Any Model – As a general maker and developer, we provide a variety of quality products ranging from sensors to motors and controls.
Any Function – We provide diversified series of equipment featuring optimal structures and functions for individual uses and fields.
Any Service – We provide various services for the satisfaction of customers.

metronix
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Servo & Sensor
System Engineering

AC Servo System Volume 5

AC Servo System

Products Collection Vol. 5

Any Model / Any Function / Any Service

metronix
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CEO GREETINGS

We appreciate you from the bottom of our hearts for your long time supports and encouragement.
Our company has specialized in developing and manufacturing, selling various Rotary encoder that can be applied & used for Elevators, Servo Motor, Lubricator, OA Equipment, Measuring instruments, etc. Based on the accumulated technologies and long time trust from the customer, we have eventually succeeded in the localization of not only rotary encoder but also servo motor & drive in Korea and now we enjoy the great reputation from overseas market as well.

Now we can proudly introduce new brand "Any Pack" that promises excellent service in every line of needs and parts of industrial automation as a total maker of Factory /Industry Automation.

Based on the Technology-oriented management, we try to deliver the ultimate satisfaction to the customers & stock holders and promise that will do our best for the contribution to industrial automation.

Metronix CEO Byung-Kyun, Kim

METRONIX CO.,LTD.

PRESIDENT Kim Byung Kyun

New World Together ..... metronix

The leader in High Precision, Digital Control Automation!

Change Up History

SERVICE CENTER

Domestic Network

Kyungin area
Kyungin office
10 distributors

Chungchong area
2 distributors

Youngnam area
Head office/ Factory / R&D Center
7 distributors

Honam area
1 distributor

Overseas Network

Overseas Branch office
China Marketing Center

Agent

Asia	China / Singapore / Vietnam
Europe	Germany / Israel / Greece / Turkey
America	U.S.A.
Africa/India	South Africa, India

PONY AnyPack Series

Global
FA Leading Company
Metronix

AC Servo System

- Unique (Exclusive Design Servic)
- Technical (Technical Supporting & Training Service)
- Comfortable (Quick Servic)
- Global (Global Standardization Servic)

Any Model As a general maker and developer, Metronix provides a variety of quality products ranging from sensors to motors

Any Function Metronix provides diversified series of equipment featuring optimal structures and functions for individual uses and fields

Any Service Metronix provides various and prompt services for customer satisfaction

History

- Sep. 1995 Metronix established
- Dec. 1995 High-precision (6000P) Encoder developed
- Jun. 1996 FA and OA encoder Series have developed
- Mar. 1997 Servo Motor encoder was developed
- May. 1997 Encoder for elevator was developed & provided
- Oct. 1997 Servo Motor OEM production begun
- Nov. 1999 Robot encoder developed
  CE standard certified
  Selected as Venture Enterprise
- Jan. 2000 Company moved and expanded(Seongseo Industrial Complex)
- Aug. 2000 Changed into Corporation
- Dec. 2000 company by Small and Medium business Corporation Authority

- Feb. 2001 Servo Motor was developed (100W~1Kw)
- Apr. 2001 Servo Motor developed (0.85kW~3kW)
- Jun. 2001 Selected as superior technology company
- Jul. 2001 Expanded the plant and relocated(Seongseo 3rd Industrial Complex)
- Aug. 2001 Servo drive(VS, VP) was developed
- Sep. 2001 The affiliated R&D Center was established
- Nov. 2001 The software for PC communication was developed
  Servo motor was developed(1.2 kW~5.5kW)
- Dec. 2001 Awarded the prize of the 1st Venture Enterprise of Daegu City
- Feb. 2002 Awarded the prize of the 1st Venture Enterprise of Daegu City
- May.2002 Certificated on participation of industry-university cooperation consortium
  Special as a technical company on components/ materials
  (by Ministry of Commerce, Industry and Energy)
- Jun. 2002 Certificated on ISO 9001 Quality Management System
  ERP System was built up
  Spinner motor for semi-conductor was developed
- Jul. 2002 Selected as the best enterprise of grade valuation
  for Venture enterprises(by the Federation of Korean Industries)
- Nov. 2002 Awarded the prize pf the 2nd Venture Enterprise of Daegu City
- Dec. 2002 Selected as INNO-BIZ Company
  (by the Small and Medium Industry Promotion Corporation)
- Feb. 2003 Servo motor & drive were developed (11Kw)
- May. 2003 CE certified for servo motor
- Apr. 2004 Servo drive(15Kw) developed
- Jun. 2004 Selected as promising export company
  (by the Small and Medium Industry Promotion Corporation)
- Aug. 2004 Economy VK drive was developed
- Sep. 2004 Awarded the gold statue of 5th Inno Tech show (the Prime Minister prize)
- Oct. 2004 CE certified for servo drive
  Awarded the chairman prize of Presidential Commission
  on Small and Medium Enterprise in 2004 Venture show
- Nov. 2004 Awarded a memorial tablet for export of 1 million (KITA)
- JAN. 2005 Selected as star enterprise

Certificates

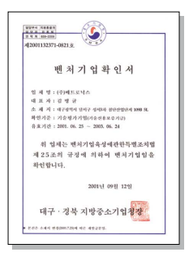
Certificate on ISO 9001 Quality Management System

CE Certificate for Rotary Encoder

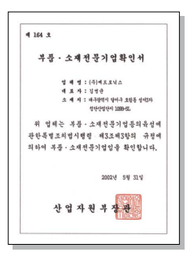
CE Certificate for AC Servo Motor

CE Certificate for AC Servo Drive

Certificate of INNO-BIZ Company Confirmation

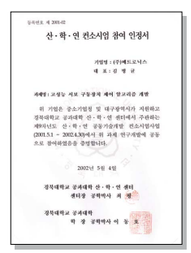


Certificate of Venture Enterprise



Certificate of Technical Company on Components / Materials

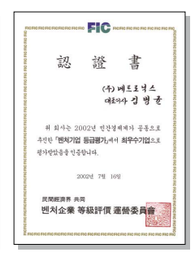
Certificate of Superior Technology Company



Certificate on Participation of Industry-University Cooperation Consortium

Certificate of Excellent Company in Technical Competitiveness

Certificate as promising export company



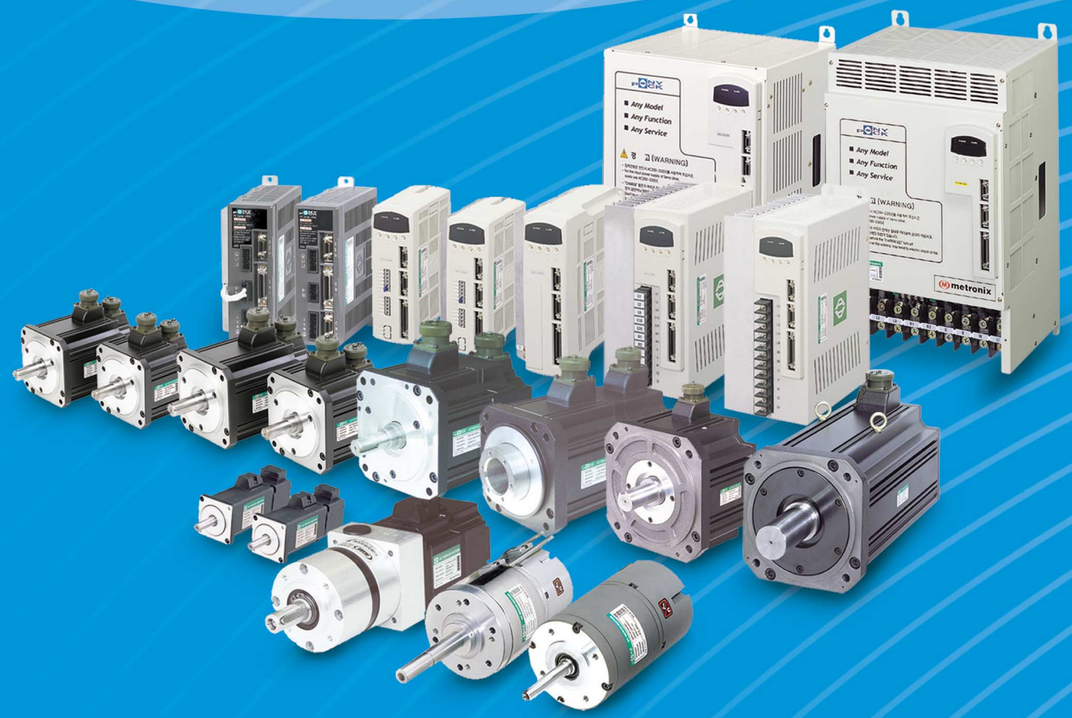
Certificate of Best Enterprise on Grade Valuation for Venture Enterprises

New World Together

Digital AC Servo System

AnyPack

AC SERVO MOTOR
30W~15kW



C·O·N·T·E·N·T·S

Feel the difference of
our technology!
AnyPack Series

metronix
Sensor & Servo
System Engineering

PONYCK AC Servo System

AC Servo Motor

30W~15kW Servo Motor & Drive released

- Provide a wide range of selection with various series
- **40 Flange 30W ~ 220 Flange 15kW**
- 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 technobgy & 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.ϕ 50-□130 Flange)**
- Realized a compact size by the use of high- performance permarent 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

AC Servo Drive

The Rated Specifications of Standard Servo Drive 「APD - VS Series」

- 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.

The Rated Specifications of Servo Drive with controller-embeded 「APD - VP Series」

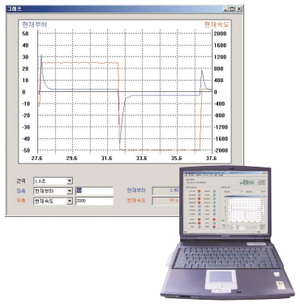
- Products are subdivided by application sector and private control functions are provided so that anyone can use the system easily.
- Linear Coordinates Position Operation Type (VP-1): Linear motion machine, X-Y table
- Rotary Coordinates Position Operation Type (VP-2): Index, Turret.
- Position operation type after feeder and sensor (VP-3): Packing machine, All sorts of feeder, conveyor, I-mark.
- Push-Pull position operation type (VP-4): Pressure control, Tensile control.
- Program operation type (VP-5): 800 step operation.
- Other private soft : Program operation, All sorts of private machine.
- Tension control Operation type : Winder

PC Loader

PC communication software also provides the grapic 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.
- Easy changing of mode & menu data.
- Display function of Alarm status.
- Operation handling function by using communication protocol
- Data editing function by using communication-code
- Auto Jog operation test function
- PC Specifications : Window 98,WindowXP



PNYCK AC Servo System

Feature for Servo System

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

AnyPack Series Servo Motor

APM – S B 04 A D K 1 G2 3

- **Motor Shaft**: S : Solid Shaft / H : Hollow Shaft / B : Built-in
- **Flange Size**: A : 40 Flange / B : 60 Flange / C : 80 Flange / D : 100 Flange / E : 130 Flange / F : 180 Flange / G : 220 Flange
- **Motor Capacity**: 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
- **Rated Rotation Speed**: A : 3000 rpm / D : 2000 rpm / G : 1500 rpm / M : 1000 rpm
- **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 / L : Abs.4,096 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)
- **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
- **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]) / 4 : Brake Attached(DC 90[V]) / 5 : Oil Seal, Brake Attached(DC 90[V])
- **Speed Reducer (Gearbox)**: None : No Reducer / G2 : For General Industry (Flange Mount) / G3 : Precision Gearbox (Flange Mount)
- **Reduction ratio**: 3 : 1/3 / 10 : 1/10 / . . .

Note1) Std. Encoder type for Motor
Inc. 3,000 P/R(15 Lines)
- 40 Flange : Inc. 2048P/R(15Lines) 3,000 & Over P/R is impossible
- 60, 80 Flange : Inc. 2,500P/R(15Lines) 5,000 & Over P/R is impossible

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

Configuration of 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 PM Power Module

AnyPack Series Servo Drive

APD – VS 04 N A4

- **Type Classification**: VS : Standard / VP : Controller-embedded / VT : Tension Control
- **Drive Capacity**: R5 : 50W / 01 : 100W / 02 : 200W / 04 : 400W / 05 : 500W / 10 : 1,000W / 15 : 1,500W / 20 : 2,000W / 35 : 3,500W / 50 : 5,000W / 75 : 7,500W / 110 : 11,000W / 150 : 15,000W
- **Encoder Type**: N : Incremental / A : Absolute
- **Exclusive Code**:
  - VS : Exclusive Option Code
  - VP : AS per the operating software
    1. Linear coordinates position drive
    2. Rotary coordinates position drive
    3. Feeder and sensor-input position type
    4. Push-Pull position drive
    5. Program operation drive
    9. Customized Position Drive

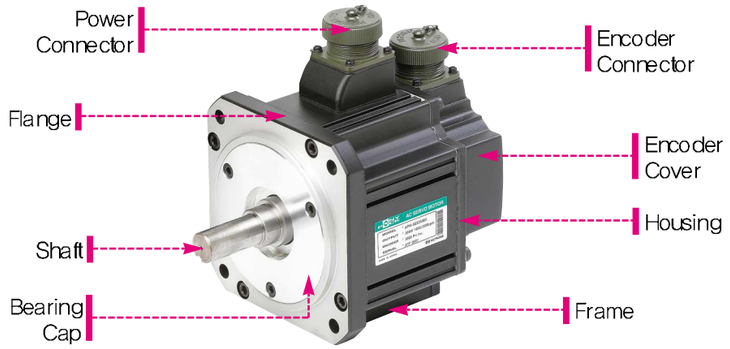
Application Table for Servo Motor and Drive

Servo Motor					Applicable drive	Encoder Used		IP grade
Rated Speed (r/min)	Maximum Speed (r/min)	Flange	Capacity (kW)	Model (APM-)	Model (APD-)	Standard Incremental	Standard Absolute	
3,000	5,000	□40	0.03	SAR3A	VSR5	·15pin type ·2048 P/R	·N/A	IP 55
			0.05	SAR5A	VSR5			
			0.1	SA01A	VS01			
		□60	0.1	SB01A	VS01	·15pin type ·2,500 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 55
			0.2	SB02A	VS02			
			0.4	SB04A	VS04			
		□80	0.4	SC04A	VS04			IP 65
			0.6	SC06A	VS04			
			0.8	SC08A	VS05			
			1.0	SC10A	VS10			
		□130	0.9	SE09A	VS10	·15pin type ·3,000 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 65
			1.5	SE15A	VS15			
			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	VS04	·15pin type ·2,500 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 65
			0.45	SC05D	VS04			
			0.55	SC06D	VS05			
			0.65	SC07D	VS05			
		□130	0.6	SE06D	VS05	·15pin type ·3,000 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 65
			1.1	SE11D	VS10			
			1.6	SE16D	VS15			
			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			
			5.5	SG55D	VS50			
	2,500		7.5	SG75D	VS75			
			11.0	SG110D	VS110			
1,500	3,000	□130	0.45	SE05G	VS05	·15pin type ·3,000 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 65
			0.85	SE09G	VS10			
			1.3	SE13G	VS15			
			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			
1,000	2,000	□130	0.3	SE03M	VS04	·15pin type ·3,000 P/R	·13pin type ·2,048 P/R ·11/13bit	IP 65
			0.6	SE06M	VS05			
			0.9	SE09M	VS10			
			1.2	SE12M	VS15			
		□180	1.2	SF12M	VS15			
			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	·15pin type ·1,024 P/R	·N/A	IP 55
			0.2	HB02A	VS02			
			0.4	HB04A	VS04			
		□130	0.9	HE09A	VS10			
			1.5	HE15A	VS15			

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

Designation of Each Part

Motor



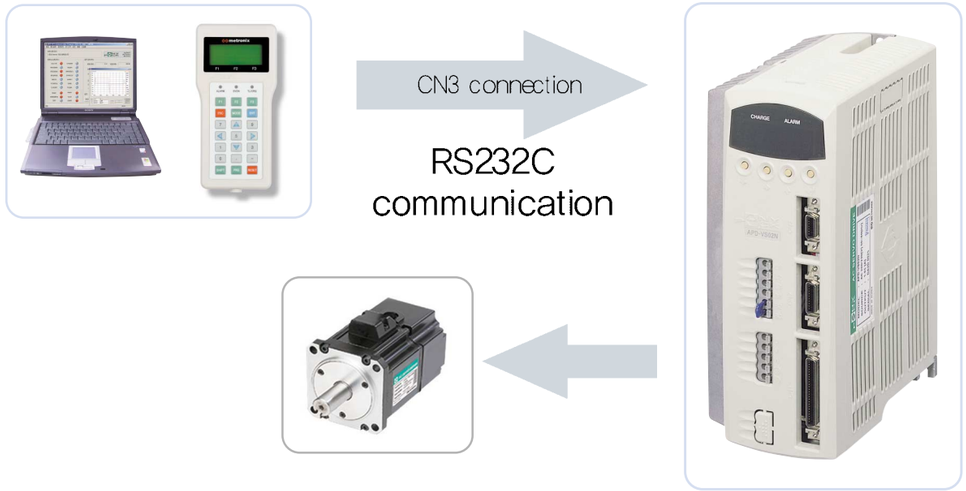
Drive

Built-in Loader Designation and Handling key function

Left	①Menu display window : Reduced the menu No. one by one. ②Data display window : Shift the row to left
Right	①Menu display window : Increased the menu No. one by one. ②Data display window : Shift the row to right
Up	①Menu display window : Menu group increased ②Data display window : The number of current row is increased
Enter	①Menu display window : Convert into data display window ②Data display window : Save the current data

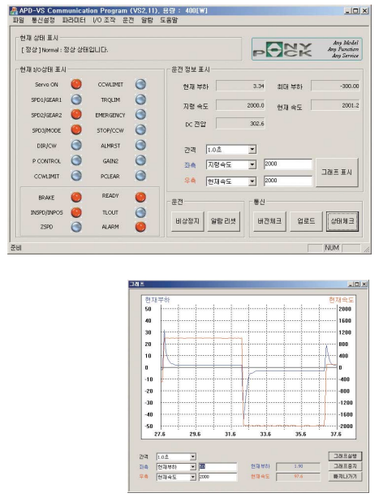
PC Loader, Handy Loader

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



PC Loader 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.
- Easy changing of mode & menu data.
- Display function of Alarm status.
- Operation handling function by using communication protocol
- Data editing function by using communication-code
- Auto Jog operation test function
- PC Specifications : Window 98,WindowXP



Note1) PC Communication software can be downloaded from our web site(www.metronix.co.kr).

PONYCK AC Servo System

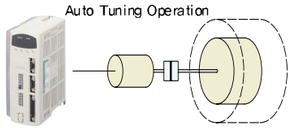
Main Function of Servo System

Built-In Loader Installation

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

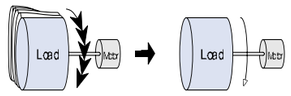
Auto Tuning Operation

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



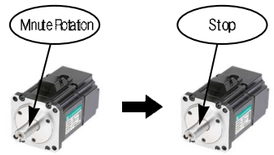
Anti-vibration during Operation

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



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.



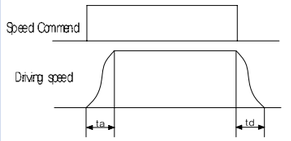
Selecting Various Speed

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

	SPD3	SPD2	SPD1
Analog Speed	off	off	off
Internal Speed ON1	off	off	on
Internal Speed ON2	off	on	off
Internal Speed ON3	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

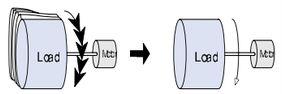
Smooth Acceleration/Deceleration Operation

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



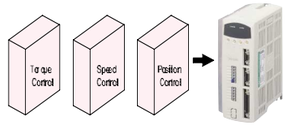
Anti-vibtation at Stop

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.



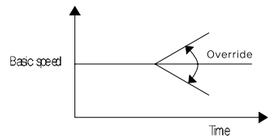
Test Operation

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

(Test operation is possible without connecting to Upper controller)

Speed Override Operation

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



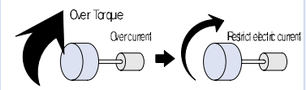
Switching Function of the Rotating Direction

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

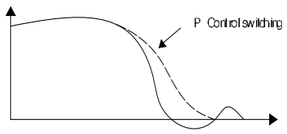
Torque Limit Function

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



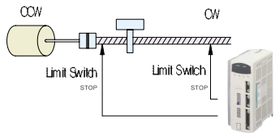
Anti-overshoot

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.

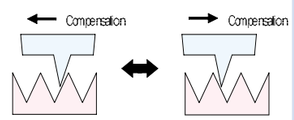


Built-in Regenerative Brake Function

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

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 + Direction	PF				
	PR				

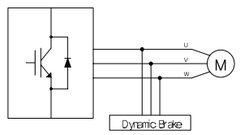
Selecting Electronic Gear Ratio & Offset Function

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

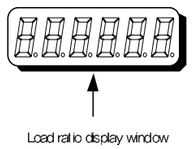
Built-in Dynamic Brake

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.



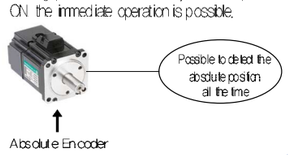
Various Load Ratio Display Function

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



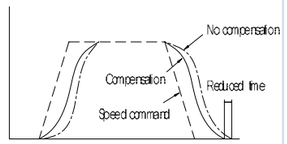
Applying an Absolute Encoder

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.



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.

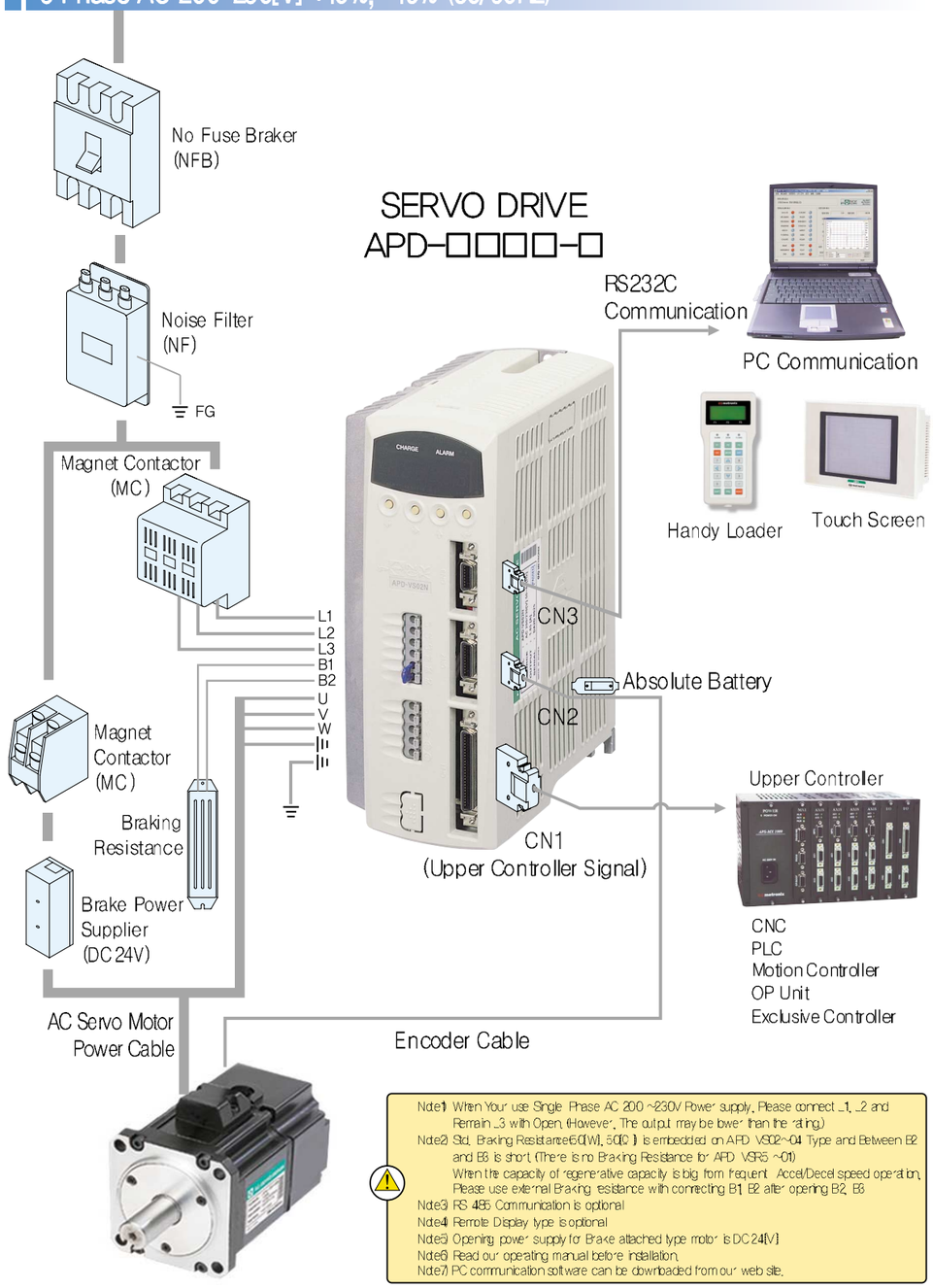
	SPD2	SPD1
Analog Speed	off	off
Internal Speed 1	off	on
Internal Speed 2	on	off
Internal Speed 3	on	on

PONYCK AC Servo System

System Configuration

Below 400W

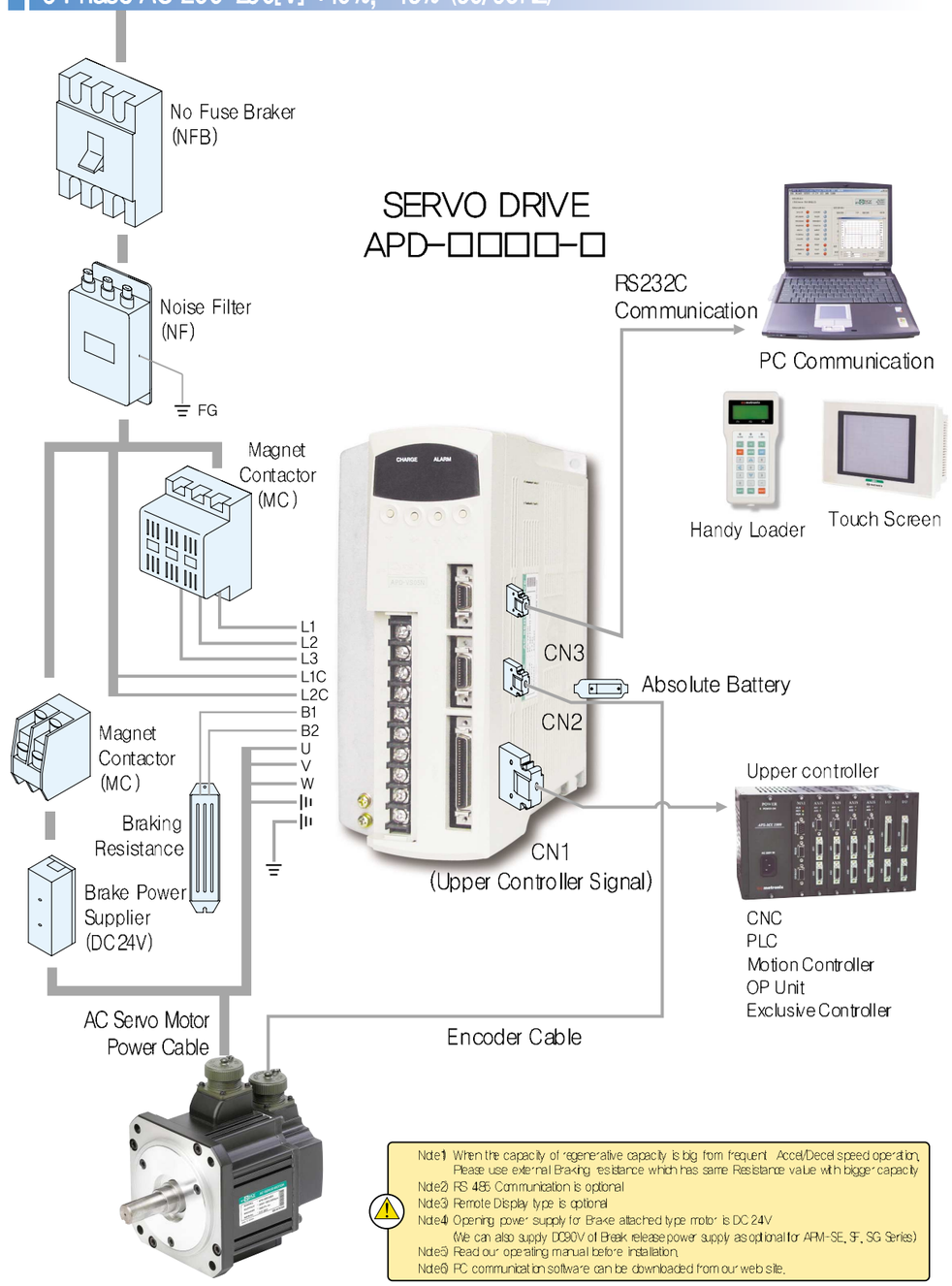
3 Phase AC 200-230[V] +10%, -15% (50/60Hz)



Note1) When Your use Single Phase AC 200~230V Power supply, Please connect _1, _2 and Remain _3 with Open. (However, The output may be lower than the rating.)
Note2) Std. Braking Resistance 60[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.

500W~1kW

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



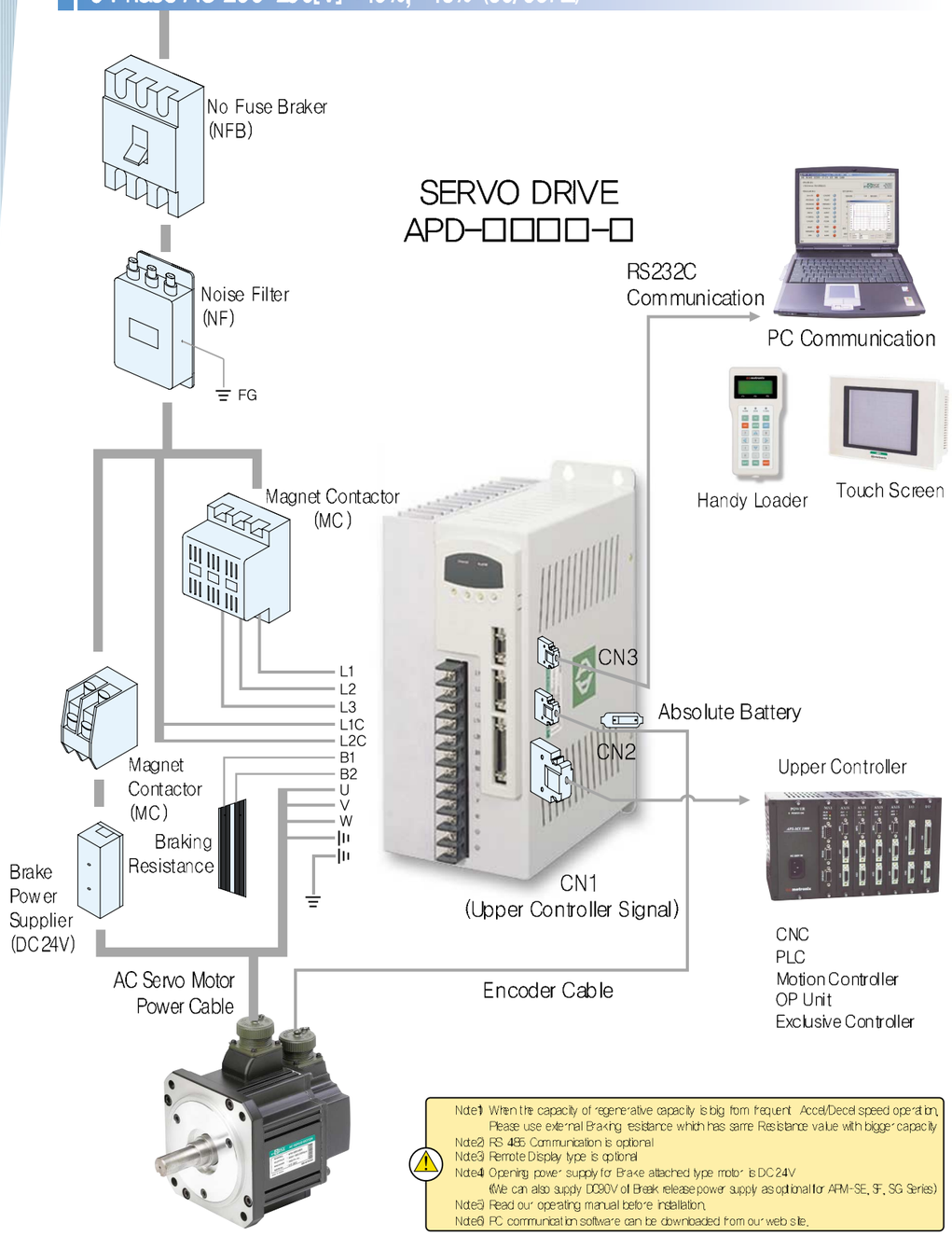
Note1) When the capacity of regenerative capacity is big from frequent Accel/Decel speed operation, Please use external Braking resistance which has same Resistance value with bigger capacity
Note2) RS 485 Communication is optional
Note3) Remote Display type is optional
Note4) Opening power supply for Brake attached type motor is DC 24V
(We can also supply DC90V of Break release power supply as optional for ARM-SE, 3F, 5G Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

PONY AC Servo System

System Configuration

1.5kW~7.5kW

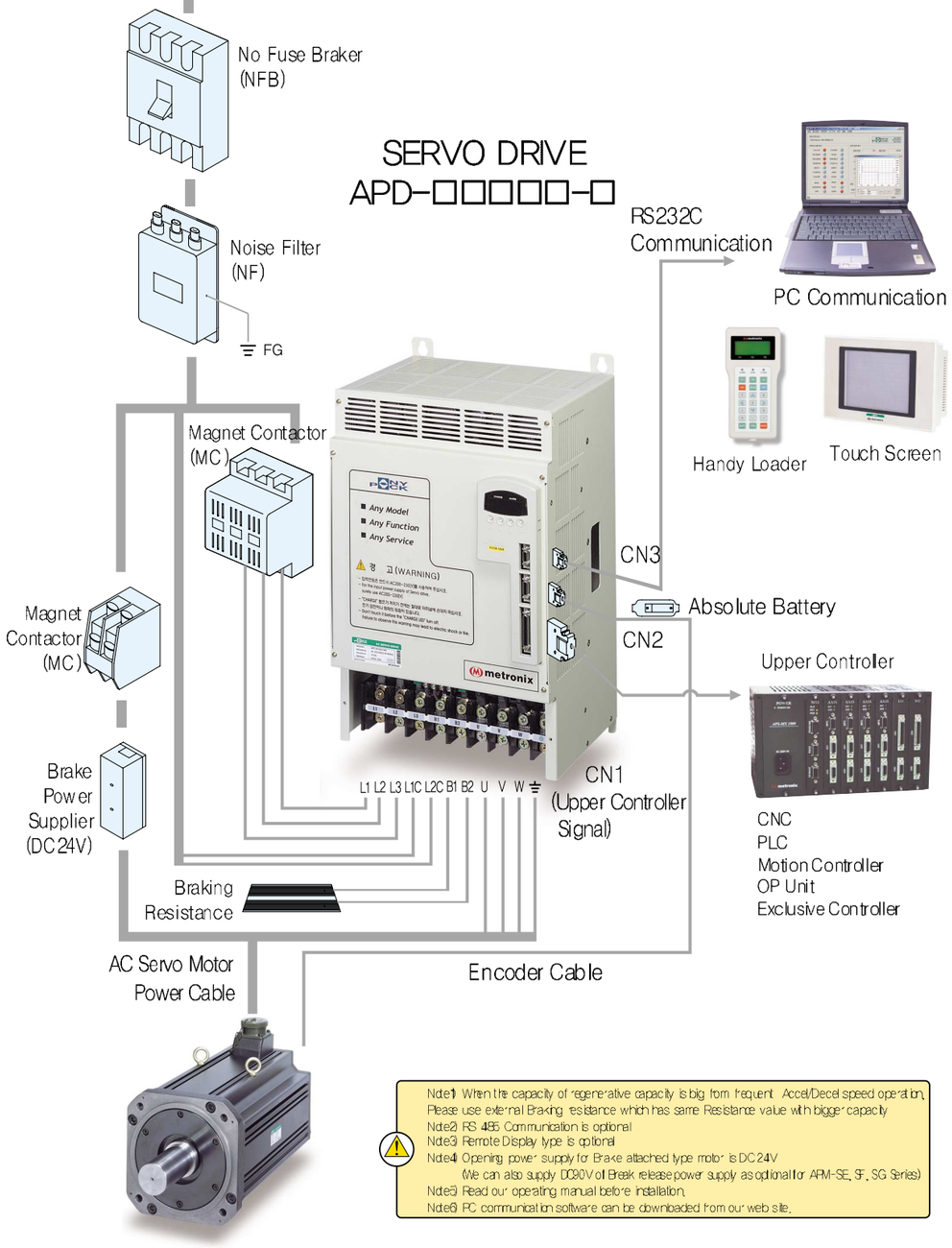
3 Phase AC 200-230[V] +10%, -15% (50/60Hz)



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 ARM-SE, SF, SG Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

11kW~15kW

3 Phase 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 ARM-SE, SF, SG Series)
Note5) Read our operating manual before installation.
Note6) PC communication software can be downloaded from our web site.

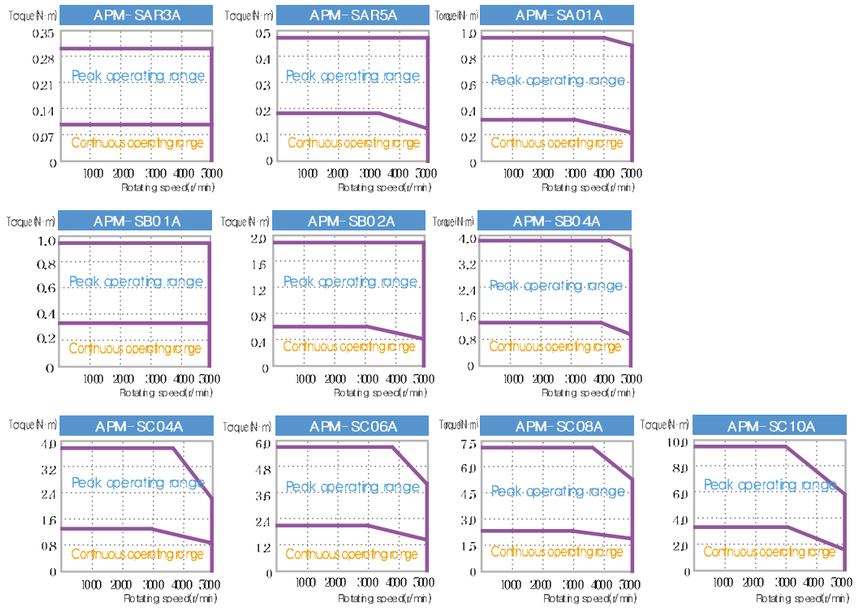
Characteristics of Servo Motor and Torque's Characteristics

Servo Motor's Characteristics 〈Rated Speed 3000r/min〉

Servo Motor Model (APM-□□□□□)		SAR3A	SAR5A	SA01A	SB01A	SB02A	SB04A	SC04A	SC06A	SC08A	SC10A
Servo Drive Model (APD-□□□□□)		VSR5		VS01	VS01	VS02	VS04	VS04		VS05	VS10
Flange Size (□)		□40			□60			□80			
Rated Power	[kW]	0.03	0.05	0.1	0.1	0.2	0.4	0.4	0.6	0.8	1.0
Rated Torque	[N · m]	0.095	0.159	0.318	0.318	0.637	1.274	1.27	1.91	2.55	3.19
	[kgf · cm]	0.97	1.62	3.25	3.25	6.50	13.0	13.0	19.5	26.0	32.5
Max. Instantaneous torque	[N · m]	0.286	0.477	0.955	0.955	1.912	3.822	3.82	5.34	6.88	9.56
	[kgf · cm]	2.92	4.87	9.74	9.74	19.5	39.0	39.0	54.5	70.2	97.5
Rated rpm	[r/min]	3,000									
Max. rpm	[r/min]	5,000									
Moment of inertia	[kg · m²× 10⁻⁴]	0.011	0.021	0.045	0.114	0.182	0.321	0.674	1.092	1.509	1.927
	[gf · cm · s²]	0.0112	0.0214	0.0459	0.116	0.186	0.327	0.687	1.114	1.539	1.966
Allowable load Inertia Ratio		30times of motor inertia			20times of motor inertia			15times of motor inertia			
Rated Power Rate	[kW/S]	5.57	10.52	23.80	8.92	22.26	50.65	24.07	33.45	43.02	52.65
Speed, 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)			
	Rated Time	Continuous									
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]									
	Ambient Temp.	Lower than 90[%] (Avoid condensation)									
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust									
	E/V	Elevation/Vibration 49[m/s²](5G)									
Weight	[kg]	0.32	0.38	0.5	0.82	1.08	1.58	1.88	2.52	3.18	3.90

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

Rotation Speed-Torque's Characteristics

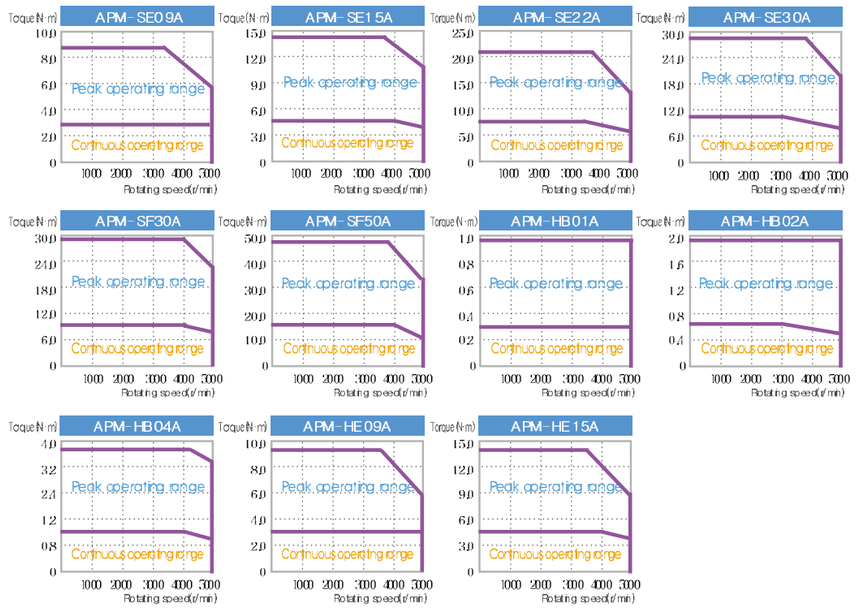


Servo Motor's Characteristics 〈Rated Speed 3000r/min〉

Servo Motor Model (APM-□□□□□)		SE09A	SE15A	SE22A	SE30A	SF30A	SF50A	HB01A	HB02A	HB04A	HE09A	HE15A
Servo Drive Model (APD-□□□□□)		VS10	VS15	VS20	VS35	VS35	VS50	VS01	VS02	VS04	VS10	VS15
Flange Size (□)		□130				□180		□60			□130	
Rated Power	[kW]	0.9	1.5	2.2	3.0	3.0	5.0	0.1	0.2	0.4	0.9	1.5
Rated Torque	[N · m]	2.86	4.77	7.0	9.55	9.55	15.91	0.318	0.637	1.274	2.86	4.77
	[kgf · cm]	29.2	48.7	71.4	97.4	97.4	162.3	3.25	6.50	13.0	29.2	48.7
Max. Instantaneous torque	[N · m]	8.59	14.32	21.01	28.65	28.64	47.74	0.955	1.912	3.822	8.59	14.32
	[kgf · cm]	87.7	146.1	214.3	292.2	292.2	487.0	9.74	19.5	39.0	87.7	146.1
Rated rpm	[r/min]	3,000										
Max. rpm	[r/min]	5,000										
Moment of inertia	[kg · m²×10⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	0.269	0.333	0.461	19.558	22.268
	[gf · cm · s²]	6.792	12.238	17.685	23.132	31.35	53.16	0.274	0.339	0.470	19.943	22.707
Allowable load Inertia Ratio		10 times of motor inertia				5times of motor inertia		10 times of motor inertia			5times of motor inertia	
Rated Power Rate	[kW/S]	12.31	18.98	28.25	40.17	29.66	48.56	3.34	11.98	34.47	4.10	10.01
Speed, Potion Transducer	Standard(Note1)	Incremental 3000[P/R]						Incremental 1024 [P/R]			Incremental 2048[P/R]	
	Option	Absolute, 11/13bit Manchester communication						–			–	
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors)										
	Rated Time	Continuous										
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]										
	Ambient Temp.	Lower than 90[%] (Avoid condensation)										
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust										
	E/V	Elevation/Vibration 49[m/s²](5G)										
Weight	[kg]	5.5	7.54	9.68	11.78	12.11	17.7	0.89	1.16	1.69	5.82	7.43

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

Rotation Speed-Torque's Characteristics



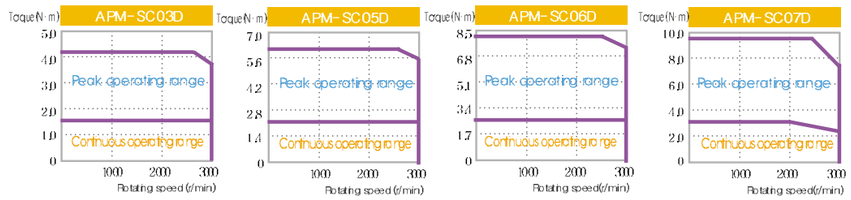
Characteristics of Servo Motor and Torque's Characteristics

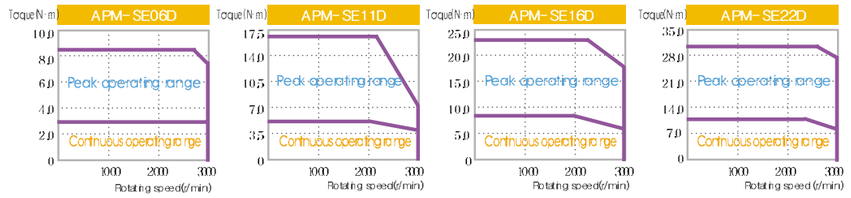
Servo Motor's Characteristics 〈Rated Speed 2000r/min〉

Servo Motor Model (APM-□□□□□)		SC03D	SC05D	SC06D	SC07D	SE06D	SE11D	SE16D	SE22D
Servo Drive Model (APD-□□□□□)		VS04		VS05		VS05	VS10	VS15	VS20
Flange Size (□)		□80				□130			
Rated Power	[kW]	0.3	0.45	0.55	0.65	0.6	1.1	1.6	2.2
Rated Torque	[N · m]	1.43	2.15	2.63	3.09	2.86	5.25	7.63	10.5
	[kgf · cm]	14.6	21.9	26.8	31.6	29.2	53.6	77.9	107.1
Max. Instantaneous torque	[N · m]	4.29	6.44	7.88	9.29	8.59	15.75	22.92	31.51
	[kgf · cm]	43.8	65.7	80.4	94.8	87.7	160.7	233.8	321.4
Rated rpm	[r/min]	2,000							
Max. rpm	[r/min]	3,000							
Moment of inertia	[kg · m²× 10⁻⁴]	0.674	1.092	1.509	1.927	6.569	11.999	17.339	22.67
	[gf · cm · s²]	0.687	1.114	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		10 times of motor inertia			
Rated Power Rate	[kW/S]	30.36	42.19	43.68	47.90	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)							
	Rated Time	Continuous							
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]							
	Ambient Temp.	Lower than 90[%] (Avoid condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust							
	E/V	Elevation/Vibration 49[m/s²](5G)							
Weight	[kg]	1.85	2.52	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



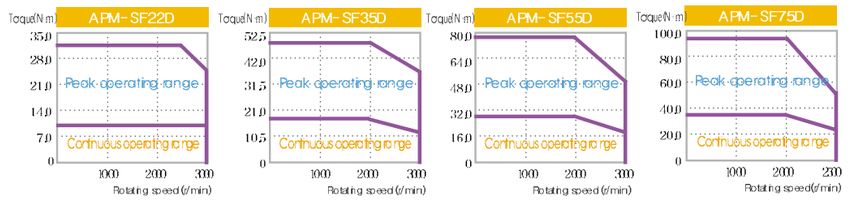


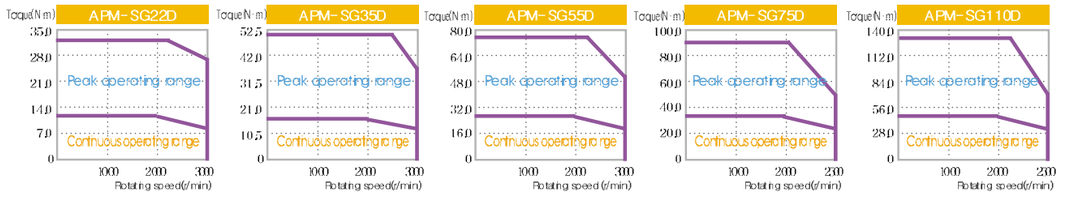
Servo Motor's Characteristics 〈Rated Speed 2000r/min〉

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	
Moment of inertia	[kg · m²×10⁻⁴]	30.74	52.13	80.60	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		5 times of motor inertia								
Rated Power Rate	[kW/S]	35.88	53.56	82.56	105.75	21.45	34.75	52.07	74.15	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.)								
	Rated Time	Continuous								
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]								
	Ambient Temp.	Lower than 90[%] (Avoid condensation)								
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust								
	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





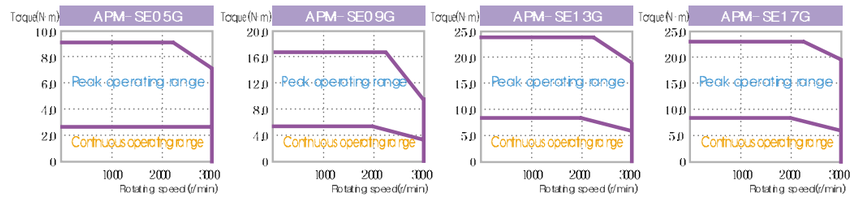
Characteristics of Servo Motor and Torque's Characteristics

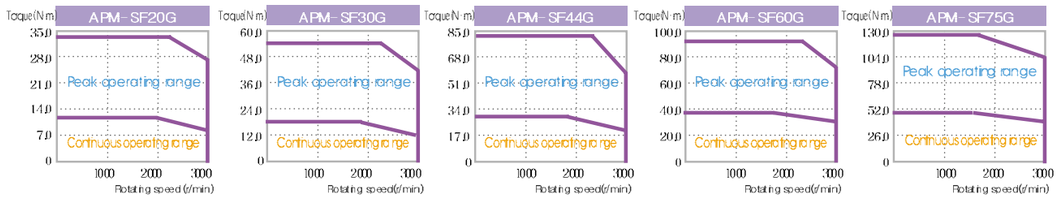
Servo Motor's Characteristics 〈Rated Speed 1500r/min〉

Servo Motor Model (APM-□□□□□)		SE05G	SE09G	SE13G	SE17G	SF20G	SF30G	SF44G	SF60G	SF75G
Servo Drive Model (APD-□□□□□)		VS05	VS10	VS15	VS20	VS20	VS35	VS50	VS75	VS110
Flange Size (□)		□130				□180				
Rated Power	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4	6.0	7.5
Rated Torque	[N · m]	2.86	5.41	8.27	10.82	11.45	18.46	28.0	38.2	47.7
	[kgf · cm]	29.22	55.19	84.41	110.38	116.88	188.3	285.7	389.8	487.2
Max. Instantaneous torque	[N · m]	8.59	16.23	24.82	32.46	34.35	55.38	84.03	95.5	128.8
	[kgf · cm]	87.66	165.57	253.23	331.14	350.64	564.9	857.1	974.9	1315.4
Rated rpm	[r/min]	1,500								
Max. rpm	[r/min]	3,000							2,500	
Moment of inertia	[kg · 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, Manchester communication								
Specification & Features	Protective Method	Totally enclosed, Non ventilated IP65(Excluding the shaft-through section and connectors.)								
	Rated Time	Continuous								
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]								
	Ambient Temp.	Lower than 90[%] (Avoid condensation)								
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust								
	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



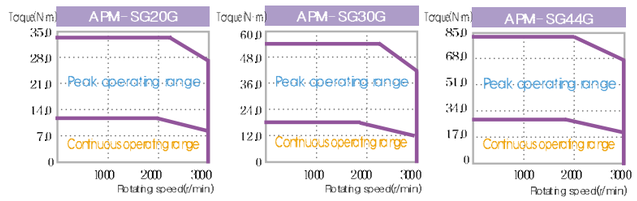


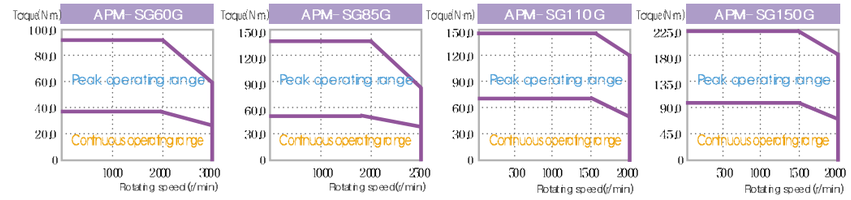
Servo Motor's Characteristics 〈Rated Speed 1500r/min〉

Servo Motor Model (APM-□□□□□)		SG20G	SG30G	SG44G	SG60G	SG85G	SG 110G	SG 150G
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	149.1	224.4
	[kgf · cm]	350.8	565.1	857.4	974.3	1380.3	1521.8	2289.6
Rated rpm	[r/min]	1,500						
Max. rpm	[r/min]	3,000			2,500		2,000	
Moment of inertia	[kg · m²×10⁻⁴]	51.42	80.35	132.41	172.91	291.36	291.36	385.54
	[gf · cm · s²]	52.47	81.99	135.11	176.44	297.31	297.31	393.41
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.)						
	Rated Time	Continuous						
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]						
	Ambient Temp.	Lower than 90[%] (Avoid condensation)						
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust						
	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





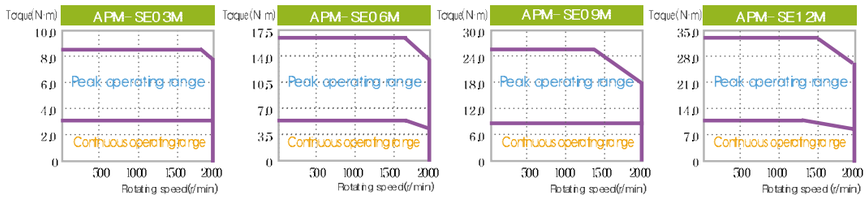
Characteristics of Servo Motor and Torque's Characteristics

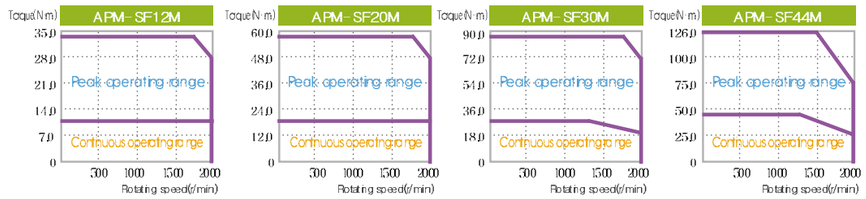
Servo Motor's Characteristics 〈Rated Speed 1000r/min〉

Servo Motor Model (APM-□□□□□)		SE03M	S06M	SE09M	SE12M	SF12M	SF20M	SF30M	SF44M
Servo Drive Model (APD-□□□□□)		VS04	VS05	VS10	VS15	VS15	VS20	VS35	VS50
Flange Size (□)		□130				□180			
Rated Power	[kW]	0.3	0.6	0.9	1.2	1.2	2.0	3.0	4.4
Rated Torque	[N · m]	2.86	5.72	8.59	11.46	11.46	19.09	28.64	42.02
	[kgf · cm]	29.2	58.4	87.7	116.9	116.9	194.8	292.2	428.7
Max. Instantaneous torque	[N · m]	8.59	17.18	25.77	34.22	34.38	57.29	8594	126.05
	[kgf · cm]	87.7	175.3	262.9	349.1	350.7	584.4	876.6	1286.2
Rated rpm	[r/min]	1,000							
Max. rpm	[r/min]	2,000							
Moment of inertia	[kg · m²× 10⁻⁴]	6.659	11.999	17.339	22.679	30.74	52.13	83.60	121.35
	[g f · 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.)							
	Rated Time	Continuous							
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]							
	Ambient Temp.	Lower than 90[%] (Avoid condensation)							
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust							
	EN	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



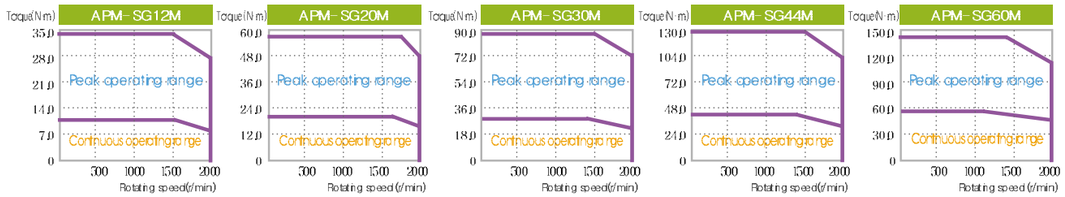


Servo Motor's Characteristics 〈Rated Speed 1000r/min〉

Servo Motor Model (APM-□□□□□)		SG12M	SG20M	SG30M	SG44M	SG60M
Servo Drive Model (APD-□□□□□)		VS15	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	149.8
	[kgf · cm]	350.8	584.6	876.9	1286.1	1528.6
Rated rpm	[r/min]	1,000				
Max. rpm	[r/min]	2,000				
Moment of inertia	[kg · m²×10⁻⁴]	51.42	80.35	132.41	172.91	291.36
	[g f · cm · s²]	52.47	81.99	135.11	176.44	297.31
Allowable load Inertia Ratio		5 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.)				
	Rated Time	Continuous				
	Ambient Temp.	Operating Temp. : 0~40[°C] ·Storage Temp. : -20~80[°C]				
	Ambient Temp.	Lower than 90[%] (Avoid condensation)				
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust				
	EN	Elevation/Vibration 49[m/s²](5G)				
무게	[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



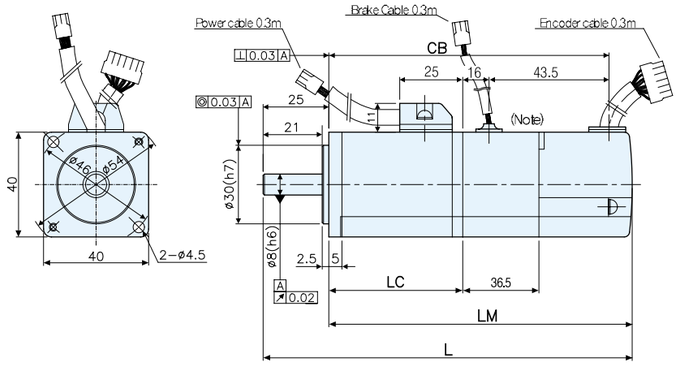
Brake Specification

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 24V
Rated Friction Torque [N • m]	0.32	1.47	3.23	9.2	40.2	74
Capacity [W]	6	6.5	9	7	33	25
Coil Resistance [Ω]	96	89	64	1150	245	327
Rated Current [A]	0.25	0.27	0.38	0.08	0.37	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) Never 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) For SE, SF, SG Series of motor, DC24V is standard Power supply for Brake, but we can supply the Brake with DC 90V of power supply as optional.

Servo Motor Dimension

SA Serise | APM-SAR3A, APM-SAR5A, APM-SA01A



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

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

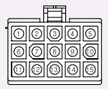
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

〈Power connector Pin〉

Plug Specification : 172165-1 (Made by AMP)

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

〈Brake connector Pin〉



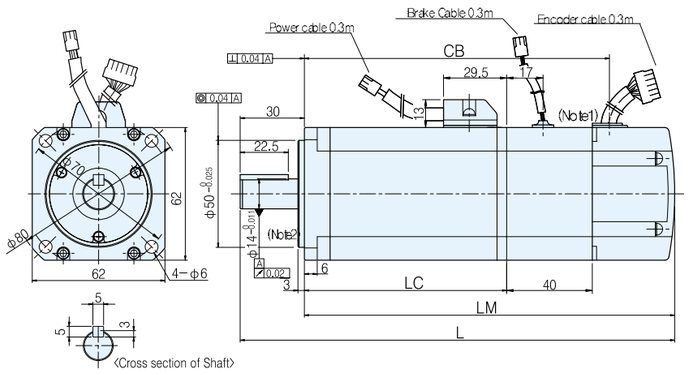
Plug Specification : 172171-1 (Made by AMP)

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

〈Encoder connector Pin〉

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

SB Serise | APM-SB01A, APM-SB02A, APM-SB04A



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

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

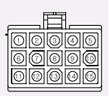
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

〈Power connector Pin〉

Plug Specification : 172165-1 (Made by AMP)

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

〈Brake connector Pin〉



Plug Specification : 172171-1 (Made by AMP)

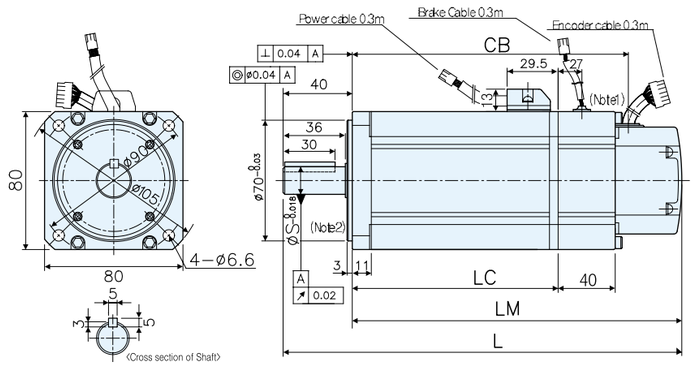
Pin No.	Phase	Pin No.	Phase
1	A	9	V
2	$\overline{A}$	10	$\overline{V}$
3	B	11	W
4	$\overline{B}$	12	$\overline{W}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	U	15	SHIELD
8	$\overline{U}$		

〈Encoder connector Pin〉

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

Servo Motor Dimension

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



Model	External Dimension					Weight (kg)
	L	LM	LC	CB	S	
SC04A, SC03D	158(198)	118(158)	79	86.5(127)	14	1.88(2.92)
SC06A, SC05D	178(218)	138(178)	99	106.5(147)	16	2.52(3.56)
SC08A, SC06D	198(238)	158(198)	119	126.5(167)	16	3.18(4.22)
SC10A, SC07D	218(258)	178(218)	139	146.5(187)	16	3.90(4.94)

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

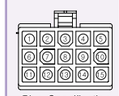
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

〈Power connector Pin〉

Plug Specification : 172165-1 (Made by AMP)

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

〈Brake connector Pin〉



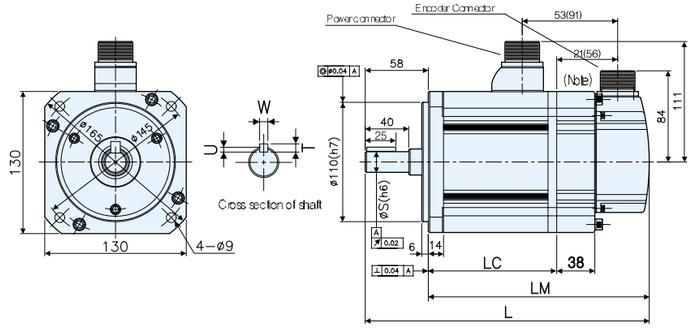
Plug Specification : 172171-1 (Made by AMP)

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

〈Encoder connector Pin〉

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

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



Model	External Dimension				Key			Weight (kg)
	L	LM	LC	S	T	W	U	
SE09A, SE06D, SE05G, SE03M	202(240)	144(182)	94	19	5	5	3	5.5(7.04)
SE15A, SE11D, SE09G, SE06M	226(264)	168(206)	118	19	5	5	3	7.54(9.08)
SE22A, SE16D, SE13G, SE09M	250(288)	192(230)	142	22	6	6	3.5	9.68(11.22)
SE30A, SE22D, SE17G, SE12M	274(312)	216(254)	166	22	6	6	3.5	11.78(13.32)

Plug Specification

Specification : MS3102A20-4P (Standard)

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

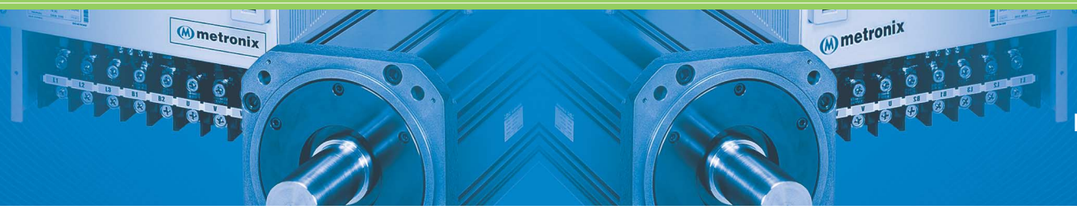
Specification : MS3102A20-15P (Brake attached type)

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

Specification : MS3102A20-29P

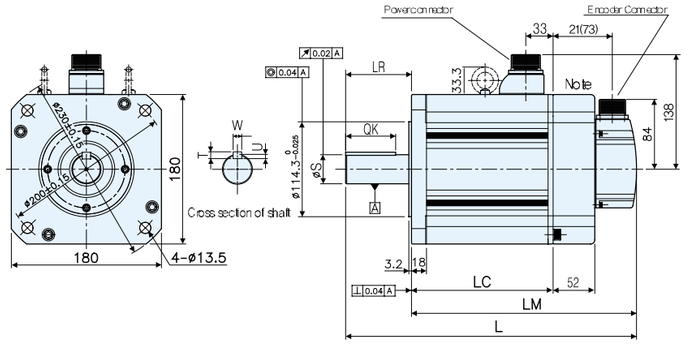
Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\overline{A}$	N	$\overline{V}$
C	B	P	W
D	$\overline{B}$	R	$\overline{W}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	U	J	SHIELD
L	$\overline{U}$		

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



Servo Motor Dimension

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



Model	External Dimension				Shaft, Key					Weight (kg)
	L	LM	LC	LR	S	QK	T	W	U	
SF30A, SF22D, SF20G, SF12M	261.8(313.8)	182.8(234.8)	132.8	79	35 +0.01 +0	60	8	10	5	12.4(19.2)
SF50A, SF35D, SF30G, SF20M	294.8(346.8)	215.8(267.8)	165.8	79	35 +0.01 +0	60	8	10	5	17.7(24.9)
SF55D, SF44G, SF30M	344.8(396.8)	265.8(317.8)	215.8	79	35 +0.01 +0	60	8	10	5	26.3(33.4)
SF75D, SF60G, SF44M	404.8(456.8)	325.8(377.8)	275.8	79	35 +0.01 +0	60	8	10	5	35.6(42.8)
SF75G	458.9(510.9)	345.8(397.8)	295.8	113	42 -0 -0.016	96	8	12	5	39.4(45.1)

Plug Specification

Specification : MS3102A22-22P (Standard)

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

Specification : MS3102A24-10P (Brake attached type)

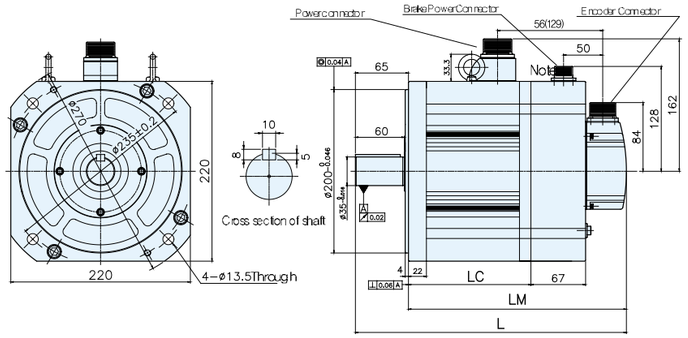
Pin No.	Phase	Pin No.	Phase
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Specification : MS3102A20-29P

Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\bar{A}$	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 or DC90V for brake input supply depending on Brake specification
2) The dimension in ( ) is for Brake attached motor

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



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

Plug Specification

Specification : MS3102A22-22P (Standard)

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

Specification : MS3102A14S-7P (Brake attached type)

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

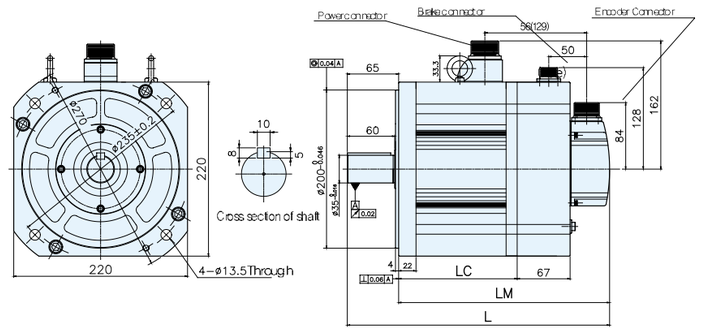
Specification : MS3102A20-29P

Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\bar{A}$	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 or DC90V for brake input supply depending on Brake specification
2) The dimension in ( ) is for Brake attached motor

Servo Motor Dimension

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



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)	306 (304)	65	22	45 -0 -0.016	60	55	8	10	5	66.2 (82.6)
SG110G	469	354	304	115	22	42 -0 -0.016	110	96	10	12	5	66.3 (82.7)
SG150G	575	459	409	116	35	55 +0.030 +0.011	110	96	10	16	6	92.2 (108.6)

Plug Specification

Specification : MS3102A32-17P (Standard)

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

Specification : MS3102A14S-7P (Brake attached type)

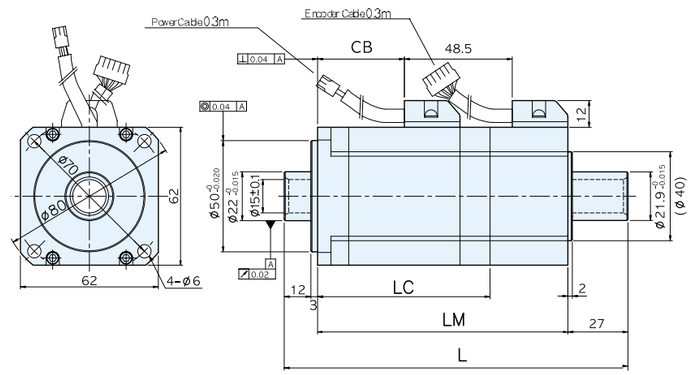
Pin No.	Phase
A	BK+
B	BK-
C	NC

Specification : MS3102A20-29P

Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\bar{A}$	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 or DC90V for brake input supply depending on Brake specification
2) The dimension in ( ) is for Brake attached motor

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



Model	External Dimension					Weight (kg)
	L	LM	LC	CB	Hollow Shaft Type	
HB01A	140.5	98.5	52.5	25	15	0.89
HB02A	154.5	112.5	66.5	39	15	1.16
HB04A	182.5	140.5	94.5	67	15	1.69

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

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

(Power connector Pin)

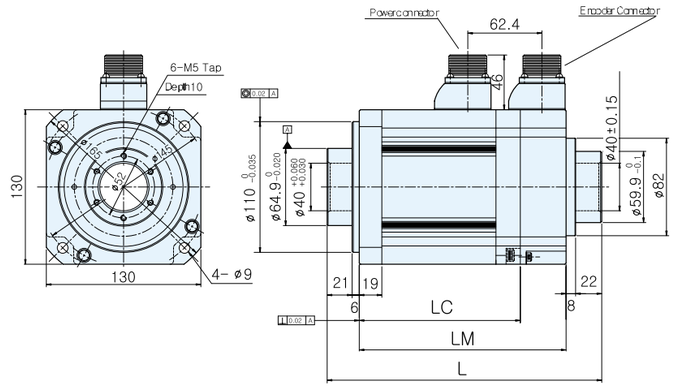
Plug Specification : 172171-1 (Made by AMP)

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

(Encoder connector Pin)

Servo Motor Dimension

HE Serise(Hollow Shaft Type) | APM-HE09A, APM-HE15A



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

Plug Specification

Specification
: MS3102A20-4P
(Standard)

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

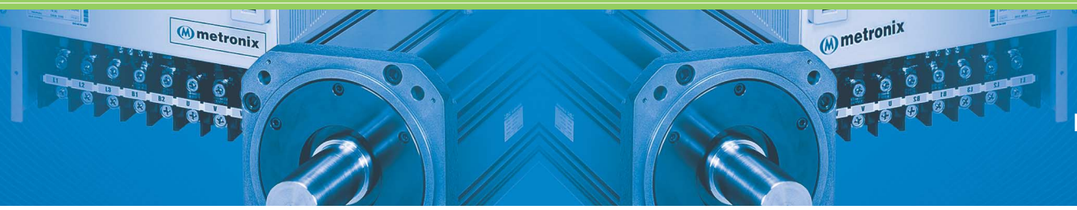
Specification
: MS3102A20-29P

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

Gearhead Servo Motor Characteristics Table

Applied Moter APM-□□□□□	Capacity (w)	Rated speed (rpm)	Reduction ratio	Back lash (arcmin)	Max. input speed (rpm)	Average input speed (rpm)	Rated output torque (N • m)	Max. instantaneous torque (N • m)	Max. radial force (N)	Max. axial force (N)	Gearhead weight (kg)
SAR3A	30	3,000	1/5	25	6,000	3,500	0.48	1.43	350	300	0.4
			1/7				0.67	1.99			
			1/9	30			0.86	2.57			0.5
			1/16				1.52	4.56			
			1/20				1.90	5.70			
SAR5A	50	3,000	1/5	25	6,000	3,500	0.79	2.39	350	300	0.4
			1/7				1.11	3.34			
			1/9	30			1.43	4.29			0.5
			1/16				2.54	7.63			
			1/20				3.18	9.54			
SA01A	100	3,000	1/5	25	6,000	3,500	1.59	4.77	350	300	0.4
			1/7				2.23	6.68			
			1/9	30			2.86	8.59			0.5
			1/16				5.09	15.26			
			1/20				6.36	19.08			
SB01A	100	3,000	1/5	12	6,000	3,500	1.59	4.77	580	1,000	1
			1/7				2.23	6.69			
			1/10				3.18	9.54			
			1/16	16			5.09	15.27			1.3
			1/20				6.36	19.08			
			1/25				7.95	23.85			
			1/40				12.72	38.16			
			1/70				22.26	66.78			
SB02A		3,000	1/5	12	6,000	3,500	3.19	9.57	580	1,000	1
			1/7				4.46	13.38			
			1/10				6.37	19.11			
			1/16	16			10.20	30.60			1.3
			1/20				12.74	38.22			
			1/25				15.93	47.79			
			1/40				25.48	76.44			
SB04A	400	3,000	1/5	12	6,000	3,500	6.37	19.11	580	1,000	1
			1/7				8.92	26.76			
			1/10				12.74	38.22			
			1/16	16			20.38	61.14			1.3
			1/20				25.48	76.44			
			1/25				31.85	82.81			

Note 1) The Characteristics on above table is measured at 20C
2) Efficiency is higher than 94%
3) Operating Temp. is -10 ~ +90C
4) Permanent lubricant is used
5) Free direction installation
6) Operating point is in the middle of output axis.



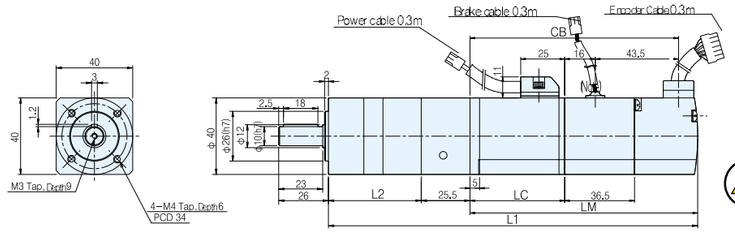
Gearhead Servo Motor Characteristics Table

Applied Moter APM-□□□□□	Capacity (w)	Rated speed (rpm)	Reduction ratio	Back lash (arcmin)	Max. input speed (rpm)	Average input speed (rpm)	Rated output torque (N • m)	Max. instantaneous torque (N • m)	Max. radial force (N)	Max. axial force (N)	Gearhead weight (kg)
SC04A SC03D	400 300	3,000 2,000	1/5	10	6,000	3,000	6.37	19.11	1,300	1,500	2.3
			1/7				8.92	26.76			
			1/10				12.74	38.22			
			1/16	14			20.38	61.14			3.1
			1/20				25.48	76.44			
			1/25				31.85	82.81			
			1/40				50.96	152.90			
			1/70				89.18	205.10			
SC06A SC05D	600 450	3,000 2,000	1/5	10	6,000	3,000	9.55	28.65	1,300	1,500	2.3
			1/7				13.37	40.11			
			1/10				19.10	57.30			
			1/16	14			30.56	91.68			3.1
			1/20				38.20	114.60			
			1/25				47.75	143.30			
			1/40				76.40	229.20			
SC08A SC06D	800 550	3,000 2,000	1/5	10	6,000	3,000	12.75	38.25	1,300	1,500	2.3
			1/7				17.85	53.55			
			1/10				25.50	76.50			
			1/16	14			40.80	122.40			3.1
			1/20				51.00	153.00			
			1/25				63.75	191.30			
			1/40				102.00	234.60			
SC10A SC07D	1,000 650	3,000 2,000	1/5	10	6,000	3,000	15.95	47.85	1,300	1,500	2.3
			1/7				22.33	66.99			
			1/10				31.90	79.75			
			1/16	14			51.04	153.10			3.1
			1/20				63.80	191.40			
			1/25				79.75	239.30			
SE09A SE06D SE05G SE03M	900 600 450 300	3,000 2,000 1,500 1,000	1/5	8	6,000	3,000	14.30	42.90	2,500	2,000	5.8
			1/7				20.02	60.06			
			1/10				28.60	85.80			
			1/16	12			45.76	137.28			7.9
			1/20				57.20	171.60			
			1/25				71.50	214.50			
			1/40				114.40	343.20			
			1/70				200.20	440.40			
SE15A SE11D SE09G SE06M	1,500 1,100 850 600	3,000 2,000 1,500 1,000	1/5	8	6,000	3,000	28.60	85.80	2,500	2,000	5.8
			1/7				40.04	120.12			
			1/10				57.20	171.60			
			1/16	12			91.52	274.56			7.9
			1/20				114.40	343.20			
			1/25				143.00	429.00			
			1/40				228.80	480.50			
SE22A SE16D SE13G SE09M	2,200 1,600 1,300 900	3,000 2,000 1,500 1,000	1/5	8	6,000	3,000	42.95	128.85	2,500	2,000	5.8
			1/7				60.13	180.39			
			1/10				85.90	257.7			
			1/16	12			137.44	412.32			7.9
			1/20				171.80	498.22			
			1/25				214.75	493.90			
SE30A SE22D SE17G SE12M	3,000 2,200 1,700 1,200	3,000 2,000 1,500 1,000	1/5	8	6,000	3,000	57.30	171.90	2,500	2,000	5.8
			1/7				80.22	240.66			
			1/10				114.60	343.80			
			1/16	12			183.36	495.07			7.9
			1/20				229.20	481.32			

Note 1) The Characteristics on above table is measured at 20C
2) Efficiency is higher than 94%
3) Operating Temp. is -10 ~ +90C
4) Permanent lubricant is used
5) Free direction installation
6) Operating point is in the middle of output axis.

Gearhead Servo Motor Dimension

APM-SAR3A, APM-SAR5A, APM-SA01A



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

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

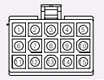
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)



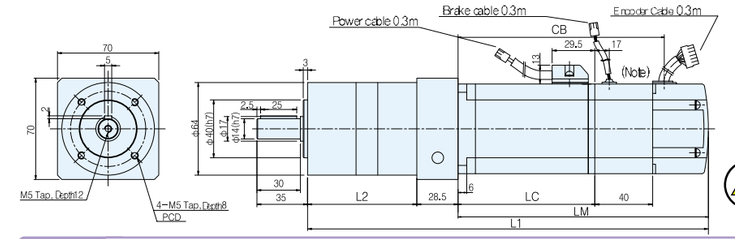
Plug Specification : 172171-1 (Made by AMP)

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

(Encoder connector Pin)

Model	Reduction Ratio	External Dimension					Weight (kg)
		L1	L2	LM	LC	CB	
SAR3A	5/7	149.5(186)	48.5	75.5(112)	42.5	65.5(102)	0.72(1.07)
	9/16/20	165(201.5)	64	75.5(112)	42.5	65.5(102)	0.82(1.17)
SAR5A	5/7	156.5(193)	48.5	82.5(119)	49.5	72.5(109)	0.78(1.13)
	9/16/20	172(208.5)	64	82.5(119)	49.5	72.5(109)	0.88(1.23)
SA01A	5/7	173.5(210)	48.5	99.5(136)	66.5	89.5(126)	0.9(1.25)
	9/16/20	189(225.5)	64	99.5(136)	66.5	89.5(126)	1.0(1.35)

APM-SB01A, APM-SB02A, APM-SB04A



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

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

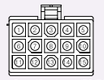
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)

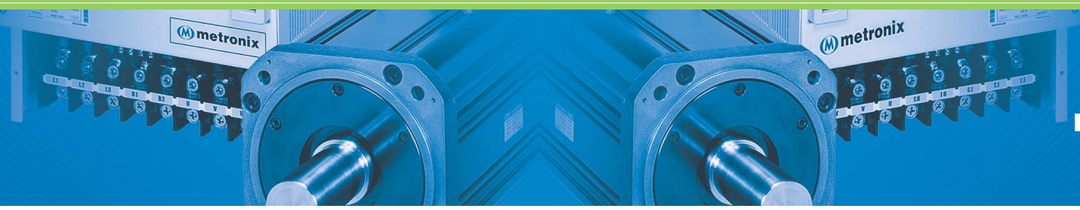


Plug Specification : 172171-1 (Made by AMP)

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

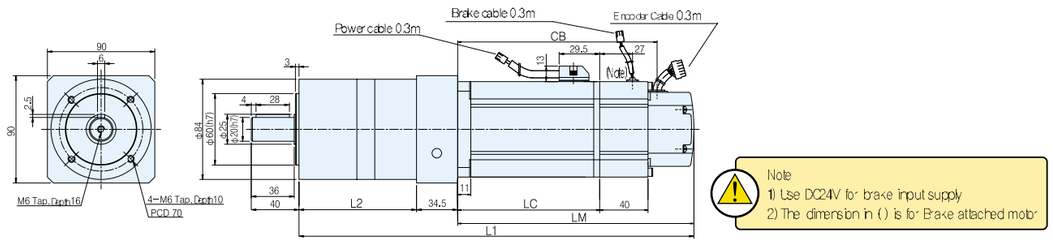
(Encoder connector Pin)

Model	Reduction Ratio	External Dimension					Weight (kg)
		L1	L2	LM	LC	CB	
SB01A	5/7/10	174(214)	53.5	92(132)	52.5	59.5(99.5)	1.82(2.4)
	16/20/25/40/70	196(235)	75.5	92(132)	52.5	59.5(99.5)	2.12(2.7)
SB02A	5/7/10	188(228)	53.5	106(146)	66.5	73.5(113.5)	2.08(2.66)
	16/20/25/40	210(250)	75.5	106(146)	66.5	73.5(113.5)	2.38(2.96)
SB04A	5/7/10	216(256)	53.5	134(174)	94.5	101.5(141.5)	2.58(3.16)
	16/20/25	238(278)	75.5	134(174)	94.5	101.5(141.5)	2.88(3.46)



Gearhead Servo Motor Dimension

APM-SC04A, SC03D, APM-SC06A, SC05D, APM-SC08A, SC06D, APM-SC10A, SC07D



Plug Specification

Plug Specification : 172167-1 (Made by AMP)

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

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)

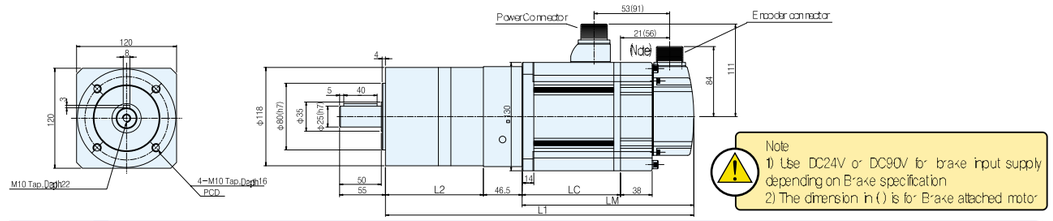
Plug Specification : 172171-1 (Made by AMP)

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

(Encoder connector Pin)

Model	Reduction Ratio	External Dimension					Weight (kg)
		L1	L2	LM	LC	CB	
SC04A, SC03D	5/7/10	251(291)	98.5	118(158)	79	86.5(127)	4.18(5.22)
	16/20/25/40/70	284(324)	131.5	118(158)	79	86.5(127)	4.98(6.02)
SC06A, SC05D	5/7/10	271(311)	98.5	138(178)	99	106.5(147)	4.82(5.86)
	16/20/25/40	304(344)	131.5	138(178)	99	106.5(147)	5.62(6.66)
SC08A, SC06D	5/7/10	291(331)	98.5	158(198)	119	126.5(167)	5.48(6.52)
	16/20/25/40	324(364)	131.5	158(198)	119	126.5(167)	6.28(7.32)
SC10A, SC07D	5/7/10	311(351)	98.5	178(218)	139	146.5(187)	6.2(7.24)
	16/20/25	344(384)	131.5	178(218)	139	146.5(187)	7.0(8.04)

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



Plug Specification

Specification : MS3102A20-4P (Standard)

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

Specification : MS3102A20-15P (Brake attached type)

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

Specification : MS3102A20-29P

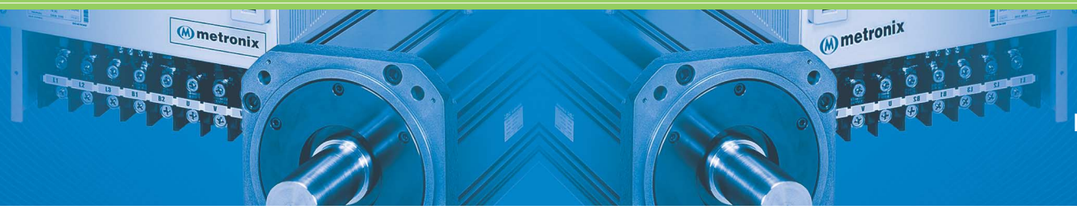
Pin No.	Phase	Pin No.	Phase	Pin No.	Phase
A	A	F	$\overline{Z}$	P	W
B	$\overline{A}$	K	U	R	$\overline{W}$
C	B	L	$\overline{U}$	H	+5V
D	$\overline{B}$	M	V	G	0V
E	Z	N	$\overline{V}$	J	SHIELD

Model	Reduction Ratio	External Dimension				Weight (kg)
		L1	L2	LM	LC	
SE09A, SE06D	5/7/10	308(346)	117.5	144(182)	94	11.3(12.84)
SE05G, SE03M	16/20/25/40/70	348(386)	157.5	144(182)	94	13.4(14.94)
SE15A, SE11D	5/7/10	332(370)	117.5	168(206)	118	13.31(14.88)
SE09G, SE06M	16/20/25/40	372(410)	157.5	168(206)	118	15.44(16.98)
SE22A, SE16D	5/7/10	356(394)	117.5	192(230)	142	15.48(17.02)
SE13G, SE09M	16/20/25	398(434)	157.5	192(230)	142	17.58(19.12)
SE30A, SE22D	5/7/10	380(418)	117.5	216(254)	166	17.58(19.12)
SE17G, SE12M	16/20	420(458)	157.5	216(254)	166	19.68(21.22)

Precision Gearhead Servo Motor Characteristics Table

Applied Moter APM-□□□□□	Capacity (w)	Rated speed (rpm)	Reduction ratio	Back lash (arcmin)	Max. input speed (rpm)	Average input speed (rpm)	Rated output torque (N • m)	Max. instantaneous torque (N • m)	Max. radial force (N)	Max. axial force (N)	Gearhead weight (kg)
SAR3A SAR5A SA01A	30 50 100	3,000	4/5/7	6	5,000	3,000	5	15	530	200	0.5
			15.4/25/41/49/53.8 81/86/106.6/113.2	1	5,000	4,000	20	100	1,400	450	1.1
SB01A	100	3,000	5/10	6	5,000	3,000	10	30	650	300	1.2
			31/36/49/61/71 76/88.5/97/121	1	5,000	4,000	40	200	3,270	980	2.1
SB02A	200	3,000	5/10	6	5,000	3,000	10	330	650	300	1.2
			31/36/49/61	1	5,000	4,000	40	200	3,270	980	2.1
SB04A	400	3,000	5/10	6	5,000	3,000	10	30	650	300	1.2
			29/33/39/43	1	5,000	4,000	60	300	6,000	1,800	3.1
SC04A SC03D	400 300	3,000 2,000	11.4/13.6	1	3,000	2,400	55	385	3,000	1,450	4
			17.8/25/31.8	1	5,000	4,000					
			34/39.5/56/61.5/71 79.75/85/95.5/101/155	1	4,000	3,200	91	455	7,000	2,100	4
SC06A SC05D	600 450	3,000 2,000	11.4/13.6	1	3,000	2,400	55	385	3,000	1,450	4
			17.8/25	1	5,000	4,000					
			40/55/59.5/67	1	4,000	3,200	147	735	7,900	2,300	4.6
SC08A SC06D	800 550	3,000 2,000	11.4/13.6	1	3,000	2,400	55	385	3,000	1,450	4
			17.8/25	1	5,000	4,000					
			40/55/59.5/67	1	4,000	3,200	147	735	7,900	2,300	4.6
SC10A SC07D	1000 650	3,000 2,000	11.4/13.6	1	3,000	2,400	55	385	3,000	1,450	4
			17.8	1	5,000	4,000					
			40	1	4,000	3,200	147	735	7,900	2,300	4.6

Note 1) The Characteristics on above table is measured at 20C
2) With high rigidity reduced resonance and vibration from high speed rotation
3) Permanent lubricant is used
4) Free direction installation



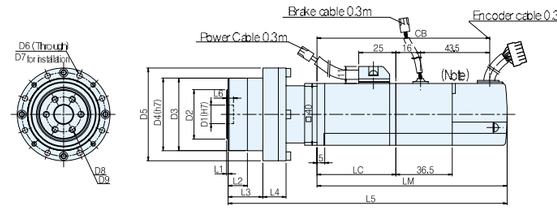
Precision Gearhead Servo Motor Characteristics Table

Applied Moter APM-□□□□□	Capacity (w)	Rated speed (rpm)	Reduction ratio	Back lash (arcmin)	Max. input speed (rpm)	Average input speed (rpm)	Rated output torque (N•m)	Max. instantaneous torque (N•m)	Max. radial force (N)	Max. axial force (N)	Gearhead weight (kg)
SE09A SE06D SE05G SE03M	900 600 450 300	3,000 2,000 1,500 1,000	9/12/15	1	2,500	2,000	280	1,960	8,500	4,000	17
			17/25	1	4,000	3,200					
			29/33/39/43/54.2/58 65/79.4/85/93.4/100/172	1	3,500	2,800	490	2,450	18,600	5,500	17
SE15A SE11D SE09G SE06M	1,500 1,100 850 600	3,000 2,000 1,500 1,000	9/12/15	1	2,500	2,000	280	1,960	8,500	4,000	17
			17/25	1	4,000	3,200					
			29/33/39/43/54.2 58/65/79.4/85	1	3,500	2,800	490	2,450	18,600	5,500	17
SE22A SE16D SE13G SE09M	2,000 1,600 1,300 900	3,000 2,000 1,500 1,000	9/12/15	1	2,500	2,000	280	1,960	8,500	4,000	17
			17/25	1	4,000	3,200					
			29/33/39/43/54.2/58	1	3,500	2,800	490	2,450	18,600	5,500	17
SE30A SE22D SE17G SE12M	3,000 2,200 1,700 1,200	3,000 2,000 1,500 1,000	9/12/15	1	2,500	2,000	280	1,960	8,500	4,000	17
			17/25	1	4,000	3,200					
			29/33/39/43	1	3,500	2,800	490	2,450	18,600	5,500	17
SF30A SF22D SF20G SF12M	3,000 2,200 1,800 1,200	3,000 2,000 1,500 1,000	9.5/11.5/14.2	1	2,500	2,000	550	3,850	12,250	5,000	28
			17.5/20/23.8/35	1	4,000	3,200					
			29/36/39/40.2/45/48.5 54.2/57/65/71/77/79.4/81	1	3,500	2,800	951	4,755	26,700	8,000	28
SF50A SF35D SF30G SF20M	5,000 3,500 2,900 2,000	3,000 2,000 1,500 1,000	9.5/11.5/14.2	1	2,500	2,000	550	3,850	12,250	5,000	28
			17.5/20/23.8	1	4,000	3,200					
			29/36/39/40.2/45/48.5	1	3,500	2,800	951	4,755	26,700	8,000	28
SF55D SF44G SF30M	5,500 4,400 3,000	2,000 1,500 1,000	9.5/11.5/14.2	1	2,500	2,000	550	3,850	12,250	5,000	28
			17.5	1	4,000	3,200					
			31.8/42.8/47	1	3,000	2,400	1,348	6,740	34,200	10,000	36
SF75D SF60G SE44M SF75G	7,500 6,000 4,400 7,500	2,000 1,500 1,000 1,500	10.6/12	1	2,100	1,680	850	5,950	20,000	8,000	36
			17	1	3,500	2,800					
			36.34/39/48.5/57/71/85	1	3,000	2,400	4,000	20,000	63,750	21,000	83

Note 1) The Characteristics on above table is measured at 20C
2) With high rigidity reduced resonance and vibration from high speed rotation
3) Permanent lubricant is used
4) Free direction installation

Precision Gearhead Servo Motor Dimension

APM-SAR3A, APM-SAR5A, APM-SA01A



Note 1) Use DC 24V for Brake power supply
2) Back lash: * indicates less than 6(arc min), ** indicates less than 1(arc min)
3) Average input rotation of Gearhead: * indicates 3000rpm, ** indicates 4000rpm
4) Normal type (less than 20) can be supplied
5) The dimension in ( ) is for brake attached type

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

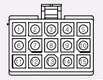
Pin No.	Color	Phase
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)



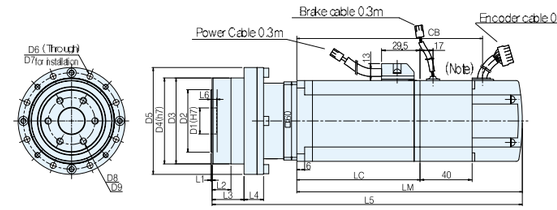
Plug Specification : 172171-1 (Made by AMP)

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

(Encoder connector Pin)

Model	Reduction Ratio	External Dimension																		Weight (kg)
		D1	D2	D3	D4	D5	D6	D7(PCD)	D8	D9(PCD)	L1	L2	L3	L4	L5	L6	LM	LC	CB	
SAR3A	*4/5/7	12	32	46.8	47	60	8-ø3.5	54	6-M4x6	22.5	1	12.5	22.5	15	133(169.5)	4.5	75.5(112)	42.5	65.5(102)	0.82(1.17)
	**15.4/25/41 49/53.8/81 86/106.6/113.2	13	40	55.8	56	70	8-ø3.5	63	6-M5x6	30	5	14.5	22.5	31	164.5(199)	4	75.5(112)	42.5	65.5(102)	1.42(1.77)
SAR5A	*4/5/7	12	32	46.8	47	60	8-ø3.5	54	6-M4x6	22.5	1	12.5	22.5	15	140(176.5)	4.5	82.5(119)	49.5	72.5(109)	0.88(1.23)
	**15.4/25/41 49/53.8/81 86/106.6/113.2	13	40	55.8	56	70	8-ø3.5	63	6-M5x6	30	5	14.5	22.5	31	169.5(206)	4	82.5(119)	49.5	72.5(109)	1.48(1.83)
SA01A	*4/5/7	12	32	46.8	47	60	8-ø3.5	54	6-M4x6	22.5	1	12.5	22.5	15	157(193.5)	4.5	99.5(136)	66.5	89.5(126)	1.0(1.35)
	**15.4/25/41 49/53.8/81 86/106.6/113.2	13	40	55.8	56	70	8-ø3.5	63	6-M5x6	30	5	14.5	22.5	31	186.5(223)	4	99.5(136)	66.5	89.5(126)	1.6(1.95)

APM-SB01A, APM-SB02A, APM-SB04A



Note 1) Use DC 24V for Brake power supply
2) Back lash: * indicates less than 6(arc min), ** indicates less than 1(arc min)
3) Average input rotation of Gearhead: * indicates 3000rpm, ** indicates 4000rpm
4) Normal type (less than 20) can be supplied
5) The dimension in ( ) is for brake attached type

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

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

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)

Plug Specification : 172171-1 (Made by AMP)

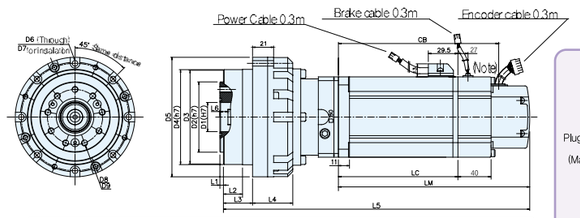
Pin No.	Phase	Pin No.	Phase	Pin No.	Phase
1	A	6	$\bar{Z}$	11	W
2	$\bar{A}$	7	U	12	$\bar{W}$
3	B	8	$\bar{U}$	13	+5V
4	$\bar{B}$	9	V	14	0V
5	Z	10	$\bar{V}$	15	SHIELD

(Encoder connector Pin)

Model	Reduction Ratio	External Dimension																		Weight (kg)
		D1	D2	D3	D4	D5	D6	D7(PCD)	D8	D9(PCD)	L1	L2	L3	L4	L5	L6	LM	LC	CB	
SB01A	*5/10	20	48	65.8	66	82	8-ø4.5	54	6-M5x8	36	1	14.5	24.5	15	157(197)	4.5	99(132)	52	59.5(99.5)	2.02(2.6)
	**31/36/49 61/71/76/88.5 97/121	20	55	74.5	75	93	8-ø4.5	85	6-M5x8	43	4	13	23	34.5	190(230)	7	99(132)	52	59.5(99.5)	2.99(3.5)
SB02A	*5/10	12	32	46.8	47	60	8-ø3.5	54	6-M4x6	22.5	1	12.5	22.5	15	144.5(211)	4.5	106(146)	66	73.5(103.5)	2.28(2.8)
	**31/36/ 49/61	20	55	74.5	75	93	8-ø4.5	85	6-M5x8	43	4	13	23	34.5	204(244)	7	106(146)	66	73.5(103.5)	3.18(3.76)
SB04A	*5/10	12	32	46.8	47	60	8-ø3.5	54	6-M4x6	22.5	1	12.5	22.5	15	162.5(239)	4.5	134(174)	94	101.5(141.5)	2.78(3.36)
	**29/33/ 39/43	27	63	87.5	88	107	8-ø5.5	98	6-M5x8	50	3.5	19.5	29.5	33.5	237(277)	9	134(174)	94	101.5(141.5)	4.68(5.26)

Precision Gearhead Servo Motor Dimension

APM-SC04A, SC03D, APM-SC06A, SC05D, APM-SC08A, SC06D, APM-SC10A, SC07D



Note 1) Use DC 24V for Brake power supply
2) Back lash: * indicates less than 1°(arc min)
3) Average input rotation of Gearhead: * indicates 2400rpm, ** indicates 3200rpm
4) Normal type (less than 20) can be supplied
5) The dimension in ( ) is for brake attached type

Plug Specification

Plug Specification : 172167-1 (Made by AMP)

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

(Connector Pin for Power)

Plug Specification : 172165-1 (Made by AMP)

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

(Brake connector Pin)

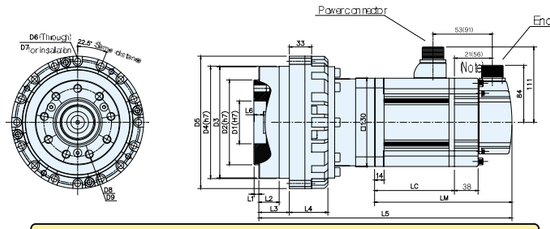
Plug Specification : 172171-1 (Made by AMP)

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

(Encoder connector Pin)

Model	Reduction Ratio	External Dimension																	Weight (kg)
		D1	D2	D3	D4	D5	D6	D7(PCD)	D8	D9(PCD)	L1	L2	L3	L4	L5	L6	LM	LC	CB	
SC04A SC03D	*11,4/13,6 17,8/25/31,8	29	70	94,5	95	119	8-ø5,5	107	9-M6x12	55	3,5	19	29	40	232,5(272,5)	8	118(158)	79	86,5(127)	5,88(6,92)
	**34/39,5/56 61,5/71/79,75 85/95,5/101/155	29	70	94,5	95	119	8-ø5,5	107	9-M6x12	55	3,5	19	29	40	232,5(272,5)	8	118(158)	79	86,5(127)	5,88(6,92)
SC06A	*11,4/13,6/17,8/25	29	70	94,5	95	119	8-ø5,5	107	9-M6x12	55	3,5	19	29	40	252,5(292,5)	8	138(178)	99	106,5(147)	6,52(6,92)
SC05D	**40/55/59,5/67	35	80	102,5	103	127	8-ø6,6	115	9-M8x13	64	4	20	30	42,5	252,5(292,5)	6,5	138(178)	99	106,5(147)	7,1(7,16)
SC08A	*11,4/13,6/17,8/25	29	70	94,5	95	119	8-ø5,5	107	9-M6x12	55	3,5	19	29	40	272,5(312,5)	8	158(198)	119	126,5(167)	7,18(8,22)
SC06D	**40/55/59,5	35	80	102,5	103	127	8-ø6,6	115	9-M8x13	64	4	20	30	42,5	272,5(312,5)	6,5	158(198)	119	126,5(167)	7,78(8,82)
SC10A	*11,4/13,6/17,8	29	70	94,5	95	119	8-ø5,5	107	9-M6x12	55	3,5	19	29	40	292,5(332,5)	8	178(218)	139	146,5(187)	7,9(8,94)
SC07D	**40	35	80	102,5	103	127	8-ø6,6	115	9-M8x13	64	4	20	30	42,5	292,5(332,5)	6,5	178(218)	139	146,5(187)	8,5(9,54)

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



Note 1) Use DC 24V and DC 90V for Brake power supply depending on brake specification
2) Back lash: * indicates less than 1°(arc min)
3) Average input rotation of Gearhead: * indicates 2400rpm, ** indicates 2800rpm
4) Normal type (less than 20) can be supplied
5) The dimension in ( ) is for brake attached type

Plug Specification

Specification : MS3102A20-4P (Standard)

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

Specification : MS3102A20-15P (Brake attached type)

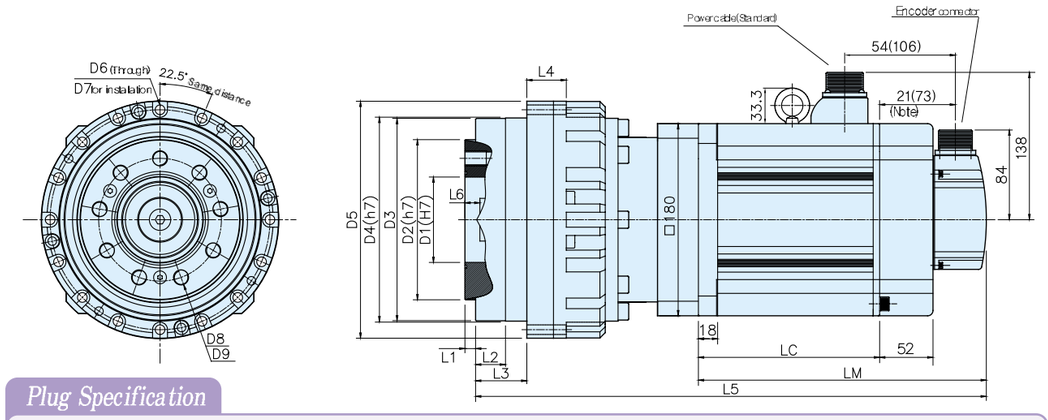
Pin No.	Phase	Pin No.	Phase
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

Specification : MS3102A20-29P

Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\bar{A}$	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	Reduction Ratio	External Dimension																	Weight (kg)
		D1	D2	D3	D4	D5	D6	D7(PCD)	D8	D9(PCD)	L1	L2	L3	L4	L5	L6	LM	LC	
SE09A SE06D SE05G SE03M	*9,5/11,5/14,2 17,5/20/23,8/35	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	315 (353)	14	144 (182)	94	22,5 (24,1)
	**29/33/39/43 54,2/58/65/79,4 85/93,4/100/172	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	315 (353)	14	144 (182)	94	22,5 (24,1)
SE15A SE11D SE09G SE06M	*9/12 15/17/25	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	339 (377)	14	168 (206)	118	24,6 (26,1)
	**29/33/39/43 54,2/58/65/79,4/85	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	339 (377)	14	168 (206)	118	24,6 (26,1)
SE22A SE16D SE13G SE09M	*9/12 15/17/25	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	363 (401)	14	192 (230)	142	26,7 (28,2)
	**29/33/39/43 54,2/58	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	363 (401)	14	192 (230)	142	26,7 (28,2)
SE30A SE22D	*9/12 15/17/25	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	387 (425)	14	216 (254)	166	28,8 (30,3)
SE17G SE12M	**29/33 39/43	63	125	164	165	195	16-ø9	180	9-M12×17	100	7	30	45	57	387 (425)	14	216 (254)	166	28,8 (30,3)

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



Plug Specification

Specification : MS3102A22-22P (Standard)

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

Specification : MS3102A24-10P (Brake attached type)

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

Specification : MS3102A20-29P

Pin No.	Phase	Pin No.	Phase
A	A	M	V
B	$\bar{A}$	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	Reduction Ratio	External Dimension																	Weight (kg)
		D1	D2	D3	D4	D5	D6	D7(PCD)	D8	D9(PCD)	L1	L2	L3	L4	L5	L6	LM	LC	
SF30A SF22D SF20G SF12M	*9,5/11,5/14,2 17,5/20/23,8/35	80	150	189	190	222	16-Φ9	206	9-M14×20	115	10	28	48	33	391,3 (443,3)	14	182,8 (234,8)	132,8	40,4 (47,2)
	**29/36/39/40,2 45/48,5/54,2/57 65/71/77/79,4/81	80	150	189	190	222	16-Φ9	206	9-M14×20	115	10	28	48	33	391,3 (443,3)	14	182,8 (234,8)	132,8	40,4 (47,2)
SF50A SF35D	*9,5/11,5/14,2 17,5/20/23,8	80	150	189	190	222	16-Φ9	206	9-M14×20	115	10	28	48	33	424,3 (476,3)	14	215,8 (267,8)	165,8	45,7 (52,9)
SF30G SF20M	**29/36/39 40,2/45/48,5	80	150	189	190	222	16-Φ9	206	9-M14×20	115	10	28	48	33	424,3 (476,3)	14	215,8 (267,8)	165,8	45,7 (52,9)
SF55D SF44G	*9,5/11,5/14,2 17,5	80	150	189	190	222	16-Φ9	206	9-M14×20	115	10	28	48	33	474,3 (526,3)	14	265,8 (317,8)	215,8	54,3 (61,4)
SF30M	**31,8/42,8/47	80	170	219	220	256	16-Φ11	238	9-M16×24	136	9	39	59	37	485,3 (537,3)	16	265,8 (317,8)	215,8	62,3 (69,4)
SF75D SF60G	*10,6/12/17	80	170	219	220	256	16-Φ11	238	9-M16×24	136	9	39	59	37	545,3 (597,3)	16	325,8 (377,8)	275,8	71,6 (78,8)
SF44M	**36,34/39/48,5 57/71/85	10	240	219	284	325	16-Φ13	304	9-M16×25	195	8	50	80	91	645,8 (697,8)	16 5	325,8 (377,8)	275,8	118,6 (125,8)
SF75G	*10,6/12/17	80	170	219	220	256	16-Φ11	238	9-M16×24	136	9	39	59	37	545,3 (597,3)	16	345,8 (397,8)	295,8	71,6 (81,1)
	**36,34/39/48,5 57/71/85	10 5	240	283	284	325	16-Φ13	304	9-M16×25	195	8	50	80	91	685,8 (717,8)	16 5	345,8 (397,8)	295,8	118,6 (128,1)

Note 1) Use DC 24V and DC 90V for Brake power supply depending on brake specification
2) Back lash: * indicates less than 1°(arc min)
3) If you need other reduction ratio or external dimension, please contact us
4) Normal type (less than 20°) can be supplied
5) The dimension in ( ) is for brake attached type
6) Eye bolt is applied for SF55D, SF44G, SF30M and over size

Standard Servo Drive

APD-VS Serise

- High - efficiency power transformation technologies realized by developing dedicated ASIC featuring latest control theory
- Additional services provided through various kinds of communication options
- Loader(6 Digits) is basically mounted for the convenience of use.
- Various menu function that is applied instantly after changing

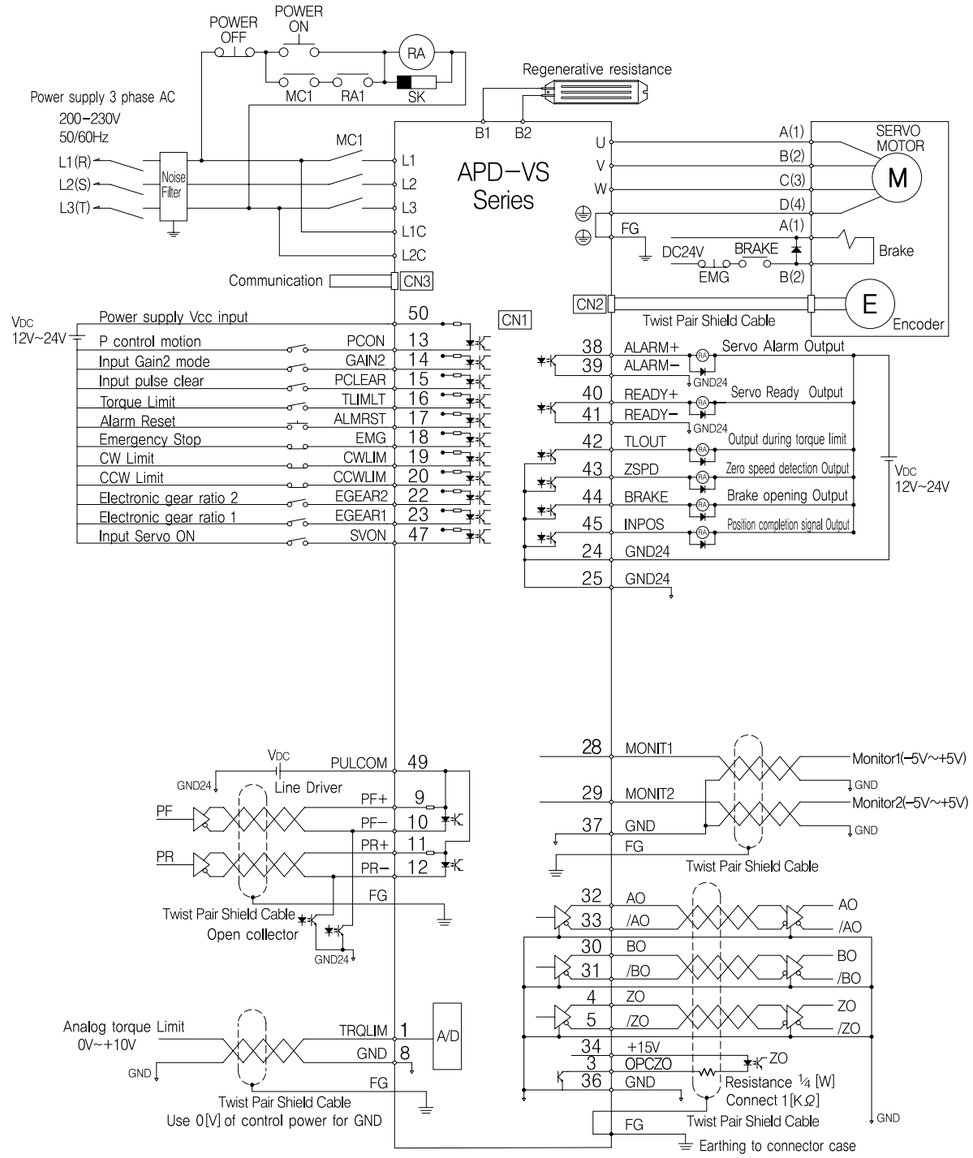
Feature of Standard Servo Drive

Model (APD-VS)		R5	01	02	04	05	10	15	20	35	50	75	110	150
Input Power supply (★Note)		3phase AC200~230[V] +10%-15%, 50/60[Hz]												
Applicable Motor	Voltage Type	3phase 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
	MAx. Current[A]	3.6	4.95	4.95	9.6	12.9	19.2	33	48	63	96	102	125	190
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)												
	Speed command	DC-10~+10 (-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]												
	Pulse	A+B Phase, Forwarder+Reverse Pulse, Direction + Pulse(Line driver, Open collector)												
	Electronic gear ratio	Digital 4 speed (1/50~50)												
Torque Control mode		Torque Command : DC -10~ +10V(- Voltage : Reverse), Linearity is less than 4%												
Braking Type		Generative 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)

Connection Diagrams for APD-VS Series

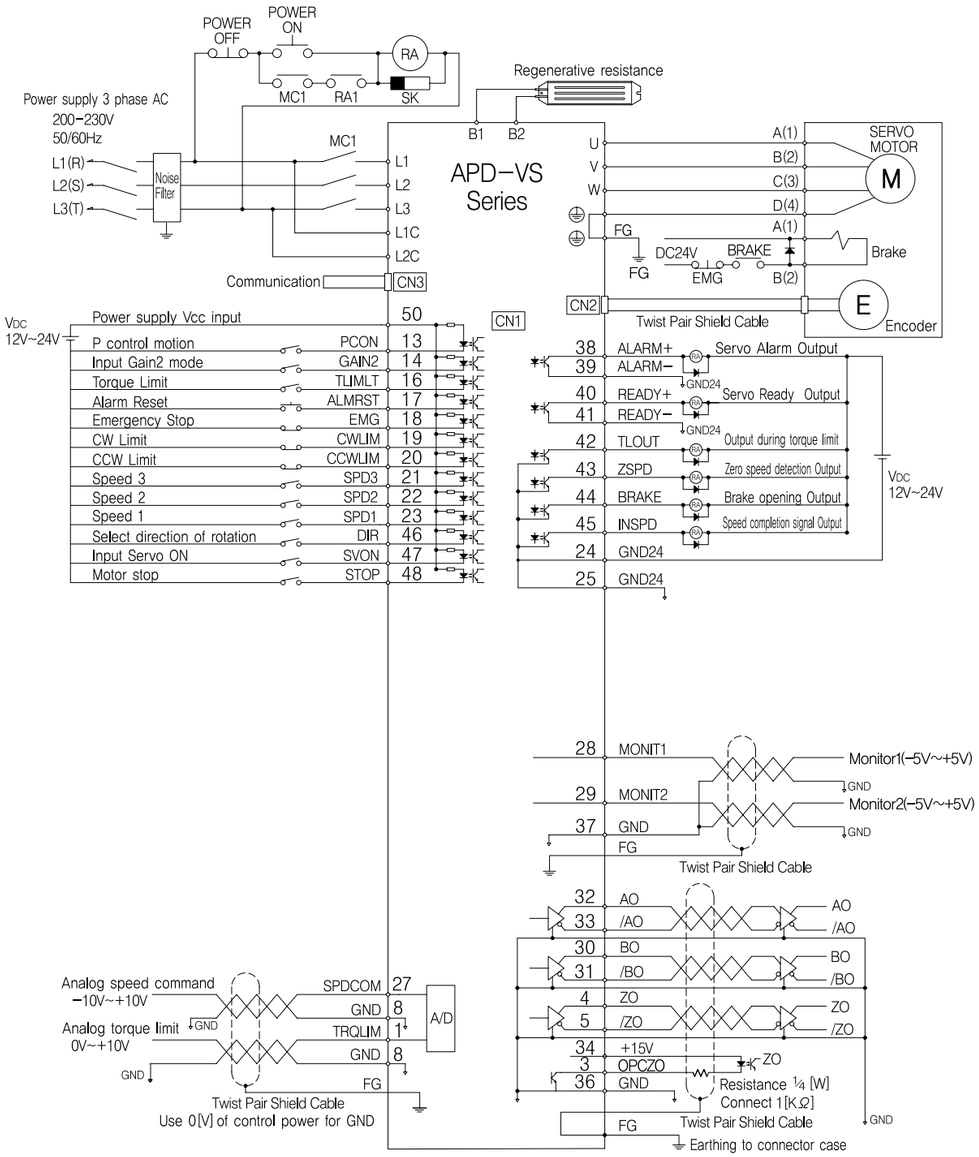
APD-VS Serise : Position Operating Mode



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 can 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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Connection Diagrams for APD-VS Series

APD-VS Serise : Speed operating mode



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.
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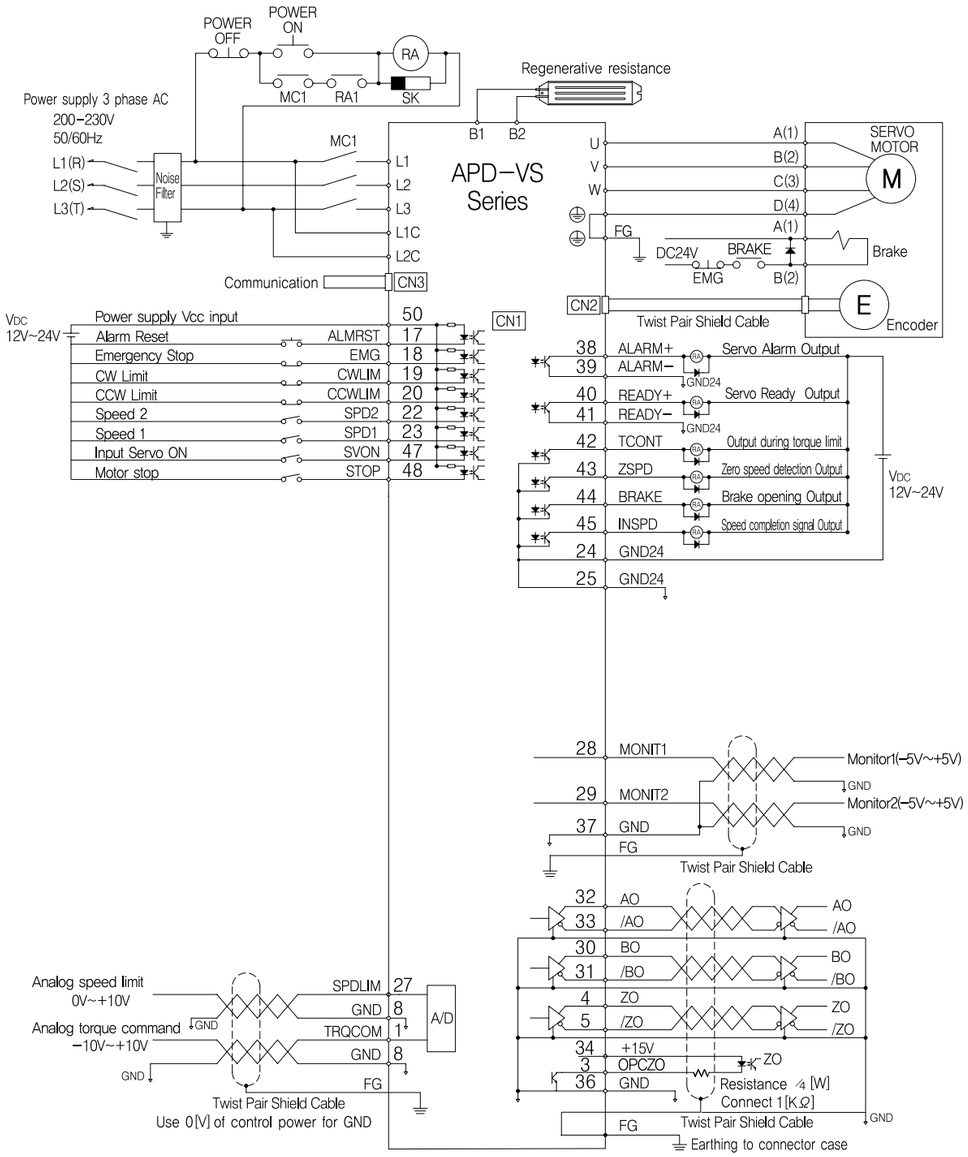
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Connection Diagrams for APD-VS Series

APD-VS Serise : Torque operating mode



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)
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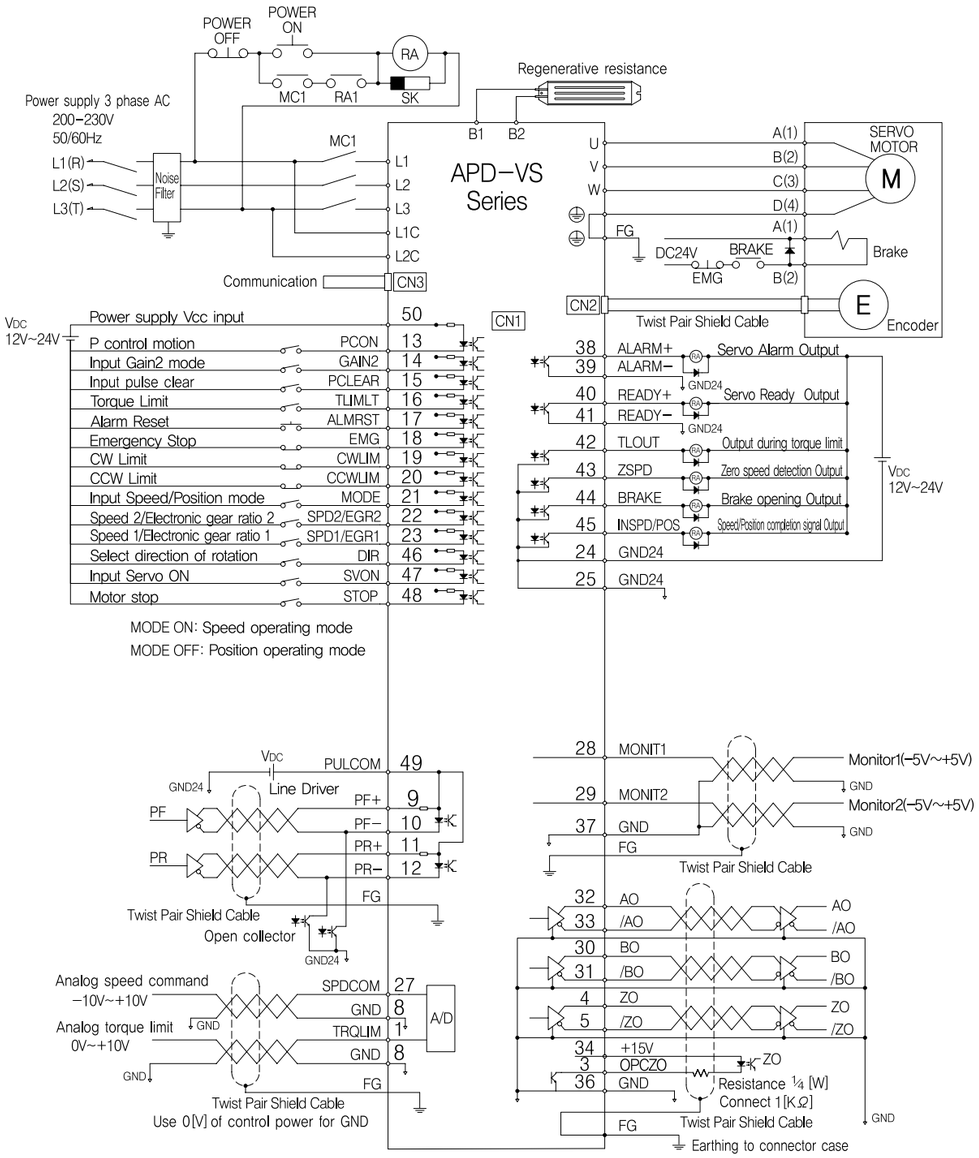
4) Emergency Stop, CWLIM, and CCWLIM terminals are in Contacts B for safety
5) To prevent Electric shock and Noise, FG terminal of servo drive must be connected to FG terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Connection Diagrams for APD-VS Series

APD-VS Serise : Speed/Position operating mode



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)
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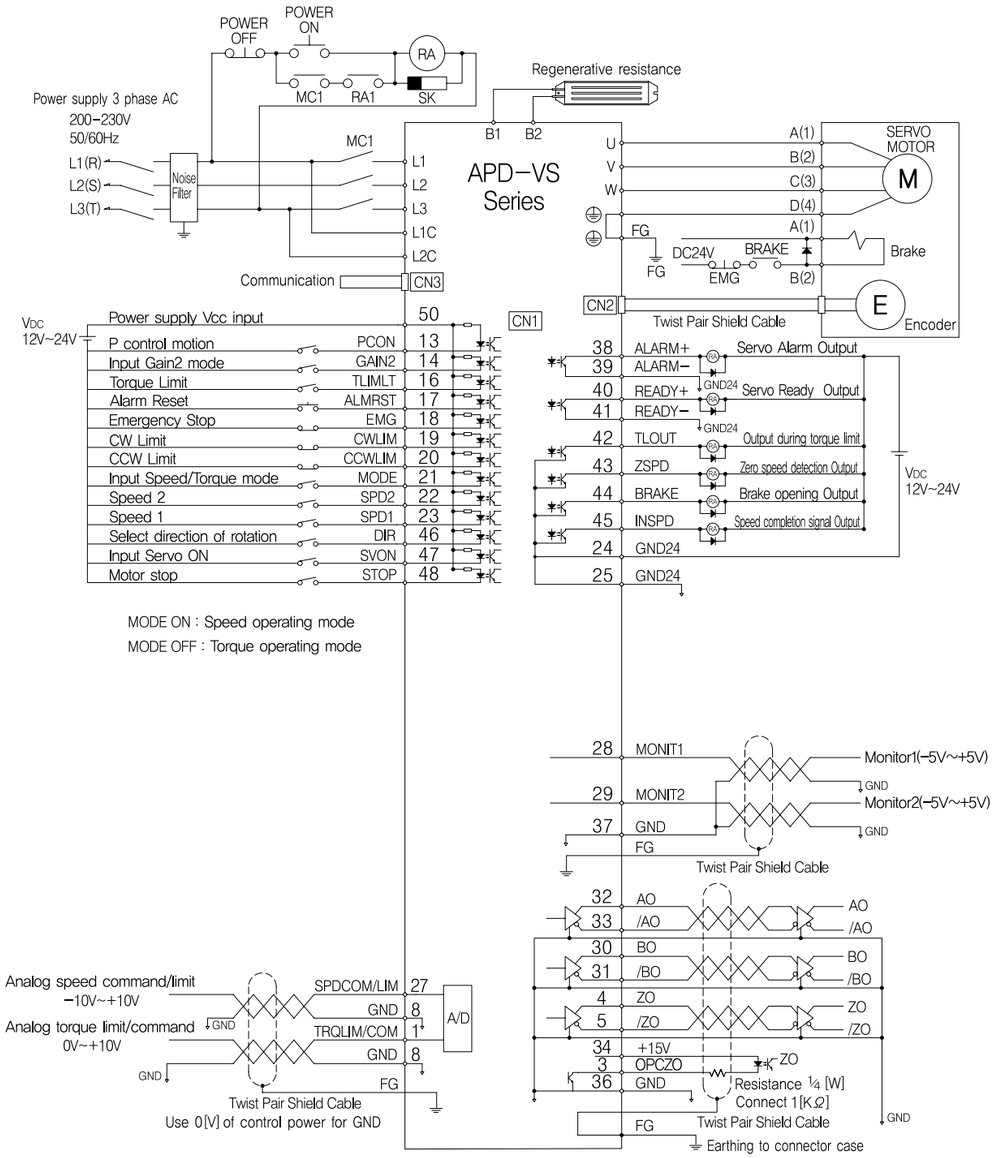
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Connection Diagrams for APD-VS Series

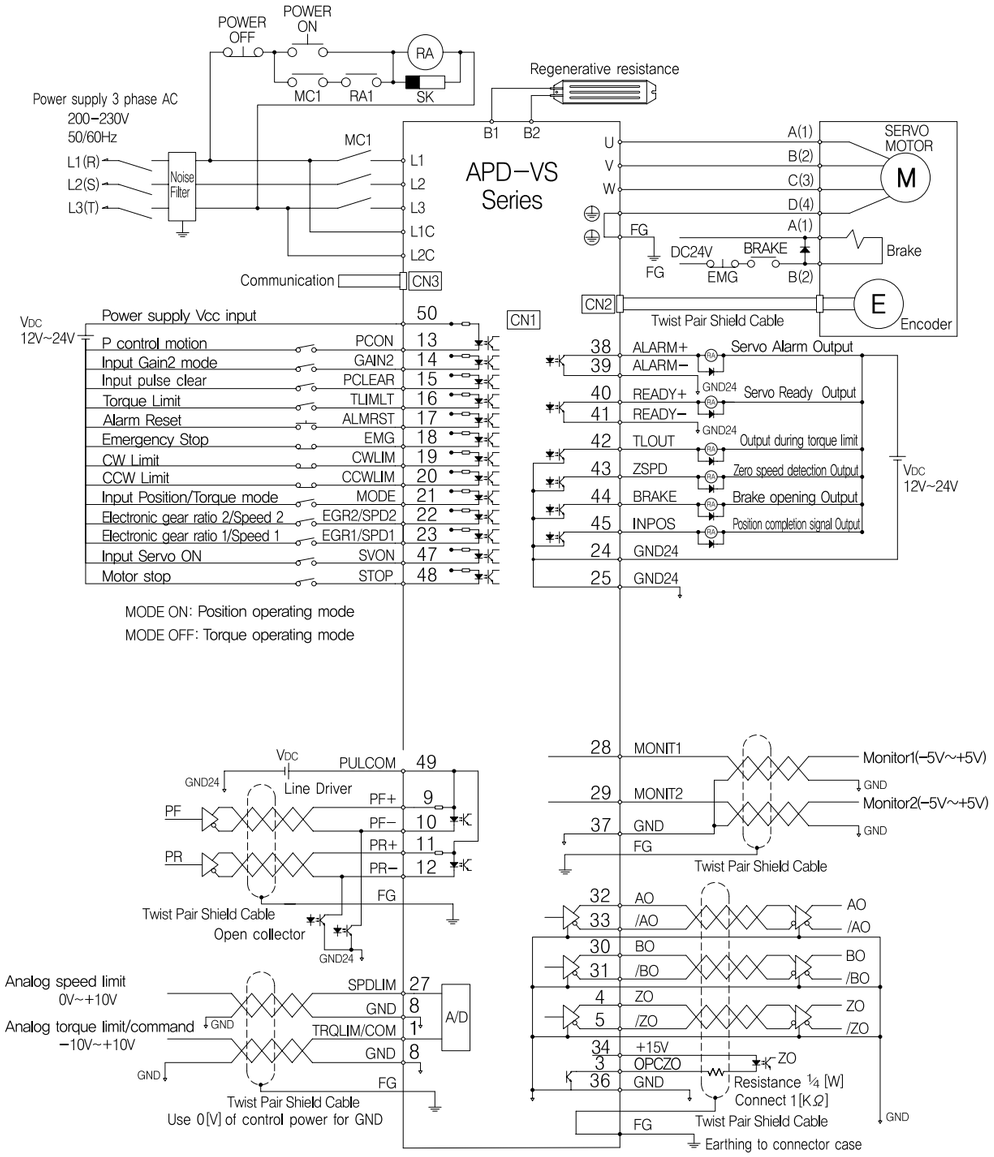
APD-VS Serise : Speed/Torque operating mode



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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Connection Diagrams for APD-VS Series

APD-VS Serise : Position/Torque operating mode



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 can 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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VS operating manual for detailed information.

Controller Embedded Type Servo Drive

APD-VP Serise

- Linear Coordinates Position Type(VP-1) : Linear motion machine, X-Y table
- Rotary Coordinates Position(VP-2) : Index, Turret
- Position Operation type after feeder and sensor(VP-3) : Packing machine, all sorts of feeder, conveyor, I-mark
- Push-Pull position operation type(VP-4) : Pressure control, Tensile control
- Program operation type(VP-5) : 800 step operation.
- Other customized soft: Program operation, all shorts of private machine
- Tension control Operation type : Winder

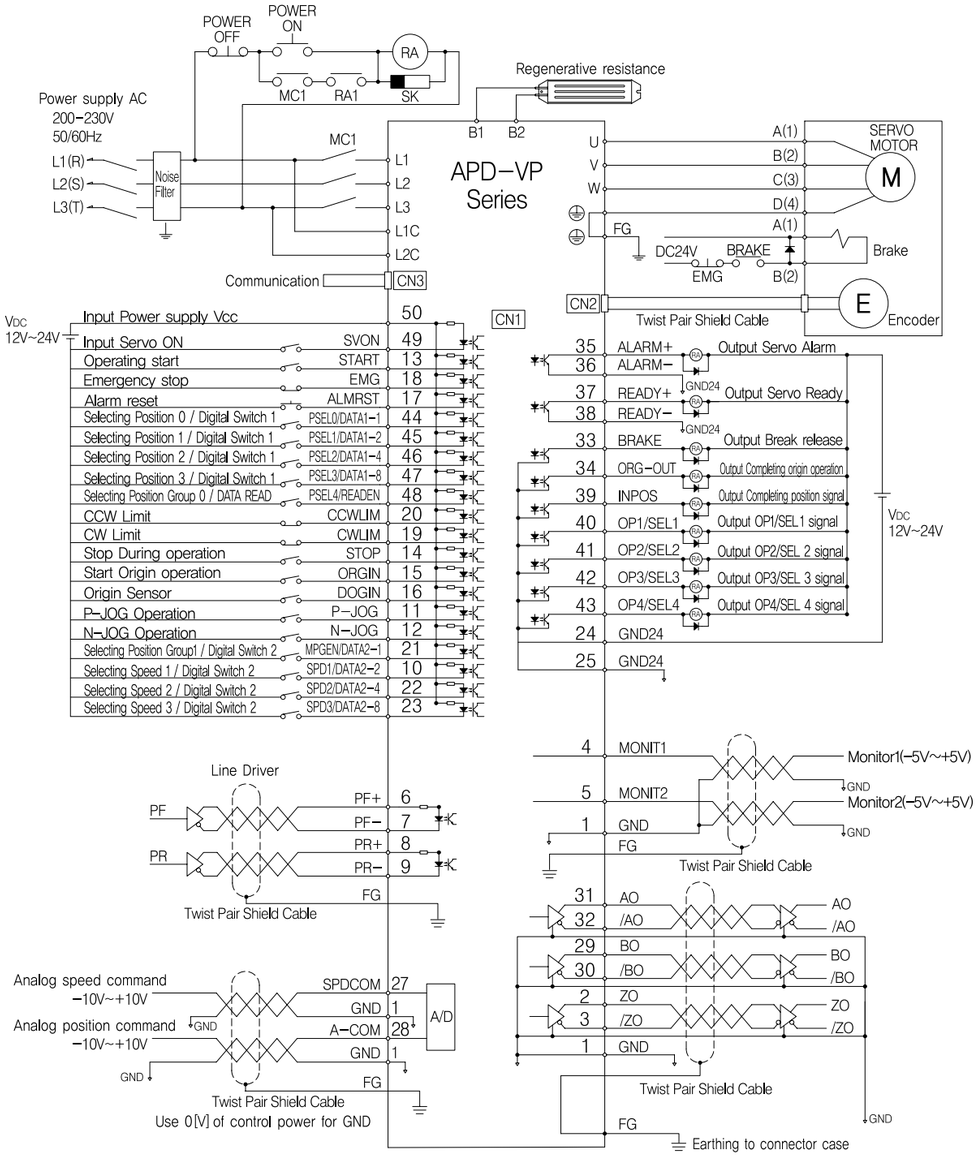
Feature of Standard Servo Drive

Model (APD-VS)		R5	01	02	04	05	10	15	20	35	50	75	110	150
Input Power supply (★ Note)		3phase AC200~230[V]+10%-15%, 50/60[Hz]												
Applicable Motor	Voltage Type	3phase 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
	MAx. Current[A]	3.6	4.95	4.95	9.6	12.9	19.2	33	48	63	96	102	125	190
Detector Type		Standard : Incremental 5V Line Drive 2000~10000P /rev Option : Absolute 11/13bit												
Setting Up Position Coordinates		Set up Max. 64 Points by input contacts, set up 6-digits of position, 2-digits of speed by digital switch												
External Input / Output	Input/Output Contacts	Input : 20 Point, Output : 9 Point												
	Position Pulse Input	Maximum input frequency : 500[kpps] Input system : A+B Phase, Forward+Reverse Pulse, Direction+Pulse(Line Driver, Open Collector)												
	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.												
Braking Type		Power generated Braking, Regenerated Braking												
Ambient Environment		Operating Temp. : 0~50[℃], Storage Temp. : -20~+80[℃], Humidity : Less than 90℃(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)

Connection Diagrams for Controller Embedded Type Servo Drive

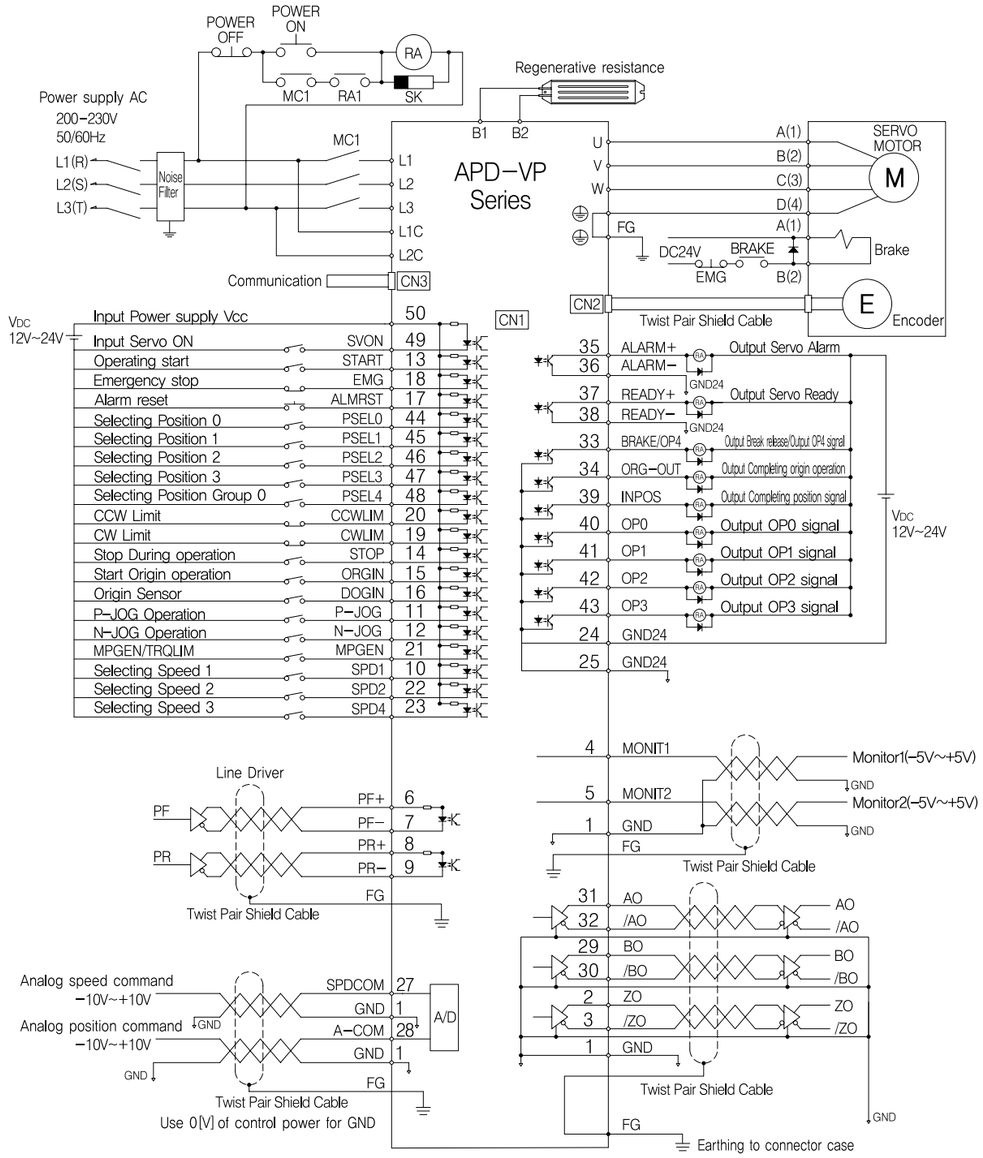
APD-VP Serise : Linear Coordinates Position Operation Type (VP-1)



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 can 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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VP operating manual for detailed information

Connection Diagrams for Controller Embedded Type Servo Drive

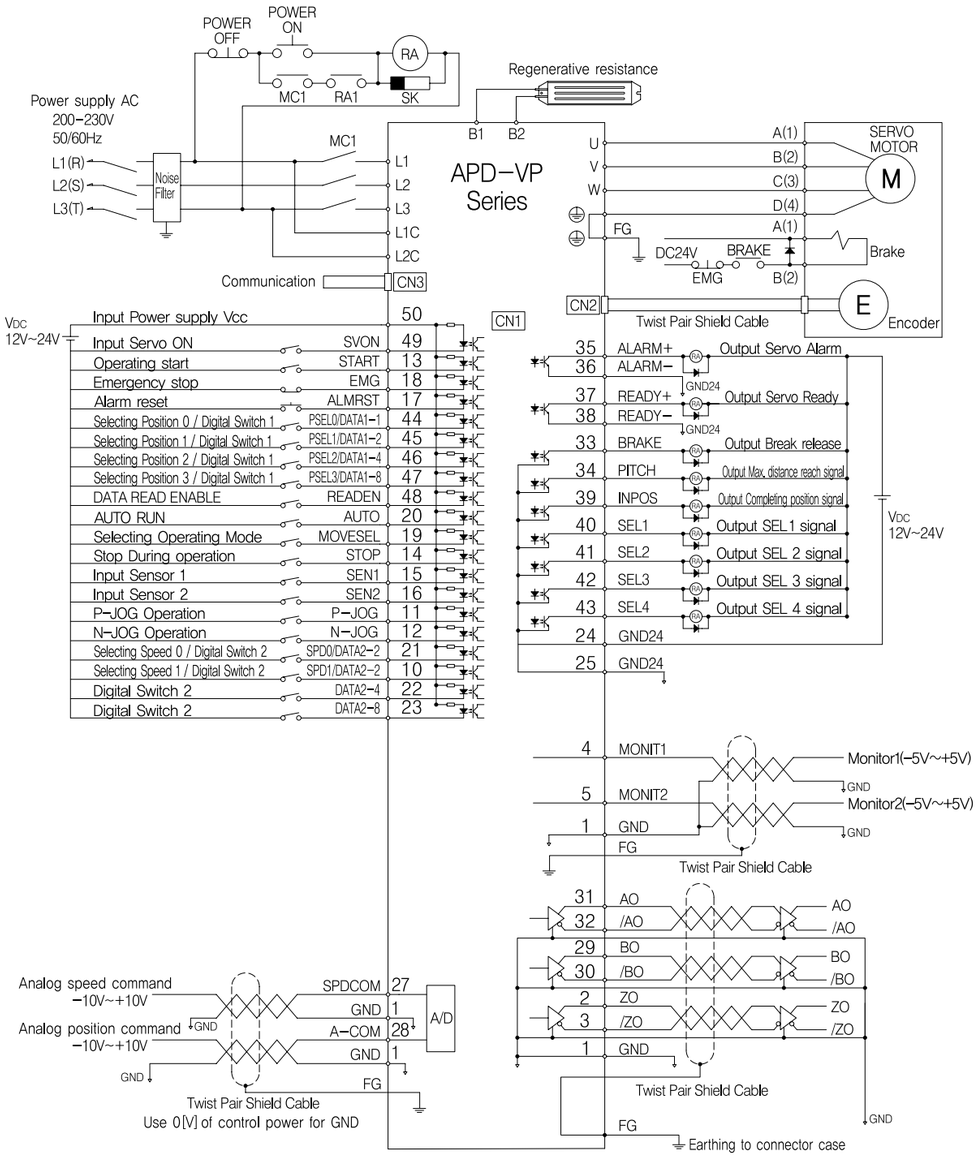
APD-VP Serise : Rotary Coordinates Position Operation Type (VP-2)



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 can 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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VP operating manual for detailed information

Connection Diagrams for Controller Embedded Type Servo Drive

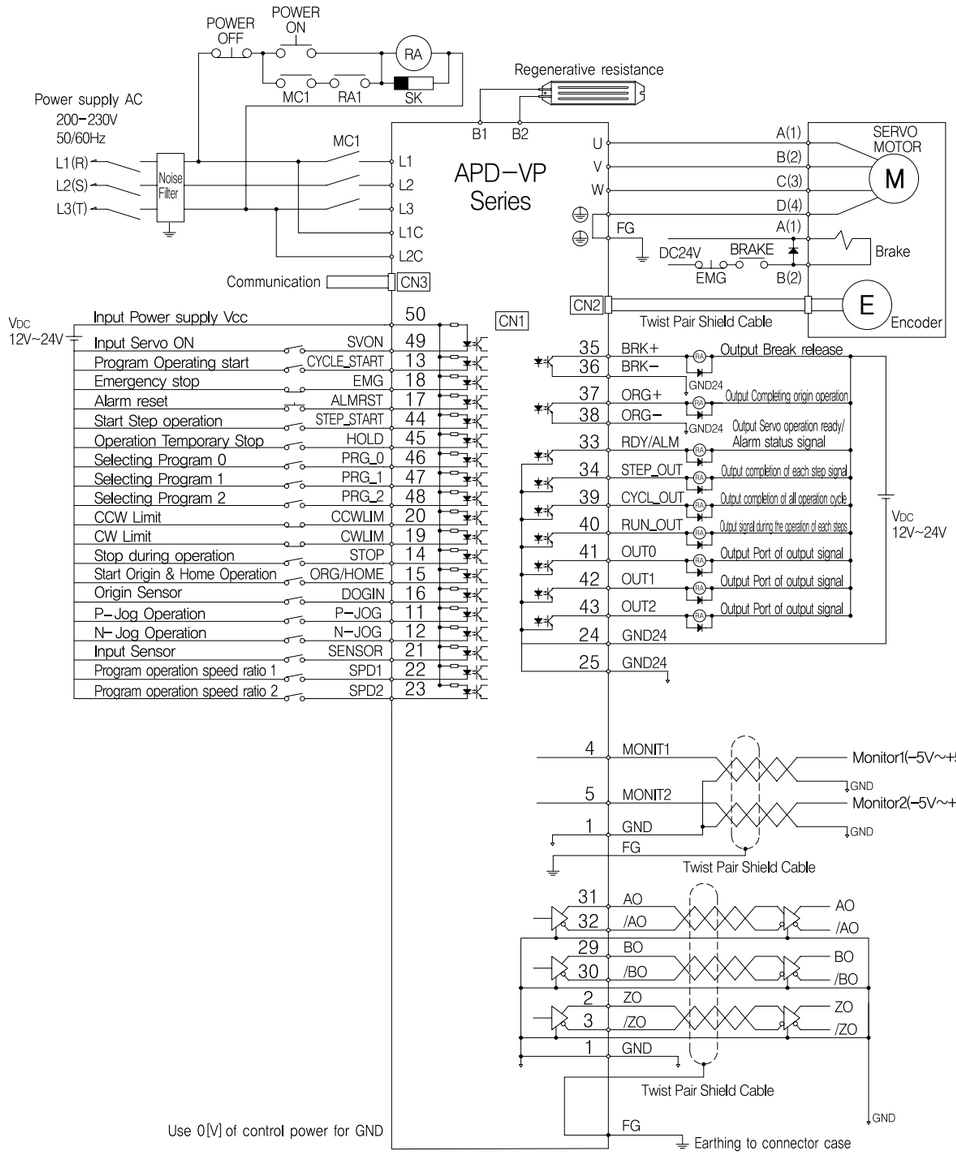
APD-VP Serise : Position Operation Type After Feeder and Sensor (VP-3)



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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VP operating manual for detailed information

Connection Diagrams for Controller Embedded Type Servo Drive

APD-VP Serise : Program Operation Type (VP-5)



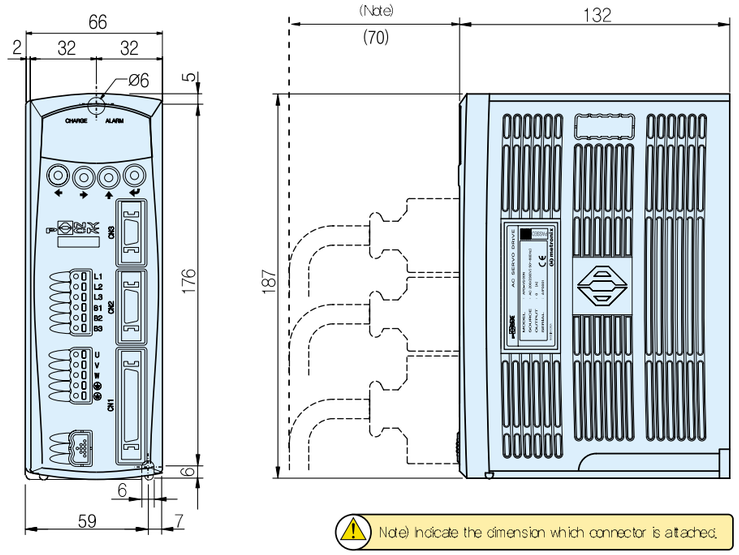
Note 1) 400W and lower size of Drive don't have control power terminals(L1C, L2C)
2) When Single-phase power supply(AC200-230V) is use, Connect L1 and L2 terminals but, in this case the output may be lower than the rating.
(the use of single-phase AC 220-230V for 500W and lower drive is acceptable)
3)Take 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 terminal of Control panel
6) Shield cable is connected to plate in the connector
7) Please refer our APD-VP operating manual for detailed information

Servo Drive Dimension

200W and Below

APD | VS/VPR5N, VS/VP01N, VS/VP02N

Weight : 1.2[kg]

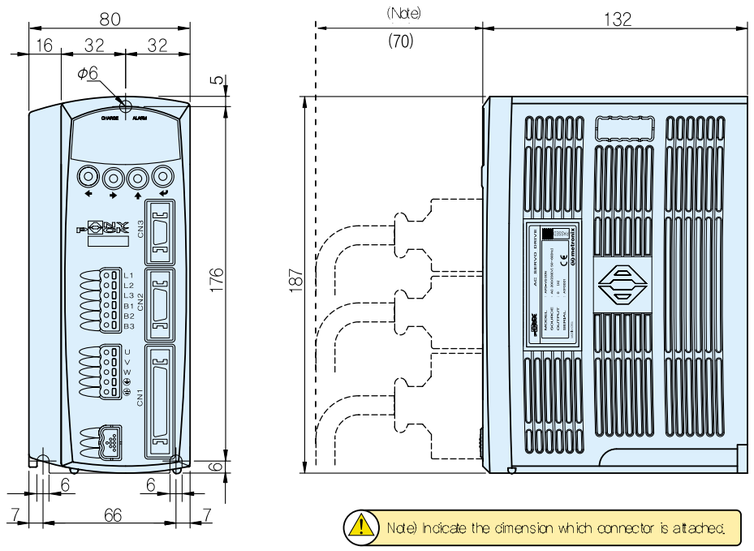


Note) Indicate the dimension which connector is attached.

400W and Below

APD | VS/VP04N

Weight : 1.5[kg]

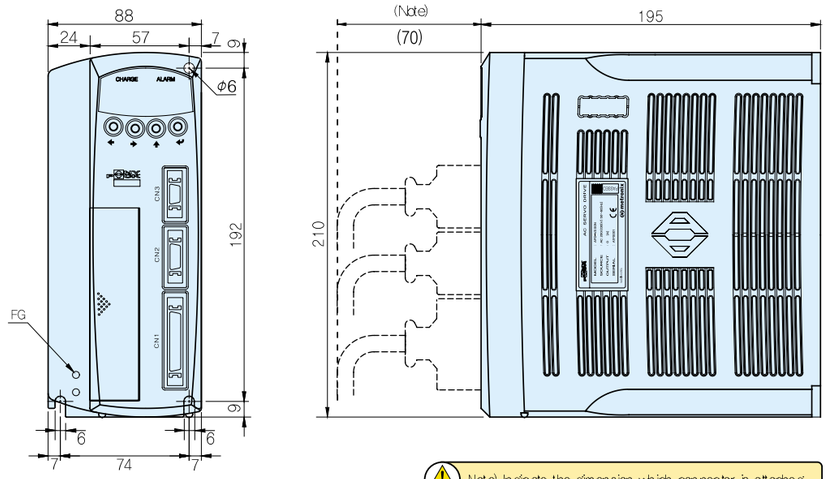


Note) Indicate the dimension which connector is attached.

500W ~ 1KW

APD | VS/VP05N, VS/VP10N

Weight : 2.5[kg]



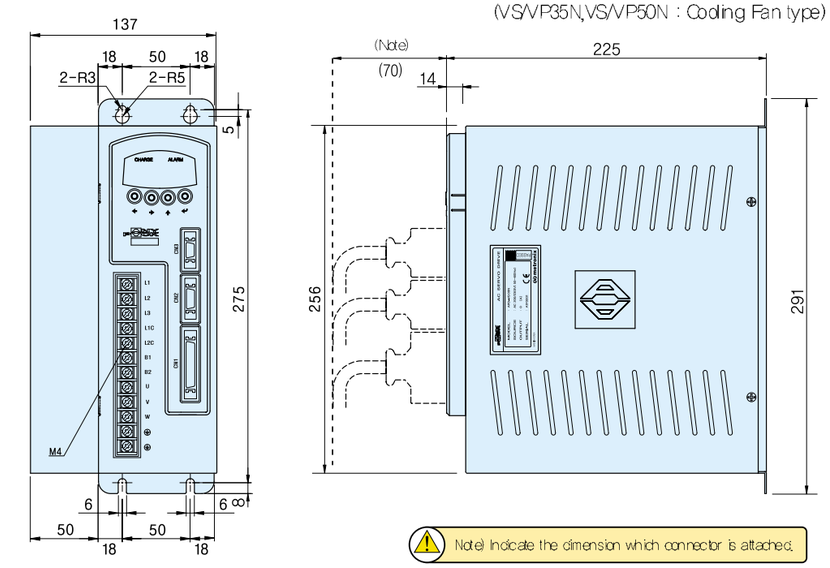
Note) Indicate the dimension which connector is attached.

1.5kW~5kW

APD | VS/VP15N, VS/VP20N, VS/VP35N, VS/VP50N

Weight : 7.2[kg]

(VS/VP35N,VS/VP50N : Cooling Fan type)



Note) Indicate the dimension which connector is attached.

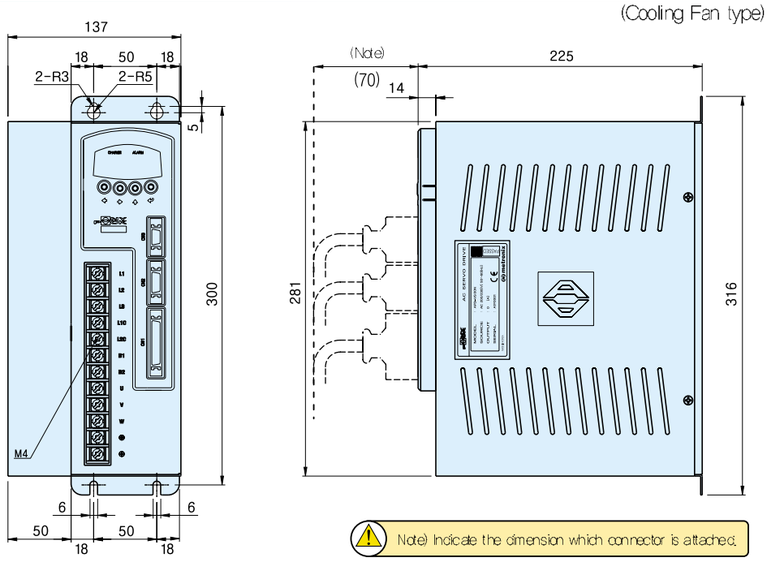
Servo Drive Dimension

7.5kW

APD | VS/VP75N

Weight : 8[kg]

(Cooling Fan type)



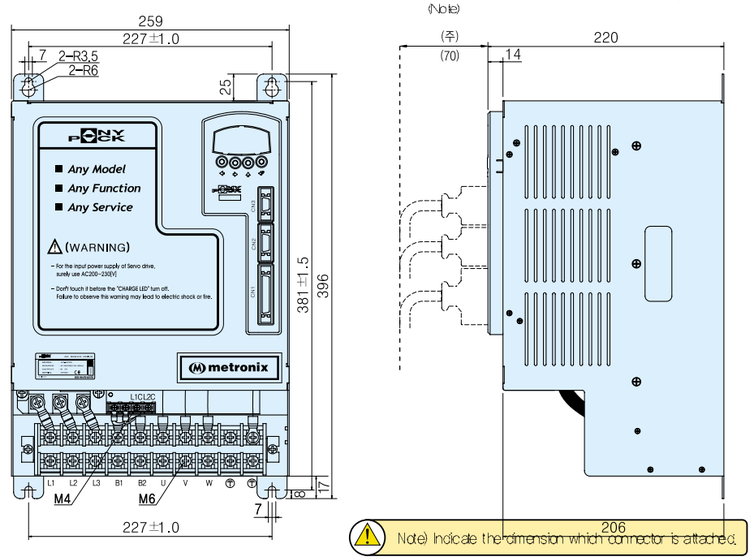
Note) Indicate the dimension which connector is attached.

11kW

APD | VS/VP110N

Weight : 12[kg]

(Cooling Fan type)



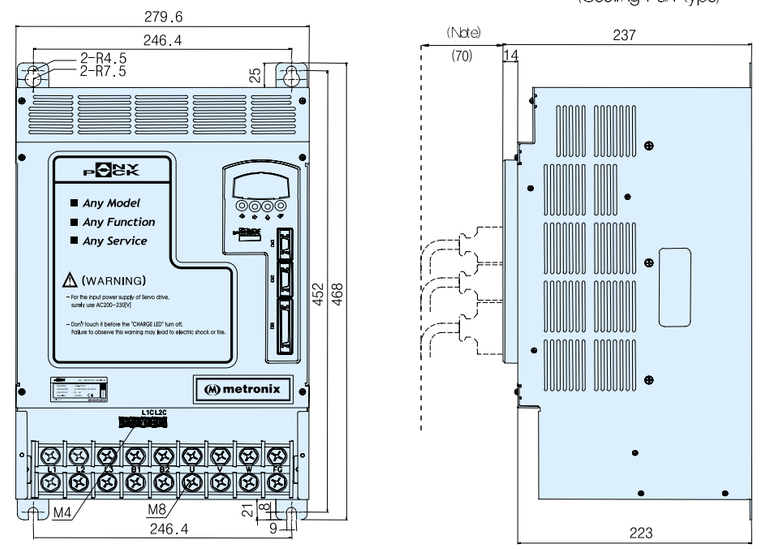
Note) Indicate the dimension which connector is attached.

15kW

APD | VS/VP150N

Weight : 15[kg]

(Cooling Fan type)

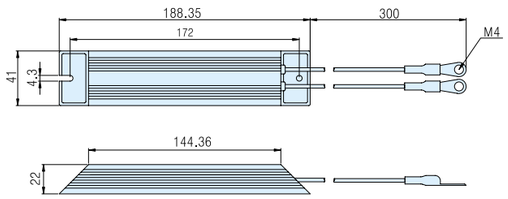


Note) Indicate the dimension which connector is attached.

Standard Braking Resistance

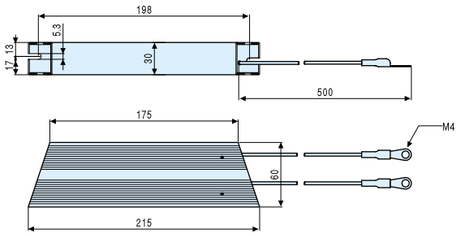
Model : APC-140R40

Maker : RARA Electronic(IRH 140W 40ohm)



Model : APC-300R23

Maker : RARA Electronic(RV 300W 23ohm)



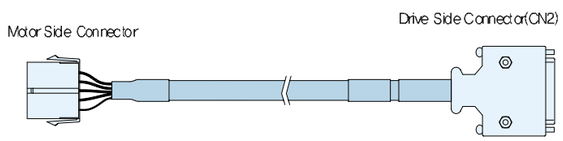
Note) Standard Braking Resistance for each drive capacity is provided as below table

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

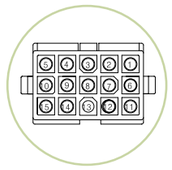
Options(Cable)

Incremental Encoder Cable

Model (★Note1) : APC - E□□□AS
Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-SC Series, APM-HB Series

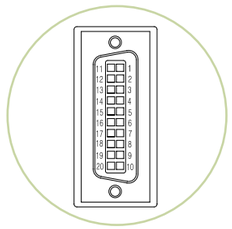


1. Motor Side Connector
   CAP (15 Position) : 172163-1(Made by AMP)
   SOCKET : 170361-1(Made by AMP)
2. Drive Side Connector(CN2)
   CASE : 10320-52A0-008(Made by 3M)
   CONNECTOR : 10120-3000VE(Made by 3M)
3. Cable
   7Px0.2SQ(AWG24)



AMP 172163-1 CAP
(15 Circuits)

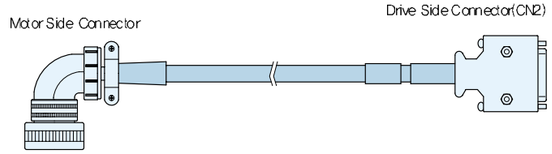
PIN NO.	Encoder signal	PIN NO.	Encoder signal
1	A	9	V
2	$\overline{A}$	10	$\overline{V}$
3	B	11	W
4	$\overline{B}$	12	$\overline{W}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	U	15	SHIELD
8	$\overline{U}$		



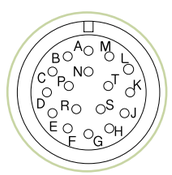
3M 10320-52A0-008

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

Model (★Note1) : APC-E□□□BS
Applicable Motor : All models of APM-SE Series, APM-SF Series, APM-SG Series, APM-HE Series

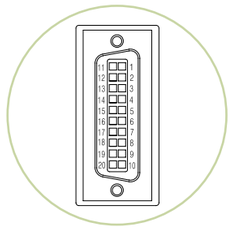


1. Motor Side Connector (MS:Military Standard)
   PLUG : MS3108B(MS3106B) 20-29S
2. Drive Side Connector(CN2)
   CASE : 10320-52A0-008(Made by 3M)
   CONNECTOR : 10120-3000VE(Made by 3M)
3. Cable
   7Px0.2SQ(AWG24)



MS3108B20-29S
(15Circuits)

PIN NO.	Encoder signal	PIN NO.	Encoder signal
A	A	M	V
B	$\overline{A}$	N	$\overline{V}$
C	B	P	W
D	$\overline{B}$	R	$\overline{W}$
E	Z	H	+5V
F	$\overline{Z}$	G	0V
K	U	J	SHIELD
L	$\overline{U}$		



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

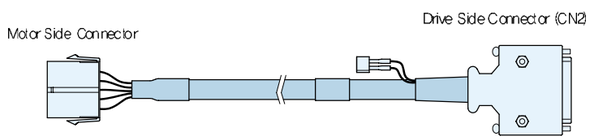
PIN NO.	Encoder signal	PIN NO.	Encoder signal
1	W	11	$\overline{Z}$
2	$\overline{W}$	12	SHIELD
3	V	13	$\overline{B}$
4	$\overline{V}$	14	Z
5	U	15	$\overline{A}$
6	$\overline{U}$	16	B
7	–	17	–
8	–	18	A
9	0V	19	+5V
10	–	20	–

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

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

Absolute Encoder Cable

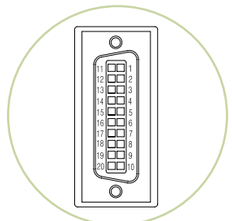
Model (★Note1) : APC-E□□□AA
Applicable Motor : All models of APM-SB Series, APM-SC Series



1. Motor Side Connector
   CAP (15 Position) : 172163-1(Made by AMP)
   SOCKET : 170361-1(Made by AMP)
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)

AMP 172163-1 CAP
(15Circuits)

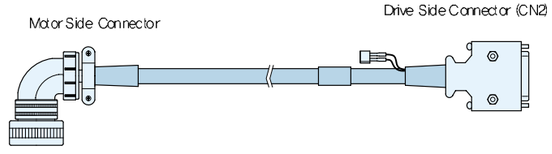
Pin No.	Encoder Phase	Pin No.	Encoder Phase
1	A	9	BATTERY
2	$\overline{A}$	10	BATTERY 0V
3	B	11	RX
4	$\overline{B}$	12	$\overline{RX}$
5	Z	13	+5V
6	$\overline{Z}$	14	0V
7	CLR	15	SHIELD
8	FG		



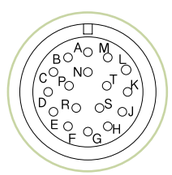
3M 10320-52A0-008
(15 Circuits)

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

Model (★Note1) : APC-E□□□BA
Applicable Motor : All models of APM-SE Series, APM-SF Series, APM-SG Series

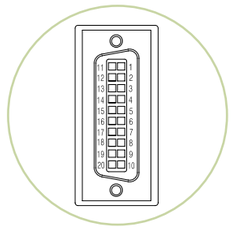


1. Motor Side Connector (MS : Military Standard)
   PLUG : MS3108B(3106B) 20-29S
2. Drive Side Connector(CN2)
   CASE : 10320-52A0-008(Made by 3M)
   CONNECTOR : 10120-3000VE(Made by 3M)
3. Cable
   7Px0.2SQ(AWG24)
4. BATTERY CONNECTOR
   5267-02A(Made by MOLEX)



MS3108B20-29S
(15Circuits)

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

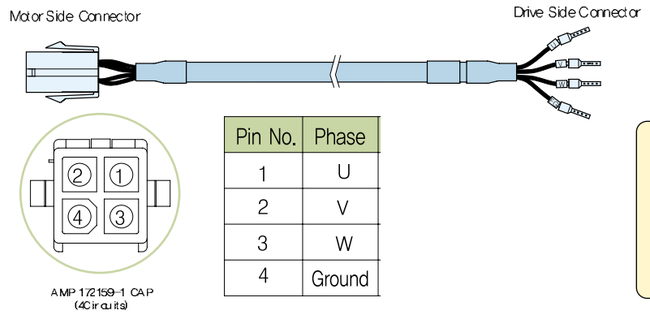
Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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

Options(Cable)

Power cable

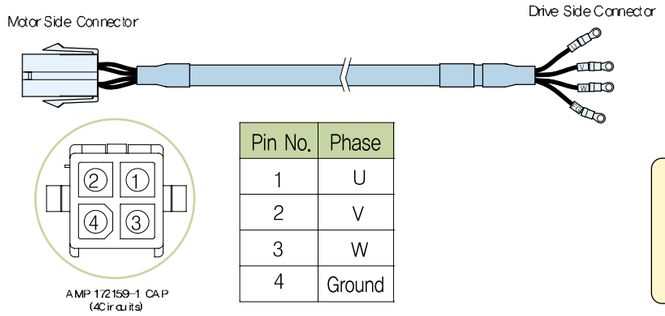
Model (★Note1) : APC - E□□□CS
Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-HB Series / APM-SC04A, SC06A, SC03D, SC05D



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

1. Motor Side Connector
   CAP (4 Position) : 172159-1(Made by AMP)
   SOCKET : 170362-1(Made by AMP)
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(AWG20)

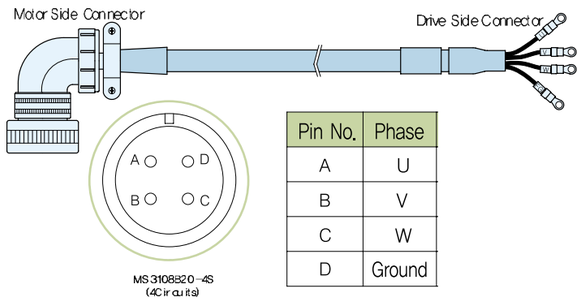
Model (★Note1) : APC - P□□□□DS
Applicable Motor : APM-SC08A, SC10A, SC06D, SC07D



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

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

Model (★Note1) : APC - P□□□□ES
Applicable Motor : All models of APM-SE Series, APM-HE Series



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

1. Motor Side Connector(MS:Military Standard)
   PLUG : MS3108B(MS3106B)20-4S
2. Drive Side Connector (U,V,W,FG)
   Connection terminals : 2.5x4(KET GP110721)
3. Cable
   4Cx2.0SQ(AWG14)

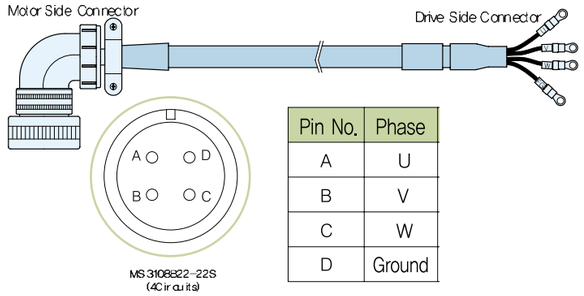
Note) For drive side connector of APM-SE03M Series cable, UA-F1512 pin is to be applied

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

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

Power cable

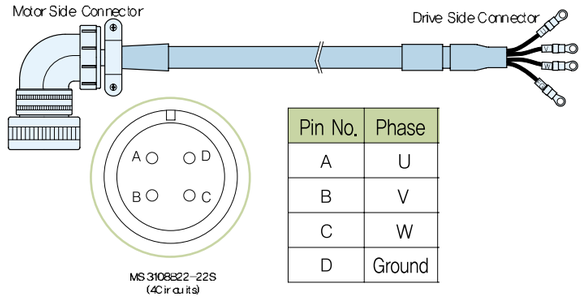
Model (★Note1) : APC-P□□□FS
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M
SG22D, SG35D, SG20G, SG30G, SG12M, SG20M, SG30M



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

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

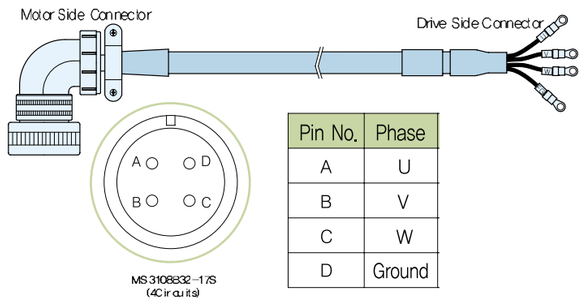
Model (★Note1) : APC-P□□□GS
Applicable Motor : APM-SF50A, SF55D, SF75D, SF44G, SF60G, SF75G, SF44M
SG55D, SG75D, SG44G, SG60G, SG44M



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

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

Model (★Note1) : APC-P□□□RS
Applicable Motor : APM-SG110D, SG85G, SG110G, SG150G, SG60M



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

1. Motor Side Connector(MS:Military Standard)
   PLUG : MS3108B(MS3106B)32-17S
2. Drive Side Connector(U,V,W,FG)
   Connection terminals : 14.0x8(KET GP140841)
3. Cable
   4Cx14.0SQ(AWG8)

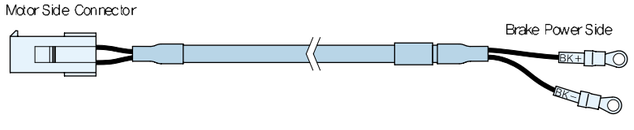
Note1) □□□ of model indicates the kind and length of cable, and notation is as below

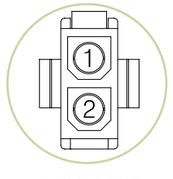
Standard Cable Length (m)	3	5	10	20
Robotic Cable	F03	F05	F10	F20
General Cable	N03	N05	N10	N20

Options(Cable)

Brake cable

Model (★Note1) : APC-P□□□KB
Applicable Motor : All models of APM-SA Series, APM-SB Series, APM-SC Series



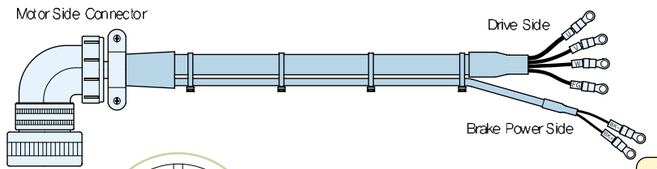


AMP 172157-1 CAP
(2Circuits)

Pin No.	Phase
1	BK+
2	BK-

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

Model (★Note1) : APC-P□□□MB
Applicable Motor : All models of APM-SE Series



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 : MS3108B(MS3106B)20-15S
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)

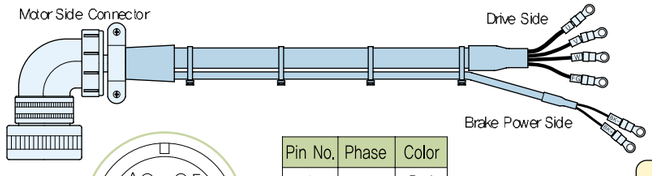
Note) For drive side connector of APM-SE03M Series cable, UA-F1512 pin is to be applied

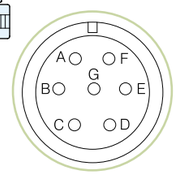
Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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

Brake cable

Model (★Note1) : APC-P□□□NB
Applicable Motor : APM-SF30A, SF22D, SF35D, SF20G, SF30G, SF12M, SF20M, SF30M



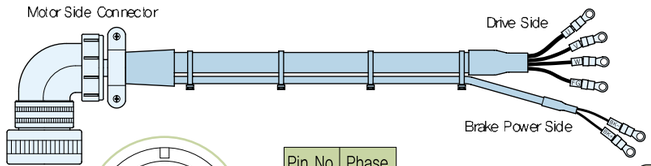


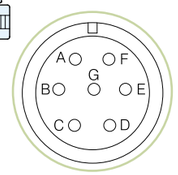
MS3108B20-10S
(6Circuits)

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

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



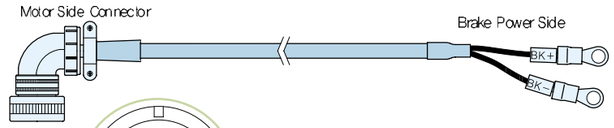


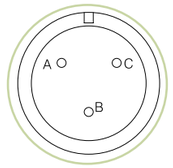
MS3108B20-10S
(6Circuits)

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

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

Model (★Note1) : APC-P□□□SB
Applicable Motor : All models of APM-SG Series





MS3108B14S-7S
(2Circuits)

Pin No.	Phase
A	BK+
B	BK-

1. Motor Side Connector
   PLUG : MS3108B(MS3106B)14S-7S
2. Brake Power Side (+, -)
   Connection terminals : 1.25×3(KET GP110012)
3. Cable
   2C×0.75SQ(AWG18)

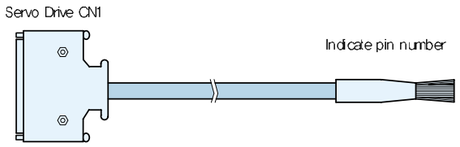
Note1) □□□ of model indicates the kind and length of cable, and notation is as below

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

Options(Cable)

For CN1 Cable

Model (★Note1) : APC-CN1□□A
Applicable Drive : All models of APD-VS/VP Series



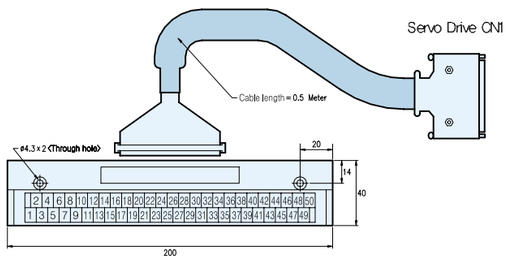
〈Pin number〉

CN1	Color	CN1	Color	CN1	Color	CN1	Color	CN1	Color
1	Orange/Black 1Point	11	Orange/Black 2Point	21	Orange/Black 3Point	31	Orange/Black 4Point	41	Orange/Black 5Point
2	Orange/Red 1Point	12	Orange/Red 2Point	22	Orange/Red 3Point	32	Orange/Red 4Point	42	Orange/Red 5Point
3	Yellow/Black 1Point	13	Yellow/Black 2Point	23	Yellow/Black 3Point	33	Yellow/Black 4Point	43	Yellow/Black 5Point
4	Orange/Red 1Point	14	Orange/Red 2Point	24	Orange/Red 3Point	34	Orange/Red 4Point	44	Orange/Red 5Point
5	White/Black 1Point	15	White/Black 2Point	25	White/Black 3Point	35	White/Black 4Point	45	White/Black 5Point
6	White/Red 1Point	16	White/Red 2Point	26	White/Red 3Point	36	White/Red 4Point	46	White/Red 5Point
7	White/Black 1Point	17	White/Black 2Point	27	White/Black 3Point	37	White/Black 4Point	47	White/Black 5Point
8	Gray/Red 1Point	18	Gray/Red 2Point	28	Gray/Red 3Point	38	Gray/Red 4Point	48	Gray/Red 5Point

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

Terminal Block for CN1

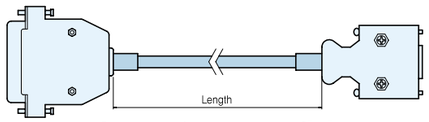
Model (★Note1) : APC-VSCN1T-□□
Applicable Drive : All models of APD-VS/VP Series



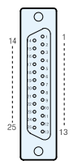
1. For APD-VS/VP
2. Standard cable Length : 0.5m
3. 1m, 2m also available

Servo Drive O/S Download Cable

Model (★Note1) : APC-CN3□□S
Applicable Drive : All models of APD-VS/VP Series



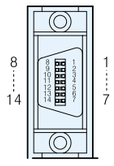
Standard Cable length : 2[m]



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	FSRX
3	CLKRX
4	CLK
8	RESET
9	INT2/3
10	DR0
11	GND
Case	Shield



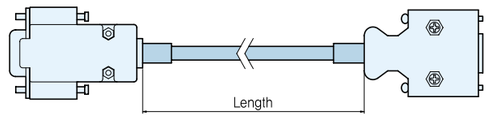
Servo Drive CN3

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

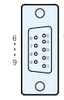
Standard Cable Length (m)	1	2	3	5
Marking	01	02	03	05

RS232 Communication Cable

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



Standard Cable length : 2[m]



PC-Serial Port

Pin No.	Phase
2	RXD
3	TXD
5	GND

Pin No.	Phase
6	TXD
5	RXD
11or12	GND
Case	Shield

Servo Drive CN3

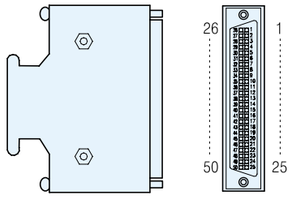
Note1) □□ of model indicates the length of cable, and notation is as below

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

Options (Connector)

CN1 Connector

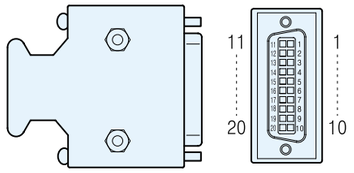
Model : APC-CN1NNA
Applicable Drive : All models of APD-VS/VP Series



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

CN2 Connector

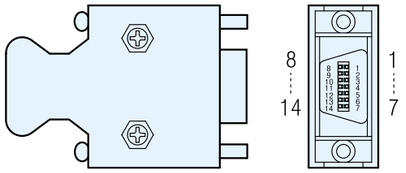
Model : APC-CN2NNA
Applicable Drive : All models of APD-VS/VP Series



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

CN3 Connector

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

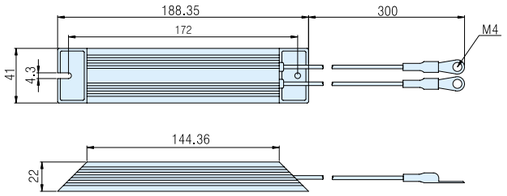


1. Case : 10314-52A0-008(Made by 3M)
2. Connector : 10114-3000VE(Made by 3M)

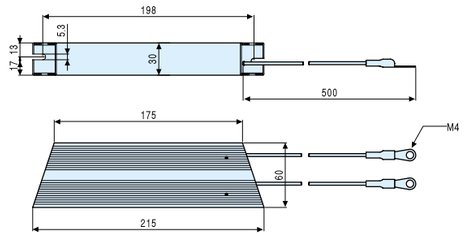
Options (Braking Resistance)

Braking Resistance

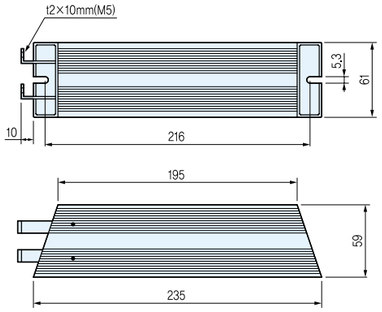
Model (★Note1) : APC-140R40
Applicable Drive : APD-VS/VP02, VS/VP04
Maker : RARA Electronic(IRH 140w 40ohm)



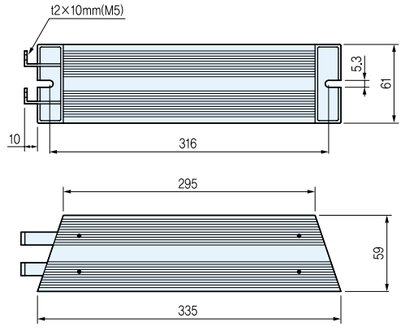
Model (★Note1) : APC-300R23
Applicable Drive : APD-VS/VP05, VS/VP10
Maker : RARA Electronic(IRV 300w 23ohm)



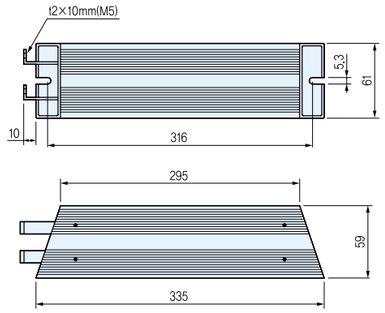
Model (★Note1) : APC-600R30
Applicable Drive : APD-VS/VP15(2P), VS/VP20(2P), VS/VP35(3P), VS/VP50(3P), VS/VP75(3P)
Maker : RARA Electronic(IRV 600w 30ohm)



Model (★Note1) : APC-1000R6R5
Applicable Drive : APD-VS/VP110(1P)
Maker : RARA Electronic(IRH 1000W 6.5ohm)



Model (★Note1) : APC-1000R6R5
Applicable Drive : APD-VS/VP150(2P)
Maker : RARA Electronic(IRV 1000W 6.5ohm)



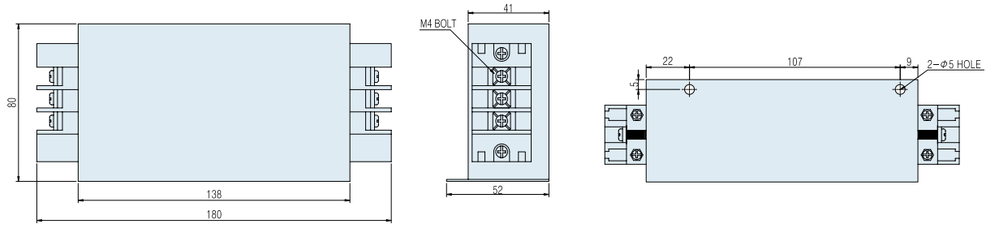
Note)Standard Braking Resistance for each drive capacity is provided as below table

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

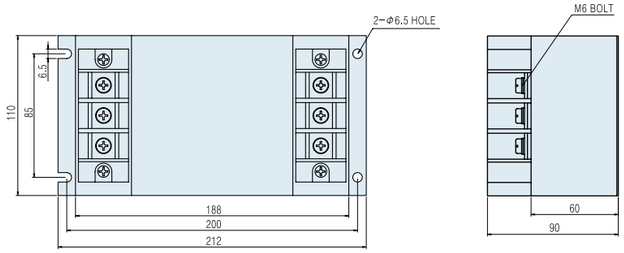
Options (Noise Filter)

Noise Filter

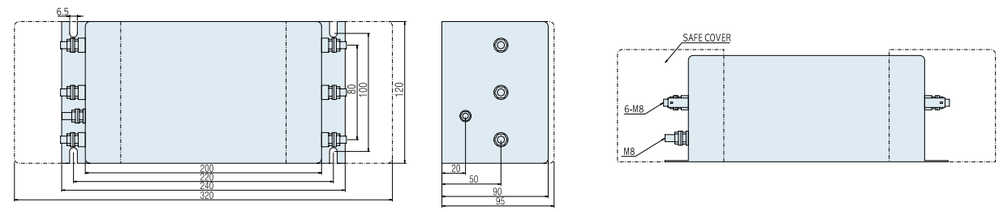
Model : APC-NFZ410/415/420/430
Applicable Drive (★Note1)
Maker: SAMIL Paris(NFZ-410S/415SM/420SM/430SM)



Model : APC-NFZ4040/4050
Applicable Drive (★Note1)
Maker: SAMIL Paris(NFZ-4040SM/4050SM)



Model : APC-NFZ4080
Applicable Drive (★Note1)
Maker: SAMIL Paris(NFZ-4080SM)



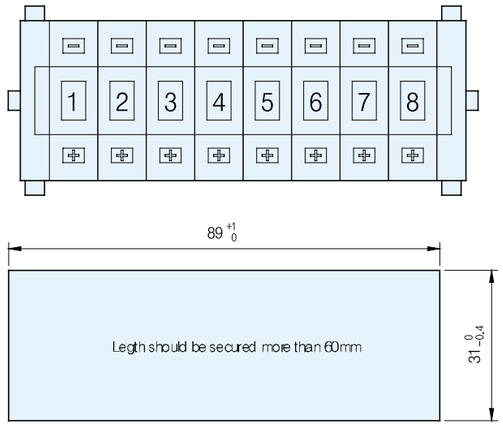
Note)Noise filter Model name for each applicable servo drive is as below table

Applicable Drive APD-VS/VP□□N	R5	01	02	04	05	10	15	20	35	50	75	110	150
Noise Filter APC-NFZ□□□□	410					415		420	430	4040		4050	4080

Options (Setting machine, Indicator)

Digital Switch

Model : APC-VPDS08
Applicable Drive : All models of APD-VP Series

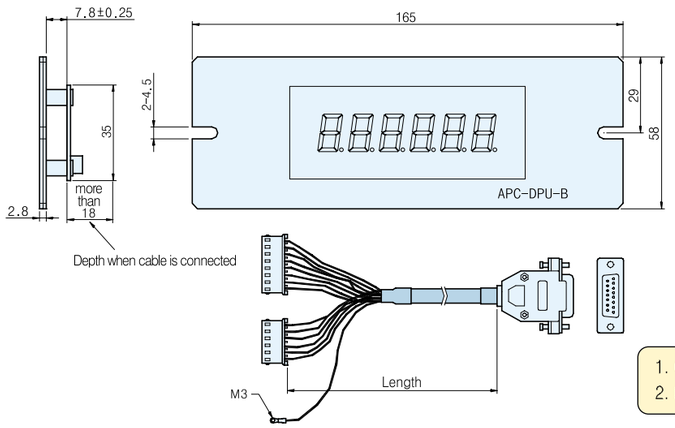


Processing dimensions

1. For Position/Speed setting of Controller-embedded Type(APD-VP)
2. Refer to the Manual of Controller-embedded Type(APD-VP) for wiring.
3. The Specification of Digital Switch can be changed (Standard 8 termianls)

Remote Display

Model (★Note1) : APC-DPU□□B
Applicable Drive : All models of APD-VS/VP Series



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

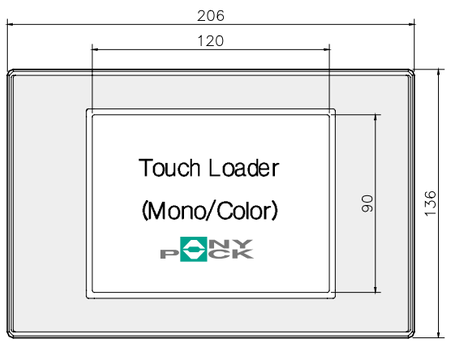
Note1) □□ of model indicates the length of cable, and the notation is as below

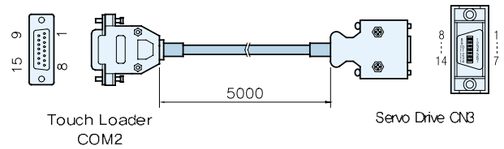
Standard Cable Length (m)	1	2	3	5
Marking	01	02	03	05

Options(Touch/Handy Loader)

Mono/Color Touch Loader

Model : Mono Touch Loader : APC-V□TS3MA, Color Touch Loader : APC-V□TS3SA
Applicable Drive : All models of APD-VS Series
Maker : M2I Cooperation (Mono:TOP3MA, Color:TOP3SA)

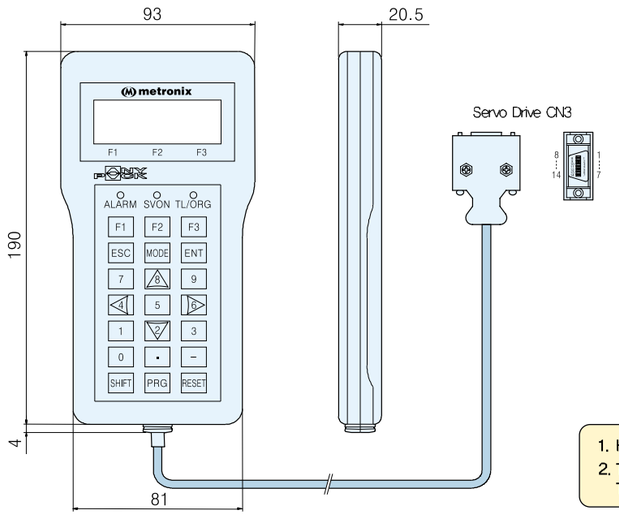




1. Touch Loader Input Voltage : DC 24V
2. Standard Cable length for COM2 : 5m
3. Option Cable(Separate Purchasing item)
   1) RS232 Communication cable for COM1 : APM-CN305T(length : 5m)
   2) Touch Loader OS Download Cable : APC-CN3TSC(LENGTH : 3m)
4. □ in model name indicates Servo drive type
   S : Standard Touch O/S installed in VS series
   P : Standard Touch O/S installed in VP series

Handy Loader

Model (★Note1) : Handy Loader : APC-HD1□□A
Applicable Drive : All models of APC-VS/VP Series



Pin No.	Color	Phase
1	Yellow, Orange	/PSEN
5	Blue	TXD
6	Green	RXD
11	Black, White	GND
14	Red, Pink	VCC

1. Handy Loader Input Voltage : DC 5[V]
2. The Length of standard Cable : 2[m]
   The length can be adjusted upon request.

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

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

Selection Table of Servo Capacity

1. General customer information

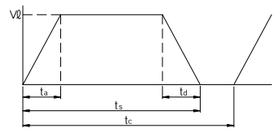
Date		Name		TEL	
Name of Product		The number of shaft		FAX	
Control Type	Standard Type(VS)	Speed, position, torque, speed/position, speed/torque, position/torque			
	Controller Type(VS)	Linear coordinates operation(x-y), Rotary coordinates operation(index, turret), Feeder operation, Position decision operation after sensor, 2 Step round operation(drill, automatic door), Pulse synchronized operation, PUSH-PULL operation(pressure, tensile control, press)			
	Tension Control Type	Normal type, Radius compensation control type			

2. Operation Cycle and Load Spec.

1. Operation cycle

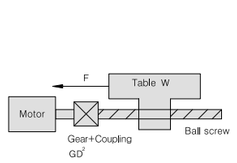
Position decision length L_s [sec]
Position decision time t_s [sec]
Transfer speed $V\ell$ [m/min]

Operation period t_c [sec]
Acceleration time t_a [sec]
Deceleration time t_d [sec]



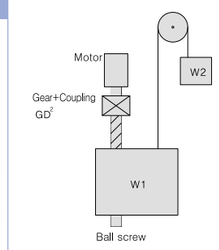
2. Ball screw(horizontal axis)

Load weight W [kg]
Impellent force F [kg]
Friction coefficient μ
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 [kg · cm^2]
Ball screw pitch P [mm]
Ball screw diameter D [mm]
Ball screw length L [mm]



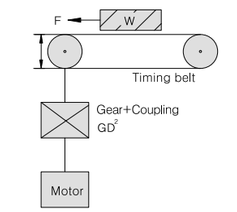
3. Ball screw(vertical axis)

Load weight W [kg]
Counter waiter W2 [kg]
Friction coefficient μ
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 [kg · cm^2]
Ball screw pitch P [mm]
Ball screw diameter D [mm]
Ball screw length L [mm]



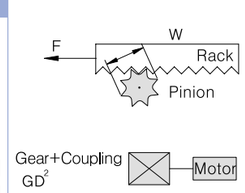
4. Timing belt

Load weight W [kg]
Impellent force F [kg]
Friction coefficient μ
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 [kg · cm^2]
Pulley GD^2 [kg · cm^2]
Pulley diameter D [mm]



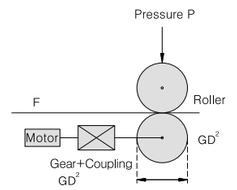
5. Rack pinion

Load weight W kg]
Impellent force F [kg]
Friction coefficient μ
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 [kg · cm^2]
Pinion diameter D [mm]
Pinion thickness t [mm]



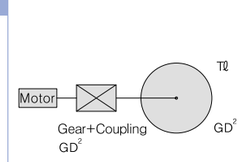
6. Roll feeder

Load GD^2 [kg · cm^2]
Tension F [kg]
Pressure P [kg]
Roll diameter D [mm]
Friction coefficient μ
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 [kg · m^2]



7. Rotating body

Load GD^2 [kg · cm^2]
Load torque T ℓ [kg · cm]
Total efficiency η
Deceleration ratio R(Nm/N ℓ)
Gear+Coupling GD^2 kg · cm^2]



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