[W], 50[Ω]) is embedded on APD-VS02~04 Type and Between B2 and B3 is short. (There is no Braking Resistance for APD-VSR5 ~01) When the capacity of regenerative capacity is big from frequent Accel/Decel speed operation, Please use external Braking resistance with connecting B1, B2 after opening B2, B3
Note3) RS-485 Communication is optional
Note4) Remote Display type is optional
Note5) Opening power supply for Brake attached type motor is DC 24[V]
Note6) Read our operating manual before installation.
Note7) PC communication software can be downloaded from our web site.

1.5kW ~7.5kW

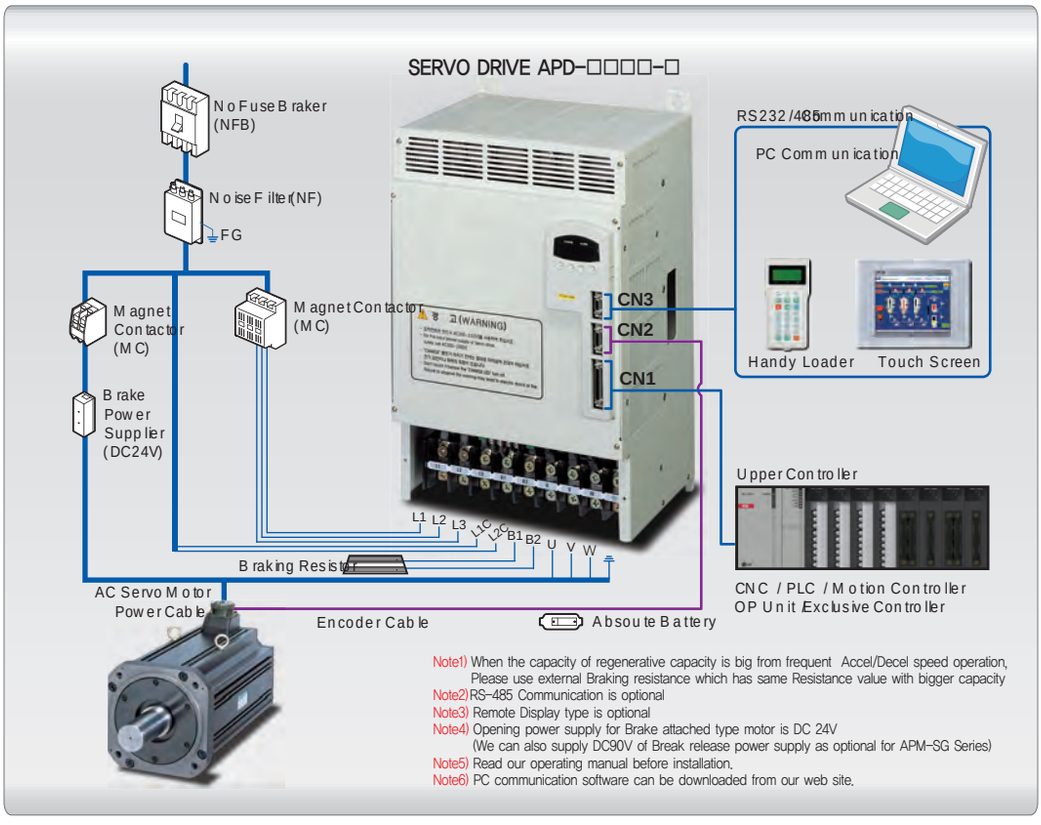
3Phase AC 200-230[V] +10%, -15% (50/60Hz)



Note1) When the capacity of regenerative capacity is big from frequent Accel/Decel speed operation, Please use external Braking resistance which has same Resistance value with bigger capacity
Note2) RS-485 Communication is optional
Note3) Remote Display type is optional
Note4) Opening power supply for Brake attached type motor is DC 24V
(We can also supply DC90V of Break release power supply as optional for APM-SG Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

11kW ~ 15kW

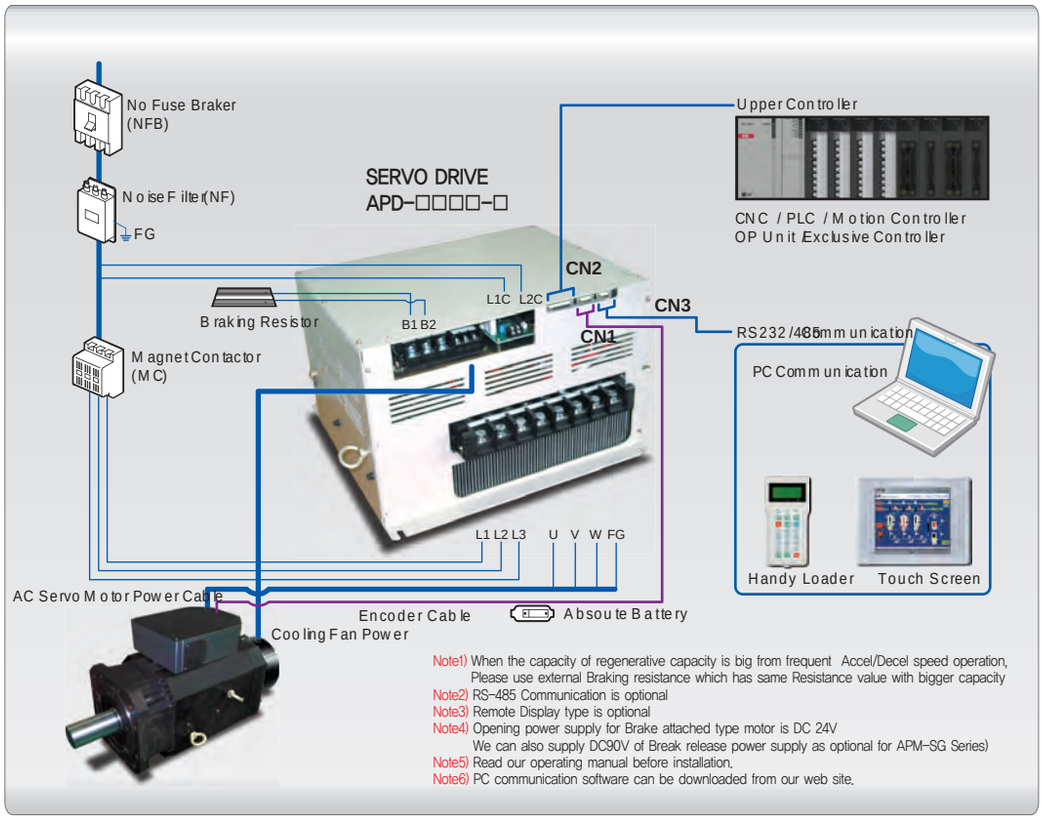
3Phase AC 200-230[V] +10%, -15% (50/60Hz)



Note1) When the capacity of regenerative capacity is big from frequent Accel/Decel speed operation, Please use external Braking resistance which has same Resistance value with bigger capacity
Note2) RS-485 Communication is optional
Note3) Remote Display type is optional
Note4) Opening power supply for Brake attached type motor is DC 24V
(We can also supply DC90V of Break release power supply as optional for APM-SG Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

22kW, 30kW 37kW

3Phase AC 200-230[V] +10%, -15% (50/60Hz)



Note1) When the capacity of regenerative capacity is big from frequent Accel/Decel speed operation, Please use external Braking resistance which has same Resistance value with bigger capacity
Note2) RS-485 Communication is optional
Note3) Remote Display type is optional
Note4) Opening power supply for Brake attached type motor is DC 24V
We can also supply DC90V of Break release power supply as optional for APM-SG Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

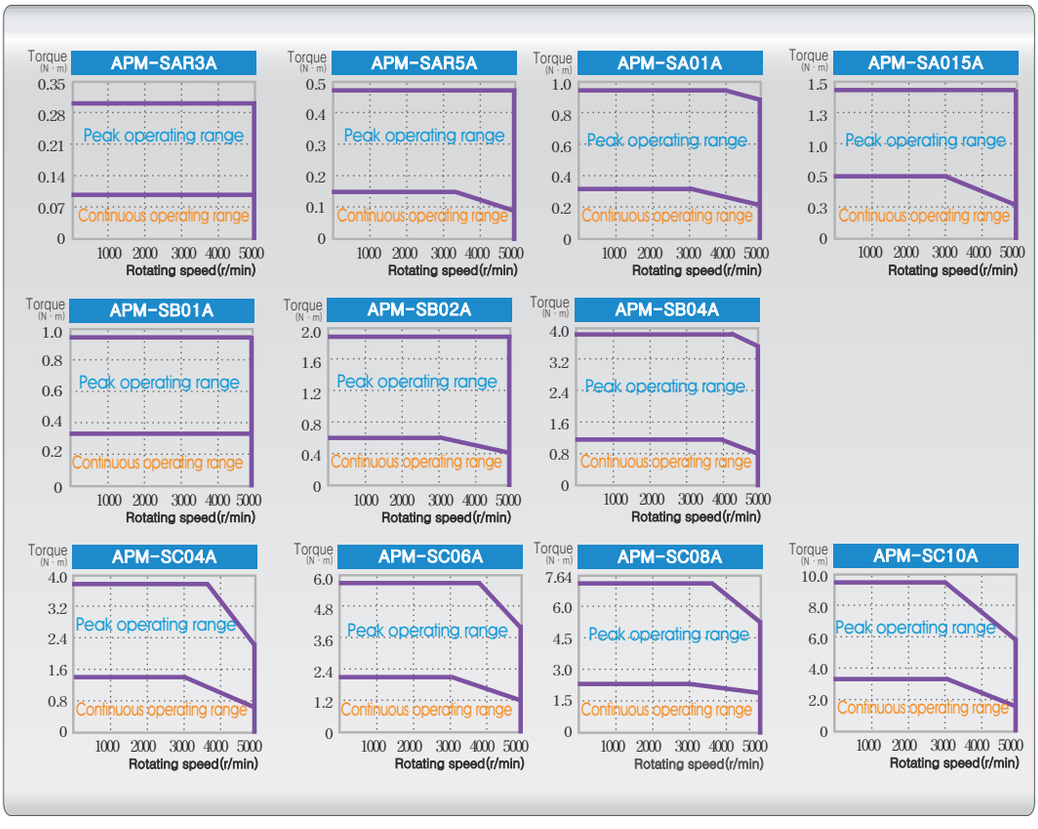
Characteristics of Servo Motor

Servo Motor's Characteristics (Rated Speed 3000r/min)

Servo Motor Model (APM-□□□□□)		SAR3A	SAR5A	SA01A	AS015A	SB01A	SB02A	SB04A	SC04A	SC06A	SC08A	SC10A
Servo Drive Model (APD-□□□□□)		VSR5/VN01		VS/VN01	VS/VN02	VS/VN01	VS/VN02	VS/VN04	VS04/VN04		VS05/VN07	VS/VN10
Flange Size (□)		□40				□60			□80			
Rated Power	[kW]	0.03	0.05	0.1	0.15	0.1	0.2	0.4	0.4	0.6	0.8	1.0
Rated Torque	[N · m]	0.095	0.159	0.318	0.477	0.318	0.637	1.274	1.27	1.91	2.55	3.19
	[kgf · cm]	0.97	1.62	3.25	4.872	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	1.432	0.955	1.912	3.822	3.82	5.73	7.64	9.56
	[kgf · cm]	2.92	4.87	9.74	14.62	9.74	19.5	39.0	39.0	58.46	77.94	97.5
Rated rpm	[r/min]	3,000										
Max. rpm	[r/min]	5,000										
Monent of inertia	[kg · m2×10-4]	0.0164	0.024	0.045	0.066	0.114	0.182	0.321	0.674	1.092	1.509	1.927
	[gf · cm · s2]	0.0167	0.0245	0.0459	0.065	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	10.55	22.52	35.34	8.92	22.26	50.65	24.07	33.45	43.02	52.65
Speed, Potion Transducer	Standard(Note1)	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 IP65(Excluding the shaft-through section and connectors)				
	Insulation rate	B										
	Ambient Temp.	Operating Temp. : 0~40[˚C] ·Storage Temp. : -20~60[˚C]										
	Ambient Humidity	Lower than 90[%] (Avoid condensation)										
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust										
	E/V	Elevation/Vibration 49[m/s2](5G)										
Weight	[kg]	0.32	0.38	0.5	0.7	0.82	1.05	1.58	1.88	2.52	3.15	3.80

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

Rotation Speed-Torque's Characteristics

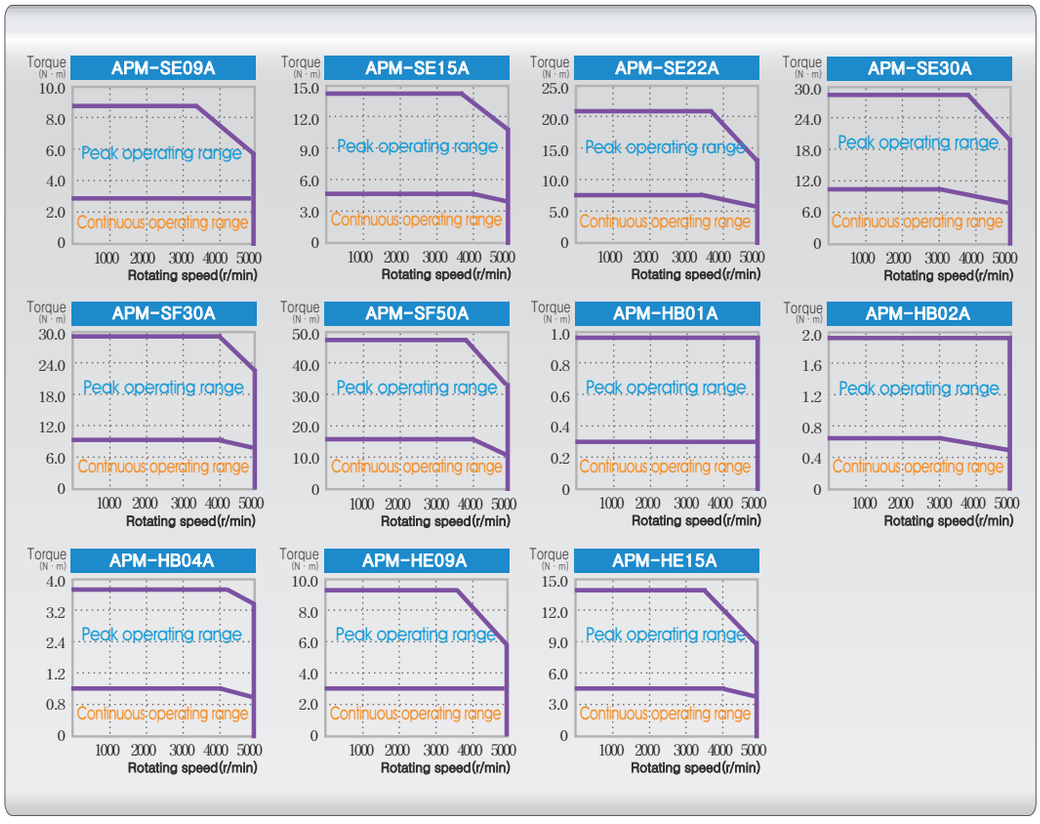


Servo Motor's Characteristics (Rated Speed 3000r/min)

Servo Motor Model (APM-□□□□□)		SE09A	SE15A	SE22A	SE30A	SF30A	SF50A	HB01A	HB02A	HB04A	HE09A	HE15A
Servo Drive Model (APD-□□□□□)		VS/VN10	VS/VN15	VS20	VS35	VS35	VS50	VS/VN01	VS/VN02	VS/VN04	VS/VN10	VS/VN15
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										
Monent 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 · 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		30times of motor inertia			20times of motor inertia			15times of motor inertia				
Rated Power Rate	[kW/S]	12.31	18.98	28.25	40.17	29.66	48.56	3.77	12.17	35.17	4.20	10.24
Speed, Potion Transducer	Standard(Note1)	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 IP65(Excluding the shaft-through section and connectors)				
	Insulation rate	B										
	Ambient	Operating Temp. : 0~40[˚C] ·Storage Temp. : -20~60[˚C]									Stor : -10~60[˚C]	
	Temp.	Lower than 90[%] (Avoid condensation)										
	Ambient Humidity	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust										
	Atmosphere	Elevation/Vibration 49[m/s2](5G)										
Weight	E/V[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



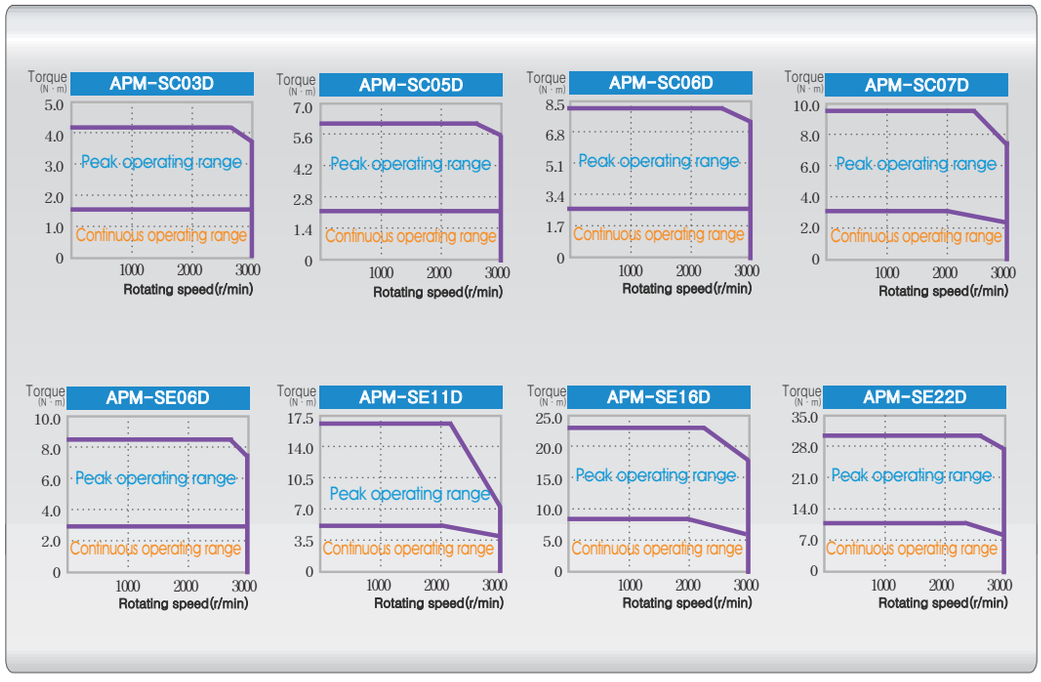
Characteristics of Servo Motor

Servo Motor's Characteristics (Rated Speed 2000r/min)

Servo Motor Model (APM-□□□□□)		SC03D	SC05D	SC06D	SC07D	SE06D	SE11D	SE16D	SE22D
Servo Drive Model (APD-□□□□□)		VS04/VN04		VS05/VN07		VS05/VN05	VS10/VN10	VS15/VN15	VS20
Flange Size (□)		□80				□130			
Rated Power	[kW]	0.3	0.3	0.55	0.65	0.6	1.1	1.6	2.2
Rated Torque	[N · m]	1.43	1.43	2.63	3.10	2.86	5.25	7.63	10.5
	[kgf · cm]	14.6	14.6	26.8	31.6	29.2	53.6	77.9	107.1
Max.Instantaneous torque	[N · m]	4.29	4.29	7.88	9.31	8.59	15.75	22.92	31.51
	[kgf · cm]	43.8	43.8	80.4	94.8	87.7	160.7	233.8	321.4
Rated rpm	[r/min]	3,000							
Max. rpm	[r/min]	5,000							
Monent of inertia	[kg · m2×10-4]	0.674	0.674	1.509	1.927	6.569	11.999	17.339	22.67
	[gf · cm · s2]	0.687	0.687	1.539	1.966	6.792	12.238	17.685	23.132
Allowable Load Inertia Ratio		15 times of motor inertia				10 times of motor inertia			
Rated Power Rate	[kW/S]	30.44	30.44	45.7	49.98	12.31	22.97	33.63	48.61
Speed, Potion Transducer	Standard(Note1)	Incremental 2500 [P/R]				Incremental 3000 [P/R]			
	Option	Absolute, 11/13bit Manchester communication				Absolute, 11/13bit Manchester communication			
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors)							
	Insulation rate	B							
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~60[°C]							
	Ambient Humidity	Lower than 90[%] (Avoid 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	1.85	3.18	3.90	5.5	7.54	9.68	11.78

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

Rotation Speed-Torque's Characteristics

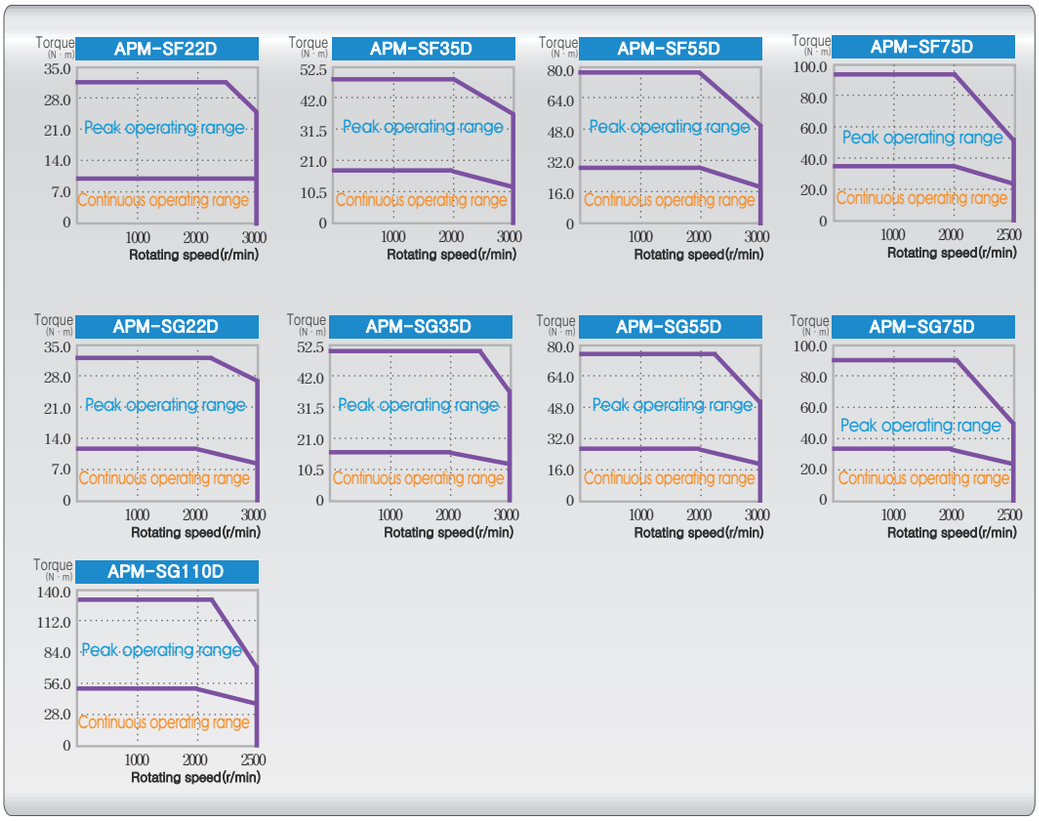


Servo Motor's Characteristics (Rated Speed 2000r/min)

Servo Motor Model (APM-□□□□□)		SF22D	SF35D	SF55D	SF75D	SG22D	SG35D	SG55D	SG75D	SG110D
Servo Drive Model (APD-□□□□□)		VS20	VS35	VS50	VS75	VS20	VS35	VS50	VS75	VS110
Flange Size (□)		□180				□220				
Rated Power	[kW]	2.2	3.5	5.5	7.5	2.2	3.5	5.5	7.5	11.0
Rated Torque	[N · m]	10.5	16.7	26.25	35.81	10.5	16.7	26.3	35.8	52.5
	[kgf · cm]	107.1	170.4	267.8	365.41	107.2	170.5	267.9	365.4	535.9
Max.Instantaneous torque	[N · m]	31.5	50.12	78.76	89.53	31.5	50.1	78.8	89.5	131.3
	[kgf · cm]	321.3	511.3	803.4	913.53	321.3	511.5	803.8	913.4	1339.7
Rated rpm	[r/min]	2,000								
Max. rpm	[r/min]	3,000			2,500	3,000			2,500	
Monent of inertia	[kg · m2×10-4]	30.74	52.13	83.60	121.35	51.42	80.35	132.41	172.91	291.36
	[gf · cm · s2]	31.35	53.16	85.24	123.74	52.47	81.99	135.11	176.44	297.31
Allowable Load Inertia Ratio		30 times of motor inertia								
Rated Power Rate	[kW/S]	35.88	53.56	82.56	105.75	21.45	34.75	52.07	74.15	94.65
Speed, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]								
	Option	Absolute, Manchester communication								
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)								
	Insulation rate	B								
	Ambient Temp.	Operating Temp. : 0~40[˚C] ·Storage Temp. : -20~60[˚C]								
	Ambient Humidity	Lower than 90[%] (Avoid condensation)								
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust								
	E/V	Elevation/Vibration 49[m/s2](5G)								
Weight	[kg]	12.4	17.7	26.3	35.6	16.95	21.95	30.8	37.52	66.2

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

Rotation Speed-Torque's Characteristics



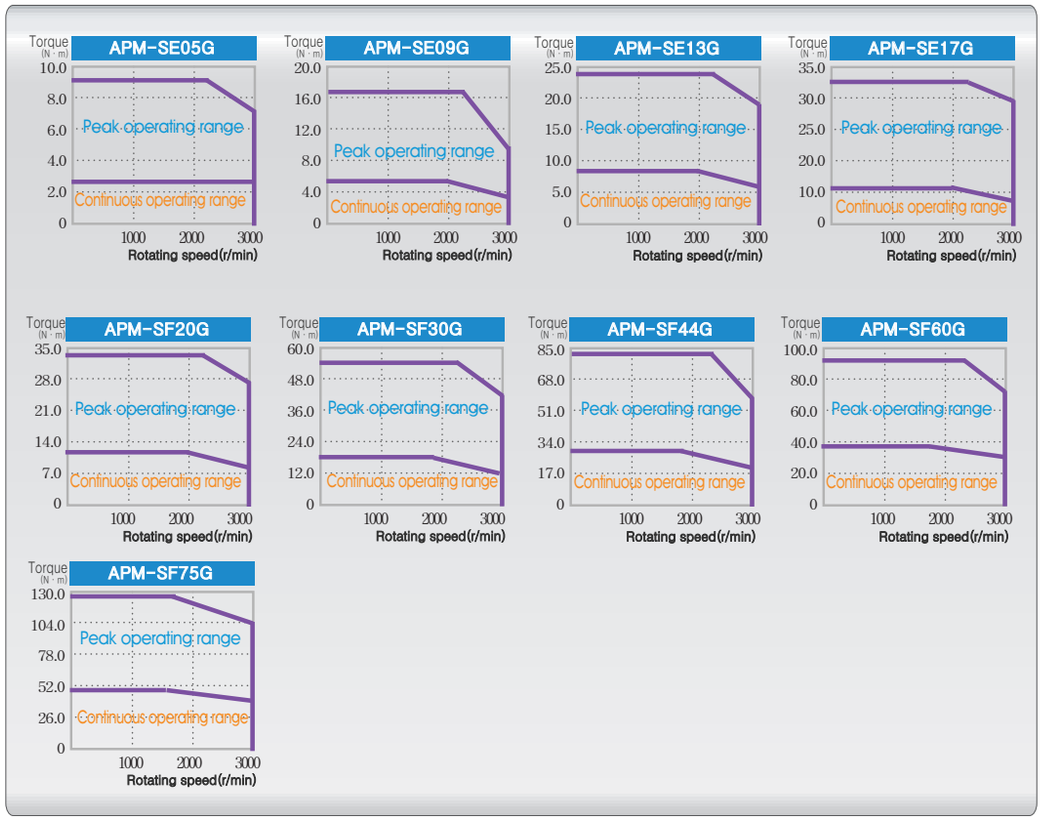
Characteristics of Servo Motor

Servo Motor's Characteristics (Rated Speed 1500r/min)

Servo Motor Model (APM-□□□□□)		SF05G	SF09G	SF13G	SF17G	SF20G	SF30G	SF44G	SF60G	SF75G
Servo Drive Model (APD-□□□□□)		VS05/VN07	VS10/VN10	VS15/VN15	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	
Monent of inertia	[kg · m2×10-4]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	121.35	143.82
	[gf · cm · s2]	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, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]								
	Option	Absolute, 11/13bit Manchester communication								
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)								
	Insulation rate	B								
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~60[°C]								
	Ambient Humidity	Lower than 90[%] (Avoid condensation)								
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust								
	E/V	Elevation/Vibration 49[m/s2](5G)								
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6	39.4

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

Rotation Speed-Torque's Characteristics

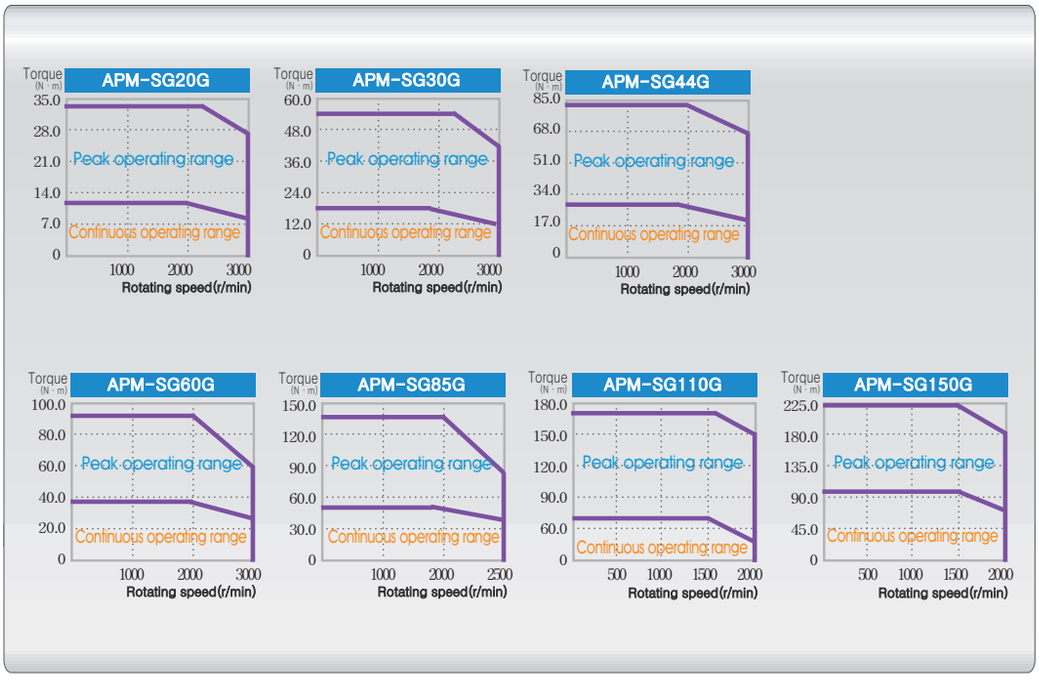


Servo Motor's Characteristics (Rated Speed 1500r/min)

Servo Motor Model (APM-□□□□□)		SG20G	SG30G	SG44G	SG60G	SG85G	SG110G	SG150G
Servo Drive Model (APD-□□□□□)		VS20	VS35	VS50	VS75	VS110	VS150	VS150
Flange Size (□)		□220						
Rated Power	[kW]	1.8	2.9	4.4	6.0	8.5	11.0	15.0
Rated Torque	[N · m]	11.5	18.5	28.0	38.2	54.1	70.0	95.5
	[kgf · cm]	116.9	188.4	285.8	389.7	552.1	714.5	974.3
Max.Instantaneous torque	[N · m]	34.4	55.4	84.0	95.5	135.3	175.1	224.4
	[kgf · cm]	350.8	565.1	857.4	974.3	1380.3	1786.4	2289.6
Rated rpm	[r/min]	1,500						
Max. rpm	[r/min]	3,000			2,500		2,000	
Monent of inertia	[kg · m2×10-4]	51.42	80.35	132.41	172.91	291.36	291.36	424.5
	[gf · cm · s2]	52.47	81.99	135.11	176.44	297.31	297.31	433.2
Allowable Load Inertia Ratio		5 times of motor inertia						
Rated Power Rate	[kW/S]	25.53	42.41	59.25	84.36	78.23	168.27	236.47
Speed, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]						
	Option	Absolute, Manchester communication						
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)						
	Insulation rate	B						
	Ambient Temp.	Operating Temp. : 0~40[˚C] ·Storage Temp. : -20~60[˚C]						
	Ambient Humidity	Lower than 90[%] (Avoid condensation)						
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust						
	E/V	Elevation/Vibration 49[m/s2](5G)						
Weight	[kg]	16.95	21.95	30.8	37.52	66.2	66.3	92.2

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

Rotation Speed-Torque's Characteristics



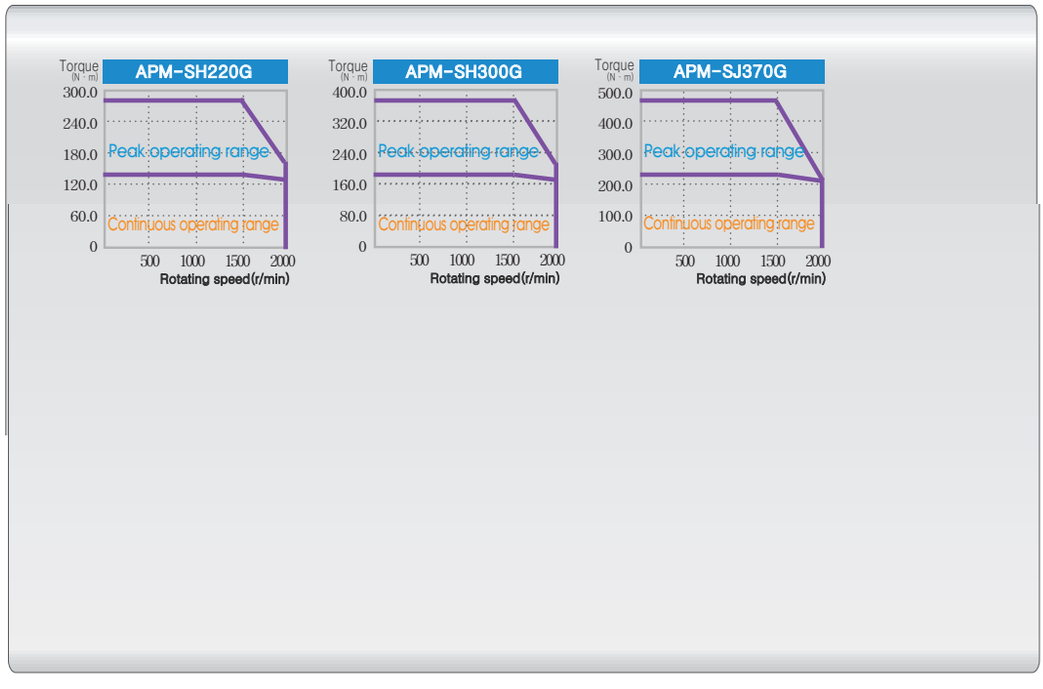
Characteristics of Servo Motor

Servo Motor's Characteristics (Rated Speed 1500r/min)

Servo Motor Model (APM-□□□□□)		SH220G	SH300G	SJ370G
Servo Drive Model (APD-□□□□□)		VS220	VS300	VS370
Flange Size (□)		□250		□280
Rated Power	[kW]	22	30	37
Rated Torque	[N · m]	140.04	190.96	235.52
	[kgf · cm]	1,429.0	1,948.6	2,403.3
Max.Instantaneous torque	[N · m]	280.08	381.93	471.04
	[kgf · cm]	2,858.0	3,897.2	4,806.6
Rated rpm	[r/min]	1,500		
Max. rpm	[r/min]	2,000		
Monent of inertia	[kg · m2×10-4]	628.51	800.81	1,314.31
	[gf · cm · s2]	641.34	817.15	1,341.13
Allowable Load Inertia Ratio		Incremental 3000[P/R]		
Rated Power Rate	[kW/S]	312.03	455.38	422.05
Speed, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]		
	Option	Absolute, Manchester communication		
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP55(Excluding the shaft-through section and connectors.)		
	Insulation rate	B		
	Ambient Temp.	Operating Temp. : 0~50[°C] ·Storage Temp. : -20~60[°C]		
	Ambient Humidity	Lower than 90[%] (Avoid condensation)		
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust		
	E/V	Elevation/Vibration 49[m/s2](5G)		
Weight	[kg]	117	138	232

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

Rotation Speed-Torque's Characteristics

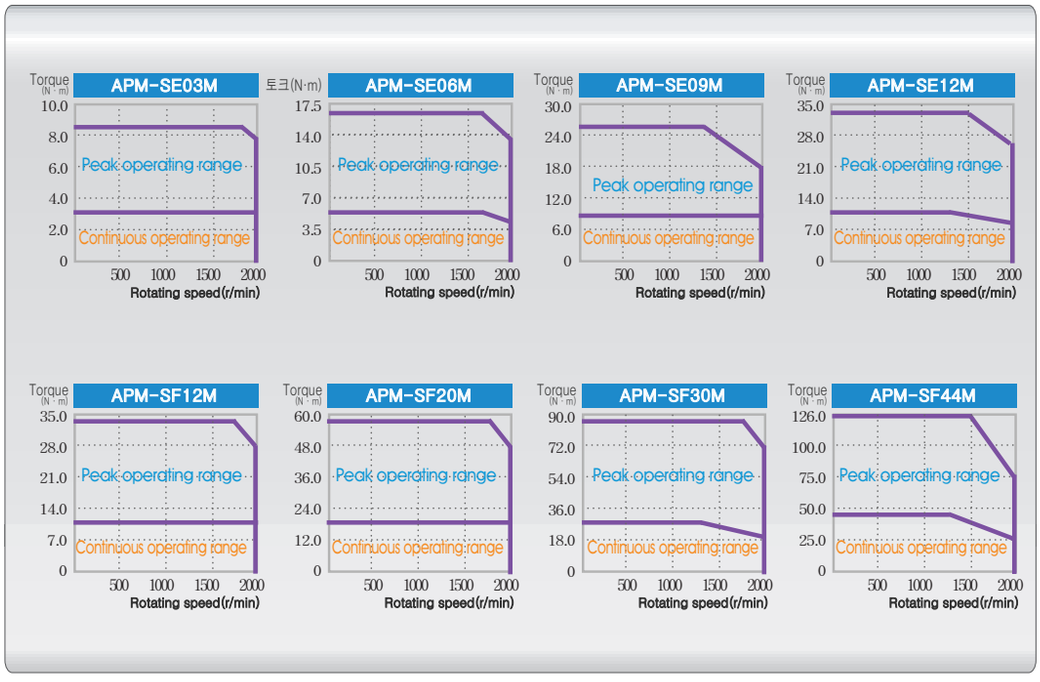


Servo Motor's Characteristics (Rated Speed 1000r/min)

Servo Motor Model (APM-□□□□□)		SE03M	SE06M	SE09M	SE12M	SF12M	SF20M	SF30M	SF40M
Servo Drive Model (APD-□□□□□)		VS04/VN04	VS05/VN07	VS10/VN10	VS15/VN15	VS15/VN15	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							
Monent of inertia	[kg · m2×10-4]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	121.35
	[gf · cm · s2]	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, Potion Transducer	Standard(Note1)	Incremental 3000 [P/R]							
	Option	Absolute, Manchester communication							
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)							
	Insulation rate	B							
	Ambient Temp.	Operating Temp. : 0~40[˚C] ·Storage Temp. : -20~60[˚C]							
	Ambient Humidity	Lower than 90[%] (Avoid condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust							
	E/V	Elevation/Vibration 49[m/s2](5G)							
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6

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

Rotation Speed-Torque's Characteristics



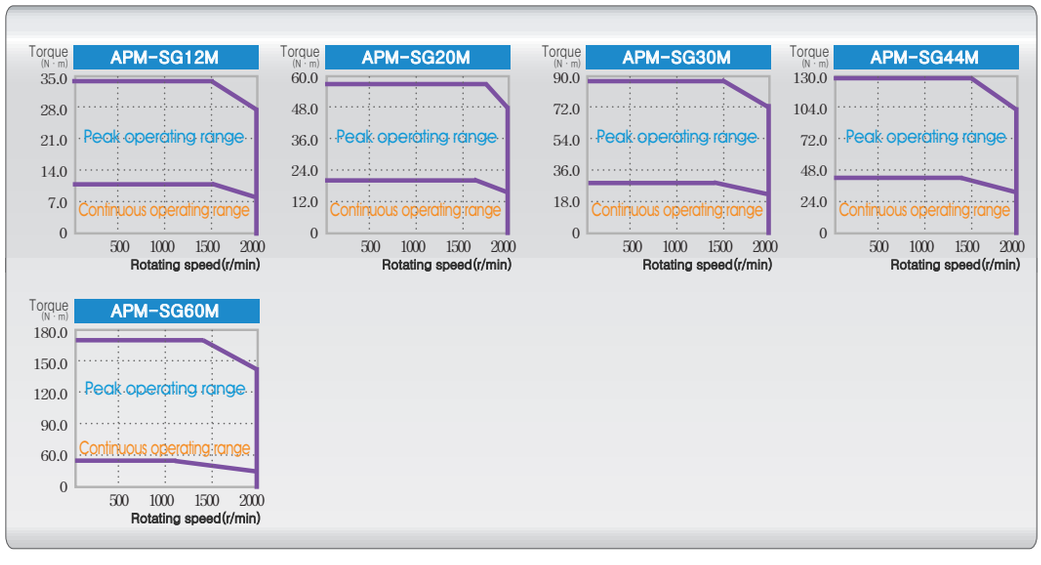
Characteristics of Servo Motor

Servo Motor's Characteristics (Rated Speed 1000r/min)

Servo Motor Model (APM-□□□□□)		SG12M	SG20M	SG30M	SG44M	SG60M
Servo Drive Model (APD-□□□□□)		VS15/VN15	VS20	VS35	VS50	VS75
Flange Size (□)		□220				
Rated Power	[kW]	1.2	2.0	3.0	4.4	6.0
Rated Torque	[N · m]	11.5	19.1	28.6	42.0	57.3
	[kgf · cm]	116.9	194.9	292.3	428.7	584.6
Max.Instantaneous torque	[N · m]	34.4	57.3	85.9	126.0	171.9
	[kgf · cm]	350.8	584.6	876.9	1286.1	1753.8
Rated rpm	[r/min]	1,000				
Max. rpm	[r/min]	2,000				
Monent of inertia	[kg · m2×10-4]	51.42	80.35	132.41	172.91	291.36
	[gf · cm · s2]	52.47	81.99	135.11	176.44	297.31
Allowable Load Inertia Ratio		30 times of motor inertia				
Rated Power Rate	[kW/S]	25.53	45.39	61.97	102.08	112.64
Speed, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]				
	Option	Absolute, Manchester communication				
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)				
	Insulation rate	B				
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~60[°C]				
	Ambient Humidity	Lower than 90[%] (Avoid condensation)				
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust				
	E/V	Elevation/Vibration 49[m/s2](5G)				
Weight	[kg]	16.95	21.95	30.8	37.52	66.2

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

Rotation Speed-Torque's Characteristics



Brake Specification

Applicable Motor Series	APM-SA	APM-SB	APM-SC	APM-SE	APM-SF	APM-SG
Use	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance
Power supply [V]	DC 24V	DC 24V	DC 24V	DC 24V	DC 24V	DC 90V
Rated 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

Note 1) For the electronic Brake that is attached to our Servo Motor, the same specifications are to be applied as per the series
2) use it for braking purpose because the electronic brake is only for maintenance of stopped condition
3) The characteristic of electronic brake is measured at 20 C
4) APM-SA,SB,SC,SE,SF Series-DC24[V], APM-SG Series-DC90[V]

Servo Motor Dimension

SA Series | APM-SAR3A, APM-SAR5A, APM-SA01A, APM-SA015A

Plug Specification

Plug Specification
: 172167-1
(Made by APM)

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 APM)

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

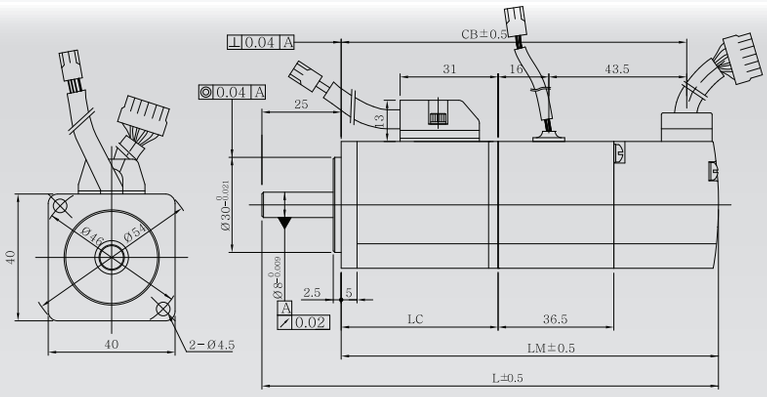
(Brake Connector Pin)

Plug Specification
: 172171-1
(Made by APM)

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 Pin)

Note
1) 40Flange standard shaft : Straight
2) Use DC24V for brake input supply depending on Brake specification
3) The dimension in ( ) is for Brake attached motor



Model	External Dimension				Weight (kg)
	L	LM	LC	CB	
SAR3A	100(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 | APM-SB01A, APM-SB02A, APM-SB04A

Plug Specification

Plug Specification
: 172167-1
(Made by APM)

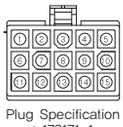
Pin No	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Brake Connector Pin)

Plug Specification
: 172165-1
(Made by APM)

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

(Brake Connector Pin)

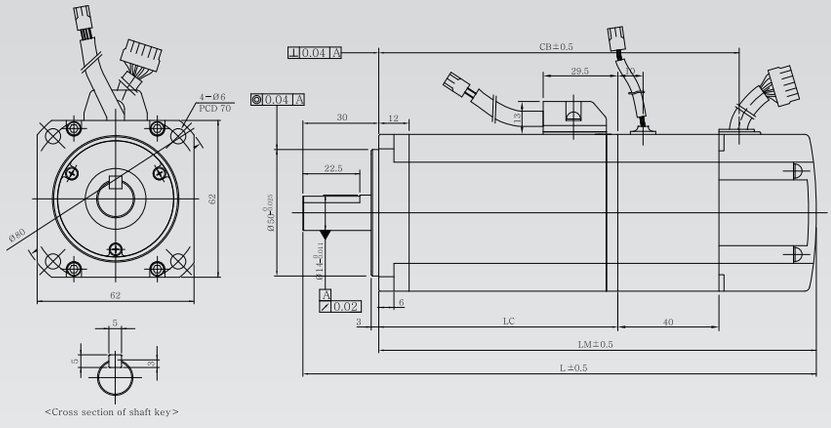


Plug Specification
: 172171-1
(Made by APM)

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 Pin)

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



Model	External Dimension				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	73(115)	1.08(1.66)
SB04A	163.5(203.5)	133.5(173.5)	94.5	103(143)	1.58(2.16)

Servo Motor Dimension

SC Series | APM-SC04A, SC03D, APM-SC06A, SC05D, APM-SC08A, SC06D, APM-SC10A, SC07D

Plug Specification

Plug Specification
: 172167-1
(Made by APM)

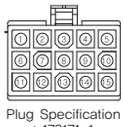
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Power Connector Pin)

Plug Specification
: 172165-1
(Made by APM)

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

(Brake Connector Pin)

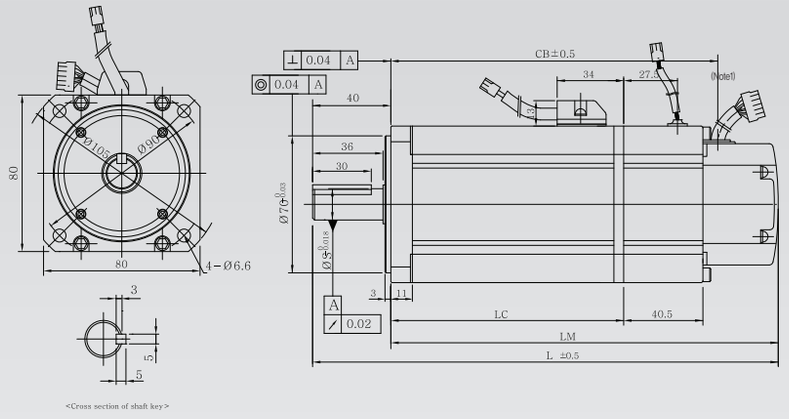


Plug Specification
: 172171-1
(Made by APM)

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 Pin)

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



Model	External Dimension					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)

SE Series | APM-SE09A, SE06D, SE05G, SE03M, APM-SE15A, SE11D, SE09G, SE06M, APM-SE22A, SE16D, SE13G, SE09M, APM-SE30A, SE22D, SE17G, SE12M

Plug Specification

Plug Specification
: MS3102A20-4P
(Standard)

Pin No	Color
A	U
B	V
C	W
D	Ground

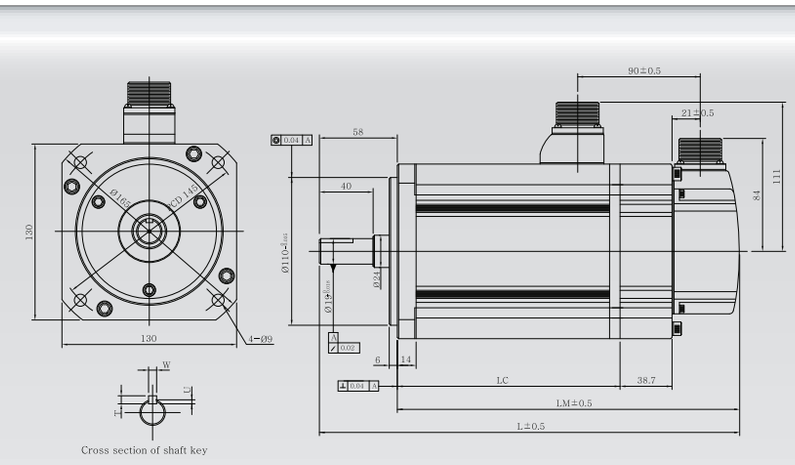
Plug Specification
: MS3102A20-15P
(Brake attachedtype)

Pin No	Color	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	$\bar{A}$	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	$\bar{U}$		

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



Model	External Dimension							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)

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

Plug Specification

Specification
: MS3102A32-17P
(Standard)

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

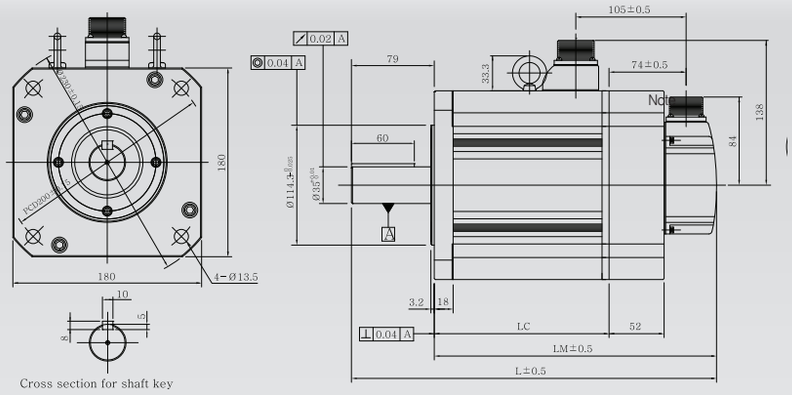
Specification
: MS3102A14S-7P
(Brake attachedtype)

Pin No.	Color	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	$\bar{A}$	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	$\bar{U}$		

Note
1) 아이볼트는 SF55D, SF44G, SF30M 이상의 모델에 적용됩니다.
2) Use DC24V for brake input supply depending on Brake specification
3) The dimension in ( ) is for Brake attached motor



Model	External Dimension				Shaft, 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)
SF50A, SF35D, SF30G, SF20M	296(348)	217(268)	167	79	$35^{+0.01}$	60	8	10	5	17.7(24.9)
SF55D, SF44G, SF30M	346(398)	267(318)	217	79	$35^{+0.01}$	60	8	10	5	26.3(33.4)
SF75D, SF60G, SF44M	406(458)	327(378)	277	79	$35^{+0.01}$	60	8	10	5	35.6(42.8)
SF75G	458	345	295	113	$42^{-0.016}$	96	8	12	5	39.4

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

Plug Specification

Specification
: MS3102A22-22P
(Standard)

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

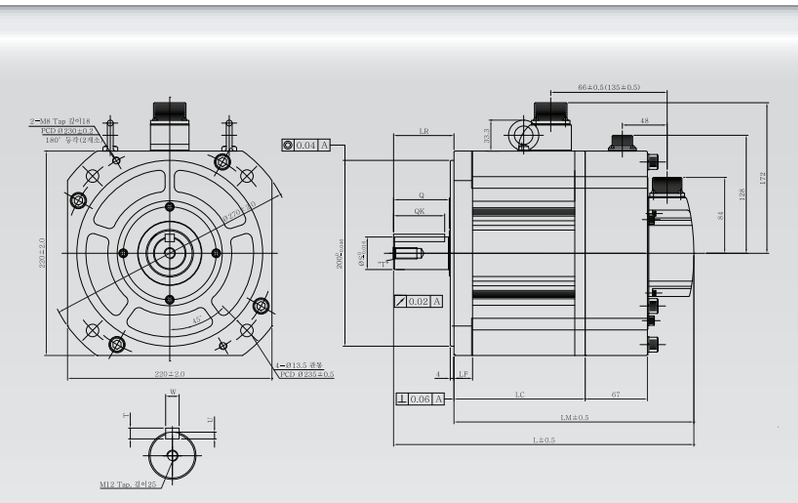
Specification
: MS3102A14S-7P
(Brake attachedtype)

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

Specification
: 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	$\bar{U}$		

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



Model	External Dimension					Shaft, 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)
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)

Servo Motor Dimension

SG Series | APM-SG110D, SG85G, SG60M, APM-SG110G, APM-SG150G

Plug Specification

Specification
: MS3102A32-17P
(Standard)

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

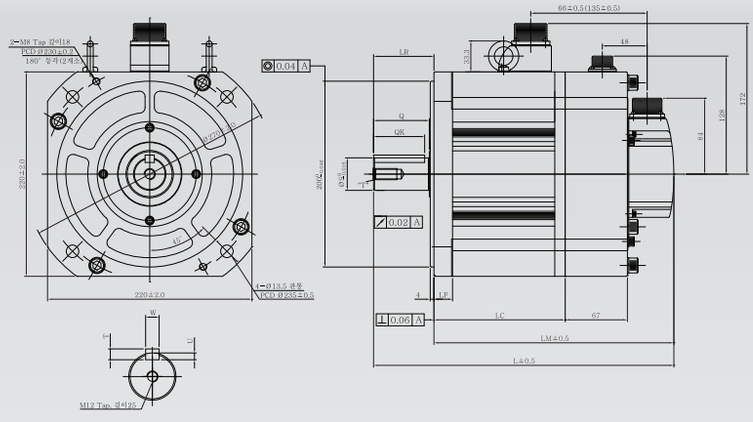
Specification
: MS3102A14S-7P
(Brake attachedtype)

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

Specification
: 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	$\bar{U}$		

Note
1) Use DC90V for brake input supply depending on Brake specification



Model	External Dimension					Shaft, Key						Weight (kg)
	L	LM	LC	LR	LF	S	Q	QK	T	W	U	
SG110D, SG85G, SG60M	421 (486)	356 (421)	304	65	22	45 -0.016	60 (110)	55 (96)	8	10	5	66.2(82.6)
SG110G	469 (536)	354 (421)	304	115	22	42 -0.016	110	96	10	12	5	66.3(82.7)
SG150G	575	459	409	116	35	55 +0.030 +0.016	110	96	10	16	6	92.2

SH, SJ Series | APM-SH220G, SHP220G, SH300G, SHP300G

Plug Specification

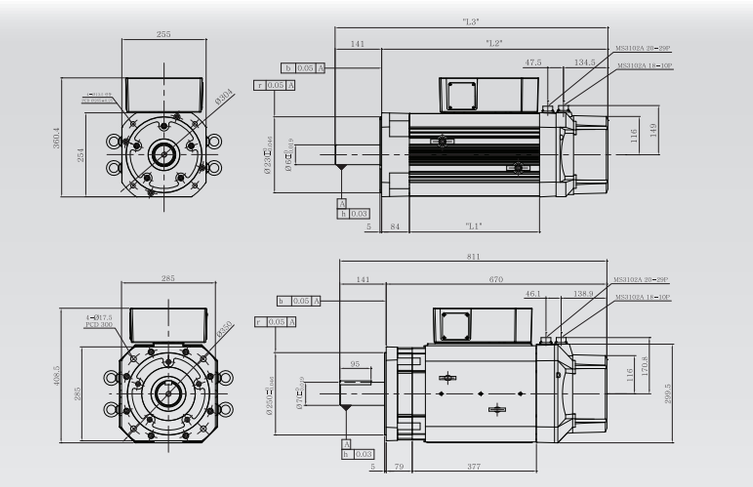
Specification
: MS3102A20-4P
(Standard)

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

Specification
: MS3102A20-29P
(Standard)

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	$\bar{U}$		

Note
Power Cable-Customer have to buy it in their market



Model	External Dimension			Weight (kg)
	L1	L2	L3	
SH220G, SHP220G	326	533	758	117
SH300G, SHP300G	394	685	826	138

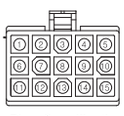
HB Series(Hollow Shaft Type) | APM-HB01A, APM-HB02A, APM-HB04A

Plug Specification

Plug Specification
: 172167-1
(Made by APM)

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

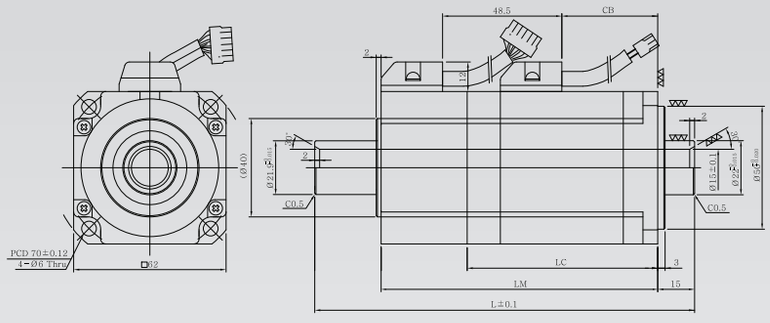
(Power Connector Pin)



Plug Specification
: 172171-1
(Made by APM)

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 Pin)



Model	External Dimension					Weight (kg)
	L	LM	LC	CB	Hollow Shaft Type	
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) | APM-HE09A, APM-HE15A

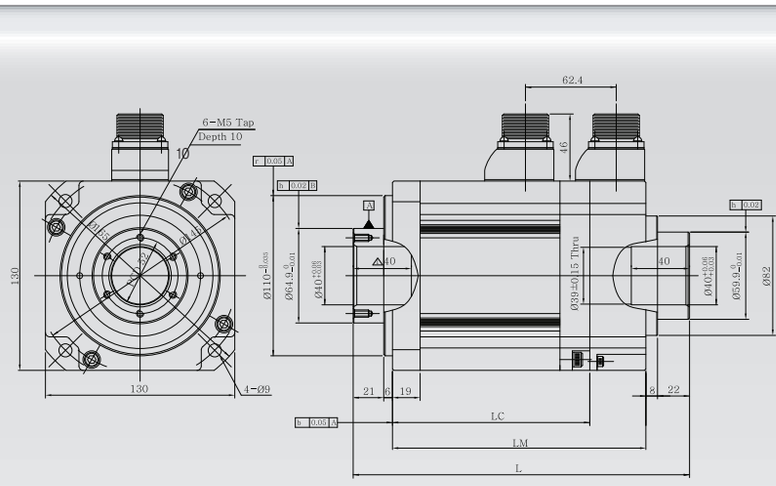
Plug Specification

Specification
: MS3102A20-4P
(Standard)

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

Specification
: 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 Dimension				Weight (kg)
	L	LM	LC	Hollow shaft Dia	
HE09A	207	150	111.5	40	5.82
HE15A	231	174	135.5	40	7.43

Feature of Servo Drive

Standard Servo Drive APD-VS Series

- High efficiency power transformation technology realized by ASIC.
- Veriety of communication options
- Convenient loader installation

Specification

Model (APD-VS)		R5	01	02	04	05	10	15	20	35	50	75	110	150	220	300	370
Input Power supply (★Note)		3 phase AC200~230[V]+10%-15%, 50/60[Hz]															
Applicable Motor	Voltage Type	3 phase sine wave PWM driven Ac Servo Motor															
	Rated Current[A]	1.2	1.65	1.65	3.2	4.3	6.4	11	16	21	32	38	50	76	125	165	210
	MAx. Current[A]	3.6	4.95	4.95	9.6	12.9	19.2	33	48	63	96	102	125	190	250	370	420
Detector Type		Standard : Incremental 5V Line Drive 2000~10000P/rev Option : Absolute 11/13bit															
Speed Control Mode	Control function	Speed control range(1:10000), frequency Response(400Hz)													Response(200Hz)		
	Speed command	DC-10[V]~+10[V] (-Voltage: Reverse Rotation), Digital Command 7 Speeds.															
	Acceleration/Deceleration time	Linear, S Type Acceleration/Deceleration (0~100000[msec])															
	Speed variation ratio	± 0.01% or less(Load Variation 0-100%), ± 0.1% or less (Temperature 25 + - 10C)															
Position Control Mode	Input frequency	500[kpps]													400[kpps]		
	Pulse	A+B Phase, Forward+Reverse Pulse, Direction + Pulse(Line driver, Open collector)															
	Electronic gear ratio	Digital 4 speed, Available detail adjust															
Torque Control mode		Torque Command : DC -10 ~ +10V(- Voltage : Reverse), Linearity is less than 4%													Linearity is less than 2%		
Braking Type		Generative Brake, regenerative Brake													Regenerative Brake		
Ambient Environment		Operating Temp. : 0~50[℃], Storage Temp. : -20~+80[℃], Humidity : Less than 90C(Avoid condensation)															

Note 1) Single-phase AC220 -230V may be used : However, the output may be lower than the rating.
(the use of single-phase AC 220-230V for 500W and lower drive is acceptable)

APD-VP Series Ratings and Characteristics

Model (APD-VP)		R5	01	02	04	05	10	15	20	35	50	75	110	150	220	300	370
Input Power supply (★Note)		3 phase AC200~230[V]+10%-15%, 50/60[Hz]															
Applicable Motor	Voltage Type	3 phase sine wave PWM driven AC Servo Motor															
	Rated Current[A]	1.2	1.65	1.65	3.2	4.3	6.4	11	16	21	32	38	50	76	125	165	210
	MAx. Current[A]	3.6	4.95	4.95	9.6	12.9	19.2	33	48	63	96	102	125	190	250	370	420
Detector Type		Standard : Incremental 5V Line Drive 2000~10000P/rev Option : Absolute 11/13bit															
Setting Up Position Coordinates		Set up Max. 64 point by input contacts, set up 6-digits of position, 2-digits of speed by digital switch															
External Input / Output	Input / Output Contacts	Input : 20 points, Output : 9 points															
	Position Pulse Input	Maximum input frequency : 500[kpps]													400[kpps]		
		Input system : A+B Phass, Forward+Reverse Pulse, Direction+Pulse(Line Drive, Open collection)															
	Analog Input	Maximum 4 Channels, DC-10~+10[V]															
	Analog Output	Maximum 2 Channels, DC0~5[V]															
	Encoder Output	A, B and Z Phase, 5V Line Driver, 1/1~1/16 frequency deviding possible.															
Bracking System		Power Generated Braking, Regenerated Braking													Regenerated Braking		
Ambient Environment		Operating Temp : 0~50[℃], Storage Temp : -20~+80[℃], Humidity : less than 90[%]															

Note 1) Single-phase AC200 -230[V] may be used : However, the output may be lower than the rating.

High performance drive APD-VN Series

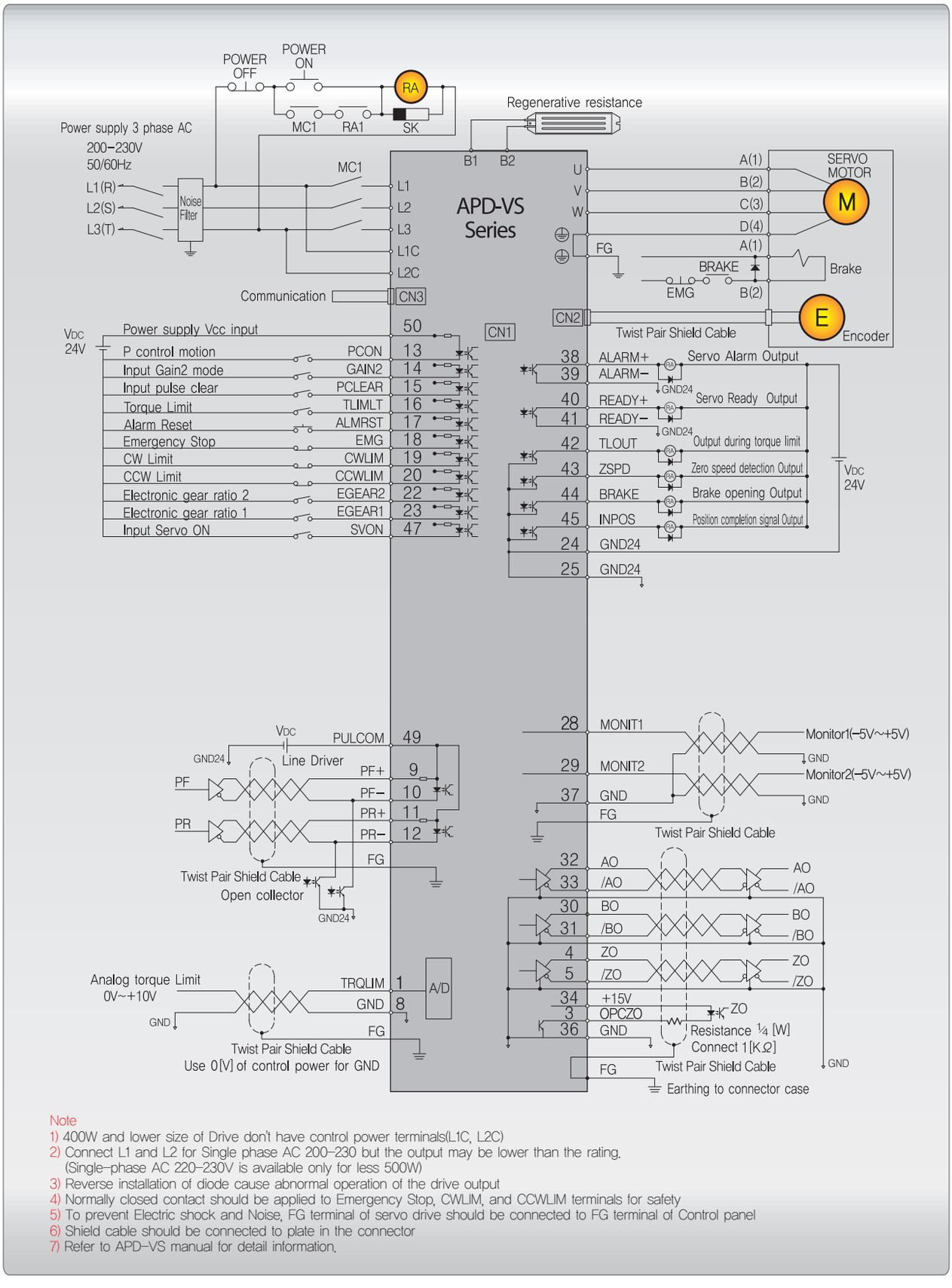
- Compact
  - Reduced 40% of size comparing with VS series (400W)
  - Improved space flexibility of control panel with minature design
- Serial Encoder Support
  - 17 ~ 19 Bit serial encoder available
- Excellent Speed Response
  - Fast response speed comparing with VS series (for the serial encoder)
- Various Alarm Function
  - Input/UVW wiring, Encoder pulse setting,Overheat of power module, Over current, Over load and Over speed, etc
- Firmware download and PC communication via USB
- RS-422 Communication

Specification

MODEL		VN01	VN02	VN04	VN07	VN10	VN15
Power	Supply	3 phase AC 200~230V +10[%] - - 15[%], 50/60[Hz]					
	Control	AC 200~230V +10[%] - - 15[%], 50/60[Hz]					
Applicable motor	Voltage type	3 phase sine wave PWM driven AC Servo Motor					
	Rated Currnet[A]	1.4	1.65	3	4.3	6.0	11
	Max Current[A]	4.2	4.95	9	12.9	18.0	30
Detector Type		Standard : Incremental line drive 2000 ~ 10000P/R Option : Serial 17(bit)					
Speed Control Mode	Speed control range	Max 1:5000					
	Frequency response	600[Hz] (For using Serial Encoder)					
	Speed command	DC -10[V] ~ +10[V](-voltage : Reverse Rotation), 3 digital speed commands					
	Acceleration/Deceration time	Linear 0~10,000[ms], S type acceleration/deceleration					
	Speed Variation ratio	± 0.01[%] or less [load variation 0~100%], ±0.1[%] or less [Temperature 25 ±10℃]					
Position Control Mode	Input frequency	Line drive : 500[kbps] Open collector : 400[kbps]					
	Input pulse	A+B phase, forward + reverse pulse, direction + pulse[Line driver, Open Collector)					
	Electronic gear ratio	Digital 4 speed, Available detail adjust					
Torque Control Mode	Torque command	DC -10[V] ~ +10[V] (- voltage : reverse)					
	Torque linearity	Less than 2[%]					
	Speed limit	DC 0[V] ~ +10[V], 3 digital speed commands					
Embeded Function	Generative Brake	Standard embedded [Operating on Servo ON or Servo OFF]					
	Regenerative Brake	Option				Embedded	
	Loader	Embedded 7 segments [6 digits], CHARGE & ALARM Lamp					
	Monitor output	DC -5[V] ~ +5[V], 2Channels [Speed, Torque, Position etc]					
	Protective function	For the error and mistake of Input/UVW wiring, Encoder pulse setting, Overheat of power module, Over current, Over load and Over speed etc					
Ambient Environment	Temperature	0 ~ 50[℃]					
	Humidity	Less than 90[%] (Avoid condensation)					
	Environment	Indoor, No corrosive gas, inflammable gas and Oil mist etc					

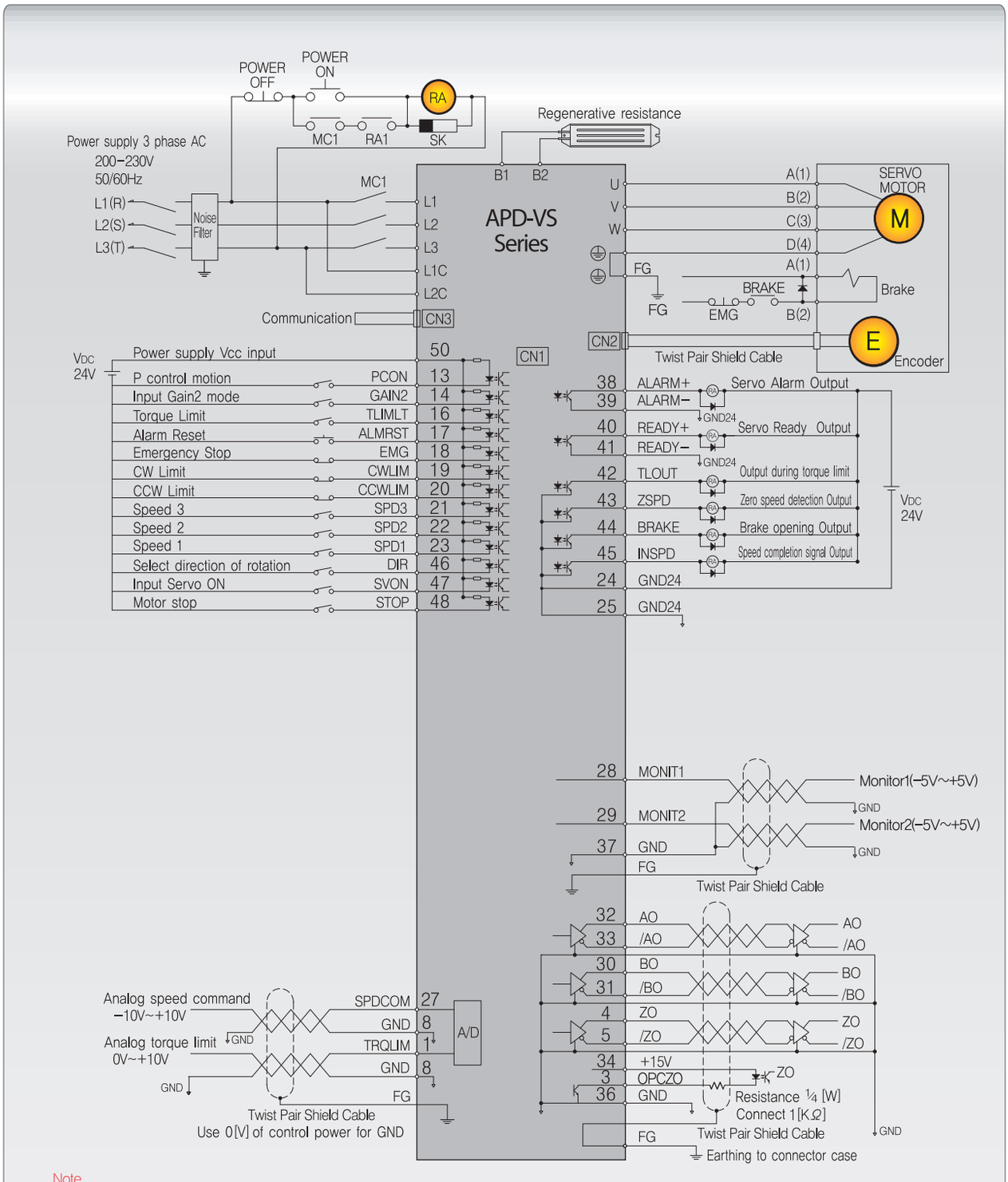
VS Drive Connection Diagrams

APD-VS Series : Position operating mode



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) Connect L1 and L2 for Single phase AC 200-230 but the output may be lower than the rating.
(Single-phase AC 220-230V is available only for less 500W)
3) Reverse installation of diode cause abnormal operation of the drive output
4) Normally closed contact should be applied to Emergency Stop, CWLIM, and CCWLIM terminals for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

APD-VS Series : Speed operating mode



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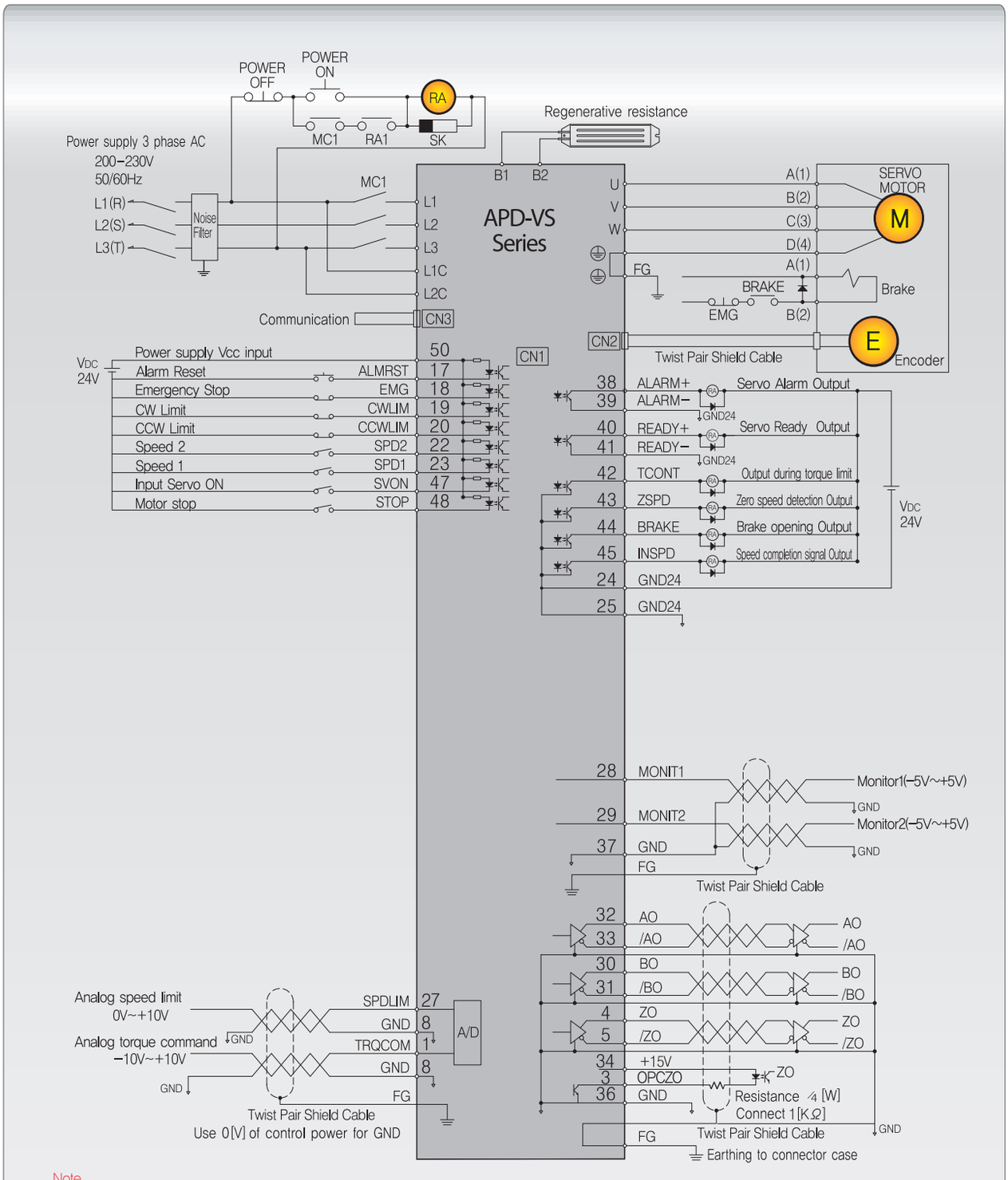
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

VS Drive Connection Diagrams

APD-VS Series : Torque operating mode



Note
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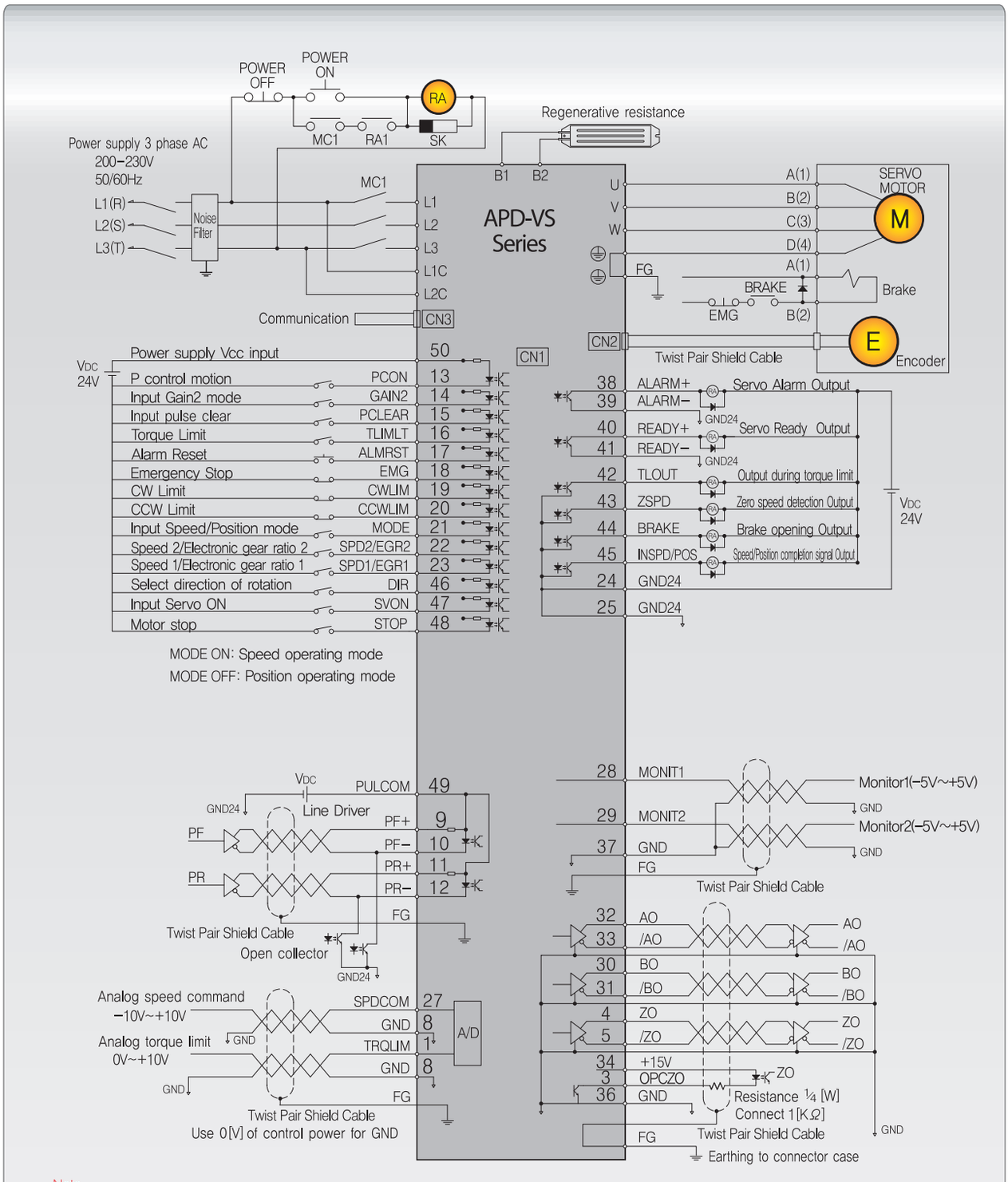
(Single-phase AC 220-230V is available only for less 500W)
3) Reverse installation of diode cause abnormal operation of the drive output
4) Normally closed contact should be applied to Emergency Stop, CWLIM, and CCWLIM terminals for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

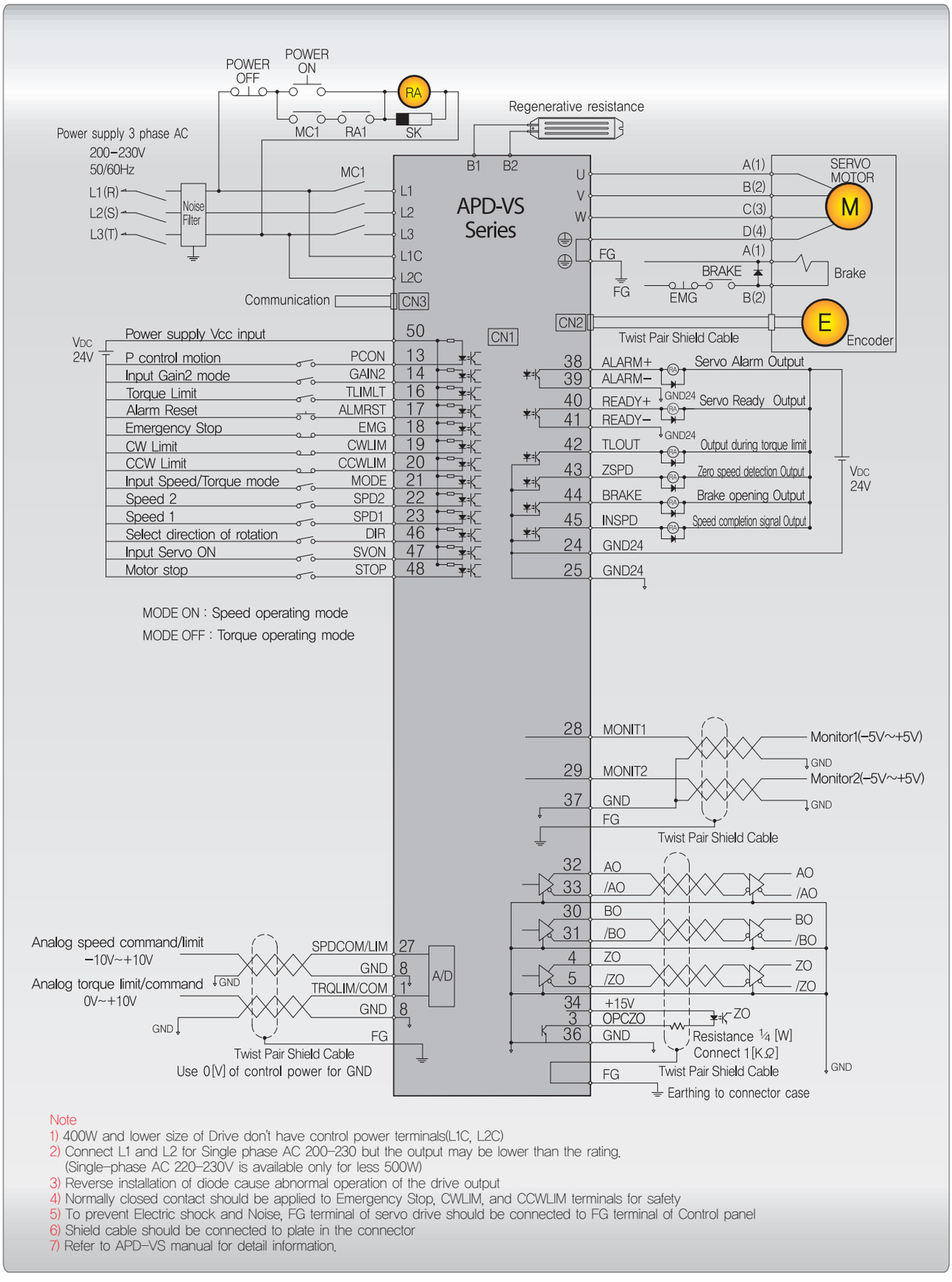
APD-VS Series : Speed/Position operating mode



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) Connect L1 and L2 for Single phase AC 200-230 but the output may be lower than the rating.
(Single-phase AC 220-230V is available only for less 500W)
3) Reverse installation of diode cause abnormal operation of the drive output
4) Normally closed contact should be applied to Emergency Stop, CWLIM, and CCWLIM terminals for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

VS Drive Connection Diagrams

APD-VS Series : Speed/Torque operating mode



Note
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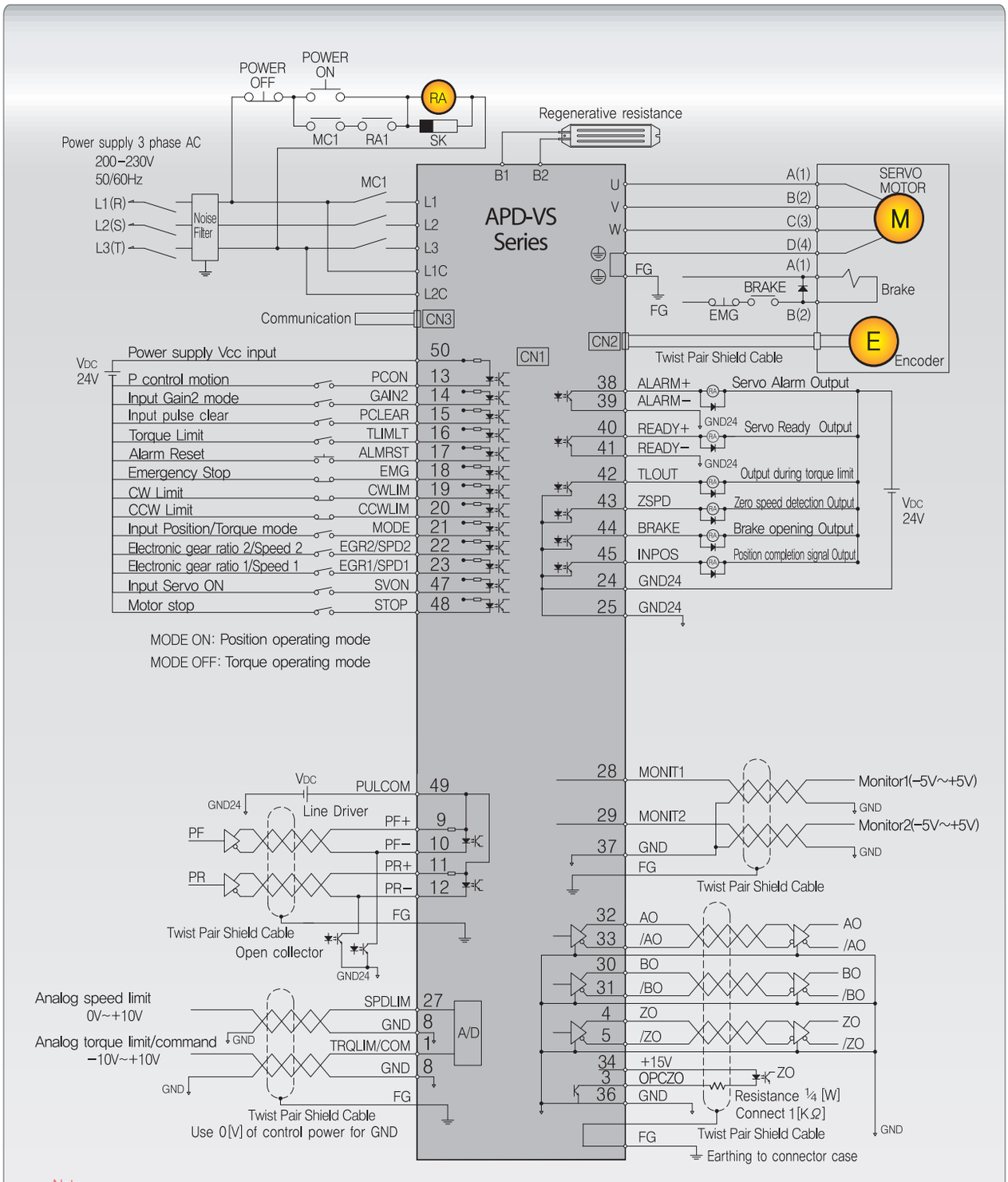
2) Connect L1 and L2 for Single phase AC 200-230 but the output may be lower than the rating.
(Single-phase AC 220-230V is available only for less 500W)
3) Reverse installation of diode cause abnormal operation of the drive output
4) Normally closed contact should be applied to Emergency Stop, CWLIM, and CCWLIM terminals for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

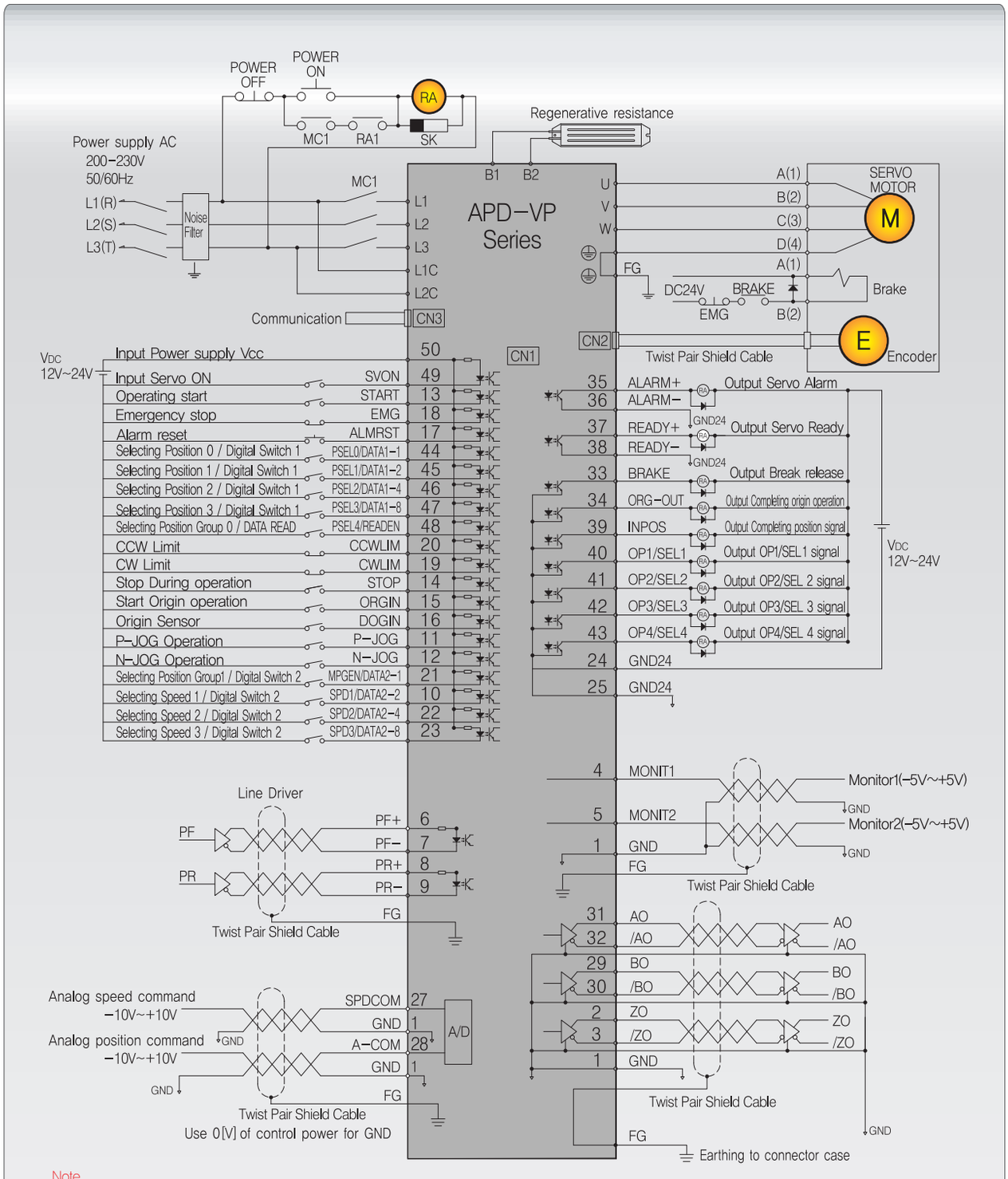
APD-VS Series : Position/Torque operating mode



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) Connect L1 and L2 for Single phase AC 200-230 but the output may be lower than the rating.
(Single-phase AC 220-230V is available only for less 500W)
3) Reverse installation of diode cause abnormal operation of the drive output
4) Normally closed contact should be applied to Emergency Stop, CWLIM, and CCWLIM terminals for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive should be connected to FG terminal of Control panel
6) Shield cable should be connected to plate in the connector
7) Refer to APD-VS manual for detail information.

VP Drive Connection Diagrams

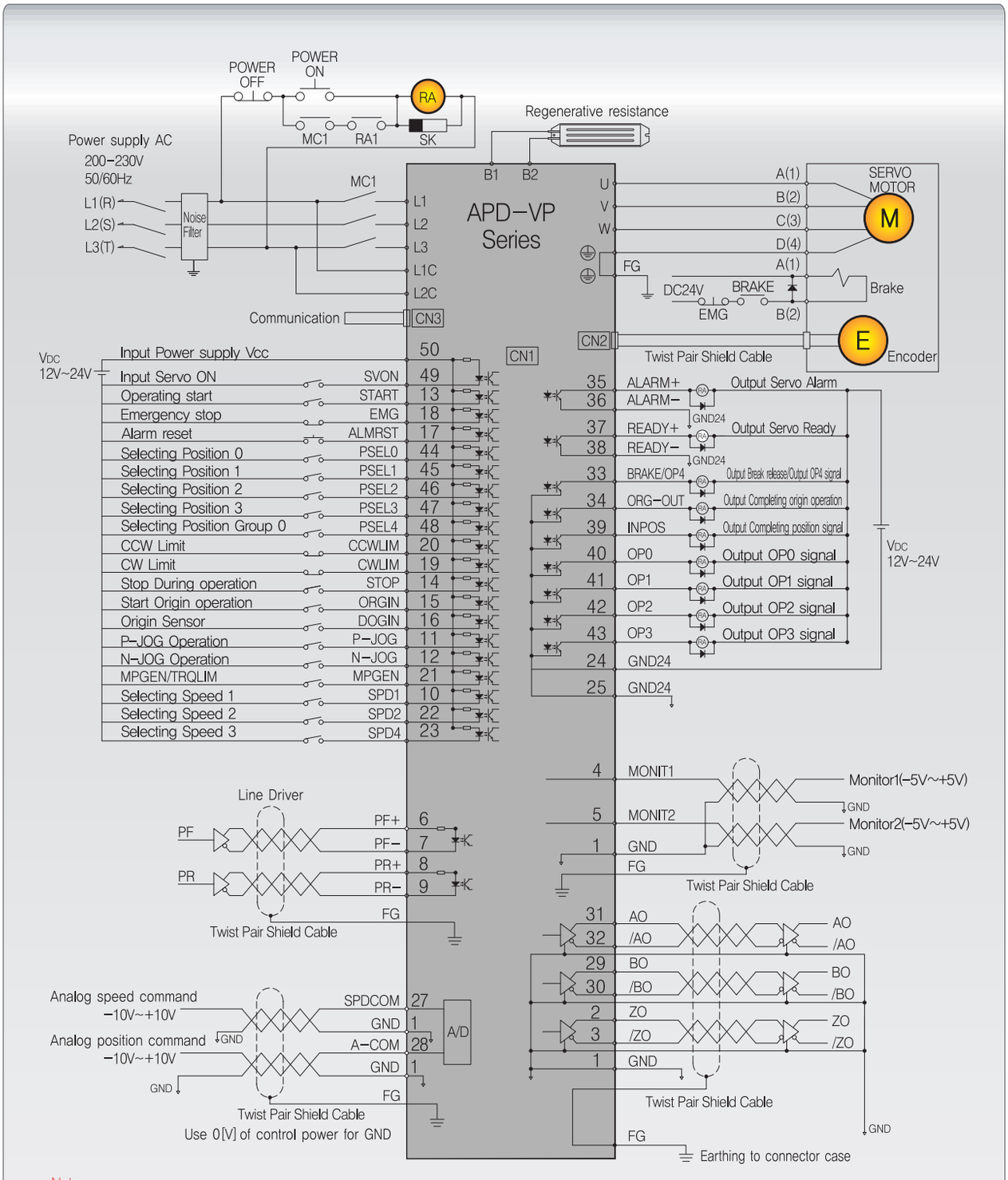
APD-VP Series : Linear coordinates position operation type(VP-1)



Note

1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) When Single-phase power supply(AC200-230V) is use, Connect L1 and L2 terminals but, in this case the output may be lower than the rating. (the use of single-phase AC 220-230V for 500W and lower drive is acceptable)
3) Take care of diode direction, Mis-connecting of Diode direction cab be reason of drive output signal problem.
4) Emergency Stop, CWLIM, and CCWLIM terminals are in Contacts B for safety.
5) To prevent Electric shock and Noise, FG terminal of servo drive must be connected to FG terminla of Control panel.
6) Shield cable should be connected to plate in the connector.
7) Please refer our APD-VP operating manual for detailed information.

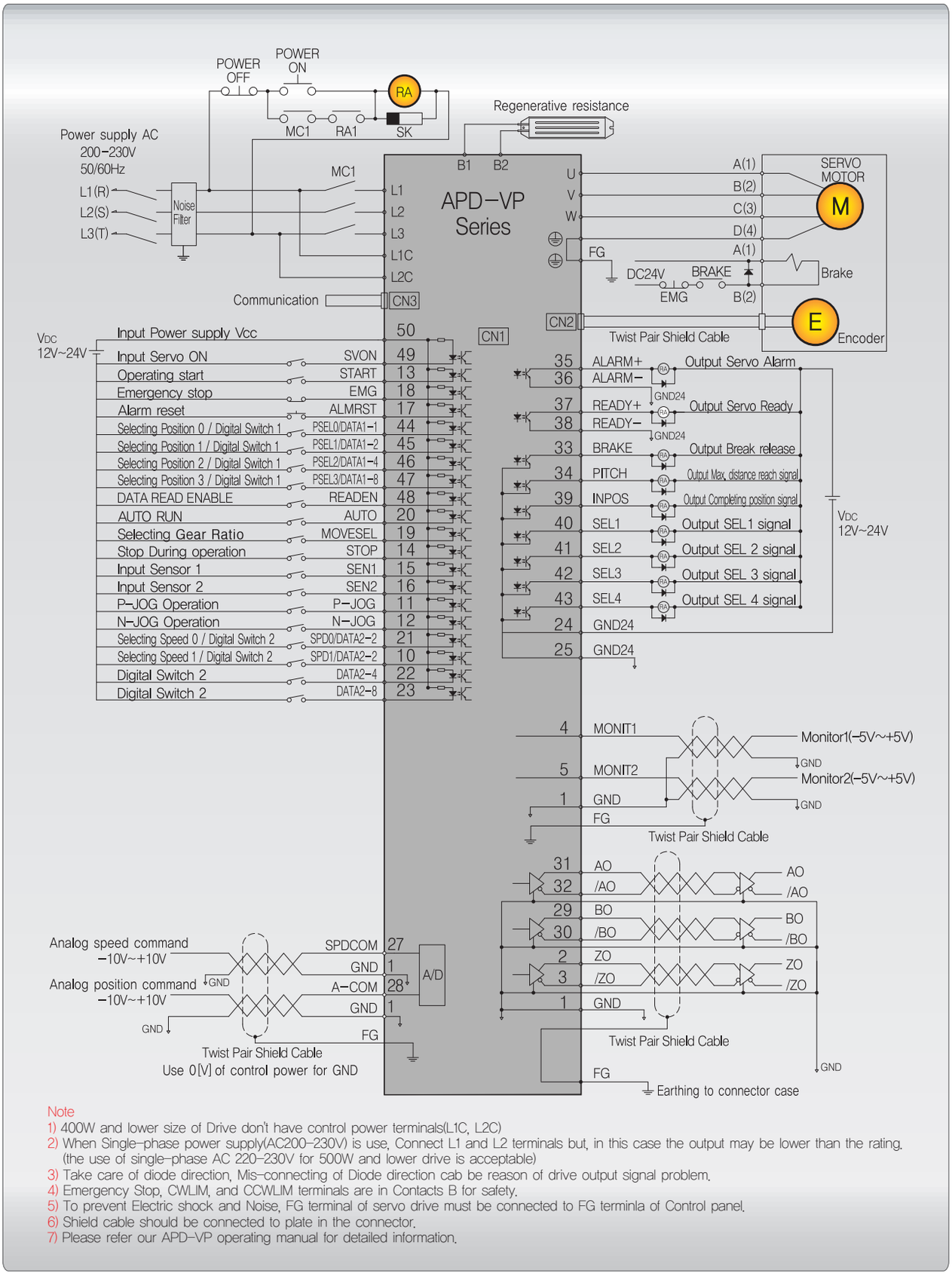
APD-VP Series : Rotary coordinates position operation type(VP-2)



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) When Single-phase power supply(AC200-230V) is use, Connect L1 and L2 terminals but, in this case the output may be lower than the rating. (the use of single-phase AC 220-230V for 500W and lower drive is acceptable)
3) Take care of diode direction, Mis-connecting of Diode direction cab be reason of drive output signal problem.
4) Emergency Stop, CWLIM, and CCWLIM terminals are in Contacts B for safety.
5) To prevent Electric shock and Noise, FG terminal of servo drive must be connected to FG terminla of Control panel.
6) Shield cable should be connected to plate in the connector.
7) Please refer our APD-VP operating manual for detailed information.

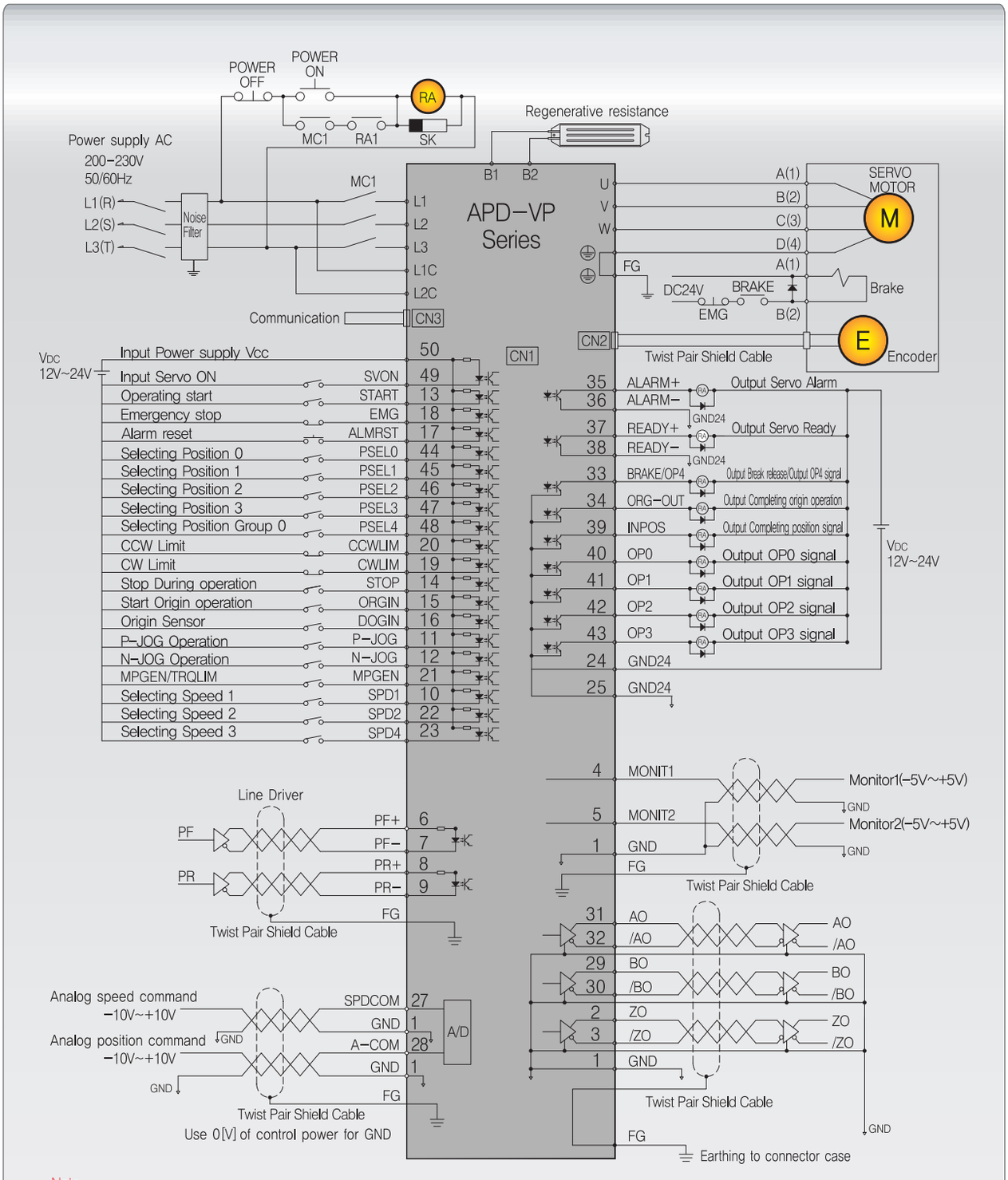
VP Drive Connection Diagrams

APD-VP Series : Position operation type after feeder and Sensor(VP-3)



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) When Single-phase power supply(AC200-230V) is use, Connect L1 and L2 terminals but, in this case the output may be lower than the rating. (the use of single-phase AC 220-230V for 500W and lower drive is acceptable)
3) Take care of diode direction, Mis-connecting of Diode direction cab be reason of drive output signal problem.
4) Emergency Stop, CWLIM, and CCWLIM terminals are in Contacts B for safety.
5) To prevent Electric shock and Noise, FG terminal of servo drive must be connected to FG terminla of Control panel.
6) Shield cable should be connected to plate in the connector.
7) Please refer our APD-VP operating manual for detailed information.

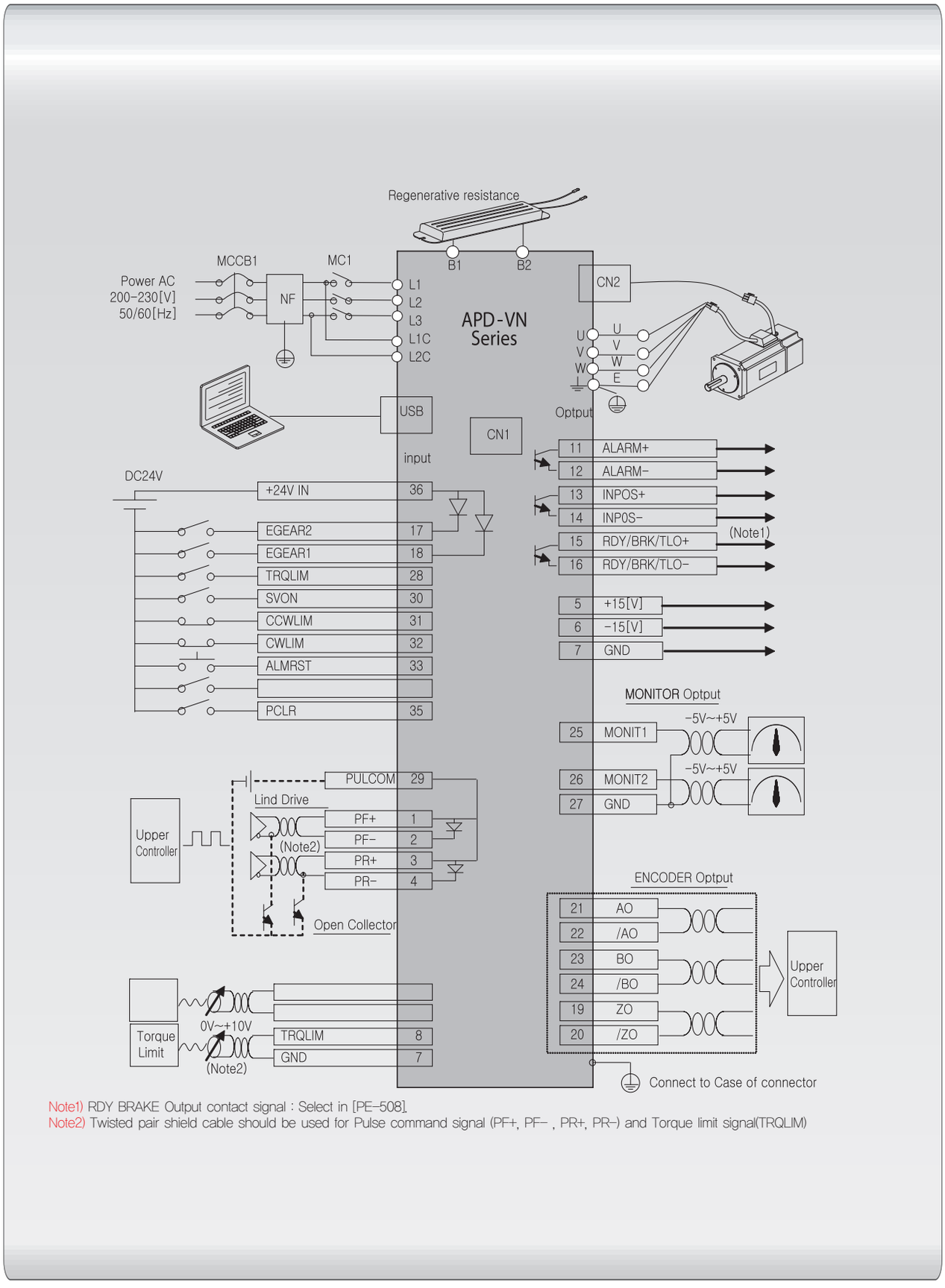
APD-VP Series : Program operation type(VP-5)



Note
1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) When Single-phase power supply(AC200-230V) is use, Connect L1 and L2 terminals but, in this case the output may be lower than the rating. (the use of single-phase AC 220-230V for 500W and lower drive is acceptable)
3) Take care of diode direction, Mis-connecting of Diode direction cab be reason of drive output signal problem.
4) Emergency Stop, CWLIM, and CCWLIM terminals are in Contacts B for safety.
5) To prevent Electric shock and Noise, FG terminal of servo drive must be connected to FG terminla of Control panel.
6) Shield cable should be connected to plate in the connector.
7) Please refer our APD-VP operating manual for detailed information.

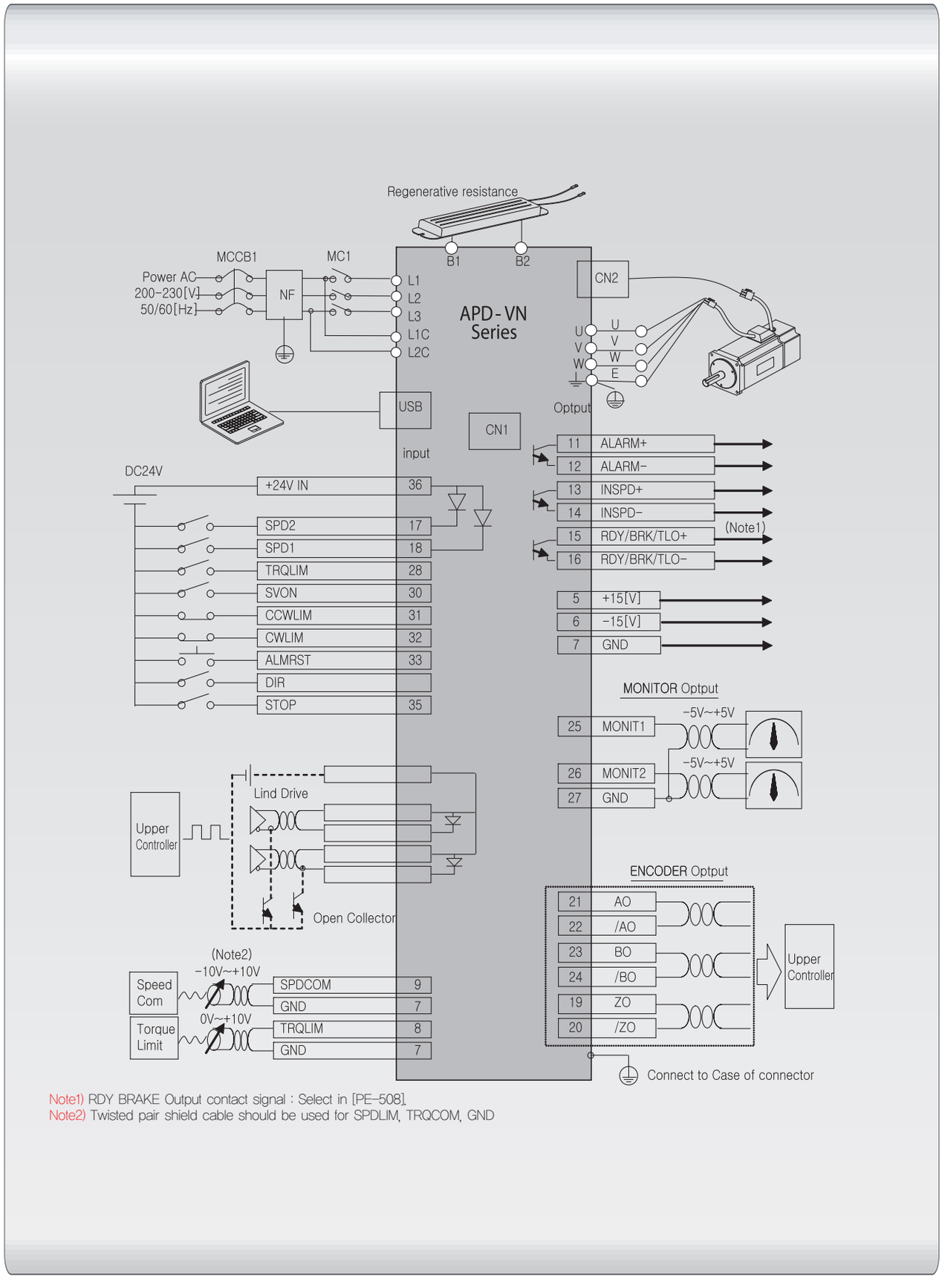
VN Drive Connection Diagrams

APD-VN Series : Position operating mode



Note1) RDY BRAKE Output contact signal : Select in [PE-508].
Note2) Twisted pair shield cable should be used for Pulse command signal (PF+, PF- , PR+, PR-) and Torque limit signal(TRQLIM)

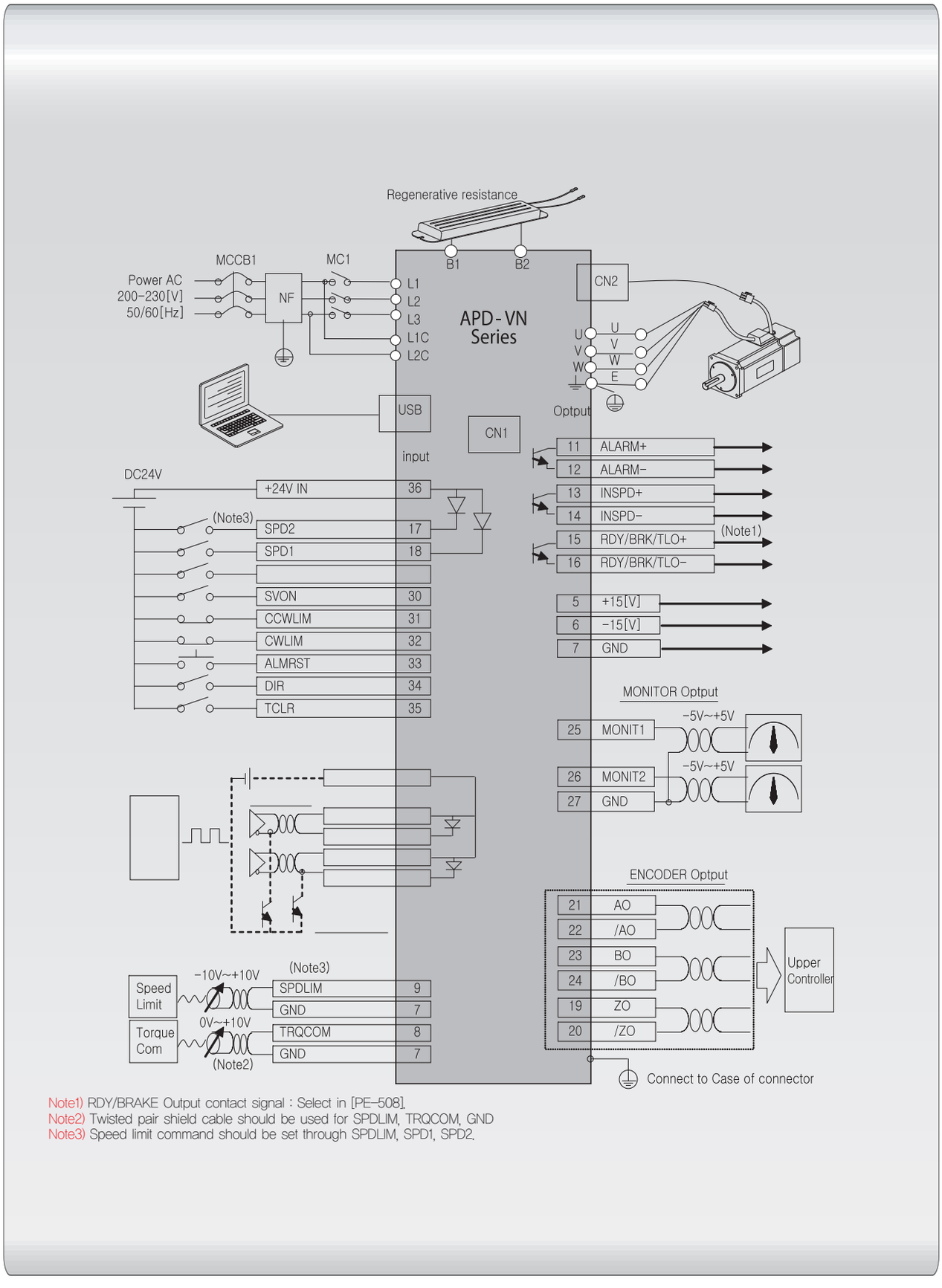
APD-VN Series : Speed operating mode



Note1) RDY BRAKE Output contact signal : Select in [PE-508].
Note2) Twisted pair shield cable should be used for SPDLIM, TRQCOM, GND

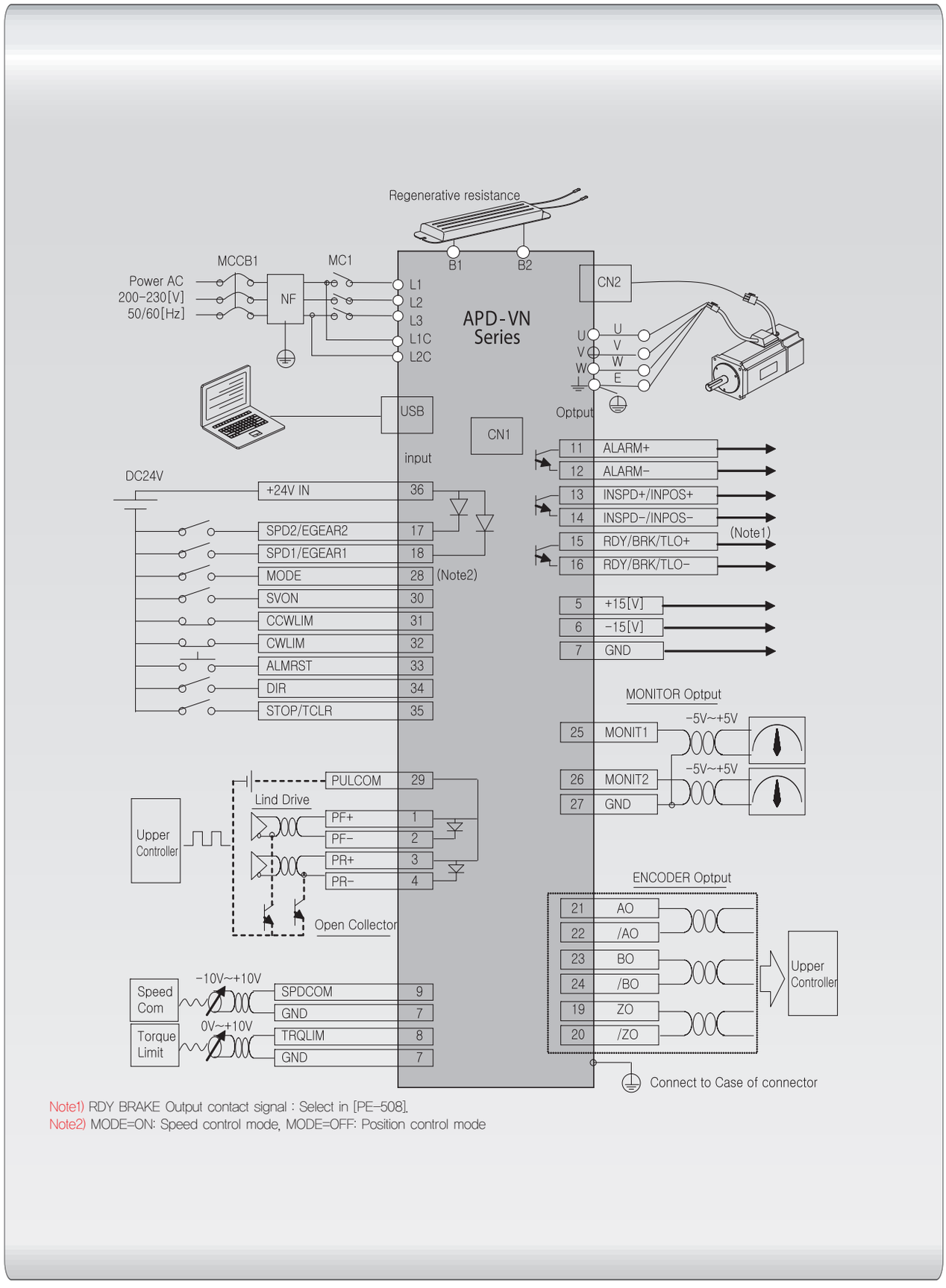
VN Drive Connection Diagrams

APD-VN Series : Torque operating mode



Note1) RDY/BRAKE Output contact signal : Select in [PE-508].
Note2) Twisted pair shield cable should be used for SPDLIM, TRQCOM, GND
Note3) Speed limit command should be set through SPDLIM, SPD1, SPD2.

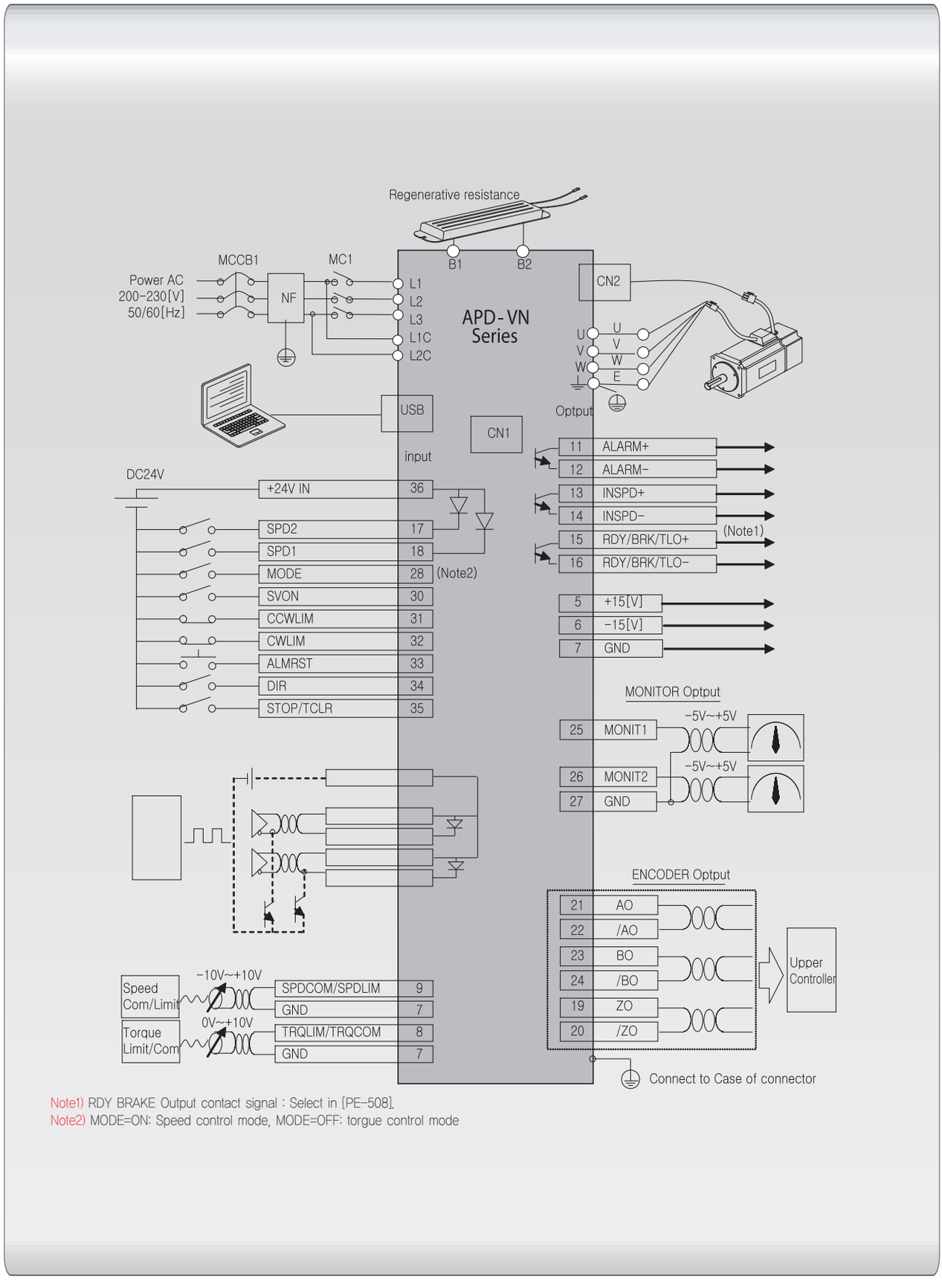
APD-VN Series : Speed / Position operating mode



Note1) RDY BRAKE Output contact signal : Select in [PE-508].
Note2) MODE=ON: Speed control mode, MODE=OFF: Position control mode

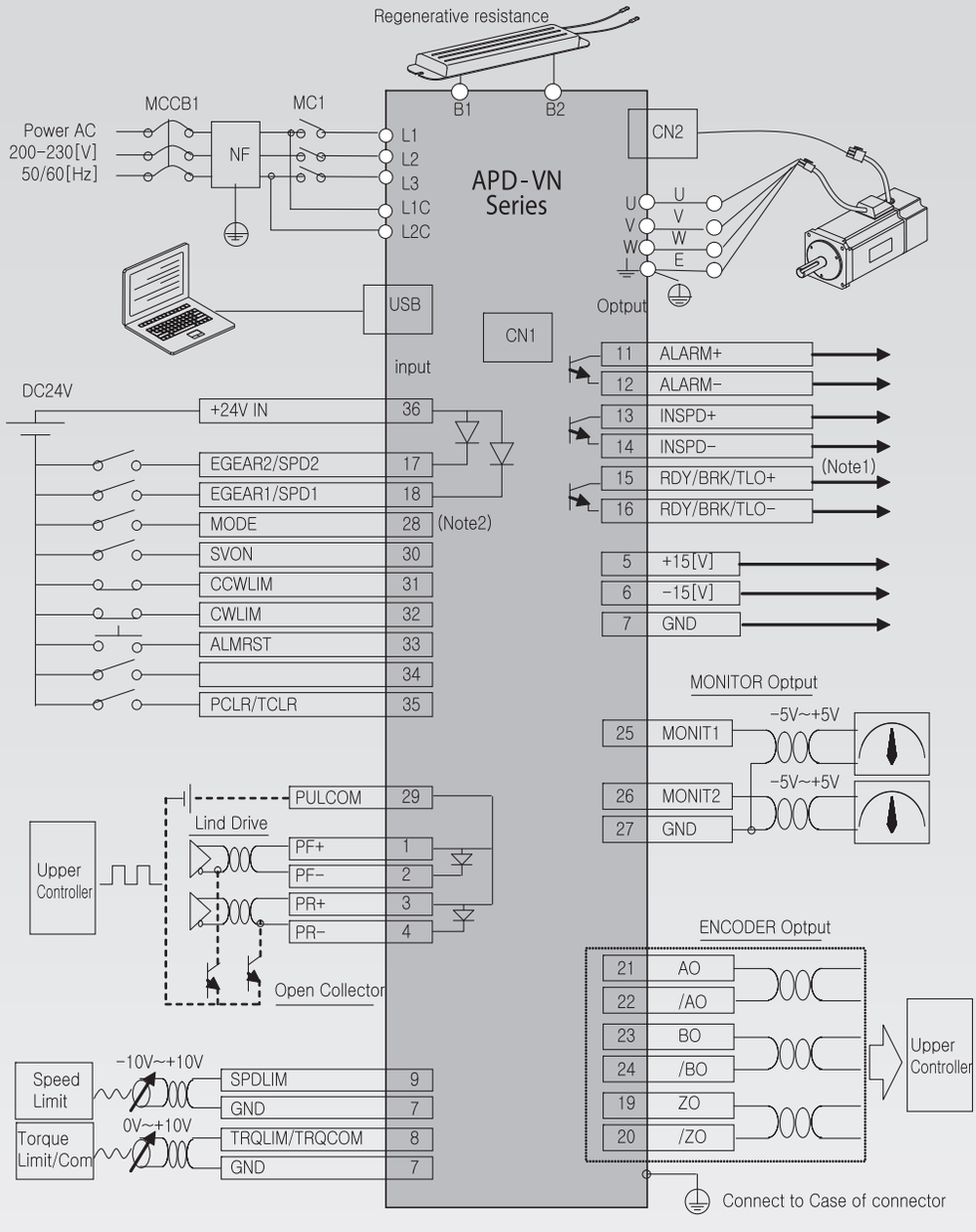
VN Drive Connection Diagrams

APD-VN Series : Speed / Torgue operating mode



Note1) RDY BRAKE Output contact signal : Select in [PE-508].
Note2) MODE=ON: Speed control mode, MODE=OFF: torgue control mode

APD-VN Series : Position / Torque operating mode



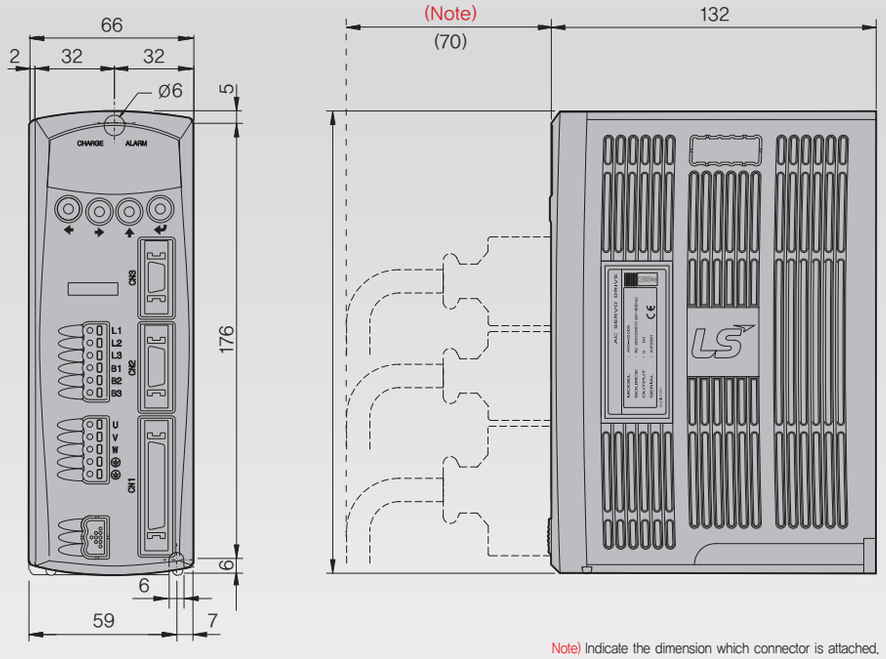
Note1) RDY BRAKE Output contact signal : Select in [PE-508].
Note2) MODE=ON: Position control mode, MODE=OFF: Torgue control mode

Servo Drive Dimension

200W and Below

APDI VSR5N, VS01N, VS02N

Weight : 1.2[kg]

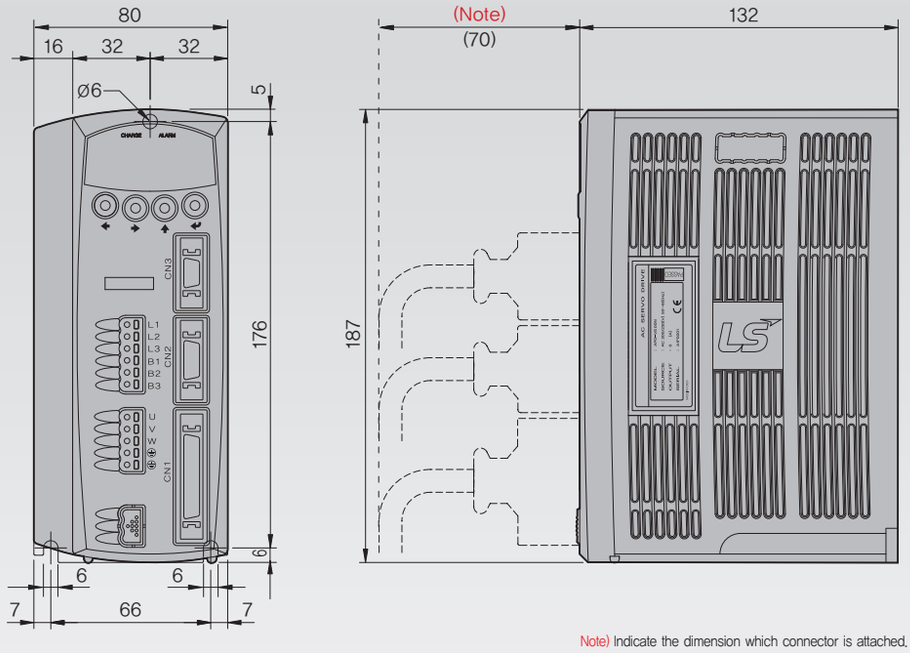


Note) Indicate the dimension which connector is attached.

400W

APD I VS04N

Weight : 1.5[kg]

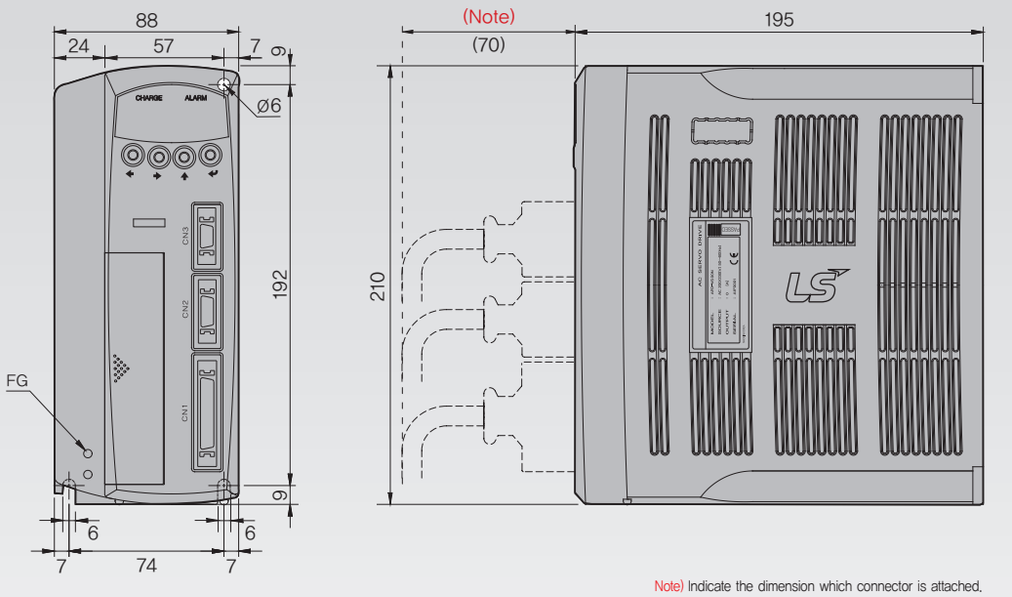


Note) Indicate the dimension which connector is attached.

500W~1kW

APD I VS05N, VS10N

Weight : 2.5[kg]

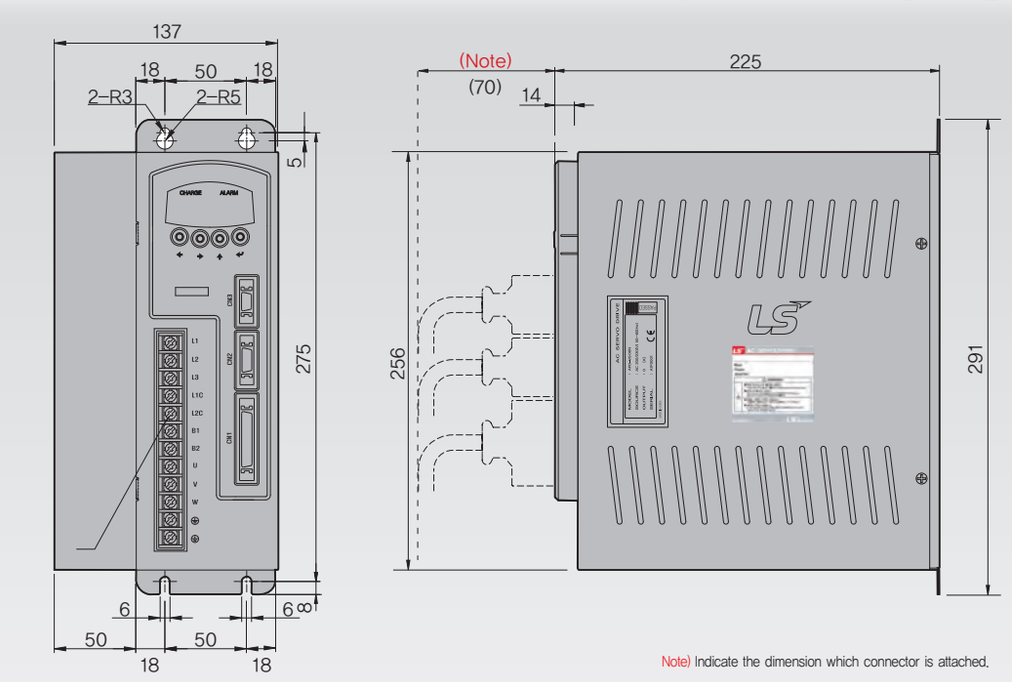


Note) Indicate the dimension which connector is attached.

1.5kW~5kW

APD I VS15N, VS20N, VS35N, VS50N

(VS/VP35N, VS/VP50N : Fan냉각) Weight : 7.2[kg]



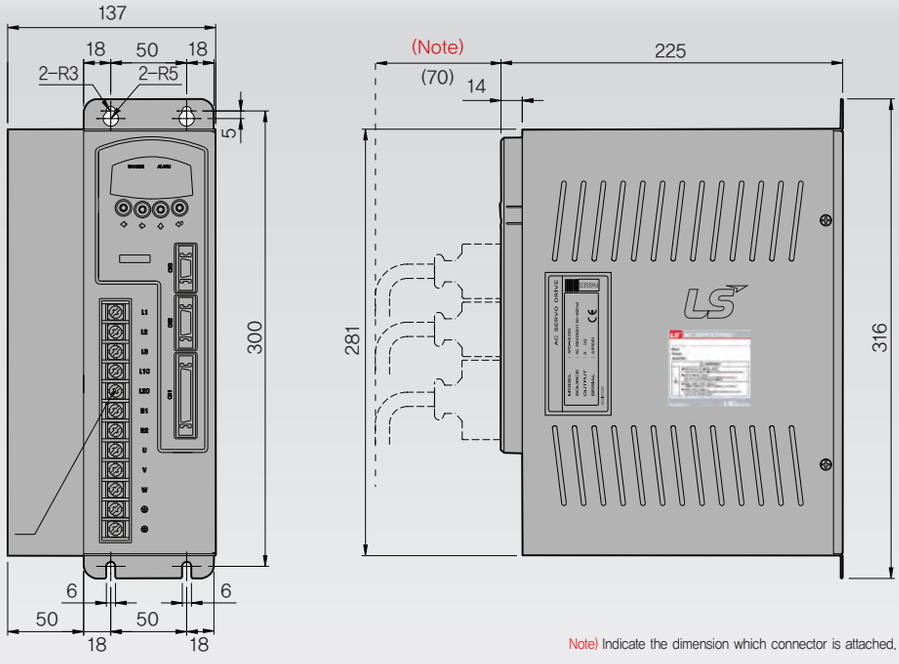
Note) Indicate the dimension which connector is attached.

Servo Drive Dimension

7.5kW

APD I VS75N

(Cooling Fan type) Weight : 8[kg]

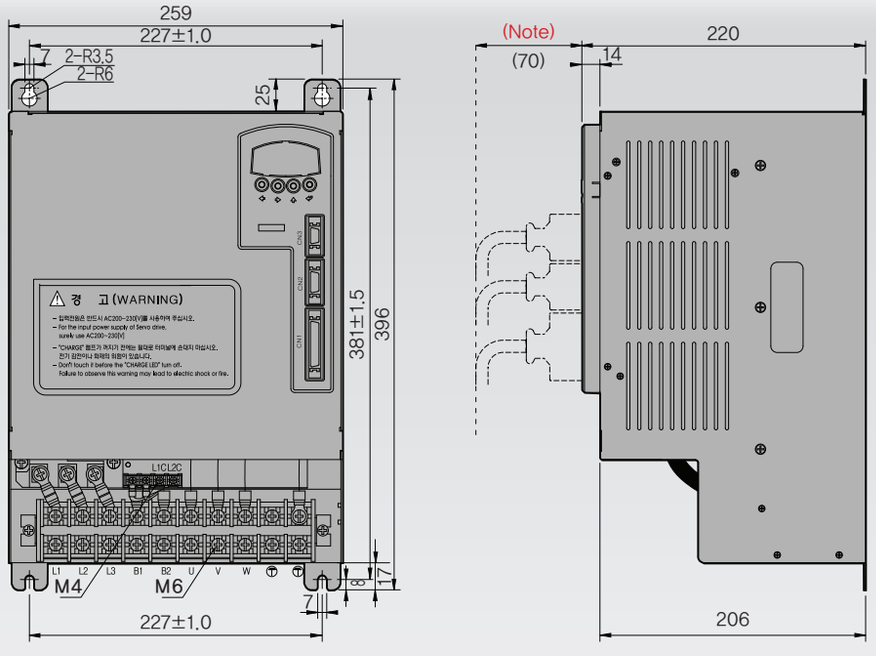


Note) Indicate the dimension which connector is attached.

11kW

APD I VS110N

(Cooling Fan type)Weight : 12[kg]

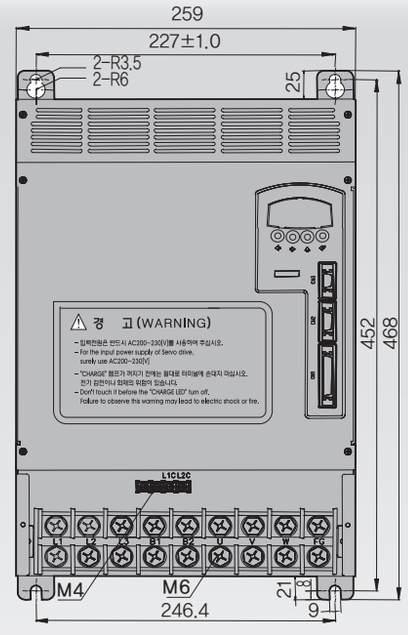


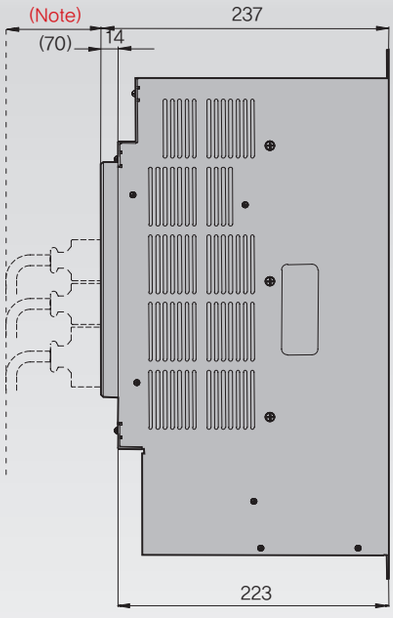
Note) Indicate the dimension which connector is attached.

15kW

APD I VS150N

(Cooling Fan type) Weight : 15[kg]



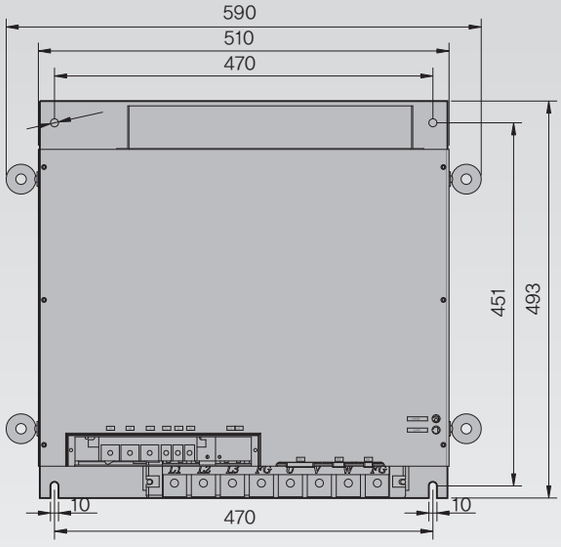


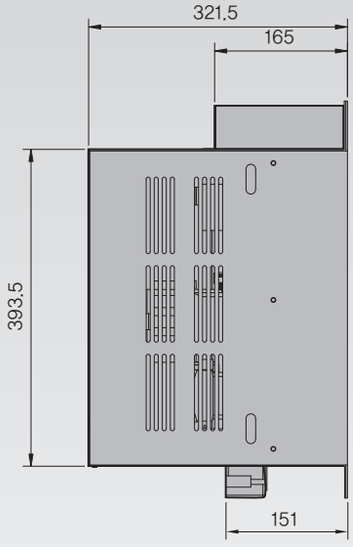
Note) Indicate the dimension which connector is attached.

22kW, 30kW 37kW

APD I VS220N, 300N, 370N

(Cooling Fan type) Weight :22,30[kw] ➡ 58[kg] / 37[kw] ➡ 62[kg]





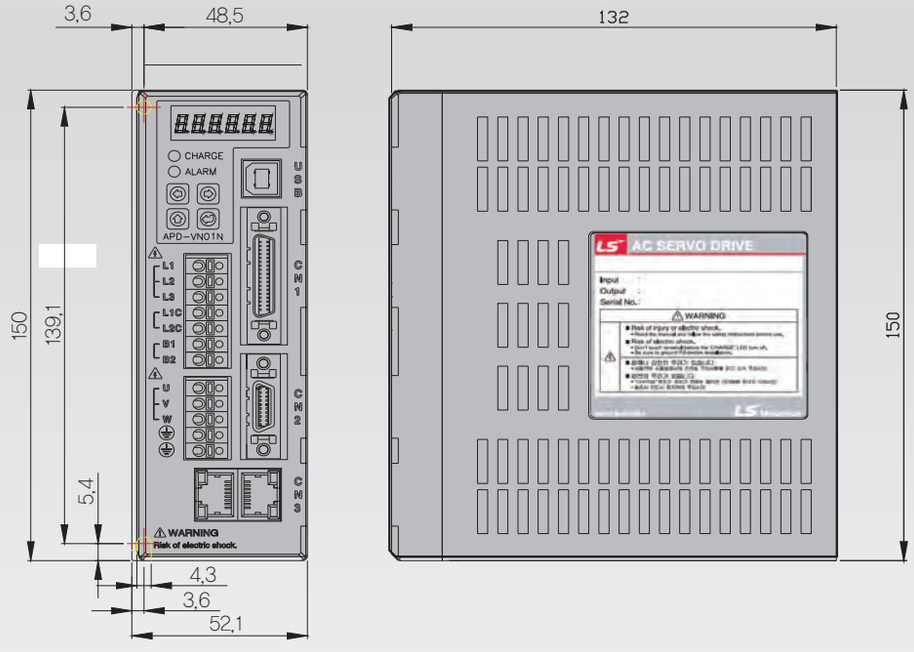
Note) Indicate the dimension which connector is attached.

Servo Drive Dimension

VN Series

APD I VN01~02N

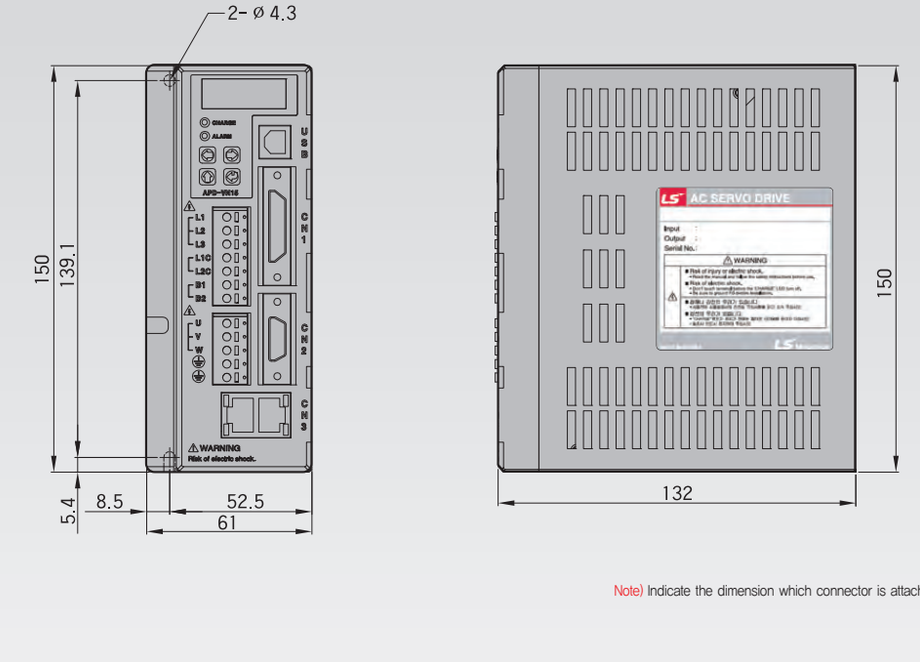
Weight : 0.8[kg]



Note) Indicate the dimension which connector is attached.

APD I VN04N

Weight : 1.0[kg]

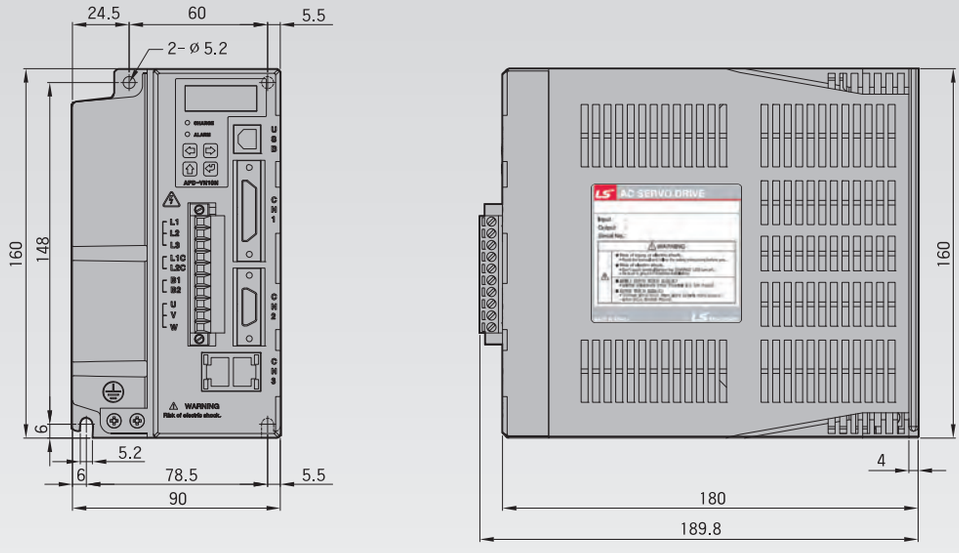


Note) Indicate the dimension which connector is attached.

VN Series

APD I VN07N~VN10N

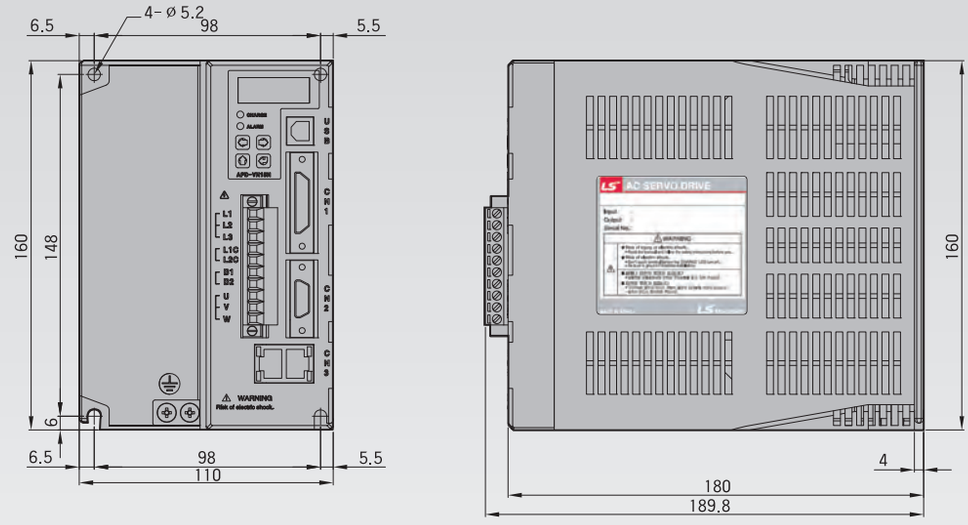
Weight : 1.9~2.0[kg]



Note) Indicate the dimension which connector is attached.

APD I VN15N

Weight : 2.7[kg]



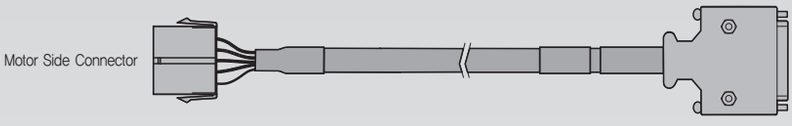
Note) Indicate the dimension which connector is attached.

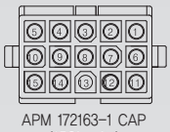
Options (Cable)

Incremental Encoder Cable

- Model (★Note1) : APC – E□□□AS
- Applicable Motor : APM-SA Series, APM-SB Series, APM-SC Series, APM-HB Series
- Applicable Drive : APD-VS/VN Series

1. Motor Side Connector
   - CAP (15 Position) : 172163-1(Made by APM)
   - SOCKET : 170361-1(Made by APM)
2. Drive Side Connector(CN2)
   - CASE : 10320-52A0-008(Made by APM)
   - CONNECTOR : 10120-3000VE(Made by APM)
3. Cable
   - 7Px0.2SQ(AWG24)





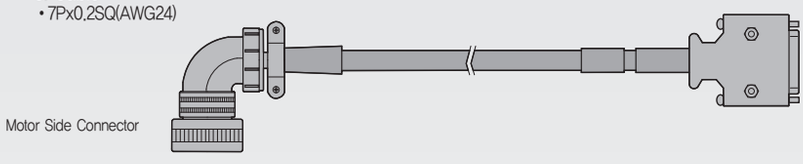
APM 172163-1 CAP
(15Circuits)

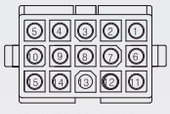
PIN NO.	Encoder Signal	Color	PIN NO.	Encoder Signal	Color
1	A		9	V	
2	$\overline{A}$		10	$\overline{V}$	
3	B		11	W	
4	$\overline{B}$		12	$\overline{W}$	
5	Z		13	+5V	
6	$\overline{Z}$		14	0V	
7	U		15	SHIELD	
8	$\overline{U}$				

PIN NO.	Encoder Signal	Color	PIN NO.	Encoder Signal	Color
1	W		11	Z	
2	$\overline{W}$		12	SHIELD	
3	V		13	B	
4	$\overline{V}$		14	$\overline{Z}$	
5	U		15	A	
6	$\overline{U}$		16	$\overline{B}$	
7	–		17	–	
8	–		18	A	
9	0V		19	+5V	
10	–		20	–	

- Model (★Note1) : APC-E□□□BS
- Applicable Motor : APM-SE Series, APM-SF Series, APM-SG Series, APM-SH Series, APM-SJ Series, APM-HE Series
- Applicable Drive : APD-VS/VN Series

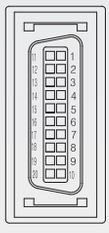
1 .Motor side connector (MS:Military standard)
   - PLUG : MS3108A20-29S
2. Drive Side Connector (CN2)
   - CASE : 10320-52A0-008(Made by APM)
   - CONNECTOR : 10120-3000VE(Made by APM)
3. Cable
   - 7Px0.2SQ(AWG24)





APM 172163-1 CAP
(15Circuits)

PIN NO.	Encoder Signal	Color	PIN NO.	Encoder Signal	Color
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	$\overline{U}$				



PIN NO.	Encoder Signal	Color	PIN NO.	Encoder Signal	Color
1	W		11	Z	
2	$\overline{W}$		12	SHIELD	
3	V		13	B	
4	$\overline{V}$		14	$\overline{Z}$	
5	U		15	A	
6	$\overline{U}$		16	$\overline{B}$	
7	–		17	–	
8	–		18	A	
9	0V		19	+5V	
10	–		20	–	

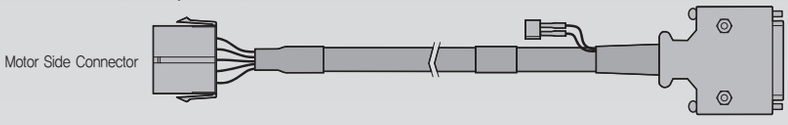
Note1) □□□ of model indicates the cable type and length

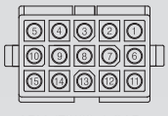
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Absolute Encoder Cable

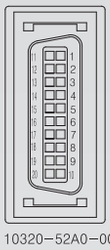
Model (★Note1) : APC-E□□□AA
Applicable Motor : APM-SB Series, APM-SC Series
Applicable Drive : APD-VS Series

1. Motor Side Connector
   • CAP 사양(15 Position) : 172163-1(Made by APM) • SOCKET : 170361-1(Made by APM)
2. Drive Side Connector(CN2)
   • CASE : 10320-52A0-008(Made by 3M) • CONNECTOR : 10120-3000VE(Made by 3M)
3. Cable
   • 7Px0.2SQ(AWG24)
4. BATTERY CONNECTOR
   • 5267-02A(Made by MOLEX)




APM 172163-1 CAP
(15Circuits)

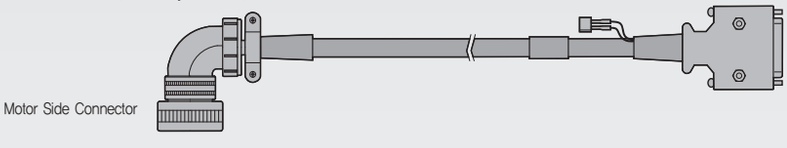
PIN NO.	Encoder Signal	PIN NO.	Encoder Signal
1	A	9	BATTERY
2	$\overline{A}$	10	BATTERY 0V
3	B	11	RX
4	$\overline{B}$	12	$\overline{RX}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	CLR	15	SHIELD
8	FG		

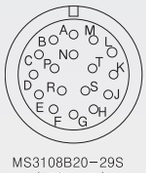

3M 10320-52A0-008
(15 Circuits)

PIN NO.	Encoder Signal	PIN NO.	Encoder Signal
1	RX	11	Z
2	$\overline{RX}$	12	SHIELD, FG
3	–	13	B
4	–	14	$\overline{Z}$
5	–	15	A
6	–	16	$\overline{B}$
7	–	17	–
8	–	18	A
9	0V	19	+5V
10	–	20	CLR

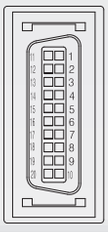
Model (★Note1) : APC-E□□□BA
Applicable Motor : APM-SE Series, APM-SF Series, APM-SG Series
Applicable Drive : APD-VS Series

1. Motor Side Connector (MS : Military Standard)
   • PLUG : MS3108A20-29S
2. Drive Side Connector(CN2)
   • CASE : 10320-52A0-008(Made by 3M) • CONNECTOR : 10120-3000VE(Made by 3M)
3. Cable
   • 7Px0.2SQ(AWG24)
4. BATTERY CONNECTOR
   • 5267-02A(Made by MOLEX)




MS3108B20-29S
(15Circuits)

PIN NO.	Encoder Signal	PIN NO.	Encoder Signal
A	A	M	CLR
B	$\overline{A}$	N	FG
C	B	P	RX
D	$\overline{B}$	R	$\overline{RX}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	BATTERY	J	SHIELD
L	BATTERY 0V		


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

PIN NO.	Encoder Signal	PIN NO.	Encoder Signal
1	RX	11	Z
2	$\overline{RX}$	12	SHIELD, FG
3	–	13	B
4	–	14	$\overline{Z}$
5	–	15	A
6	–	16	$\overline{B}$
7	–	17	–
8	–	18	A
9	0V	19	+5V
10	–	20	CLR

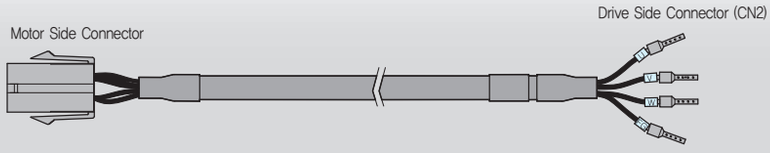
Note1) □□□ of model indicates the cable type and length

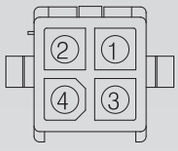
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Options (Cable)

Power cable

- Model (★Note1) : APC – P□□□CS
- Applicable Motor : APM-SA Series, APM-SB Series, APM-HB Series, APM-SC04A, SC06A, SC03D, SC05D
- Applicable Drive : APD-VS/VN Series



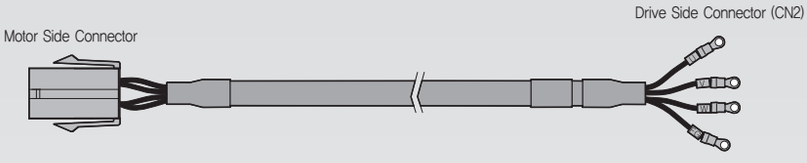


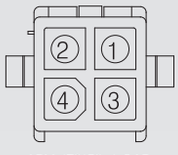
APM 172159-1 CAP
(4Circuits)

PIN NO.	Phase
1	U
2	V
3	W
4	Ground

1. Motor Side Connector
   - CAP(4 Position) : 172159-1(Made by APM) - SOCKET : 170362-1(Made by APM)
2. Drive Side Connector (U,V,W,FG)
   - PIN : UA-F1512(Made by Suh-il Electronic) - Compressor : UA-510A (Made by Suh-il Electronic)
3. Cable
   - 4Cx0.75SQ(AWG18)

- Model (★Note1) : APC – P□□□DS
- Applicable Motor : APM-SC08A, SC10A, SC06D, SC07D
- Applicable Drive : APD-VS Series



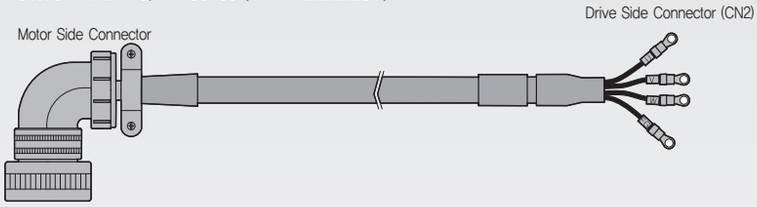


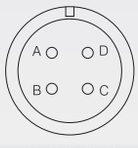
APM 172159-1 CAP
(4Circuits)

PIN NO.	Phase
1	U
2	V
3	W
4	Ground

1. Motor Side Connector
   - CAP (4 Position) : 172159-1(Made by APM) - SOCKET : 170362-1(Made by AMP)
2. Drive Side Connector (U,V,W,FG)
   - Connection terminals : 1.25×3(KET GP110012)
3. Cable
   - 4Cx0.75SQ(AWG18)

- Model (★Note1) : APC – P□□□ES
- Applicable Motor : APM-SE Series, APM-HE Series
- Applicable Drive : APD-VS/VN Series (VN : P□□□ESV)





MS3108B20-4S
(4Circuits)

PIN NO.	Phase
A	U
B	V
C	W
D	Ground

1. Motor Side Connecto (MS:Military Standard)
   - PLUG : MS3108A20-4S
2. Drive Side Connector (U,V,W,FG)
   - Connection terminals : 2.5x4(KET GP110721)
3. Cable
   - 4Cx2.0SQ(AWG14)

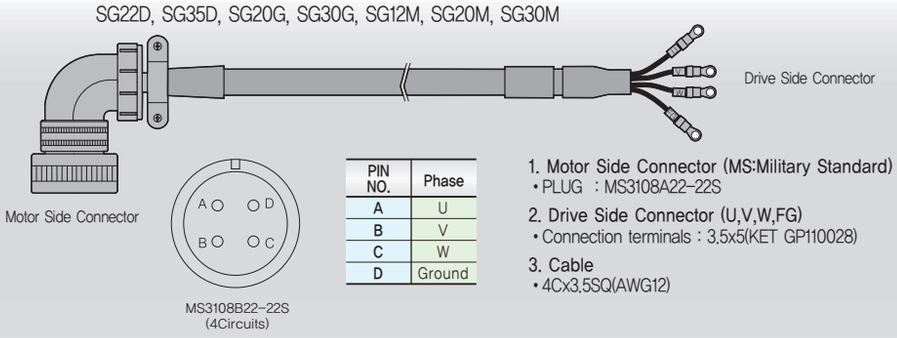
Note) For drive side connector of APM-SE03M Series cable, UA-F1512 pin is to be applied

Note1) □□□ of model indicates the cable type and length

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

Power cable

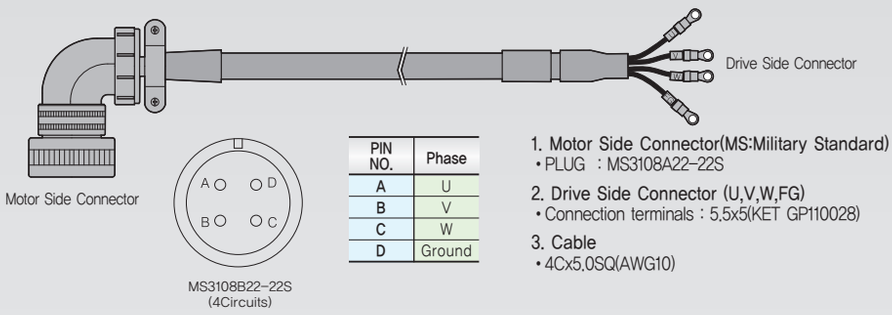
Model (★Note1) : APC-P□□□FS Applicable Drive : APD-VS/VN Series (VN : P□□□FSV)
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M
SG22D, SG35D, SG20G, SG30G, SG12M, SG20M, SG30M



PIN NO.	Phase
A	U
B	V
C	W
D	Ground

1. Motor Side Connector (MS:Military Standard)
 • PLUG : MS3108A22-22S
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 Drive : APD-VS Series
Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF44M, SG55D, SG75D, SG44G, SG60G, SG44M



PIN NO.	Phase
A	U
B	V
C	W
D	Ground

1. Motor Side Connector(MS:Military Standard)
 • PLUG : MS3108A22-22S
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 Drive : APD-VS Series
Applicable Motor : APM-SG110D, SG85G, SG60M, SF75G

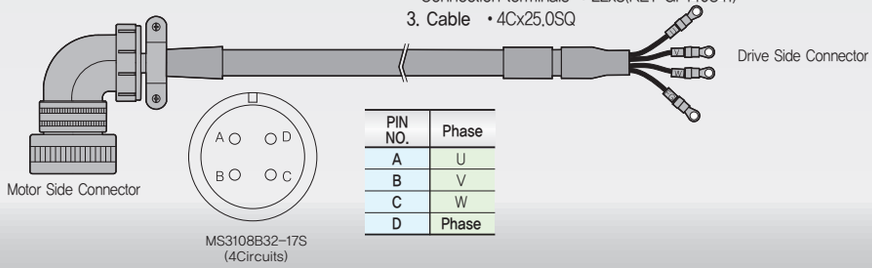
★Note2
1. Motor Side Connector(MS:Military Standard)
 • PLUG : MS3108A(MS3106B)32-17S
2. Drive Side Connector(U,V,W,FG)
 • Connection terminals : 8.0x8(KET GP140841)
3. Cable • 4Cx8.0SQ(AWG8)

Model (★Note1,3) : APC-P□□□TS
Applicable Drive : APD-VS Series
Applicable Motor : APM-SG110G

★Note3
1. Motor Side Connector (MS:Military Standard)
 • PLUG : MS3108A(MS3106B)32-17S
2. Drive Side Connector(U,V,W,FG)
 • Connection terminals : 14x8(KET GP140841)
3. Cable • 4Cx16.0SQ

Model (★Note1,4) APC-P□□□SS
Applicable Drive : APD-VS Series
Applicable Motor : SG150G

★Note4
1. Motor Side Connector (MS:Military Standard) • PLUG : MS3108A(MS3106B)32-17S
2. Drive Side Connector(U,V,W,FG)
 • Connection terminals : 22x8(KET GP140841)
3. Cable • 4Cx25.0SQ



PIN NO.	Phase
A	U
B	V
C	W
D	Phase

Note1) □□□ of model indicates the cable type and length

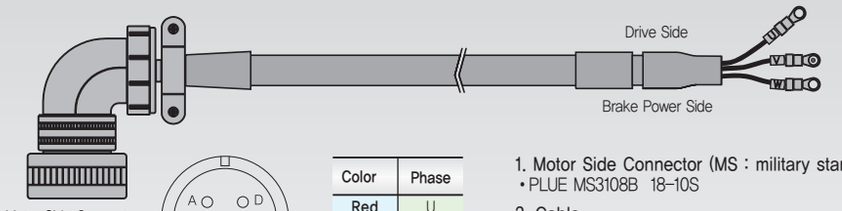
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

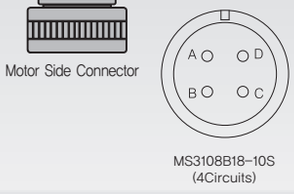
Options (Cable)

Fan Power Cable (Using AP 25,28 in common)

Model (★Note1) : General APC-PN□□HS / Robotic APC-PF□□HS

Applicable Drive : APD-VS Series





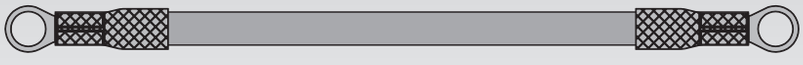
MS3108B18-10S
(4Circuits)

Color	Phase
Red	U
Yellow	V
Black	W

1. Motor Side Connector (MS : military standard)
   • PLUE MS3108B 18-10S
2. Cable
   • 3CX2.0SQ

Power Cable (22,30kW)

Model : General APC-PN□□QS

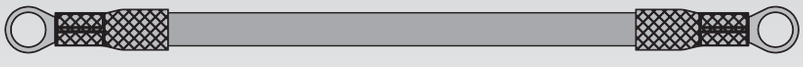


Color	Phase
Red	U
Yellow	V
Black	W

1. Motor Side Connector
   • Ring Terminal : 50x10s
2. Cable
   • 50SQ 600V KIV

Power Cable (37kW)

Model : General APC-PN□□US

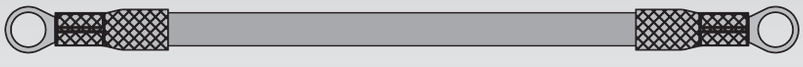


Color	Phase
Red	U
Yellow	V
Black	W

1. Motor Side Connector
   • Ring Terminal : 80x10s
2. Cable
   • 75SQ 600V KIV

Ground Cable

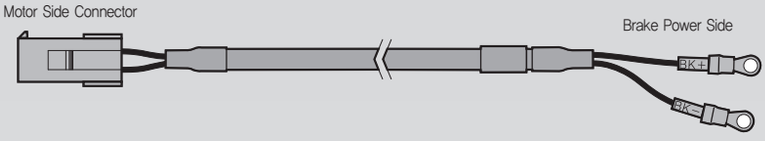
Model : General APC-PN□□JS

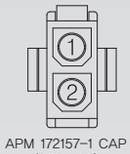


1. Motor Side Connector
   • Ring Terminal : 16x10s
2. Cable
   • 16SQ FR-GV

Brake cable

- Model (★Note1) : APC-P□□□KB
- Applicable Motor : APM-SA Series, APM-SB Series, APM-SC Series
- Applicable Drive : APD-VS/VN Series



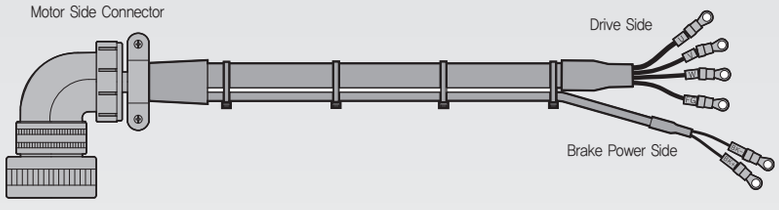


APM 172157-1 CAP
(2Circuits)

PIN NO.	Phase
A	U
B	V
C	W
D	Ground

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

- Model (★Note1) : APC-P□□□MB
- Applicable Motor : APM-SE Series
- Applicable Drive : APD-VS/VN Series (VN : P□□□MBV)



MS3108B20-15S
(6Circuits)

PIN NO.	Phase
A	U
B	V
C	W
D	Ground
E	BK+
F	BK-

1. Motor Side Connector (MS:Military Standard)
   - PLUG : MS3108A20-15S
2. Drive Side (U,V,W,FG)
   - Connection terminals : 2.5x4(KET GP110721)
   - Cable : 4Cx2.0SQ(AWG14)
3. Brake Power Side (+,-)
   - Connection terminals : 1.25x3(KET GP110012)
   - Cable : 2Cx0.75SQ(AWG18)

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

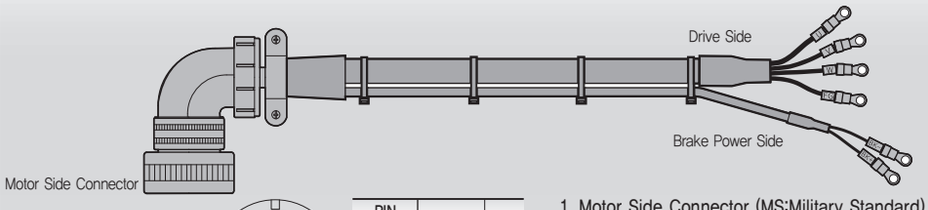
Note1) □□□ of model indicates the cable type and length

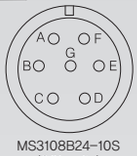
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Options (Cable)

Brake cable

- Model (★Note1) : APC-P□□□NB
- Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M
- Applicable Drive : APD-VS/VN Series



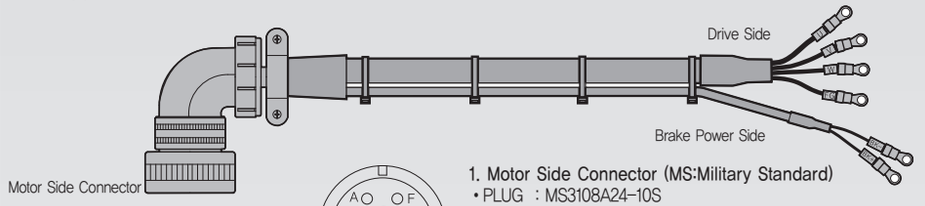


MS3108B24-10S
(6Circuits)

PIN NO.	Phase	color
A	U	Red
B	V	White
C	W	Black
D	Ground	Green
E	BK+	–
F	BK–	–

1. Motor Side Connector (MS:Military Standard)
   - PLUG : MS3108A24-10S
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)

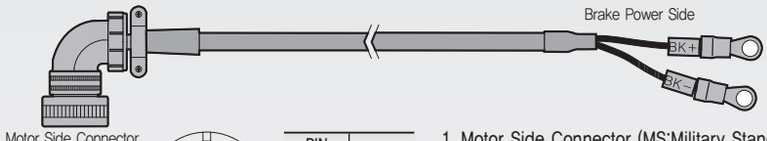
- Model (★Note1) : APC-P□□□PB
- Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF75G, SF44M
- Applicable Drive : APD-VS Series

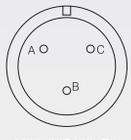


MS3108B24-10S
(6Circuits)

1. Motor Side Connector (MS:Military Standard)
   - PLUG : MS3108A24-10S
2. Drive Side (U,V,W,FG)
   - Connection terminals : 3.5x5(KET GP110028)
   - Cable : 4Cx3.5SQ(AWG10)
3. Brake Power Side (+,–)
   - Connection terminals : 1.25x3(KET GP110012)
   - Cable : 2Cx0.75SQ(AWG18)

- Model (★Note1) : APC-P□□□SB
- Applicable Motor : APM-SG Series
- Applicable Drive : APD-VS/VN Series (VN : P□□□SBV)





MS3108B14S-7S
(2Circuits)

PIN NO.	Phase
A	BK+
B	BK–

1. Motor Side Connector (MS:Military Standard)
   - PLUG : MS3108A24-10S
2. Power Side (+, –)
   - Connection terminals : 1.25×3(KET GP110012)
3. Cable
   - 2C×0.75SQ(AWG18)

Note1) □□□ of model indicates the cable type and length

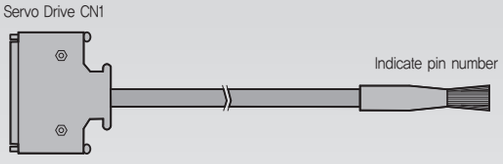
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

For CN1 Cable

Model (★Note1) : APC-CN1□□A

Applicable Drive : APD-VS/VN Series (VN : CN1□□VNA)

1. Drive Side (CN1)
   - Case : 10350-52A0-008(3M사)
   - Connector : 10150-3000VE(3M사)
   - Cable : UL20276 25Pair(AWG 28)
2. Cable can be changed without any notice.



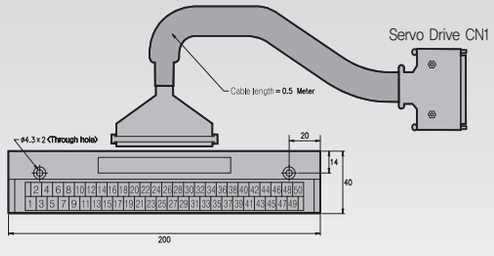
CN1	Color	CN1	Color	CN1	Color	CN1	Color	CN1	Color
1	Orange/Black 1P	11	Orange/Black 2P	21	Orange/Black 3P	31	Orange/Black 4P	41	Orange/Black 5P
2	Orange/Red 1P	12	Orange/Red 2P	22	Orange/Red 3P	32	Orange/Red 4P	42	Orange/Red 5P
3	Yellow/Black 1P	13	Yellow/Black 2P	23	Yellow/Black 3P	33	Yellow/Black 4P	43	Yellow/Black 5P
4	Yellow/Red 1P	14	Yellow/Red 2P	24	Yellow/Red 3P	34	Yellow/Red 4P	44	Yellow/Red 5P
5	White/Black 1P	15	White/Black 2P	25	White/Black 3P	35	White/Black 4P	45	White/Black 5P
6	White/Red 1P	16	White/Red 2P	26	White/Red 3P	36	White/Red 4P	46	White/Red 5P
7	White/Black 1P	17	White/Black 2P	27	White/Black 3P	37	White/Black 4P	47	White/Black 5P
8	White/Red 1P	18	White/Red 2P	28	White/Red 3P	38	White/Red 4P	48	White/Red 5P
9	Pink/Black 1P	19	Pink/Black 2P	29	Pink/Black 3P	39	Pink/Black 4P	49	Pink/Black 5P
10	Pink/Red 1P	20	Pink/Red 2P	30	Pink/Red 3P	40	Pink/Red 4P	50	Pink/Red 5P

Terminal Block for CN1

Model (★Note1) : APC-VSCN1T-□□

Applicable Drive : APD-VS/VN Series

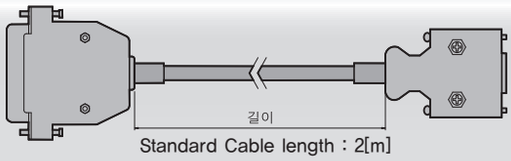
1. For APD-VS/VP
2. Standard cable Length : 0.5m
3. 1m, 2m also available



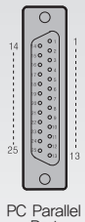
Servo Drive O/S Download Cable

Model (★Note1) : APC-CN3□□S

Applicable Drive : APD-VS/VN Series



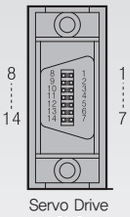
Standard Cable length : 2[m]



PC Parallel Port

PIN NO.	Phase
15	Error
8	Data6
7	Data5
9	Data7
16	init
18~25	GND
6	Data4
18~25	GND

PIN NO.	Phase
1	DX0
2	RSRX
3	CLKRX
4	CLK
8	RESET
9	INT2/3
10	DR0
11	GND
Case	Shield



Servo Drive CN3

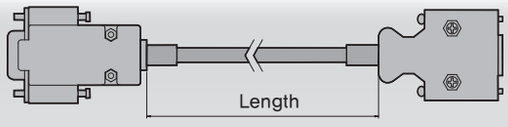
Note1) □□□ of model indicates the cable type and length

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

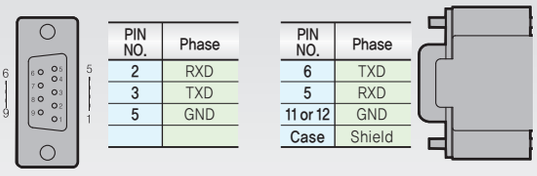
Options (Cable · Connector)

RS232 Communication Cable

- Model (★Note1) : APC-CN3□□R
- Applicable Drive : APD-VS/VN/VP Series



Standard Cable length : 2[m]



PIN NO.	Phase
2	RXD
3	TXD
5	GND

PIN NO.	Phase
6	TXD
5	RXD
11 or 12	GND
Case	Shield

PC-Serial Port

Servo Drive CN3

Note1) □□□ of model indicates the cable type and length

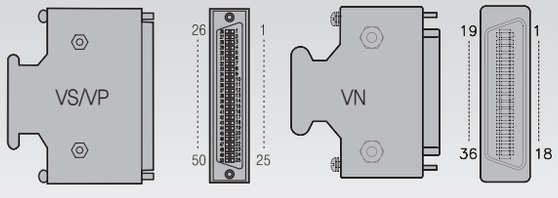
Standard Cable Length (m)	1	2	3	5
Marking	01	02	03	05

Options (Connector)

CN1 Connector

- Model : APC-CN1NNA
- Applicable Drive : APD-VS/VP Series

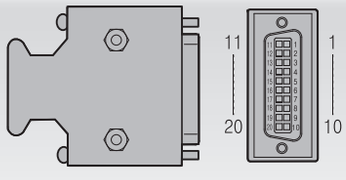
1. Case : 10350-52A0-008(Made by 3M)
2. Connector : 10150-3000VE(Made by 3M)



CN2 Connector

- Model : APC-CN2NNA
- Applicable Drive : APD-VS/VP Series

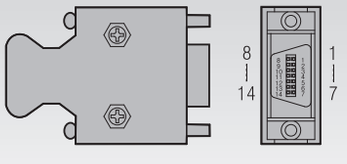
1. Case : 10320-52A0-008(Made by 3M)
2. Connector : 10120-3000VE(Made by 3M)



CN3 Connector

- Model : APC-CN3NNA
- Applicable Drive : APD-VS/VP Series

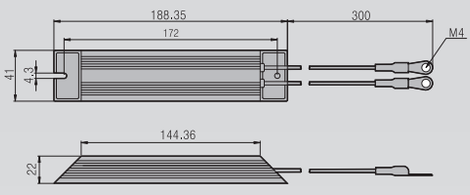
1. Case : 10314-52A0-008(Made by 3M)
2. Connector : 10114-3000VE(Made by 3M)



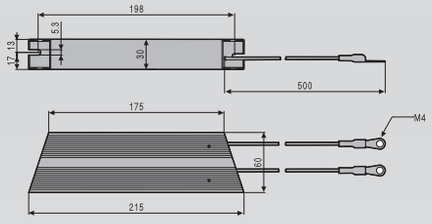
Options (Braking Resistor)

Braking Resistor

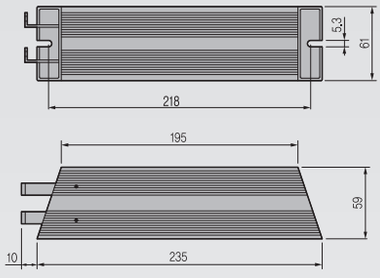
Model (★Note1) : APC-140R40, VN : 140R40VN(140W, 40Ω)
Applicable Drive : APD-VS/VP02, VS04
Part Name : IRH 140W 40ohm)



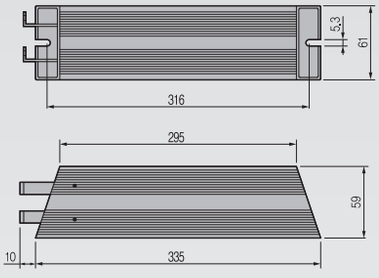
Model (★Note1) : APC-300R23, VN : 300R23VN(300W, 23Ω)
Applicable Drive : APD-VS/VP05, VS10
Part Name : IRV 300W 23ohm)



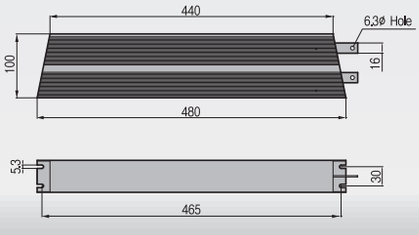
Model (★Note1) : APC-600R30(600W, 30Ω)
Applicable Drive : APD-VS15(2P), VS20(2P), VS35(3P), VS50(3P), VS75(3P), VS110(4P), APD-VN Series
Part Name : IRV 600S 30ohm)



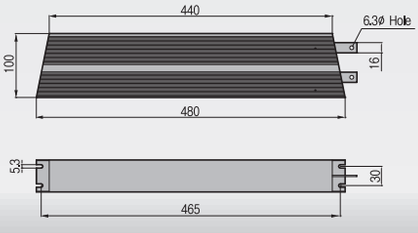
Model (★Note1) : APC-1000R6R5(1,000W, 65Ω)
Applicable Drive : APD-VS150(2P)
Part Name : IRV 1,000S 6.5ohm)



Model (★Note1) : APC-2400R2R4(2,400W, 2.4Ω)
Applicable Drive : APD-VS220(1P), VS Series
Part Name : IRV 2,400P 2.4ohm)



Model (★Note1) : APC-2400R3R2(2,400W, 3.2Ω)
Applicable Drive : APD-VS300(2P), VS370(2P)
Part Name : IRV 2,400P 3.2ohm)



Note) Standard Braking Resistance for drive capacity is as below table.

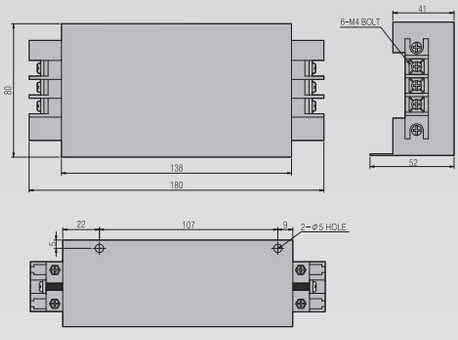
Applicable DriveAPD-VS/VP□□N	R5	01	02	04	05	10	15	20	35	50	75	110	150	220	300	370
Braking Resistance (Basically provided)	VS Series				40[Ω] (140[W])		23[Ω] (300[W])		11.5[Ω] (300[W]×2P)			Option				

Options (Noise Filter)

Noise Filter

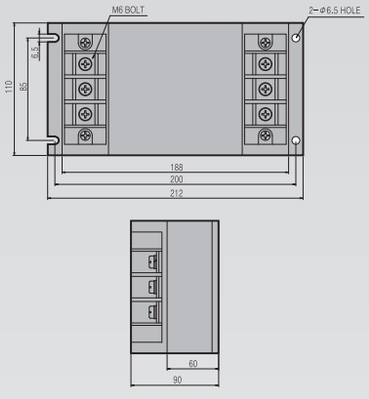
- Model : APC-RFY4010M/4015M/4020M/4030M
- Applicable Drive (★Note1)

Part Name : (RFY4010M/4015M/4020M/4030M)



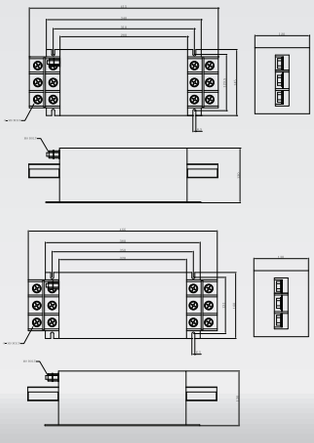
- Model : APC-RFY4040M/4050M/4080M
- Applicable Drive (★Note1)

Part Name : (RFY-4040M/4050M/4080M)



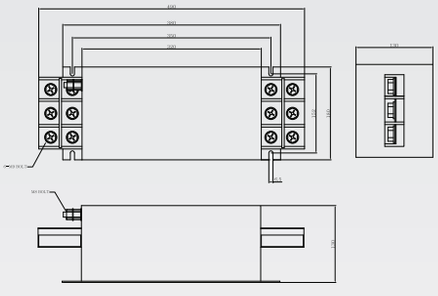
- Model : APC-RFY4150M/4200M
- Applicable Drive (★Note1)

Part Name : (RFY-4150M/4200M)



- Model : APC-RFY4250M
- Applicable Drive (★Note1)

Part Name : (RFY-4250M)



Note) Standard Noise filter for drive capacity is as below table.

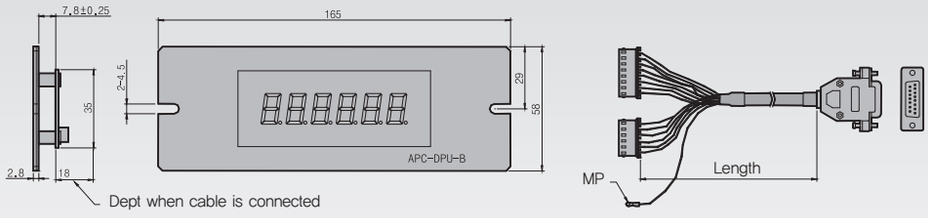
Applicable Drive APD-VS	R5	01	02	04	05	10	15	20	35	50	75	110	150	220	300	370
Noise Filter APC-RFY□□□□M	4010						4015	4020	4030	4040		4050	4080	4150	4200	4250

Options
(Setting machine / Indicator)

Remote Display

- Model (★Note1) : APC-DPU□□B
- Applicable Drive : APD-VS Series

1. Cable length can be adjusted upon request
2. Place an order with Servo Drive (Remote Type)

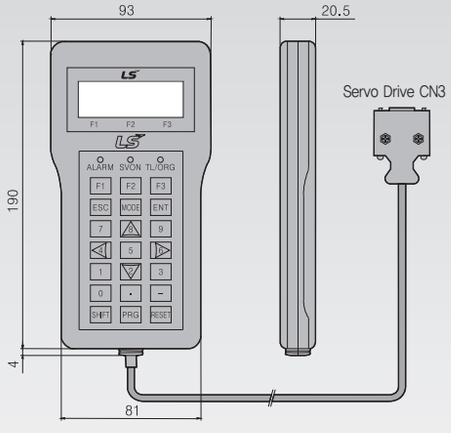


Note1) □□□ of model indicates the length of cable, and the notation is as below

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

Handy Loader

- Model (★Note1) : Handy Loader : APC-HD1□□
- Applicable Drive (★Note1) : APD-VS Series



1. Handy Loader Input Voltage : DC 5[V]
2. The Length of standard Cable : 2[m]

PIN NO.	Color	Phase
A	U	Red
B	V	White
C	W	Black
D	Ground	Green
E	BK+	–
F	BK–	–

Note1) □□□ of model indicates the cable type and length

Standard Cable Length (m)	2	3	4	5
Marking	20	30	40	50

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' 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' 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.

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
- Optinized 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 apeed range
- IP20 enclosure, UL type 1 (option)
- Built-in RS 485 (LS Bus/Modbus RTU) communication

Starvert - iS5

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, sensored vector control (optional)
- Optimum acceleration & deceleration for a maximum torque
- Muilt-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 perfomance 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, sensored 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 funtion (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, Bacnet

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 convenice
- Circuit design considerd 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
- High efficiency
- Compact & slim size
- Remote monitoring with RS485 communication
- User frendly HMI

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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 (structured text), 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

HMIs(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

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MEMO