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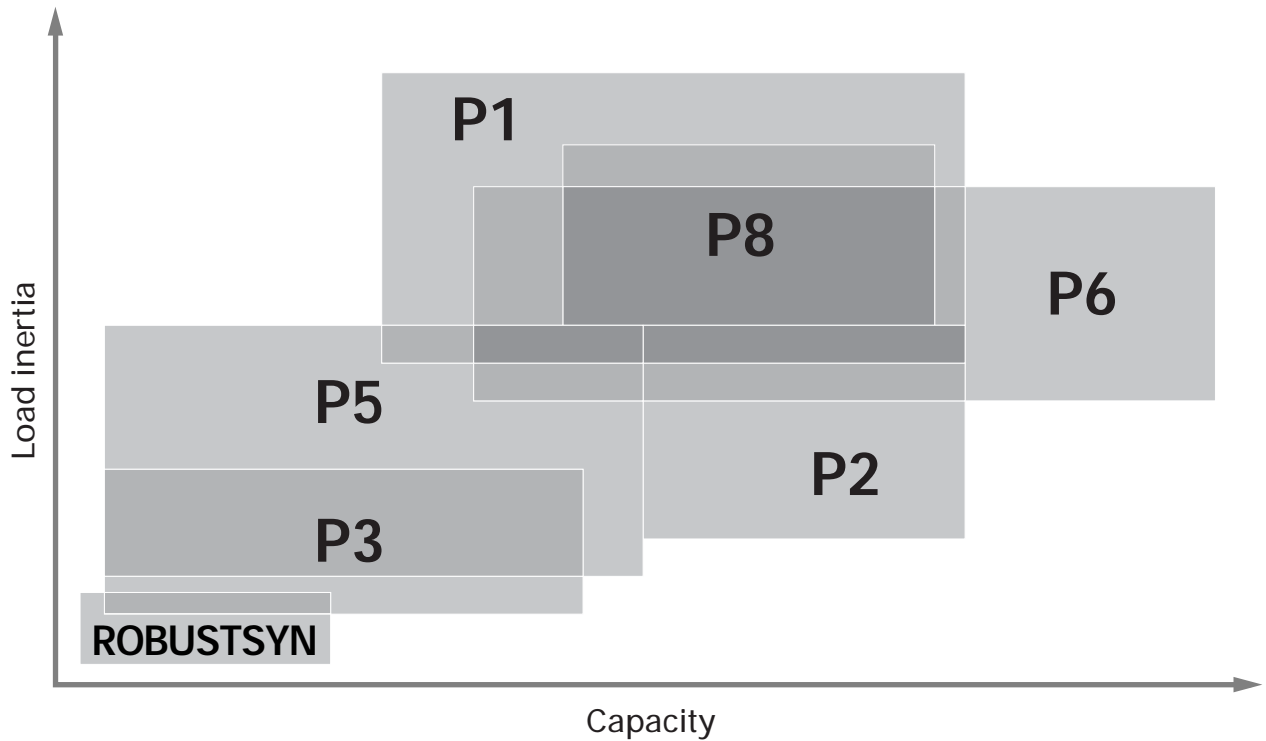
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AC servo systems “ P ” series

Domain diagram

Motors



P1 Motor 



Rated rotating speed
2,000min⁻¹


Maximum rotating speed
3,000min⁻¹


Uses

Motor capacity
0.3 to 5.5kW

Applicable amplifier
PZ/PE/C

- Machines for precision machining
- Lathes
- Milling machines
- Transfer machines
- General industrial machines

P2 Motor 



Rated rotating speed
3,000min⁻¹



Maximum rotating speed
4,500min⁻¹


Uses

Motor capacity
1 to 5.0kW

Applicable amplifier
PZ/PE/C

- Machines for superfast response
- Semiconductor-making machines
- Mounters and inserters
- Mounters and inserters printed circuit boards

P3 Motor  



Rated rotating speed
3,000min⁻¹





Maximum rotating speed
4,500min⁻¹


Uses

Motor capacity
30 to 750W

Applicable amplifier
PU/PV/PZ/PE/C

- Small simple robots
- Mounters
- Inserters
- Wafer transfer machines
- Semiconductor-making machines

P5 Motor    



Rated rotating speed
3,000min⁻¹



Maximum rotating speed
4,500min⁻¹


Uses

Motor capacity
30 to 1,000W

Applicable amplifier
PU/PV/PZ/PE/C

- Robots
- Winding machines
- General industrial machines

P6 Motor  



Rated rotating speed
2,000min⁻¹



Maximum rotating speed
3,000min⁻¹


Uses

Motor capacity
0.5 to 30kW

Applicable amplifier
PU/PV/PZ/PE/C

- Robots
- General-purpose machine tools
- General industrial machines
- Transfer machines
- Food processors
- Medical equipment

P8 Motor  



Rated rotating speed
2,000min⁻¹

Maximum rotating speed
3,000min⁻¹

Uses

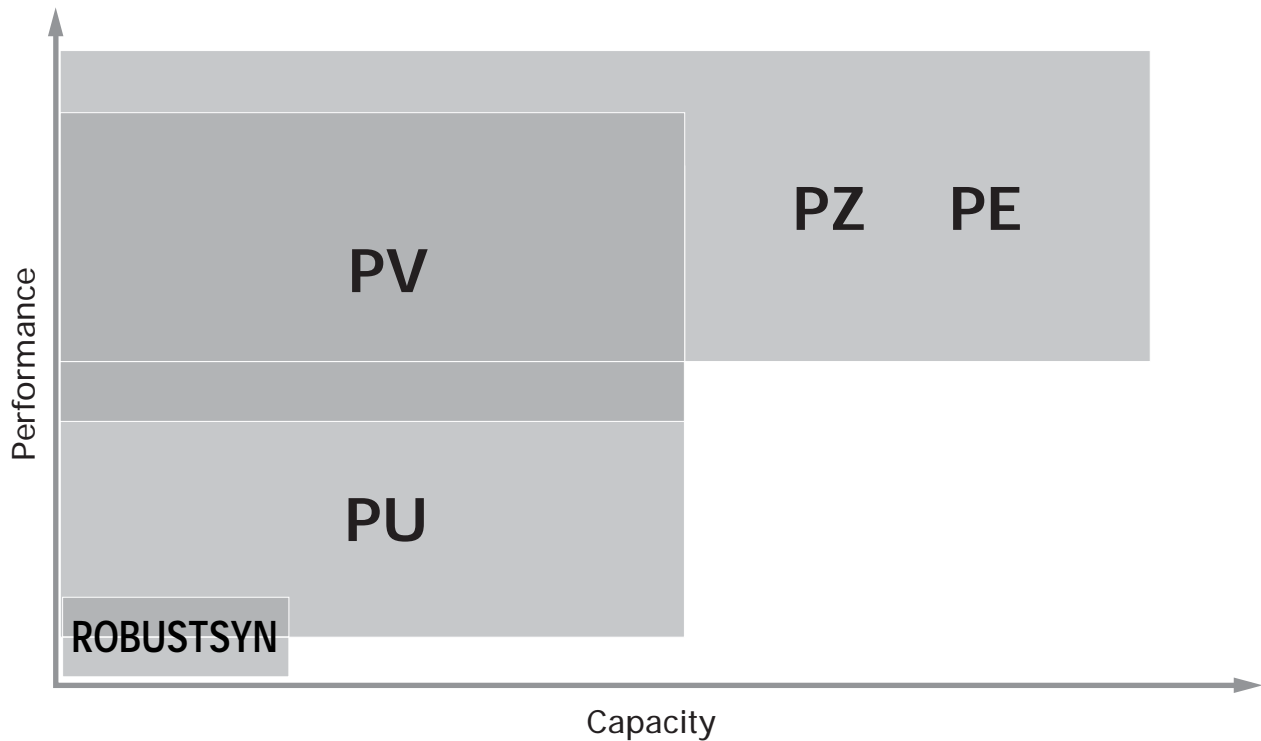
Motor capacity
0.75 to 4.5kW

Applicable amplifier
PZ/PE/C

- Robots
- General industrial machines
- Take-up machines
- Transfer machines

* For the hollow servomotors “P5”, “P6”, and “P8”, see pages 60 and 61.

Amplifiers



PU

Amplifier



Amplifier capacity
15A/30A/50A

Uses

- Various robots
- Roll feeders
- Food processors
- General industrial machines

Motor capacity
30 to 1,000W

Applicable motors
P3/P5/P6

PZ

Amplifier



Amplifier capacity
**15A/30A/50A/100A
150A/300A/600A**

Uses

- Machine tools
- Various robots
- Transfer machines
- Take-up machines
- Printers
- Roll feeders
- Food processors
- General industrial machines

Motor capacity
30W to 30kW

Applicable motors
P1/P2/P3/P5/P6/P8

PE

Amplifier



Amplifier capacity
15A/30A/50A

Uses

- Machine tools
- Various robots
- Transfer machines
- Take-up machines
- Printers
- Roll feeders
- Food processors
- General industrial machines

Motor capacity
30W to 7kW

Applicable motors
P1/P2/P3/P5/P6/P8

PV

Amplifier



Amplifier capacity
15A/30A

Uses

- Machine tools
- Various robots
- Transfer machines
- Take-up machines
- Printers
- Roll feeders
- Food processors
- General industrial machines

Motor capacity
30 to 1,000W

Applicable motors
P3/P5/P6

C-TYPE

Controller-equipped amplifiers



Amplifier capacity
**15A/30A/50A
100A/150A**

Uses

- Transfer machines
- Index tables
- Various robots
- Food processors
- General industrial machines

Motor capacity
30W to 15kW

Applicable motors
P1/P2/P3/P5/P6/P8

ROBUSTSYN



Rotating speed
4,500min⁻¹

Uses

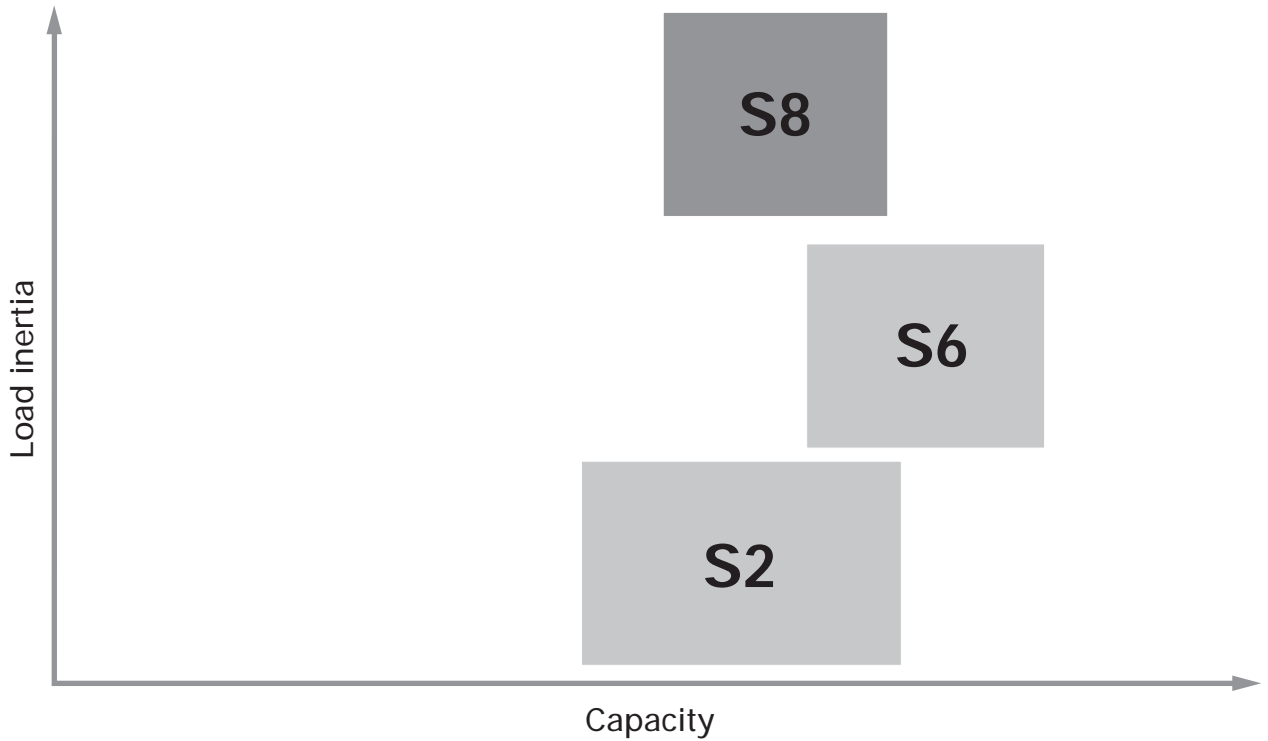
- Mounters
- Laboratory equipment
- Bonders

Motor capacity
20 to 750W

Amplifier Power Input
**DC24/38V
AC100/200V**

AC servo systems “ S ” series

Domain diagram



S2 Motor 



Rated rotating speed
1,500min⁻¹

Maximum rotating speed
2,000min⁻¹

Uses

- Press machines
- Paper raisers
- Injection molders
- Transfer machines
- Shearing machines

Motor capacity
5.5 to 30kW

Applicable amplifier
SZ

S6 Motor 



Rated rotating speed
1,500min⁻¹

Maximum rotating speed
2,000min⁻¹

Uses

- Tower automatic warehouses
- Tower parking systems
- Transfer machines
- Conveyors
- Pipe benders

Motor capacity
22 to 45kW

Applicable amplifier
SZ

S8 Motor 



Rated rotating speed
1,500min⁻¹

Maximum rotating speed
2,000min⁻¹


Uses

- Tower automatic warehouses
- Can-making machines
- Printers

Motor capacity
11 to 30kW

Applicable amplifier
SZ

SZ Amplifiers



Amplifier capacity
300A/600A
900A

Uses

- Press machines
- Turret machines
- Tower automatic warehouses
- Main spindles of machine tools
- Injection molders

Motor capacity
2.2 to 45kW

Applicable amplifier
S2/S6/S8

System controllers

Networking controllers and digital controllers

S-MAC



3Types

- Networking NC
... TypeA
- PC based NC
... TypeB
- Motion
Cardless NC
... TypeC

PDC-1300



Applicable amplifiers and drivers

- PU
- PZ
- PE
- PV

3 shafts simultaneously
Communications by RS-232C and RS-485
PTP operation
Compatible with G codes

PDC-1600



Applicable amplifiers and drivers

- PU
- PZ
- PE
- PV

6 shafts simultaneously
Communications by RS-232C and RS-485
Bus and PTP operation
Compatible with G codes

DC servo systems

SUPER V



Rated rotating speed

3,000min⁻¹

Maximum rotating speed

5,000min⁻¹

Uses

- Semiconductor-making machines
- Liquid product-making machines
- Sheet metal machines
- Robots
- Ticket vendors

Motor capacity

23 to 500W

Applicable amplifier

DA2

DA2



Amplifier capacity

15A/30A

Uses

- Semiconductor-making machines
- Liquid product-making machines
- Sheet metal machines
- Robots
- Ticket vendors

Motor capacity

23 to 500W

Applicable amplifier

Super V

⚠ Cautions

Failure to observe any of the precautions indicated on the right-hand side may cause a light to medium-degree injury or property damage. It may even lead to a serious disaster. Be sure to observe all of the precautions.

⚠ Cautions

- Do not use any of these products for medical or other equipment that may affect human lives.
- Do not use any of these products for equipment that may have a serious impact on society or the public.
- Do not use any of these products in a vehicle, ship, or other environment exposed to vibration.
- Do not remodel or machine any of these products.
- Before using any of these products, be sure to read its operation manual.

* For any question or inquiry regarding the above, contact our Sales Department.

The PDC-1300 and PDC-1600 are strategic commodities as defined in the Foreign Exchange and Foreign Trade Control Law with Concomitant Orders and Ordinances. Exporters of any of these products, therefore, must apply to the Ministry of International Trade and Industry for a permit to export. All other products are non-strategic. Therefore, exporters of these other products do not need a permit to export from the MITI. However, exporters may be asked by the customs officers that the products being exported are non-strategic. Exporters are therefore encouraged to contact us for a document explaining the non-strategic nature of a specific product.

If any product is incorporated in another product, be sure to follow the strategic or non-strategic requirements of that other product.

FA total solutions

“Technology to protect the earth's environment”

“Technology to protect the health and safety of humans”

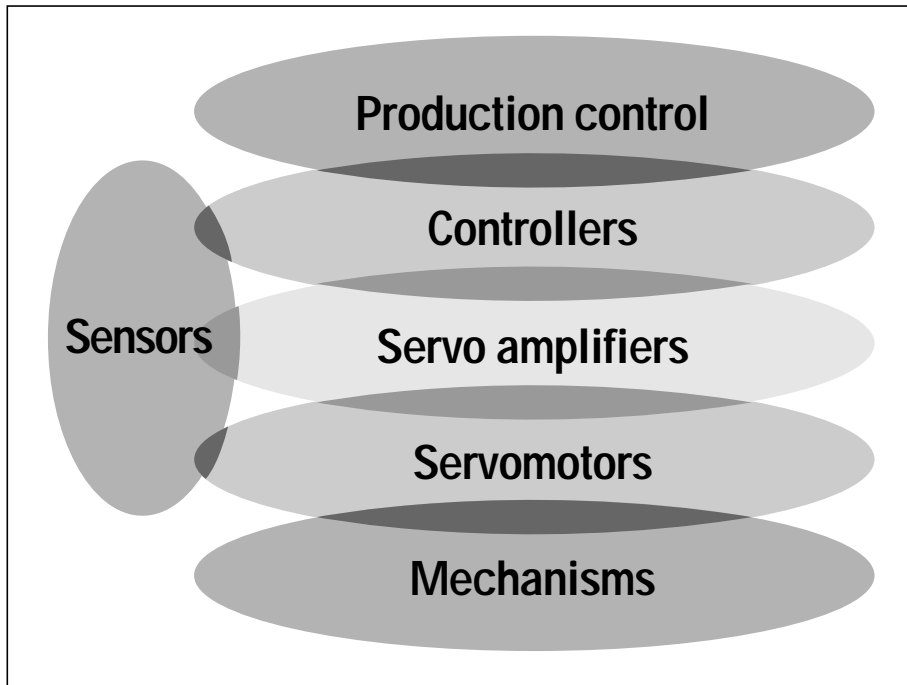
“Technology to use new energies and to conserve energy”

Based on these technological principles, we, the members of Sanyo Denki, will aggressively pursue research and development independently of established ideas.

With technologies in sensors, motors, amplifiers, networks, controllers, and other equipment, we will keep making proposals that will bring about true advantages to our customers.



SANYO DENKI *TECHNOLOGY CENTER*



A diagram of a typical decentralized FA system

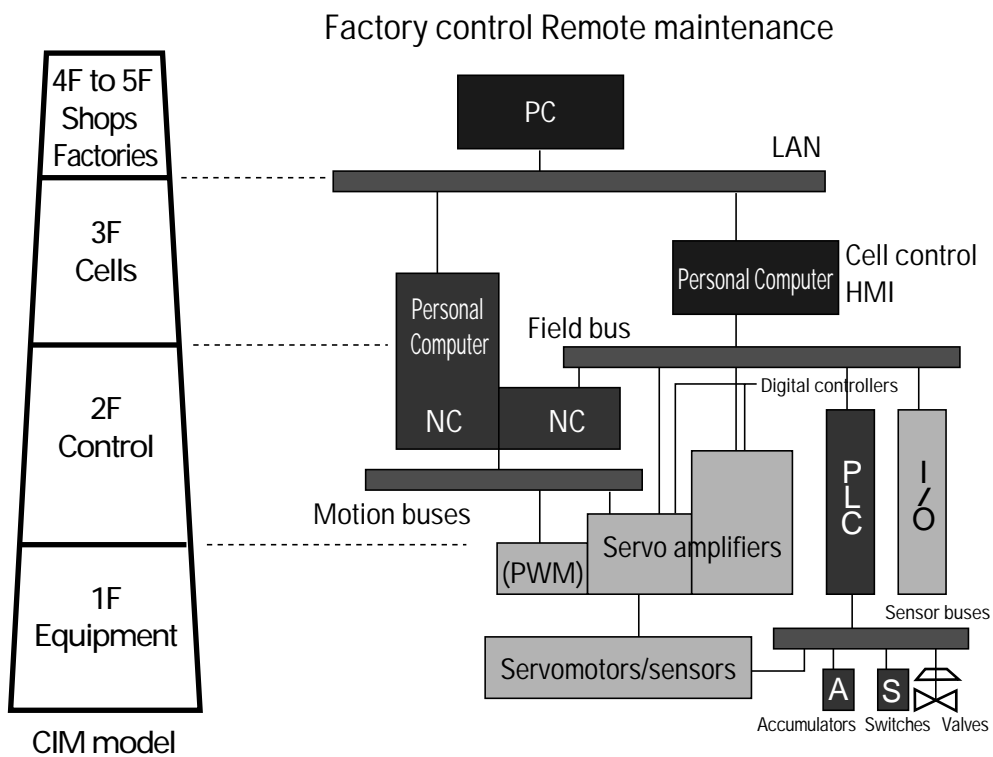


Diagram of a servo system and a field area network (FAN)

Overview and domain diagram of a typical servo system

Overview

In response to demand for flexible, intelligent products, production systems in various industrial sectors these days are increasingly require smaller, faster, higher-performance, and higher-precision servo systems.

To meet the requirements of these different industrial sectors, Sanyo Denki provides a complete family of servo systems that meet a wide range of applications.

Characteristics

DC servomotors

DC servomotors incorporate a stator made of a permanent magnet and a rotor made of a coil structure, achieving quick starts and stops and stable, smooth rotation. Our DC servomotors have the following features:

- 1) small rotor inertia
- 2) high maximum torque
- 3) small torque ripples
- 4) small electrical and mechanical time constants.

In addition to the above, control is relatively easy to build up.

Sanyo Denki's "SUPER V" DC servomotor and "DA2" super-small DC servo amplifier have less brush wear, known to be a major problem with DC motors, and higher reliability.

Uses: press brakes and mat cutters

AC servo amplifiers

In recent years, servo amplifiers have shifted from analog to digital software to increase controllability and maintenance and servicing efficiency, to reduce adjustment time and adjustment variances, to speed up communications, and to bring about other advantages in performance and functions. Attempts to make compact and lightmass servo amplifiers are also under way by using gate arrays and ASICs, compact components, and advanced surface-mount technology.

Families available are "PU" general-purpose compact servo amplifiers,

"PZ" and "PV" high-performance and high-functionality servo amplifiers, and "PE" and "PV" servo amplifiers conforming to overseas standards.

AC servomotors

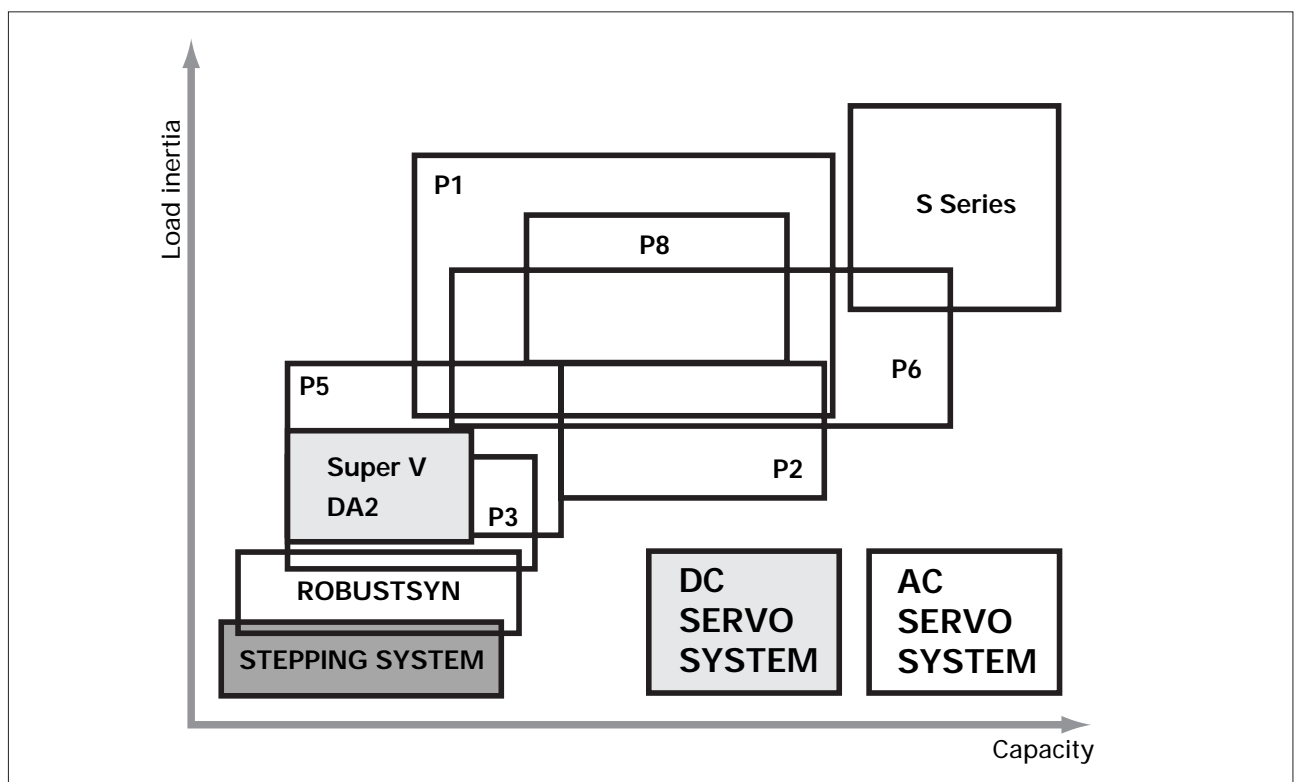
AC servomotors generally come in two types: synchronous and induction types. Devoid of sliding and contact portions, these motors are maintenance-free and contribute to the buildup of clean environments. Synchronous servos are compact and high in response and precision and consist of a stator made of a coil and a rotor made of a permanent magnet. Rectification is performed electronically, but needs a position sensor.

These servomotors are widely used in robots, machine tools, and semiconductor-making machines, along with various production systems. Sanyo Denki offers a wide variety of products: "P1" through "P8" series.

Induction servos are compact and fast and achieve high torque. The stator incorporates a coil, while the rotor incorporates a secondary coil. A speed sensor is needed for vector control.

Sanyo Denki offers a variety of families designed for particular uses: "S2" through "S8" series.

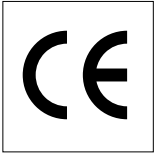
Uses: Press machines, turret machines, tower automatic warehouses, main spindles of machine tools, injection molders, etc.



How to read markings

How to read markings

Safety markings



A safety marking representing a European Union Board of Ministers Directive (EC Directive) (EC). Only those products conforming to the safety regulations of a specific EU directive can bear this marking and can be sold in the EC territory. These markings are combined with certification markings affixed by TÜV or other private inspection agency.



A certification marking representing TÜV Product Service.

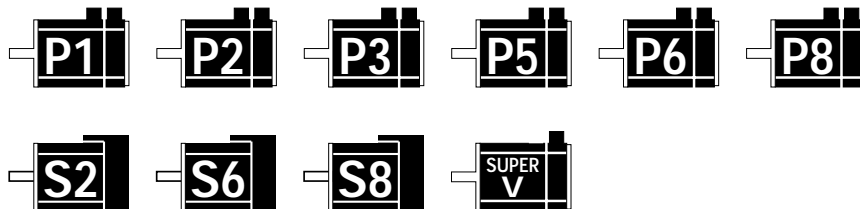
SERCOS



SERCOS stands for SERIAL Real-time COMMUNICATION SYSTEM.

This specification is for an interface between an open controller and an intelligent digital drive. SERCOS systems are made noise-resistant by optical fiber cable, and they are designed for serial communications of closed-loop data in a standardized, real-time manner.

Applicable motor series marking



Hollow servomotor marking



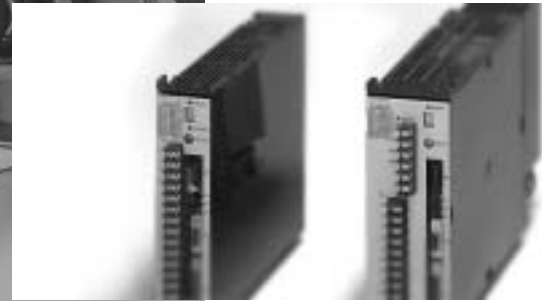
IPCODE marking



Applicable amplifier series marking



AC servo system



tems

AC servo systems

Selected software of servomotors

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“P” series

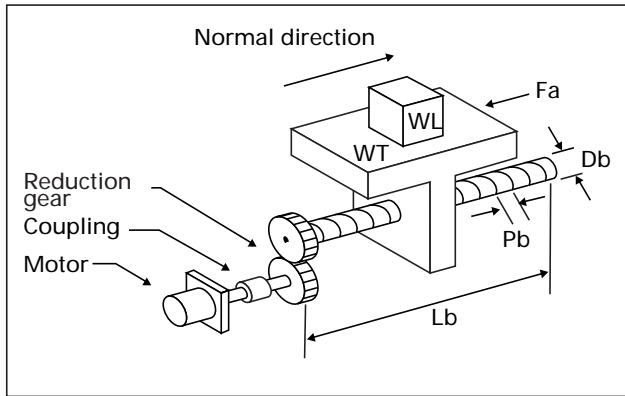
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P series

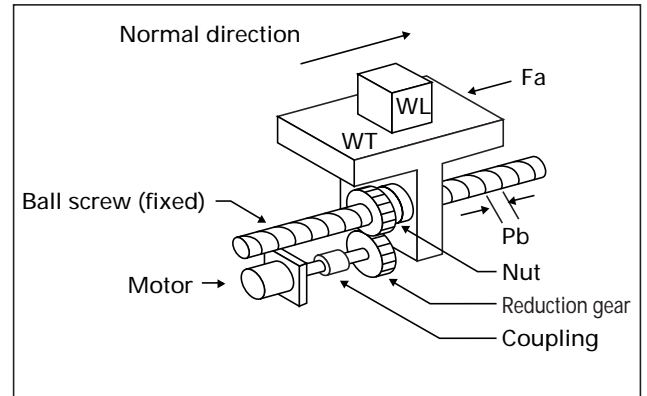
Selected software for servomotors

Selecting a mechanical structure

Horizontal structure

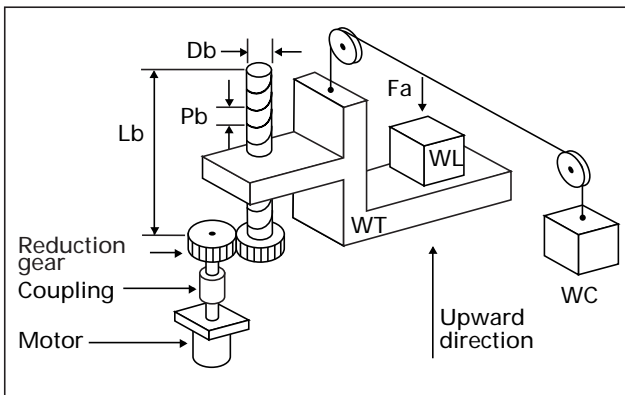


Rotary ball screw and normal screw type

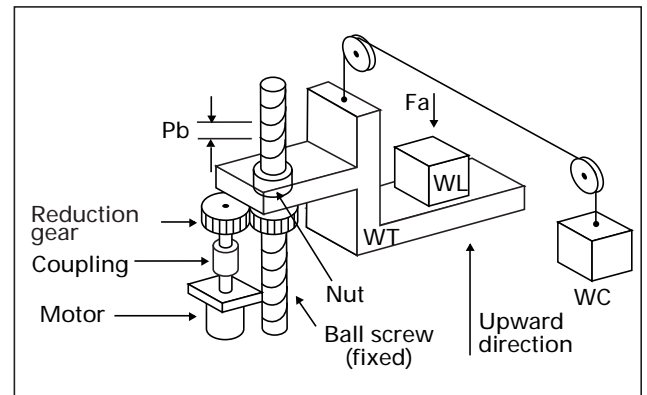


Rotary ball screw and nut type

Vertical structure

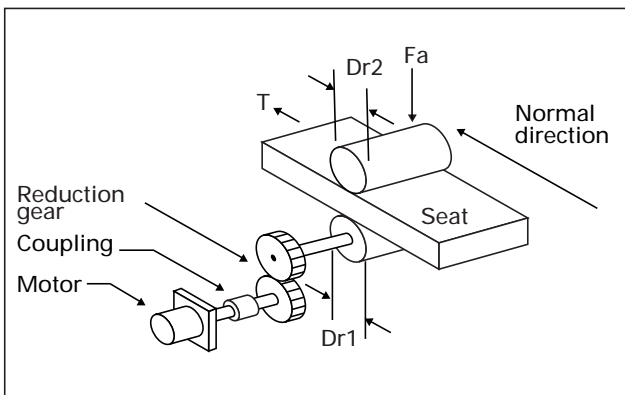


Rotary ball screw and normal screw type

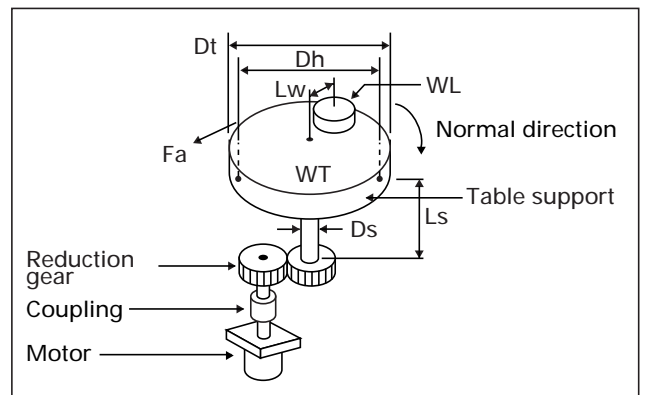


Rotary ball screw and nut type

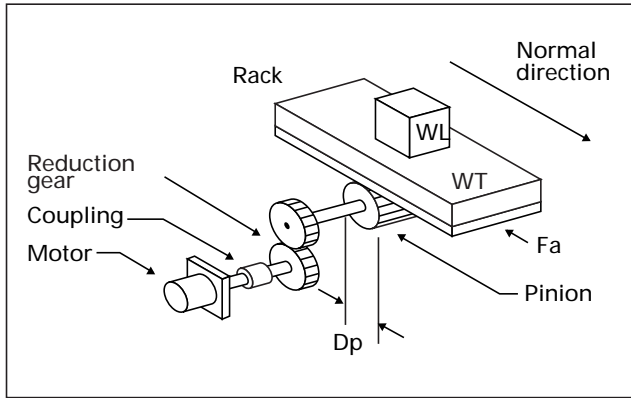
Other



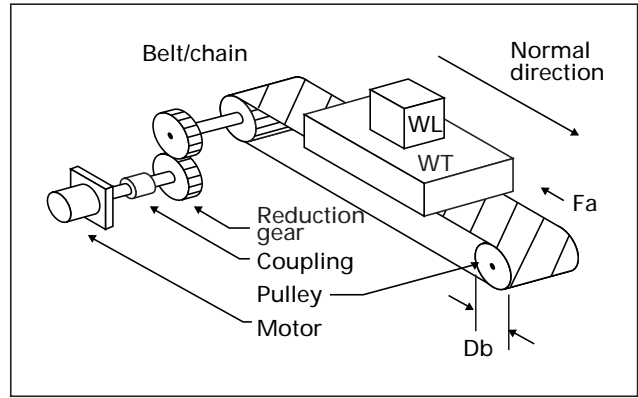
Roll feed



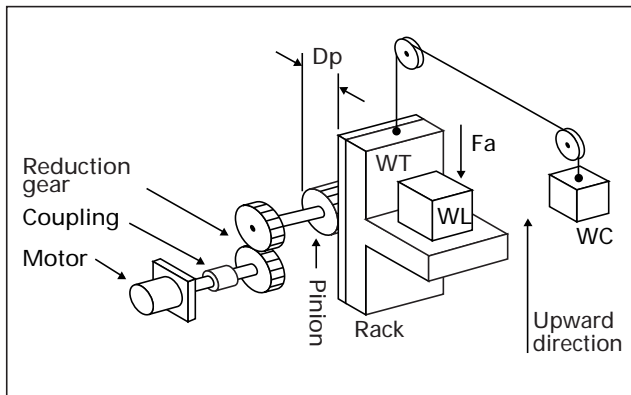
Rotary table



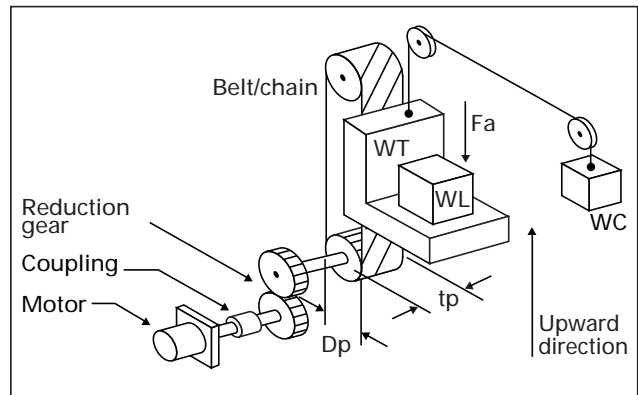
Rack and pinion



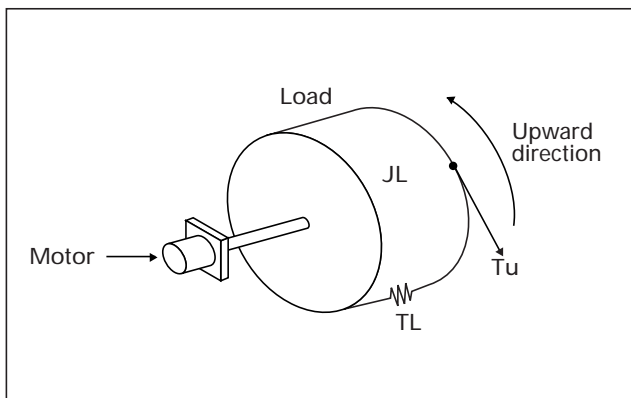
Belt/chain



Rack & pinion



Belt/chain



Irregularly shaped

For selected software for servomotors, please contact our sales representative.



P series

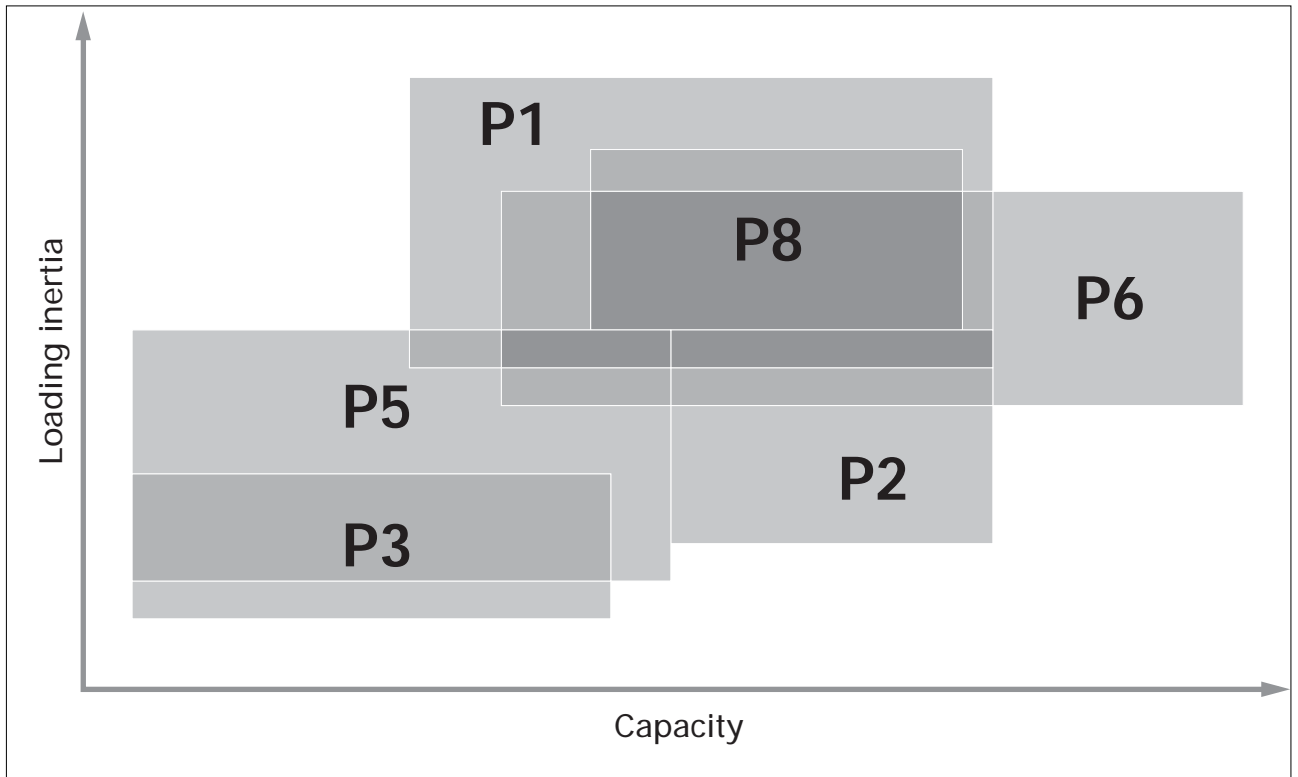
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“P” Series

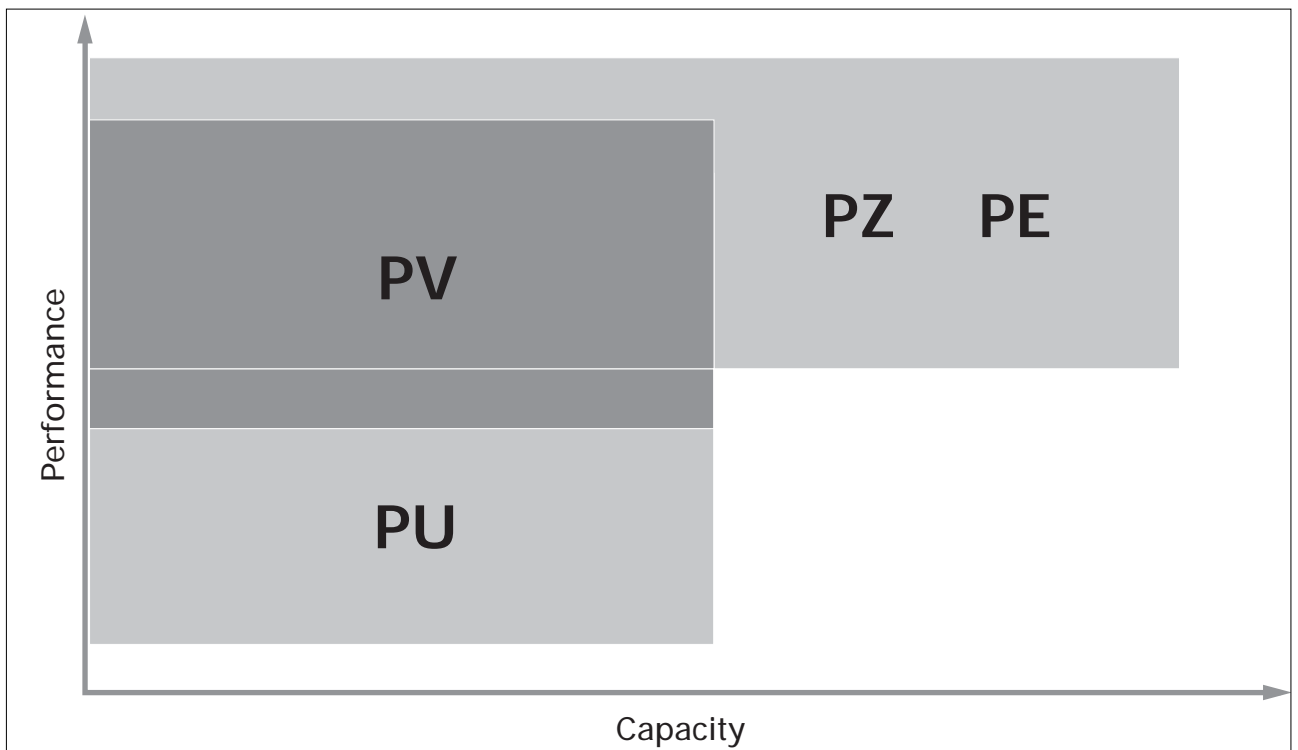
P series

Domain diagram

Motors



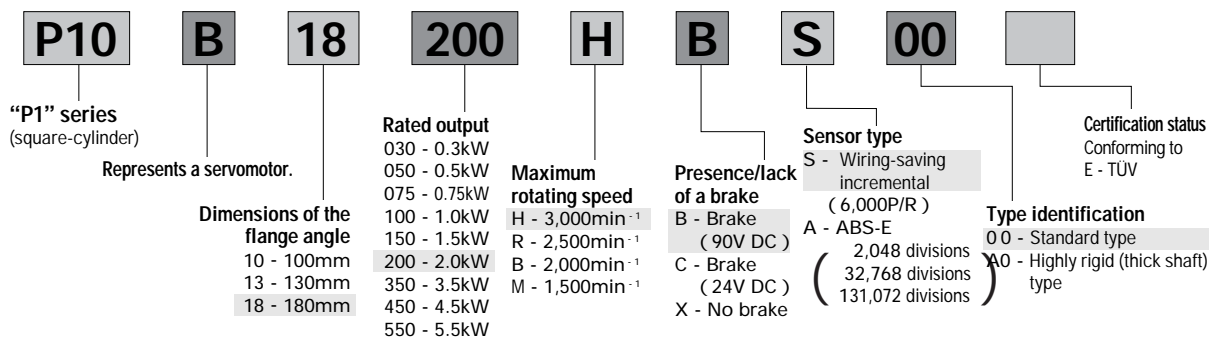
Amplifiers



How to read servomotor model numbers

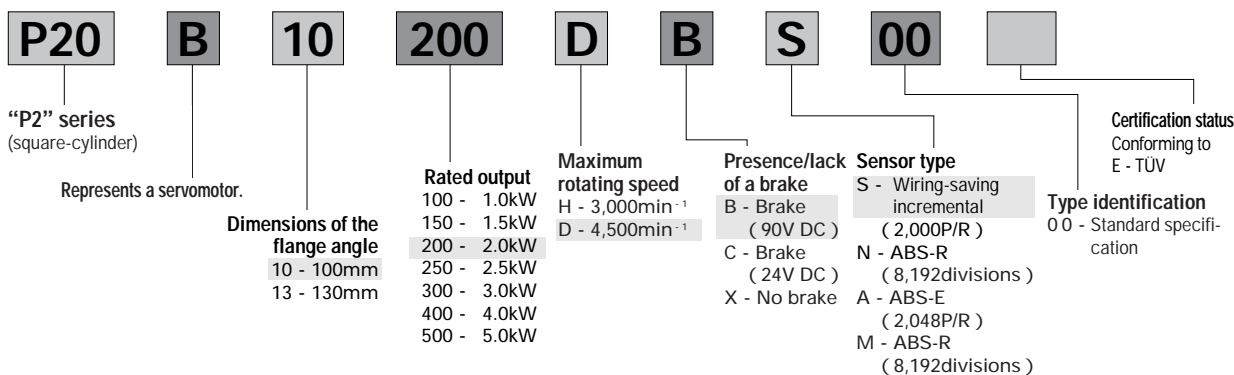
“P1”

Example: If you need a servomotor of the “P1” type (medium-capacity, square-cylinder) having a rated output of 2 kW, a rotational speed of 3,000 min⁻¹, a flange angle 180 × 180 mm, a wiring-saving incremental (6,000P/R), and a 90 VDC brake, use the following model number:



“P2”

Example: If you need a servomotor of the “P2” type (medium-capacity, high-response, square-cylinder) having a rated output of 2 kW, a rotational speed of 4,500 min⁻¹, a flange angle 100 × 100 mm, a wiring-saving incremental (2,000P/R), and a 90 VDC brake, use the following model number:



Outputs and dimensions of motors and amplifiers (The dimensions include those of an incremental encoder but without a brake.)

Dimensions of the flange angle (mm)		100					130					180							
Rated output (kW)		0.3	0.75	1.0	1.5	2.0	2.5	0.5	1.0	1.5	3.0	4.0	5.0	2.0	3.5	4.5	5.5		
“P1”	Overall length (mm)	182	272					176	221	272				230	280	350	501		
	Installed dimensions (mm)	115	115					145	145	145				200	200	200	200		
	Shaft diameter (mm)	16	16					19	19	22				35	35	35	42		
“P2”	Overall length (mm)		147	172	197	222					194	228	267						
	Installed dimensions (mm)		115	115	115	115					145	145	145						
	Shaft diameter (mm)		22	22	22	22					28	28	28						
“PZ”	Amplifier capacity (A)	Maximum rotating speed symbol	D		50	50	100	100			100	150	150						
			H	15	30	30	50	50	100	30	50	50	100	100	150	100	150		
			R																150
			B							30	30	50				50	100	100	
			M																150

“P” Series

How to read servomotor model numbers

“P3”

Example: If you need a servomotor of the “P3” type (super-small, square-cylinder) having a rated output of 400W, a rotating speed of 4,500min⁻¹, a motor 60 × 60mm, an absolute sensor (ABS-R), and a 90 VDC brake, use the following model number:

P30 B 06 040 D B N 00

- P30**: “P3” series (square-cylinder) Represents a servomotor.
- B**: Dimensions of the flange angle: 04 - 40, 06 - 60, 08 - 80
- 06**: Dimensions of the flange angle
- 040**: Rated output: 003 - 30W, 005 - 50W, 010 - 100W, 020 - 200W, 040 - 400W, 075 - 750W
- D**: Maximum rotating speed: D - 4,500min⁻¹ (200V AC), H - 3,000min⁻¹ (200V AC), P - 4,500min⁻¹ (100V AC)
- B**: Presence/lack of a brake: B - Brake (90V DC), C - Brake (24V DC), X - No brake
- N**: Sensor type: N - ABS-R (8,192 divisions)
- 00**: Type identification: 00 - Standard type (w/o oil seal, w/o connector), 01 - w/o oil seal, w/o connector, 50 - w/o oil seal, w/ connector, 51 - w/ oil seal, w/ connector
- Certification status**: Conforming to E - TÜV
- Gear type identification**: (See table below)

Identification	Gear type	Gear ratio
A	A type Planetary gear	1/3
B		1/5
C		1/9
D		1/15
E		1/25
J	B type Spur gear	1/5
K		1/10
L		1/15
S	C type Backlash-less planetary gear	1/5
T		1/11
U		1/21
V		1/33

“P5”

Example: If you need a servomotor of the “P5” type (compact, square-cylinder) having a rated output of 750W, a rotating speed of 4,500min⁻¹, a motor 86 × 86mm, an absolute sensor (ABS-R), and a 90 VDC brake, use the following model number:

P50 B 08 075 D B N 00

- P50**: “P5” series (square-cylinder) Represents a servomotor.
- B**: Dimensions of the flange angle: 03 - 35, 04 - 42, 05 - 54, 07 - 76, 08 - 86
- 08**: Dimensions of the flange angle
- 075**: Rated output: 003 - 30W, 005 - 50W, 006 - 60W, 010 - 100W, 020 - 200W, 030 - 300W, 040 - 400W, 050 - 500W, 075 - 750W, 100 - 1,000W
- D**: Maximum rotating speed: D - 4,500min⁻¹, H - 3,000min⁻¹
- B**: Presence/lack of a brake: B - Brake (90V DC), C - Brake (24V DC), X - No brake
- N**: Sensor type: N - ABS-R (8,192 divisions)
- 00**: Type identification: 00 - Standard type
- Certification status**: Conforming to E - TÜV
- Gear type identification**: (See table below)

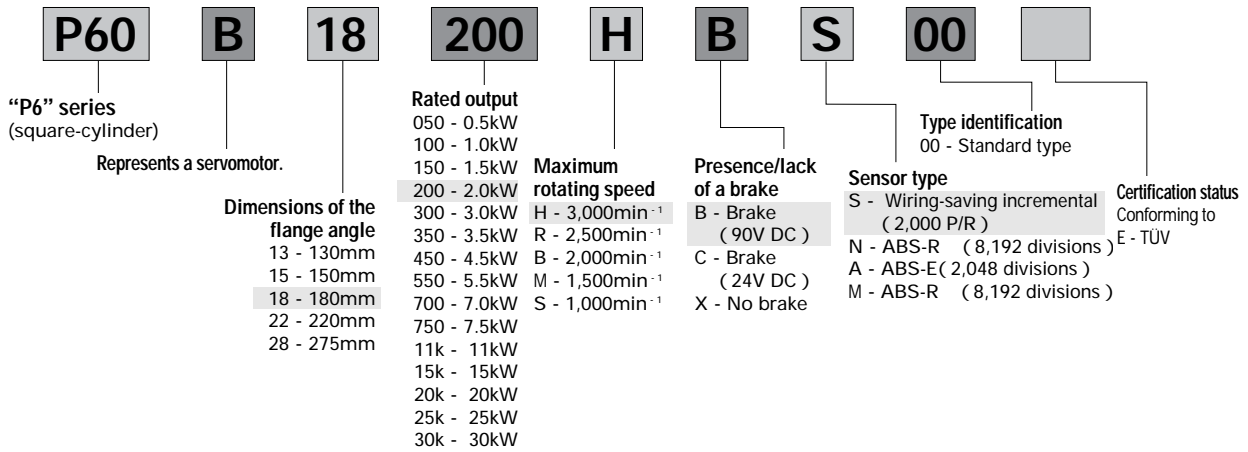
* A flange angle 35 × 35mm is unavailable. The flange angles 42 × 42mm and 54 × 54mm are J.

Outputs and dimensions of motors and amplifiers (The dimensions include those of an incremental encoder but without a brake.)

	35	40	42	54	54	60	76	76	80	86	86							
Dimensions of the flange angle (mm)	35	40	42	54	54	60	76	76	80	86	86							
Rated output (kW)	30	30	50	100	60	100	50	100	200	200	400	200	300	400	750	500	750	1000
“P3”	Overall length (mm)	64	70	88			95.5	123.5		140								
	Installed dimensions (mm)	30	30	30			50	50		70								
	Shaft diameter (mm)	6	8	8			14	14		16								
“P5”	Overall length (mm)	67.5		82	95	76	86	105		97	103	113		126	149	172		
	Installed dimensions (mm)	30		34	34	50	50	50		70	70	70		80	80	80		
	Shaft diameter (mm)	5		7	7	8	8	11		14	14	14		16	16	1		
“PU”	Amplifier capacity (A)	15	15	15	15	15	15	15	15	15	30	15	30	30	30	50	50	
“PZ”	Amplifier capacity (A)	15	15	15	15	15	15	15	15	15	30	15	30	30	30	50	50	
“PV”	Amplifier capacity (A)	15	15	15	15	15	15	15	15	15	30	15	30					

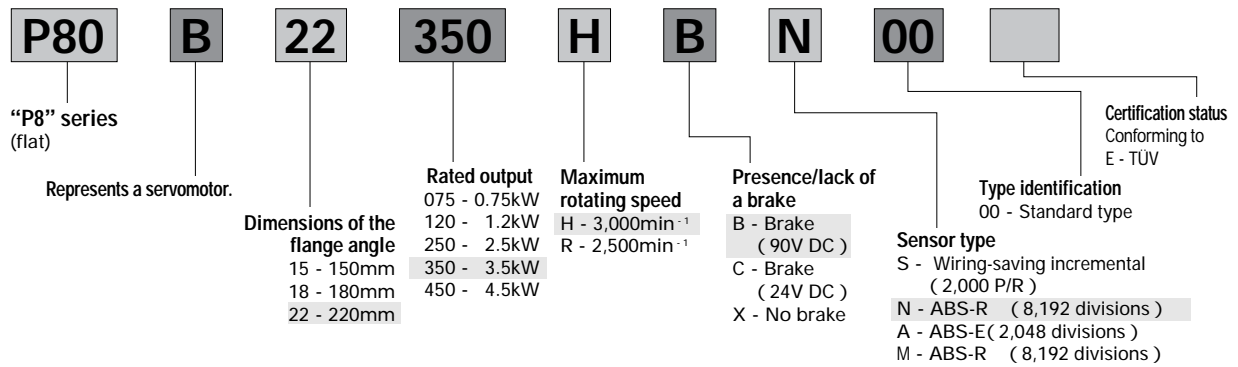
“P6”

Example: If you need a servomotor of the “P6” type (medium-capacity, square-cylinder, super-small) having a rated output of 2kW, a rotating speed of 3,000min⁻¹, a flange angle 180 × 180mm, a wiring-saving incremental (2,000P/R), and a 90 VDC brake, use the following model number:



“P8”

Example: If you need a servomotor of the “P8” type (medium-capacity, super-flat) having a rated output of 3.5kW, a rotating speed of 3,000min⁻¹, a flange 220 × 220mm, an absolute unit (ABS-R), with 8,192 divisions), and a 90 VDC brake, use the following model number:



Outputs and dimensions of motors and amplifiers (The dimensions include those of an incremental encoder but without a brake.)

Dimensions of the flange angle (mm)		130		150		180		220		275														
Rated output (kW)		0.5	1.0	1.5	2.0	0.75	3.0	1.2	2.0	3.5	4.5	5.5	7.5	2.5	3.5	4.5	5.5	7.0	11	15	20	20	25	30
“P6”	Overall length (mm)	113	133	152	171	182		144	169	192	267	332		209	285	362	405	490	429	454	479			
	Installed dimensions (mm)	145	145	145	145	165		200	200	200	200	200		235	235	235	235	235	300	300	300	300		
	Shaft diameter (mm)	22	22	22	28	28		35	35	35	42	42		55	55	55	55	55	55	55	55	55		
“P8”	Overall length (mm)					116		119					122	136	151									
	Installed dimensions (mm)					165		200					235	235	235									
	Shaft diameter (mm)					22		28					35	35	35									
“PU”	Amplifier capacity (A)		50	50																				
“PZ”	Amplifier capacity (A)	30	50	50	100	30	150	50	100	150	150	150	300	100	150	150	150	150	150	300	300	600	600	600
“PE”	Amplifier capacity (A)	30	50	50	100	30	150	50	100	150	150	150		100	150	150	150	150						

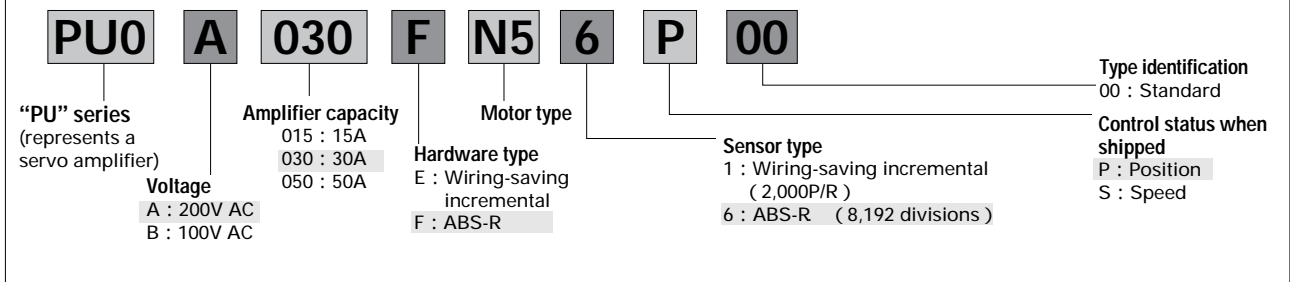
* For the 20kW, 25kW, and 30kW models, contact our sales representative.

How to read servo amplifier model numbers

How to read servomotor model numbers

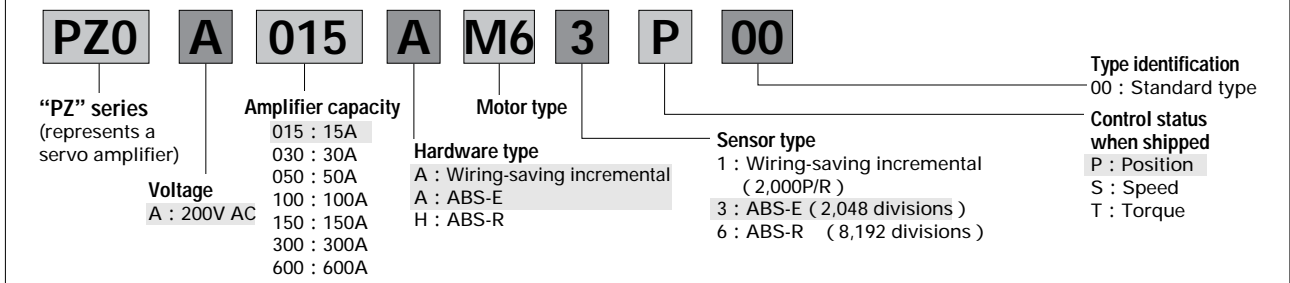
“PU” servo amplifiers

Example: If you need a servo amplifier of the “PU” type (super-small amplifier) having a “P3” motor, an output of 400W, a position control mechanism, a 200 VAC input, and an absolute sensor (ABS-R), use the following model number:



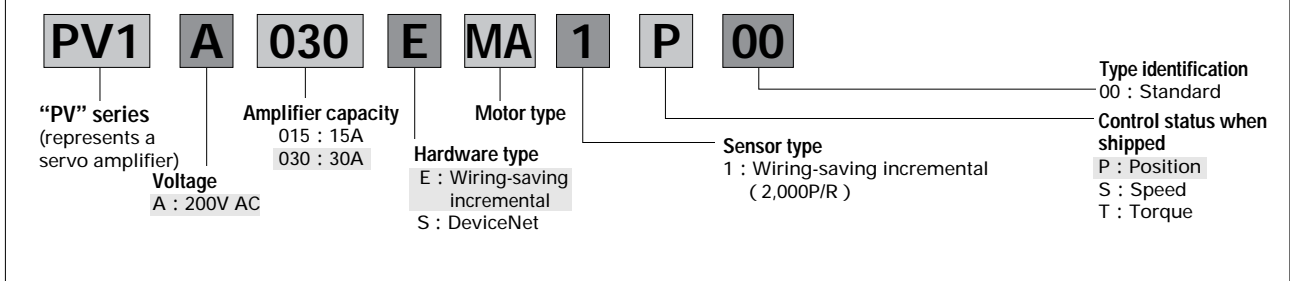
“PZ” servo amplifiers

Example: If you need a servo amplifier of the “PZ” type (small amplifier) having a “P5” motor, an output of 200W, dimensions 54 × 54mm, a position control mechanism, a 200 VAC input, and an absolute sensor (ABS-E), use the following model number:



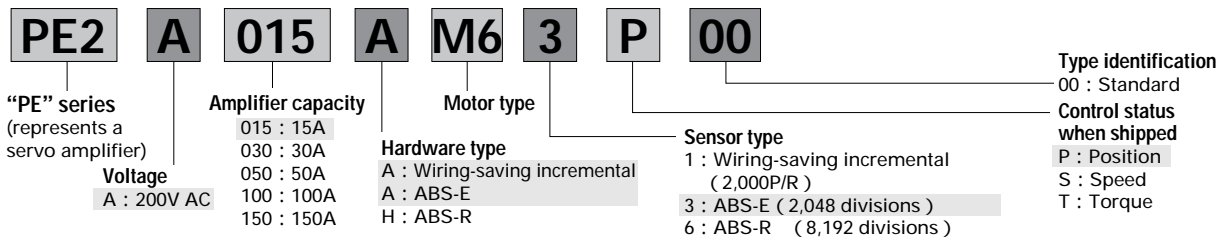
“PV” servo amplifiers

Example: If you need a servo amplifier of the “PV” type (super-small amplifier) having a “P5” motor, an output of 400W, a position control mechanism, a 200 VAC input, and a wiring-saving incremental, use the following model number:



“PE” servo amplifiers

Example: If you need a servo amplifier of the “PE” type (small amplifier) having a “P5” motor, an output of 200W, dimensions 54 × 54mm, a position control mechanism, a 200 VAC input, and an absolute sensor (ABS-E), use the following model number:



Motor types

200 VAC family

11 : P10B10030H	1A : P10B13050B	21 : P20B10100D	2A : P20B10200H	N1 : P30B04003D
12 : P10B10075H	1B : P10B13100B	22 : P20B10150D	2B : P20B10250H	N2 : P30B04005D
13 : P10B13050H	1C : P10B13150B	23 : P20B10200D	2C : P20B13300H	N3 : P30B04010D
14 : P10B13100H	1D : P10B18200B	24 : P20B10250D	2D : P20B13400H	N4 : P30B06020D
15 : P10B13150H	1E : P10B18350B	25 : P20B13300D	2E : P20B13500H	N5 : P30B06040D
16 : P10B18200H	1F : P10B18450B	26 : P20B13400D		N6 : P30B08075D
17 : P10B18350H		27 : P20B13500D		
18 : P10B18450R		28 : P20B10100H		
19 : P10B18550M		29 : P20B10150H		

M1 : P50B03003D	MA : P50B07040D	PA : P60B13050H	PR : P60B18550R	R2 : P80B15075H
M2 : P50B04006D	MC : P50B08050D	P1 : P60B13100H	PW : P60B18750R	R3 : P80B18120H
M3 : P50B04010D	MF : P50B08075H	P2 : P60B13150H	PG : P60B2211KB	R4 : P80B22250H
M4 : P50B05005D	MG : P50B08100H	P3 : P60B13200H	PX : P60B2215KB	R5 : P80B22350H
M5 : P50B05010D	MB : P50B08040D	P4 : P60B15300H	T4 : P60B2220KB	R6 : P80B22450R
M6 : P50B05020D	MD : P50B08075D	P5 : P60B18200H	T5 : P60B2820KM	
M8 : P50B07020D	ME : P50B08100D	P6 : P60B18350H	T6 : P60B2825KM	
M9 : P50B07030D		P7 : P60B18450R	P8 : P60B22550M	
		P8 : P60B22550M	T7 : P60B2830KM	
		P9 : P60B22700S		

100 VAC family

MH : P50B03003P	NA : P30B04003P
MJ : P50B04006P	NB : P30B04005P
MK : P50B04010P	NC : P30B04010P
ML : P50B05005P	ND : P30B06020P
MM : P50B05010P	
MN : P50B05020P	
MR : P50B07020P	

AC servo systems "P" series

P series

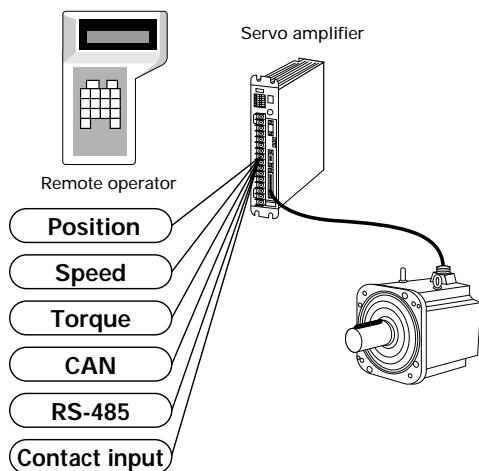
Functions

List of functions of "P" series servo amplifiers

Function	Position control	Speed control	Torque control	Position, speed, and torque One pack	Serial communications (CAN,RS-485)
"PU" amplifiers					
"PZ" amplifiers					
"PE" amplifiers					
"PV" amplifiers					

Selection of various controls and various styles of communications

These flexible servos allow users to select various styles of control, including position control, speed control, torque control, and serial communications (CAN RS-485).



Built-in regenerative processing function **PZ PE CZ**

These servos incorporate a regenerative processing circuit and a regenerative resistor.

Allowable effective power of a regenerative resistor contained in "PU" amplifiers

Amplifier capacity	15A	30A
Resistance (Ω)	100	100
Allowable effective value(W)	5	7

Allowable effective power of a regenerative resistor contained in "PZ", "PE", and "PV" amplifiers

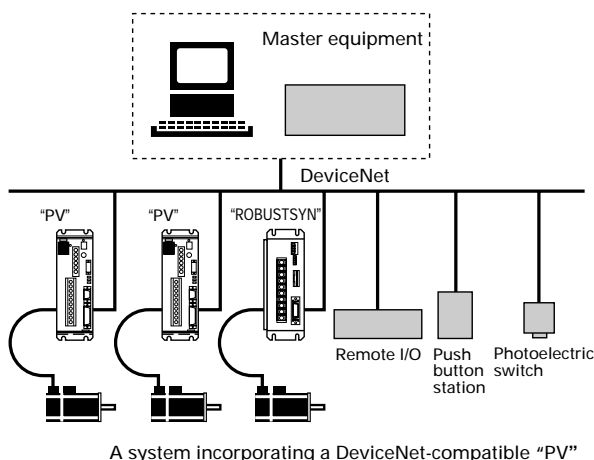
Amplifier capacity	15A	30A	50A	100A	150A
Resistance (Ω)	100	50*	20	10	6.7
Allowable effective value(W)	5	5	30	60	90

Note: 100 Ω only for "PV".

* For 300A and above, use an external regenerative resistor.

Compatible with open networks **PV**

These servos incorporate an interface for CAN (patents applied for) DeviceNet.



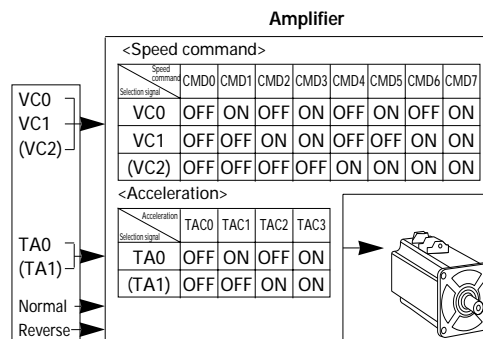
Contact input (speed selection type) **Optional PV**

Four speeds preset inside can be selected according to the external contact.

Speed selection type

Turning on normal or reverse rotation turns on the unit at an acceleration detected with TA0 (TA1) up to a speed selected with VC0 and VC1 (VC2).

Turning it off turns the unit off at a selected acceleration.

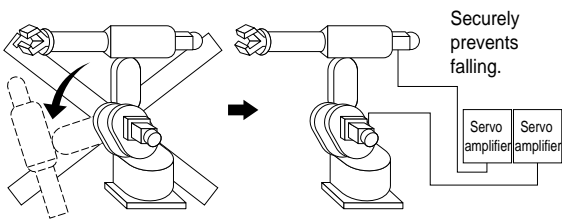


Note: The speed selection signal (VC2) and acceleration selection signal (TA1) are optional. They can be selected on the remote operator.

Contact input	Regenerative processing	Built-in dynamic brake	Brake timing output	Vibration control	Power supply separation of control and main circuit
(Optional)					

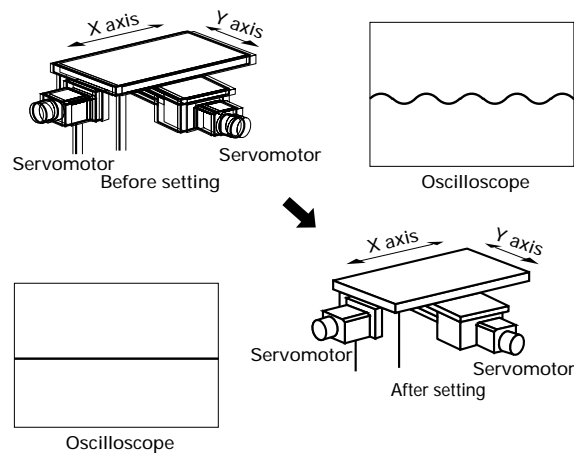
Timing output for the operation of the holding brake **PZ PE C Z**

Timing signals for operating the holding brake are output by the amplifier. Operating the holding brake according to these signals prevents the gravity shaft from falling by its own mass in an event such as an emergency stop.



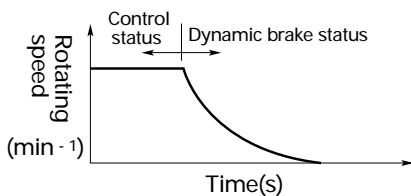
Vibration control **PU PZ PE PV C Z**

This unit incorporates a programmable filter. Adjusting the filter controls the vibration level of the machine on the load side and achieves smooth, silent operation.



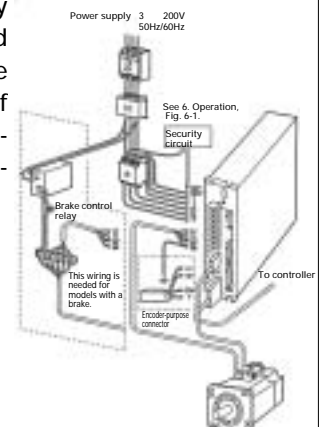
Built-in dynamic brake **PZ PE PV C Z**

These amplifiers incorporate a dynamic brake circuit. It is activated in the event of a blackout or a shutdown of the main circuit power supply. It is activated when an alarm occurs, regardless of the status of the main circuit power supply. "PU" amplifiers provide an external dynamic brake. Contact our sales representative when you need one.



Separation of control power supply from main circuit power supply **PU PZ PE PV C Z**

The control power supply is separated from the main circuit power supply. In the case of an alarm or emergency stop, only the main circuit power supply can be shut down for safety. The control power supply can be separated and held to maintain the transmission status of alarms, thus facilitating analysis and maintenance.



AC servo systems "P" series

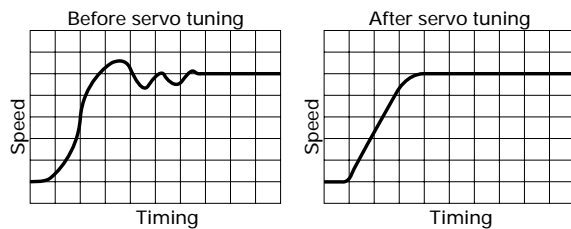
Functions

List of functions of "P" series servo amplifiers

Function	Supporting function for servo tuning	Electronics gear	Pulse resolution switchover	Alarm tracing	Normal/reverse switchover
"PU" Amplifier					
"PZ" Amplifier					
"PE" Amplifier					
"PV" Amplifier					

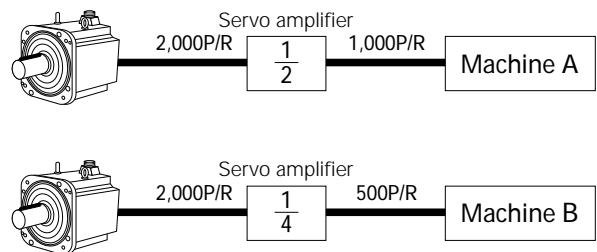
Supporting function for servo tuning **PU PZ PE PV C Z**

This function automatically estimates load inertia levels, allows users to set appropriate parameters, and facilitates adjustment in test runs.



Pulse resolution switchover **PU PZ PE PV**

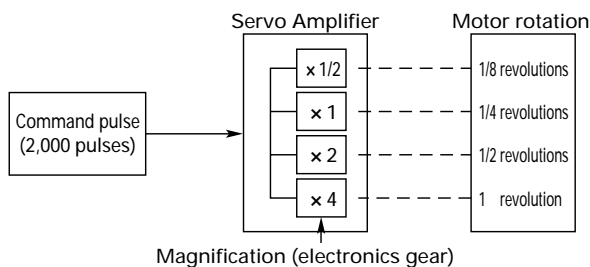
Changing the parameters with the remote operator divides encoder signal pulses in a desired manner.



Note : Effective only in the case of a wiring-saving incremental encoder and an absolute encoder (ABS-E).

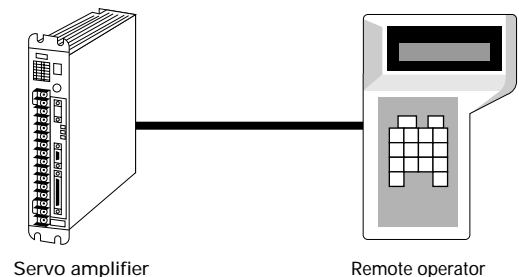
Electronics gear **PU PZ PE PV C Z**

These servos incorporate an electronics gear that sets the amount of movement per pulse of position command to a desired value. The amount of movement can be changed without changing the mechanical gear.



Alarm tracing **PU PZ PE PV C Z**

These servos store the history of the last seven alarms. They can be monitored on the remote operator to help in troubleshooting.

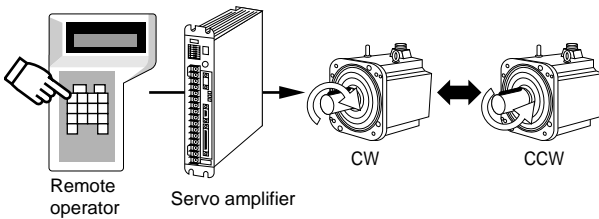


Overtravel stop	Built-in circuit for preventing rush currents in main circuit	Incremental encoder	ABS-R	ABS-R	ABS-E

Normal/reverse switchover

PU PZ PE PV C Z

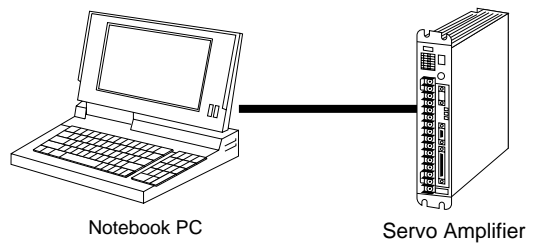
Parameter values can be changed to switch over normal and reverse commands. This obviates the need for command polarity and wire replacement, thus facilitating operation.



PC interface

PZ PE PV C Z

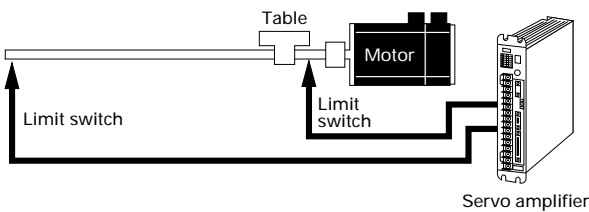
This interface allows users to edit and set servo parameters, display various monitor panels, and indicate other operation statuses on the remote operator. In addition, users can store data onto floppy disks and perform other operations on a PC.



Overtravel stop

PZ PE PV C Z

Overtravel signals can be entered with the limit switch to stop the motor instantaneously. This protects machines from damage due to runaway or other operation exceeding their operational limits.



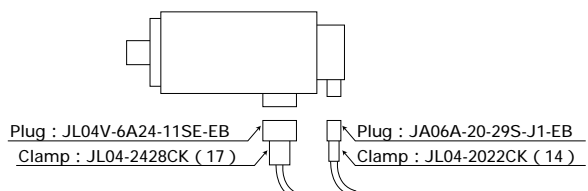
IP CODE

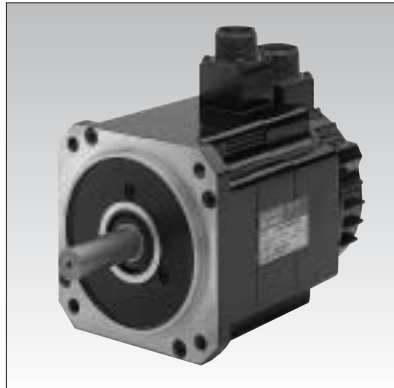
The protective model of a motor itself satisfies the IEC standards. For use in an environment constantly exposed to liquid, contact Sanyo Denki.

	P1	P2	P3	P5	P6	P8
Protective model	IP67	IP40		P50B03、04:IP40 P50B05、07、08:IP55	IP67	

The cannon connector types "P1", "P2", "P6", and "P8" can be adapted to by using a waterproof connector or conduit for the destination cannon connector.

For "P6" and "P8"





Capacity
0.3 to 5.5kW(9 types)

Features

High rigidity and performance

High in rigidity and performance, these motors run smoothly even at super-low speeds. They are best suited for precision positioning and feeding.

Uses

- Machines for precision machining
- Lathes
- Milling machines
- Transfer machines
- Machines for industrial industries

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection system	Fully closed, self-cooling
Presence/lack of seal	Yes
Ambient temperature	0 to +40
Storage temperature	- 20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V10
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet
Installation method	Flange type

Standard specifications

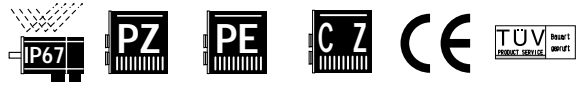
Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P10B10030HXS	P10B10075HXS
Sq. flange size in 《 》	Condition	Symbol	Unit	《 100 》
Rated output		PR	kW	0.3
Rated rotating speed		NR	min ⁻¹	2,000
Maximum rotating speed		Nmax	min ⁻¹	3,000
Rated torque		TR	N · m	1.5
Continuous stall torque		TS	N · m	1.5
Instantaneous maximum stall torque		TP	N · m	4.4
Rated armature current		IR	Arms	2.7
Continuous stall armature current		IS	Arms	2.5
Instantaneous maximum stall armature current		IP	Arms	7.9
Torque constant		KT	N · m/Arms	0.67
Induced voltage constant		KE	mV/min ⁻¹	23.4
Phase armature resistance		R		3.63
Rated power rate		QR	kW/S	5.5
Electric time constant		te	ms	1.9
Mechanical time constant (w/o sensor)		tm	ms	9.6
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	3.98 × 10 ⁻⁴
Rotor inertia (ABS-E)		JM	kg · m ² (GD ² /4)	4.0 × 10 ⁻⁴
Detector wiring-saving INC			P/R	6,000
Detector ABS-E			Division	32,768
Mass including wiring-saving INC		WE	kg	5.1
Brake holding torque		TB	N · m	3.9
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.23 (0.76)
Brake inertia		JB	kg · m ² (GD ² /4)	0.34 × 10 ⁻⁴
Brake mass		W	kg	0.8
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model	PZ0A015	PZ0A030
Amplifier power supply	200 to 230V AC +10% - 15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	1.0
Amplifier mass	kg	2.2

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P10B13050BXS	P10B13100BXS
Sq. flange size in 《 》	Condition	Symbol	Unit	《 130 》
Rated output		PR	kW	0.5
Rated rotating speed		NR	min ⁻¹	2,000
Maximum rotating speed		Nmax	min ⁻¹	2,000
Rated torque		TR	N · m	2.4
Continuous stall torque		TS	N · m	2.9
Instantaneous maximum stall torque		TP	N · m	8.8
Rated armature current		IR	Arms	2.9
Continuous stall armature current		IS	Arms	3.4
Instantaneous maximum stall armature current		IP	Arms	11.0
Torque constant		KT	N · m/Arms	0.98
Induced voltage constant		KE	mV/min ⁻¹	34.3
Phase armature resistance		R		2.43
Rated power rate		QR	kW/S	4.7
Electric time constant		te	ms	3.2
Mechanical time constant (w/o sensor)		tm	ms	9.0
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	12.08 × 10 ⁻⁴
Rotor inertia (ABS-E)		JM	kg · m ² (GD ² /4)	12.1 × 10 ⁻⁴
Detector wiring-saving INC			P/R	6,000
Detector ABS-E			Division	32,768
Mass including wiring-saving INC		WE	kg	7.6
Brake holding torque		TB	N · m	8.8
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.25 (0.86)
Brake inertia		JB	kg · m ² (GD ² /4)	0.5 × 10 ⁻⁴
Brake mass		W	kg	1.5
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model	PZ0A030	
Amplifier power supply	200 to 230V AC +10% - 15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	1.3
Amplifier weight	kg	2.2

- Note 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.



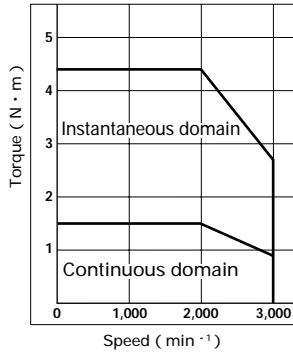
	P10B13050HXS 《130》	P10B13100HXS 《130》	P10B13150HXS 《130》	P10B18200HXS 《180》	P10B18350HXS 《180》	P10B18450RXS 《180》	Symbol	
	0.5	1.0	1.5	2.0	3.5	4.5	PR	
	2,000							NR
	3,000							Nmax
	2.4	4.7	7.4	9.3	16.7	21.6	TR	
	2.9	5.9	8.8	11.8	21.6	32.4	TS	
	8.8	15.2	18.6	29.4	55.9	78.5	TP	
	4.0	8.3	11.2	16.9	23.3	26.0	IR	
	4.6	9.0	12.0	19.7	29.5	34.0	IS	
	15.1	25.0	26.5	48.3	74.2	83.0	IP	
	0.72	0.75	0.83	0.74	0.92	1.16	KT	
	25.1	25.8	28.9	25.9	32.2	40.2	KE	
	1.31	0.44	0.32	0.16	0.096	0.080	R	
	4.7	9.0	15	12	19	23	QR	
	3.2	4.5	5.3	7.5	8.8	11	te	
	9.0	5.9	4.9	6.3	4.9	3.7	tm	
	12.08×10^{-4}	25.08×10^{-4}	35.08×10^{-4}	73.08×10^{-4}	144.08×10^{-4}	206.08×10^{-4}	JM	
	12.1×10^{-4}	25.1×10^{-4}	35.1×10^{-4}	73.1×10^{-4}	144.1×10^{-4}	206.1×10^{-4}	JM	
	6,000							
	32,768							
	7.6	11.7	16.1	23.1	32.6	44.7	WE	
		8.8			32.4		TB	
	90 (24)							
		0.25 (0.86)			0.37(1.4)		VB	
		0.5×10^{-4}			3.4×10^{-4}		IB	
		1.5			5.0		JB	
	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)							

	PZ0A030	PZ0A050	PZ0A100	PZ0A150
	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase			
	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)			
	1.3	3.5	3	4
	2.2	4.4	6.0	8.5

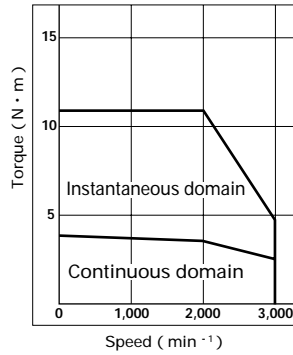
	P10B13150BXS 《130》	P10B18200BXS 《180》	P10B18350BXS 《180》	P10B18450BXS 《180》	P10B18550MXS 《180》	Symbol
	1.5	2.0	3.5	4.5	5.5	PR
	2,000					NR
	2,000					Nmax
	7.4	9.3	16.7	21.6	35.3	TR
	8.8	11.8	21.6	32.4	46.1	TS
	19.6	29.4	45.6	69.6	118	TP
	6.9	9.5	17.5	18.4	24.4	IR
	7.9	11.1	22.1	23.2	30.2	IS
	17.9	26.5	45.5	52.7	79.0	IP
	1.34	1.32	1.23	1.62	1.81	KT
	47.0	46.0	42.9	56.3	63.3	KE
	0.84	0.50	0.17	0.157	0.113	R
	15.0	12.0	19.0	23.0	38	QR
	5.3	7.5	8.8	11	12	te
	4.9	6.3	4.9	3.7	3.4	tm
	35.08×10^{-4}	73.08×10^{-4}	144.08×10^{-4}	206.08×10^{-4}	330.08×10^{-4}	JM
	35.1×10^{-4}	73.1×10^{-4}	144.1×10^{-4}	206.1×10^{-4}	330.1×10^{-4}	JM
	6,000					
	32,768					
	16.1	23.1	32.6	44.7	66.1	WE
	8.8		32.4		49.0	TB
	90 (24)					
	0.25 (0.86)		0.37 (1.4)		0.28 (1.1)	VB
	0.5×10^{-4}		3.4×10^{-4}		7.8×10^{-4}	IB
	1.5		5.0		7.0	JB
	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)					

	PZ0A050	PZ0A100	PZ0A150
	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase		
	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)		
	3	4	7.5
	4.4	6.0	8.5

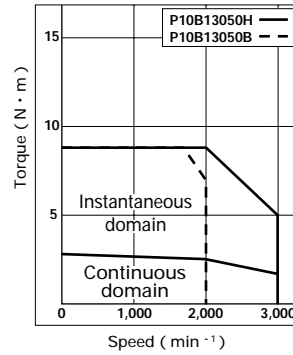
“P1” + “PZ” system: characteristics of torque versus rotating speed



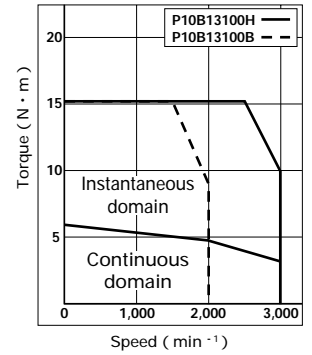
P10B10030H (0.3kW)



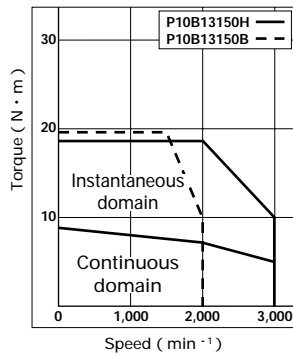
P10B10075H (0.75kW)



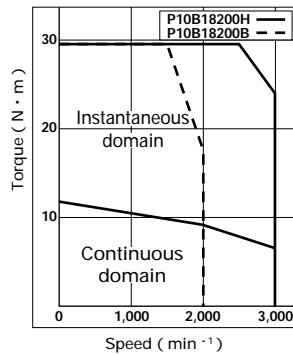
P10B13050H (0.5kW)
P10B13050B (0.5kW)



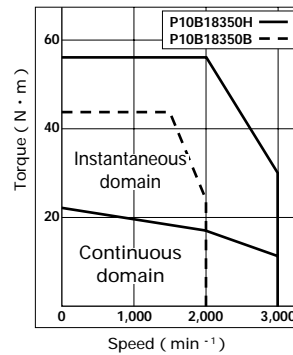
P10B13100H (1.0kW)
P10B13100B (1.0kW)



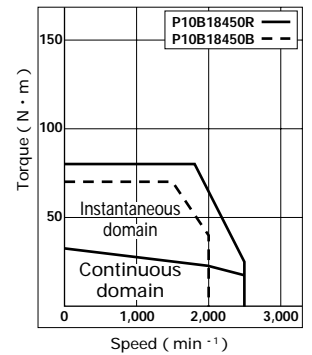
P10B13150H (1.5kW)
P10B13150B (1.5kW)



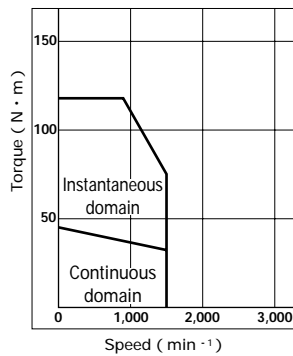
P10B18200H (2.0kW)
P10B18200B (2.0kW)



P10B18350H (3.5kW)
P10B18350B (3.5kW)

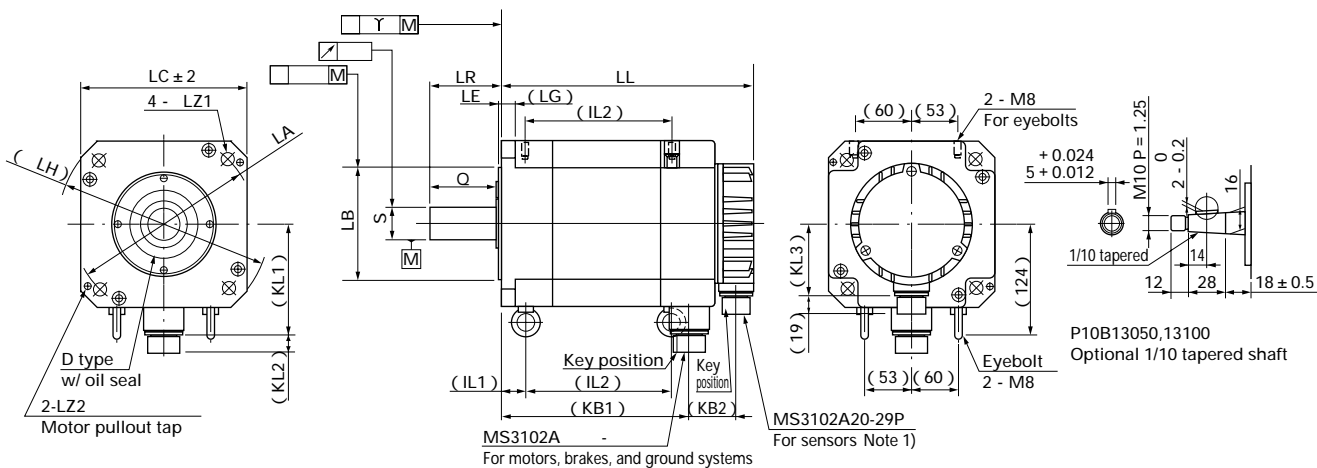


P10B18450R (4.5kW)
P10B18450B (4.5kW)



P10B18550M (5.5kW)

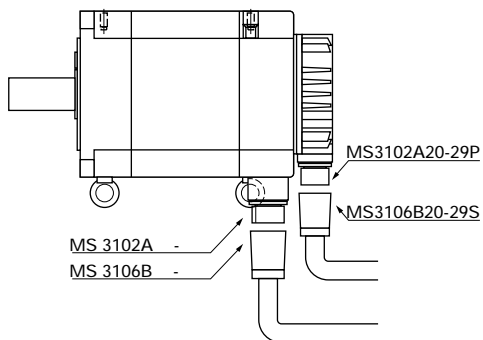
Dimensions [unit:mm]



MODEL	Incremental		ABS - E		Connector (motor), Note 1)				Shaft										ABS - E														
	w/o brake	w/ brake	w/o brake	w/ brake	w/o brake	w/ brake	KL1	KL2	MS3102A	KL1	KL2	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	LR	S	Q	KB1	KL3	KL3	Y	IL1	IL2		
P10B10030	182	225	234	277	18 - 10P	76	19	20 - 15P	76	19	10	115	95 - 0.035	3	130	100	9			35	16 - 0.011	30	45	22 - 0.013 0 25 - 0.013	40	108 198	64	96	0.02	0.04	0.04	-	-
P10B10075	272	315	324	367																													
P10B13050	176	216	214	253																													
P10B13100	221	261	259	298	18 - 10P	91	19	20 - 15P	91	19	12	145	110 - 0.035	6	165	130	9	M6	58	19 - 0.013 0 22 - 0.013	40	58	25 - 0.013 0 35 0.016	40	145 196	80	96	0.02	0.04	0.04	-	-	
P10B13150	272	312	310	349																													
P10B18200	230	278	269	317	22 - 22P		19																										113
P10B18350	280	328	319	367	24 - 11P	118	21	24 - 11P	118	21	16	200	114.3 - 0.035	3	230	180	13.5	M8	79	35 0 +0.01	76	79	48 - 0.016 0 0	76	208 278	80	96	0.02	0.04	0.04	27	163	
P10B18450	350	398	389	437																													233
P10B18550	501	565	544	604	24 - 10P		21																										381

Note 1): Connectors are waterproof when engaged. To meet the needs of IP76, therefore, use waterproof connectors for receiving plugs.
 * For the dimensions of the high-resolution ABS-E (131,072 divisions), consult us.

External connection diagram for "P1"



MODEL	Brake	Plug and clamp	Terminal number				
			U	V	W	E	Brake
P10B10030	Yes	MS3106B20-15S,MS3057-12A	A	B	C	D	E,F
P10B13150	No	MS3106B18-10S,MS3057-10A	A	B	C	D	-
P10B18200	Yes	MS3106B24-11S,MS3057-16A	D	E	F	G,H	A,B
P10B18350	No	MS3106B22-22S,MS3057-12A	A	B	C	D	-
P10B18450	Yes	MS3106B24-11S,MS3057-16A	D	E	F	G,H	A,B
P10B18550	No	MS3106B24-10S,MS3057-16A	A,B	C,D	E,F	G	-



Capacity
1 to 5.0kW (7 types)

Features
Low inertia
High response
Faster servos

Maximum rotating speed of 4,500min⁻¹
for quicker positioning.

Uses
Super-fast response machines
Semiconductor-making machines
Mounters and inserters
PCB drilling units

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection system	Fully closed, self-cooling
Presence/lack of seal	Yes
Ambient temperature	0 to +40
Storage temperature	-20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V10
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet
Installation method	Flange type

Standard specifications

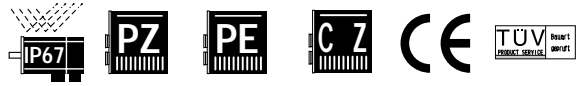
Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P20B10100DXS 《100》	P20B10150DXS 《100》	
Sq. flange size in 《 》	Condition	Symbol	Unit		
Rated output		P _R	kW	1.0	1.5
Rated rotating speed		N _R	min ⁻¹	3,000	
Maximum rotating speed		N _{max}	min ⁻¹	4,500	
Rated torque		T _R	N · m	3.19	4.79
Continuous stall torque		T _S	N · m	3.92	4.90
Instantaneous maximum stall torque		T _P	N · m	10.3	14.7
Rated armature current		I _R	Arms	6.9	8.4
Continuous stall armature current		I _S	Arms	8.0	8.1
Instantaneous maximum stall armature current		I _P	Arms	23.2	26.5
Torque constant		K _T	N · m/Arms	0.53	0.65
Induced voltage constant		K _E	mV/min ⁻¹	18.6	22.6
Phase armature resistance		R		0.51	0.42
Rated power rate		Q _R	kW/S	69	117
Electric time constant		t _e	ms	11	13
Mechanical time constant (w/o sensor)		t _m	ms	0.80	0.59
Rotor inertia (INC)		J _M	kg · m ² (GD ² /4)	1.55 × 10 ⁻⁴	2.04 × 10 ⁻⁴
Rotor inertia (ABS-E)		J _M	kg · m ² (GD ² /4)	1.54 × 10 ⁻⁴	2.03 × 10 ⁻⁴
Detector wiring-saving INC			P/R	2,000	
Detector ABS-E			Division	8,192	
Mass including wiring-saving INC		W _E	kg	5.4	6.5
Brake holding torque		T _B	N · m	3.92	7.84
Brake excitation voltage		V _B	V	90 (24)	
Brake excitation current		I _B	A	0.20 (0.75)	
Brake inertia		J _B	kg · m ² (GD ² /4)	0.15 × 10 ⁻⁴	0.40 × 10 ⁻⁴
Brake mass		W	kg	1.3	1.5
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)	

Applicable amplifier model	PZ0A050		
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase		
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)		
Power capacity (at rating)	kVA	2.5	3
Amplifier mass	kg	4.4	

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P20B10100HXS 《100》	P20B10150HXS 《100》	
Sq. flange size in 《 》	Condition	Symbol	Unit		
Rated output		P _R	kW	1.0	1.5
Rated rotating speed		N _R	min ⁻¹	3,000	
Maximum rotating speed		N _{max}	min ⁻¹	3,000	
Rated torque		T _R	N · m	3.19	4.79
Continuous stall torque		T _S	N · m	3.92	4.90
Instantaneous maximum stall torque		T _P	N · m	10.3	17.7
Rated armature current		I _R	Arms	4.1	6.5
Continuous stall armature current		I _S	Arms	4.7	6.3
Instantaneous maximum stall armature current		I _P	Arms	14	26.5
Torque constant		K _T	N · m/Arms	0.89	0.83
Induced voltage constant		K _E	mV/min ⁻¹	31.2	29.0
Phase armature resistance		R		1.6	0.67
Rated power rate		Q _R	kW/S	69	117
Electric time constant		t _e	ms	10	13
Mechanical time constant (w/o sensor)		t _m	ms	0.89	0.57
Rotor inertia (INC)		J _M	kg · m ² (GD ² /4)	1.55 × 10 ⁻⁴	2.04 × 10 ⁻⁴
Rotor inertia (ABS-E)		J _M	kg · m ² (GD ² /4)	1.54 × 10 ⁻⁴	2.03 × 10 ⁻⁴
Detector wiring-saving INC			P/R	2,000	
Detector ABS-E			Division	8,192	
Mass including wiring-saving INC		W _E	kg	5.4	6.5
Brake holding torque		T _B	N · m	3.92	7.84
Brake excitation voltage		V _B	V	90 (24)	
Brake excitation current		I _B	A	0.20 (0.75)	
Brake inertia		J _B	kg · m ² (GD ² /4)	0.15 × 10 ⁻⁴	0.40 × 10 ⁻⁴
Brake mass		W	kg	1.3	1.5
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)	

Applicable amplifier model	PZ0A030		PZ0A050	
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase			
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)			
Power capacity (at rating)	kVA	2.5	3	
Amplifier mass	kg	2.2	4.4	

Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.



P20B10200DXS 《100》	P20B10250DXS 《100》	P20B13300DXS 《130》	P20B13400DXS 《130》	P20B13500DXS 《130》	Symbol
2.0	2.5	3.0	4.0	5.0	PR
		3,000			NR
		4,500			Nmax
6.37	7.97	9.51	12.7	15.7	TR
7.36	8.82	10.8	14.7	18.1	TS
19.6	23.8	28.4	39.2	47.6	TP
16.5	16.5	16.4	23.4	24.5	IR
17.9	17.6	18.2	25.6	26.9	IS
53.0	52.0	55.0	76.0	77.0	IP
0.44	0.54	0.64	0.62	0.73	KT
15.5	18.8	22.3	21.6	25.3	KE
0.14	0.15	0.13	0.076	0.071	R
148	175	128	167	198	QR
13	14	18		20	te
0.59	0.56	0.68	0.58	0.50	tm
2.83×10^{-4}	3.71×10^{-4}	7.14×10^{-4}	9.79×10^{-4}	12.58×10^{-4}	JM
2.82×10^{-4}	3.43×10^{-4}	7.13×10^{-4}	9.78×10^{-4}	12.57×10^{-4}	JM
		2,000			
		8,192			
8.7	9.4	11.4	14.4	18.1	WE
7.84	9.8	11.8		19.6	TB
		90 (24)			VB
	0.20 (0.75)		0.25 (0.95)		IB
	0.40×10^{-4}	0.5×10^{-4}	0.58×10^{-4}		JB
	1.5	1.7	2.2		W
Temperature: 0 to 40 , humidity: 90% or less (non-condensing)					

PZ0A100			PZ0A150		
200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase					
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)					
4	4.2	5	6.7	8.3	
	6.0		8.5		

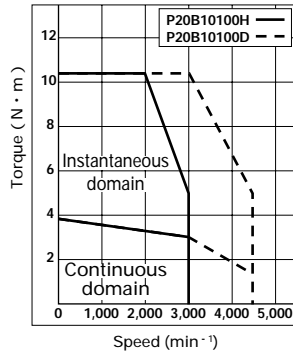
P20B10200HXS 《100》	P20B10250HXS 《100》	P20B13300HXS 《130》	P20B13400HXS 《130》	P20B13500HXS 《130》	Symbol
2.0	2.5	3.0	4.0	5.0	PR
		3,000			NR
		3,000			Nmax
6.37	7.97	9.51	12.7	15.7	TR
7.36	8.82	10.8	14.7	18.1	TS
19.6		34.3	39.2	53.9	TP
8.5	11.0	14.7	17.0	22.3	IR
9.3	11.9	14.4	18.1	22.9	IS
26.5	55	52	54	76	IP
0.85	0.79	0.80	0.87	0.85	KT
30.0	27.6	28.0	30.4	29.7	KE
0.50	0.31	0.19	0.16	0.11	R
148	175	128	167	198	QR
13	14		19		te
0.56	0.54	0.62	0.61	0.57	tm
2.83×10^{-4}	3.71×10^{-4}	7.14×10^{-4}	9.79×10^{-4}	12.58×10^{-4}	JM
2.82×10^{-4}	3.43×10^{-4}	7.13×10^{-4}	9.78×10^{-4}	12.57×10^{-4}	JM
		2,000			
		8,192			
8.7	9.4	11.4	14.4	18.1	WE
7.84	9.8	11.8		19.6	TB
		90 (24)			VB
	0.20 (0.75)		0.25 (0.95)		IB
	0.40×10^{-4}	0.50×10^{-4}	0.58×10^{-4}		JB
	1.5	1.7	2.2		W
Temperature: 0 to 40 , humidity: 90% or less (non-condensing)					

PZ0A050	PZ0A100			PZ0A150
200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase				
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)				
4	4.2	5	6.7	8.3
4.4		6.0		8.5

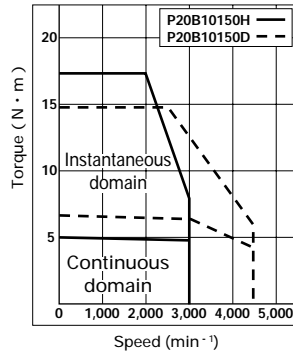
“P2” + “PZ” system: characteristics of torque versus rotating speed

P series

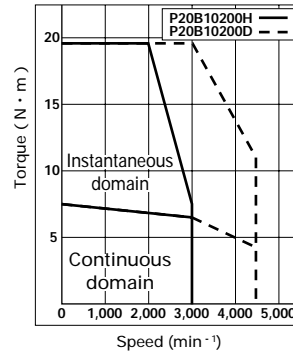
P2



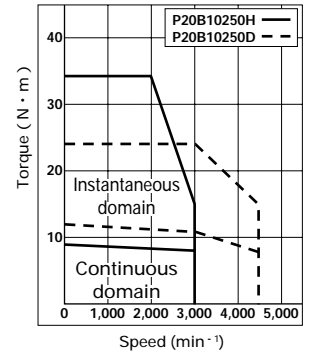
P20B10100H (1.0kW)
P20B10100D (1.0kW)



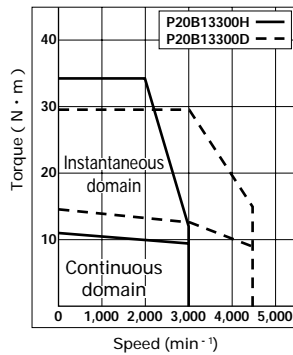
P20B10150H (1.5kW)
P20B10150D (1.5kW)



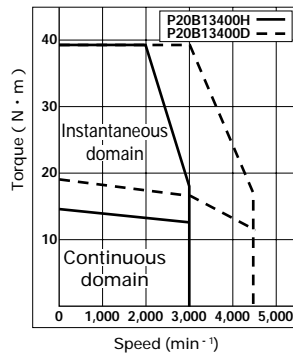
P20B10200H (2.0kW)
P20B10200D (2.0kW)



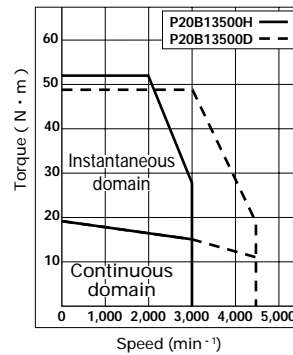
P20B10250H (2.5kW)
P20B10250D (2.5kW)



P20B13300H (3.0kW)
P20B13300D (3.0kW)

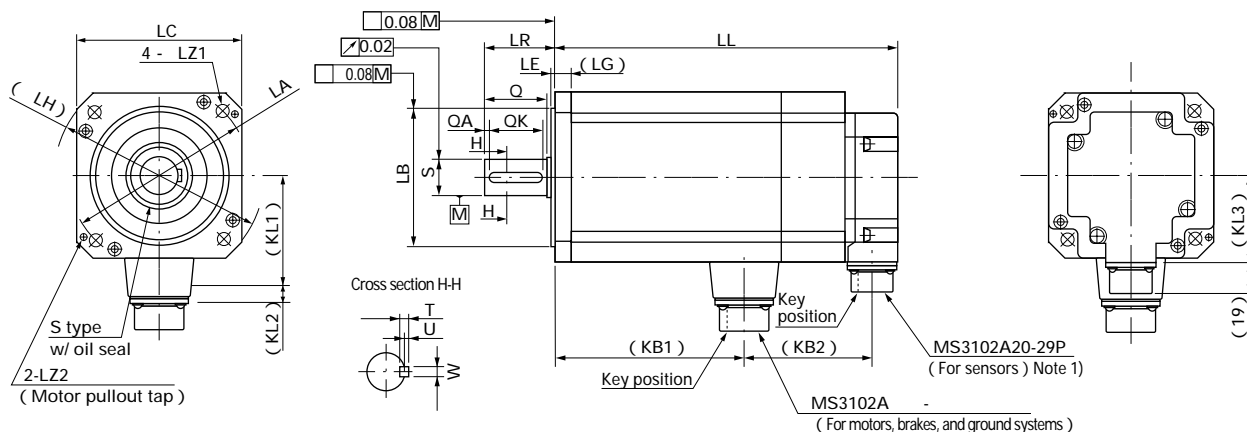


P20B13400H (4.0kW)
P20B13400D (4.0kW)



P20B13500H (5.0kW)
P20B13500D (5.0kW)

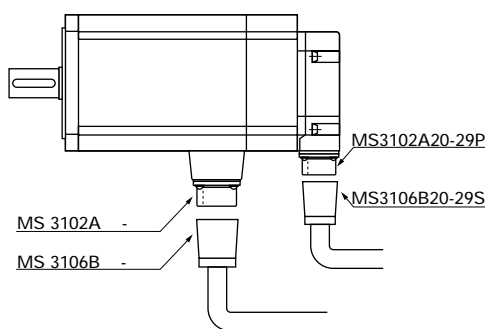
Dimensions [unit:mm]



MODEL	Incremental		ABS - R		ABS - E		Note 1) Connector																		Incremental	ABS - R	ABS - E						
	w/o brake	w/ brake	w/o brake	w/ brake	w/o brake	w/ brake		MS3102A	KL1	KL2	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	KL3	KL3	KL3			
P20B10100	147	191	177	221	187	231																									80		
P20B10150	172	216	202	246	212	256																								105			
P20B10200	197	241	227	271	227	281	132	20 - 15P	76	19	10	115	95 - 0.035	3	130	100	9	45	22 - 0.013	40	3	32	6 - 0.030	6	2.5				130				
P20B10250	222	266	252	296	262	306																							155	70	80	80	
P20B13300	194	236	224	266	234	276																							117				
P20B13400	228	270	258	300	268	281	310	24 - 11P	98	21	12	145	110 - 0.035	4	165	130	9	M6	55	28 - 0.013	50	3	42	8 - 0.036	7	3		151					
P20B13500	267	309	297	339	307	349																							190				

Note 1): Connectors are waterproof when engaged. To meet the needs of IP76, therefore, use waterproof connectors for receiving plugs.

External connection diagram for "P2"



MODEL	Brake	Plug and clamp	Terminal number					
			U	V	W	E	Brake	
P20B10100	Yes	MS3106B20-15S,MS3057-12A	A	B	C	D	E,F	
P20B10250	No		A	B	C	D	-	
P20B13300	Yes	MS3106B24-11S,MS3057-16A	D	E	F	G,H	A,B	
P20B13400	No		D	E	F	G,H	-	



Capacity
30 to 750W (6 types)

Features

Low inertia /high power rate

Best suited for high-response applications with light-load low machine inertia levels

Faster servos

Maximum rotating speed of 4,500min⁻¹ for quick

Uses

Small simple robots

Semiconductor-making machines

Mounters and inserters

Wafer transfer

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection system	Fully closed, self-cooling IP40
Presence/lack of seal	No
Ambient temperature	0 to +40
Storage temperature	- 20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V15
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet type
Installation method	Flange type

Standard specifications

200 VAC type

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle	P30B04003DXS		P30B04005DXS			
	Sq. flange size in 《 》	Condition	Symbol	Unit	《40》	《40》
Rated output		Pr	W		30	50
Rated rotating speed		Nr	min ⁻¹		3,000	
Maximum rotating speed		Nmax	min ⁻¹		4,500	
Rated torque		Tr	N · m		0.098	0.157
Continuous stall torque		Ts	N · m		0.108	0.167
Instantaneous maximum stall torque		Tp	N · m		0.322	0.49
Rated armature current		Ir	Arms		0.54	0.74
Continuous stall armature current		Is	Arms		0.56	0.75
Instantaneous maximum stall armature current		Ip	Arms		1.79	2.4
Torque constant		Kt	N · m/Arms		0.20	0.235
Induced voltage constant		Ke	mV/min ⁻¹		7.1 ± 10%	8.2 ± 10%
Phase armature resistance		R			12.5	9.1
Rated power rate		Qr	kW/S		4.9	9.3
Electric time constant		te	ms		1.2	1.2
Mechanical time constant (w/o sensor)		tm	ms		1.8	1.3
Rotor inertia (INC)		Jm	kg · m ² (GD ² /4)		0.024 × 10 ⁻⁴	0.031 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		Jm	kg · m ² (GD ² /4)		0.021 × 10 ⁻⁴	0.028 × 10 ⁻⁴
Detector wiring-saving INC			P/R		2,000	
Detector ABS-RII / RIII			P/R		8,192	
Mass including wiring-saving INC		We	kg		0.3	0.35
Brake holding torque		Tb	N · m		0.098	0.157
Brake excitation voltage		Vb	V		90 (24)	
Brake excitation current		Ib	A		0.07 (0.26)	
Brake inertia		Jb	kg · m ² (GD ² /4)		0.0078 × 10 ⁻⁴	
Brake mass		W	kg		0.24	
Motor operating temperature and humidity					Temperature: 0 to 40 , humidity: 90% or less (non-condensing)	

Applicable amplifier model	PU0A015- / PZ0A015-
Amplifier power supply	200 to 230V AC + 10% - 15% 50/60Hz 1
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)
Power capacity (at rating)	kVA 0.2
Amplifier mass	kg 0.85

100VAC type

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle	P30B04003PXS		P30B04005PXS			
	Sq. flange size in 《 》	Condition	Symbol	Unit	《40》	《40》
Rated output		Pr	W		30	50
Rated rotating speed		Nr	min ⁻¹		3,000	
Maximum rotating speed		Nmax	min ⁻¹		4,500	
Rated torque		Tr	N · m		0.098	0.157
Continuous stall torque		Tp	N · m		0.322	0.49
Instantaneous maximum stall torque		Ir	Arms		1.0	1.5
Rated armature current		Ip	Arms		3.6	5.1
Continuous stall armature current		Kt	N · m/Arms		0.1	0.113
Instantaneous maximum stall armature current		Ke	mV/min ⁻¹		3.65 ± 10%	3.93 ± 10%
Torque constant		R			3.04	2.25
Induced voltage constant		Qr	kW/S		4.9	9.3
Phase armature resistance		te	ms		1.2	1.3
Rated power rate		tm	ms		1.6	1.4
Electric time constant		Jl	kg · m ² (GD ² /4)		0.24 × 10 ⁻⁴	0.31 × 10 ⁻⁴
Mechanical time constant (w/o sensor)			P/R		2,000	
Rotor inertia (INC)		Jm	kg · m ² (GD ² /4)		0.024 × 10 ⁻⁴	0.031 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		We	kg		0.3	0.35
Detector wiring-saving INC			P/R		8,192	
Detector ABS-RII / RIII		Jm	kg · m ² (GD ² /4)		0.021 × 10 ⁻⁴	0.028 × 10 ⁻⁴
Mass including wiring-saving INC		We	kg		0.39	0.44
Brake holding torque		Tb	N · m		0.098	0.157
Brake excitation voltage		Vb	V		90 (24)	
Brake excitation current		Ib	A		0.07 (0.26)	
Brake inertia		Jb	kg · m ² (GD ² /4)		0.0078 × 10 ⁻⁴	
Brake mass		W	kg		0.24	
Motor operating temperature and humidity					Temperature: 0 to 40 , humidity: 90% or less (non-condensing)	

Applicable amplifier model	PU0B015-
Amplifier power supply	200 to 230V AC + 10% - 15% 50/60Hz ± 3Hz single-phase
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)
Power capacity (at rating)	kVA 0.2
Amplifier mass	kg 0.85

- Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.



P30B04010DXS 《40》	P30B06020DXS 《60》	P30B06040DXS 《60》	P30B08075DXS 《80》	Symbol
100	200	400	750	Pr
3,000				Nr
4,500				Nmax
0.32	0.637	1.274	2.38	TR
0.353	0.686	1.372	2.55	TS
0.98	1.96	3.82	7.15	TP
1.1	2.2	2.7	4.6	IR
1.3	2.3	2.8	4.8	IS
4.1	7.5	8.6	15.0	IP
0.292	0.316	0.533	0.565	KT
10.2 ± 10%	11.0 ± 10%	18.6 ± 10%	19.74 ± 10%	KE
4.3	1.5	1.4	0.52	R
22.0	29.0	64.0	92.0	QR
1.4	3.8	4.6	8.3	te
0.7	0.63	0.38	0.3	tm
0.051×10^{-4}	0.144×10^{-4}	0.255×10^{-4}	0.635×10^{-4}	JM
0.048×10^{-4}	0.141×10^{-4}	0.252×10^{-4}	0.647×10^{-4}	JM
2,000				
8,192				
0.5	1.15	1.7	3.3	WE
0.32	0.637	1.274	2.38	TB
90 (24)				VB
0.07 (0.26)	0.07 (0.31)		0.08 (0.37)	IB
0.0078×10^{-4}	0.06×10^{-4}		0.343×10^{-4}	JB
0.24	0.44		0.8	W
Temperature: 0 to 40 , humidity: 90% or less (non-condensing)				

PU0A015- / PZ0A015-	PU0A030- / PZ0A030-
200 to 230V AC +10% -15% 50/60Hz 1	
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
0.3	1.7
0.85	1.1

P30B04010PXS 《40》	P30B06020PXS 《60》	Symbol
100	200	Pr
3,000		Nr
4,500		Nmax
0.32	0.637	TR
0.98	1.96	TP
2.2	4.6	IR
7.4	15.8	IP
0.162	0.151	KT
5.63 ± 10%	5.28 ± 10%	KE
1.58	0.39	R
22.0	29.0	QR
1.3	3.6	te
0.8	0.71	tm
0.51×10^{-4}	1.44×10^{-4}	JL
2,000		
0.051×10^{-4}	0.144×10^{-4}	JM
0.5	1.15	WE
8,192		
0.048×10^{-4}	0.141×10^{-4}	JM
0.59	1.35	WE
0.32	0.637	TB
90 (24)		VB
0.07 (0.26)	0.07 (0.31)	IB
0.0078×10^{-4}	0.06×10^{-4}	JB
0.24	0.44	W
Temperature: 0 to 40 , humidity: 90% or less (non-condensing)		

PU0B015-	PU0B030-
200 to 230V AC +10% -15% 50/60Hz ±3Hz single-phase	
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
0.3	0.5
0.85	1.1

Planetary gears

Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rotating speed	Dimensions
	W							
P30B04010DXS *A	100	1/3	30	75	0.7	2.2	1,000	54 × 54mm
P30B04010DXS *B		1/5			1.3	3.9	600	
P30B04010DXS *C		1/9	80	2.3	7.1	333		
P30B04010DXS *D		1/15		3.8	11.8	200		
P30B04005DXS *E	50	1/25	42	70	2.9	8.9	120	
P30B06040DXS *A	400	1/3	24	75	2.9	8.6	1,000	78 × 78mm
P30B06040DXS *B		1/5			4.8	14.3	600	
P30B06040DXS *C		1/9	8.5	25.8	333			
P30B06040DXS *D		1/15	30	14.3	43.0	200		
P30B06020DXS *E	200	1/25	30	70	11.9	36.8	120	
P30B08075DXS *A	750	1/3	24	75	5.4	16.1	1,000	96 × 96mm
P30B08075DXS *B		1/5			8.9	26.8	600	
P30B08075DXS *C		1/9	30	70	15.0	45.0	333	
P30B08075DXS *D		1/15			25.0	75.1	200	

Flat gears

Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rotating speed	Dimensions	
	W								Minute
P30B04005DXS *J	50	1/5	60	95	0.75	1.8	600	60 × 60mm	
P30B04005DXS *K		1/10		90	1.4	3.4	300		
P30B04005DXS *L		1/15			2.1	5.2	200		
P30B06020DXS *J	200	1/5		90	95	3.0	6.0	600	82 × 82mm
P30B06020DXS *K		1/10			5.7	11.4	300		
P30B04010DXS *L	100	1/15		90	4.3	8.6	200		
P30B04010DXS *J	400	1/5		95	95	6.0	12.0	600	102 × 102mm
P30B04010DXS *K		1/10			11.5	23.0	300		
P30B06020DXS *L	200	1/15		90	8.6	25.2	200		
P30B08075DXS *J	750	1/5	80	80	9.5	19.0	600	120 × 120mm	
P30B08075DXS *K		1/10			19.0	38.0	300		

Note: To protect the gears, limit the torques to double their ratings.

Amplifiers can be delivered with different internal settings if you specify them when placing an order.

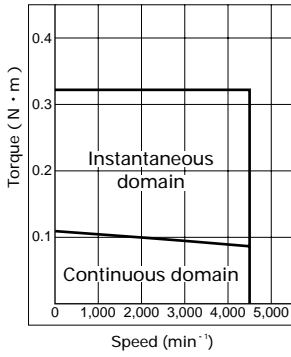
Backlash-less planetary gears

Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rotating speed	Dimensions
	W							
P30B04010DXS *S	100	1/5	2	75	1.2	3.7	600	70 × 70mm
P30B04010DXS *T		1/11	3		80	2.8	8.6	
P30B04005DXS *U	50	1/21		2.7		8.2	143	
P30B04005DXS *V		1/33		4.2	12.9	91		
P30B06040DXS *S	400	1/5	2	75	4.8	14.3	600	
P30B06040DXS *T		1/11	3		75	10.5	31.5	273
P30B06020DXS *U	200	1/21		10.0		30.9	143	
P30B06020DXS *V		1/33		15.8	48.5	91		
P30B08075DXS *S	750	1/5	2	70	8.3	25.0	600	120 × 120mm
P30B08075DXS *T		1/11	3		18.3	55.1	273	

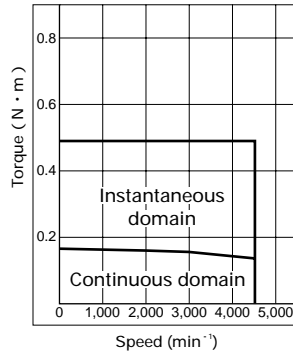


“P3” + “PZ” system: characteristics of torque versus rotating speed

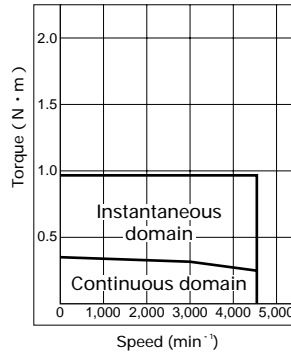
200 VAC type



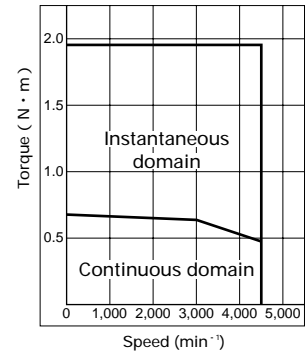
P30B04003D (30W)



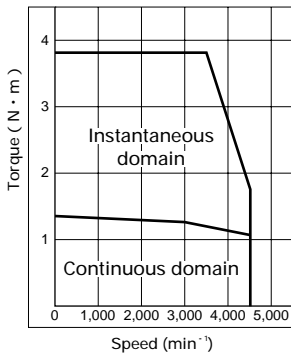
P30B04005D (50W)



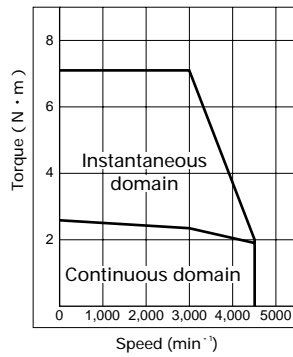
P30B04010D (100W)



P30B06020D (200W)



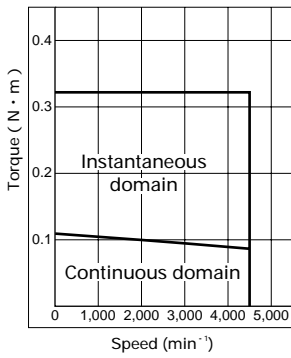
P30B06040D (400W)



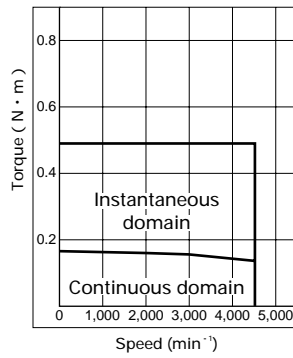
P30B08075D (750W)

“P3” + “PU” system: characteristics of torque versus rotating speed

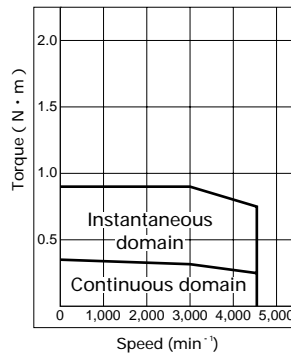
100 VAC type



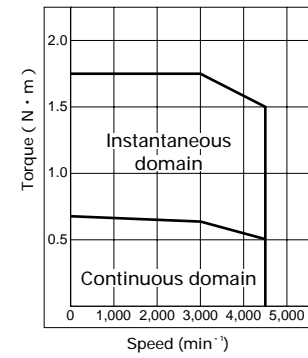
P30B04003P (30W)



P30B04005P (50W)

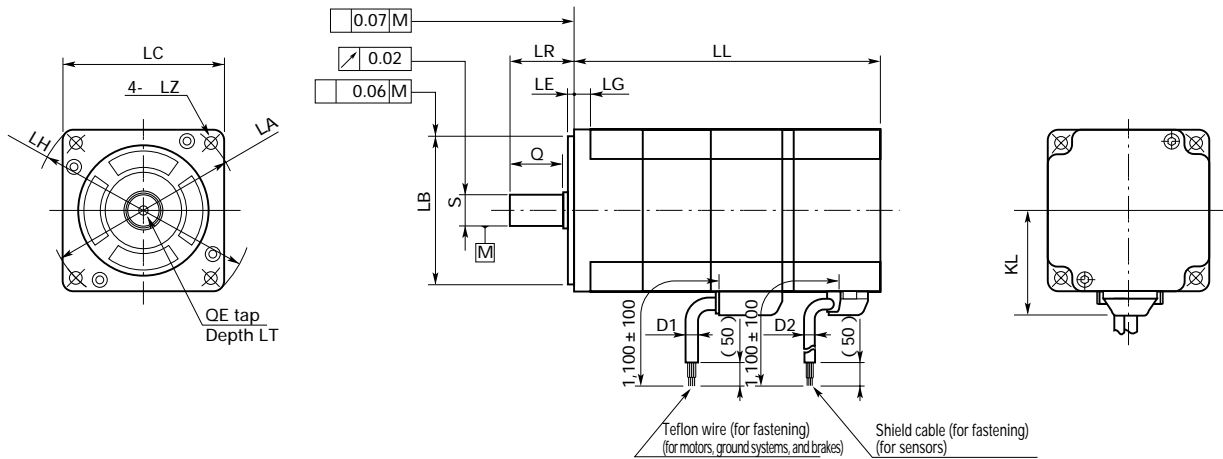


P30B04010P (100W)



P30B06020P (200W)

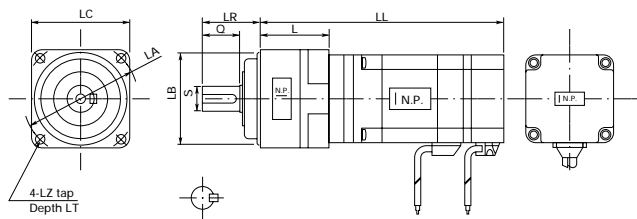
Dimensions [unit:mm]



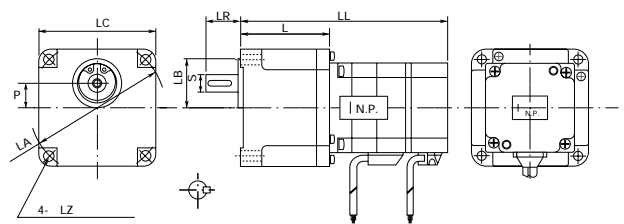
MODEL	Incremental		ABS-R		LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QE	LT	D1	D2	Incremental-R	ABS-R	
	w/o brake	w/ brake	w/o brake	w/ brake																		
P30B04003	64	102.5	70	108.5	5	30	46	30 - 0.021	2.5	54	40	4.5	25	0	6 - 0.008			6			5.1	
P30B04005	70	108.5	76	114.5										0								8 - 0.009
P30B04010	88	126.5	94	132.5										0								
P30B06020	95.5	133.5	101	139	6	41	70	50 - 0.025	3	81	60	5.5	30	0	14 - 0.011	M5	12	6.7		4.7		
P30B06040	123.5	161.5	129	167										0								
P30B08075	140	180.5	145	185.5	8	52	90	70 - 0.030	3	107	80	6.6	40	0	16 - 0.011	35				7.9		

Note: ABS-E and ABS-RIII come with sensors having different dimensions.

Planetary gears



Flat gears

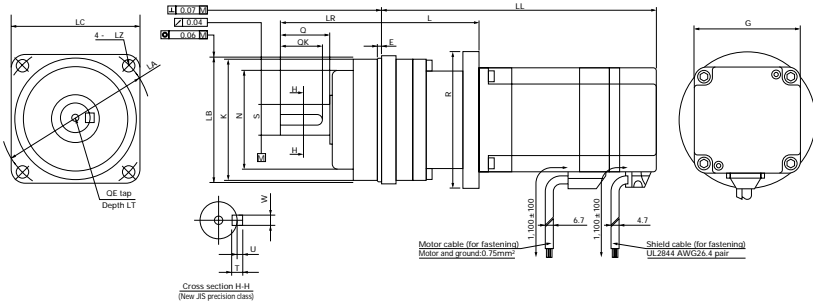


Planetary gears		LL	L	LA	LB	LC	S	LR	Q	LZ	LT	Mass
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
P30B04010DXS	*A	138	50									0.5
P30B04010DXS	*B											
P30B04010DXS	*C			60	50	54	12	32	20	M5	10	0.65
P30B04010DXS	*D	153	65									
P30B04005DXS	*E	135										
P30B06040DXS	*A	191	67									1.85
P30B06040DXS	*B											
P30B06040DXS	*C											
P30B06040DXS	*D	211	87	90	70	78	19	50	30	M6	12	2.3
P30B06020DXS	*E	183										
P30B08075DXS	*A	208	68									1.85
P30B08075DXS	*B											
P30B08075DXS	*C											
P30B08075DXS	*D	242	102	115	90	96	24	61	40	M8	16	3.5

Flat gears		LL	L	LA	LB	LC	S	LR	Q	LZ	LT	Mass
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
P30B04005DXS	*J											
P30B04005DXS	*K	117	47	70	18	60	8	32	5	10	4.5	0.4
P30B04005DXS	*L											
P30B06020DXS	*J	147										
P30B06020DXS	*K		51	94	44	82	12	26.5	5	15	6.5	0.7
P30B06040DXS	*L	139										
P30B06040DXS	*J	202										
P30B06040DXS	*K		78	120	40	102	15	32	3	20	6.5	1.3
P30B06020DXS	*L	174										
P30B08075DXS	*J	220	80	146	50	120	19	35	5	25	9	1.5
P30B08075DXS	*K											



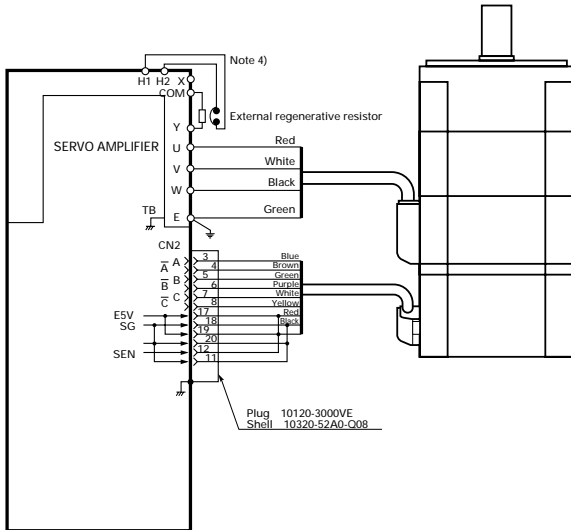
Backlash-less planetary gears



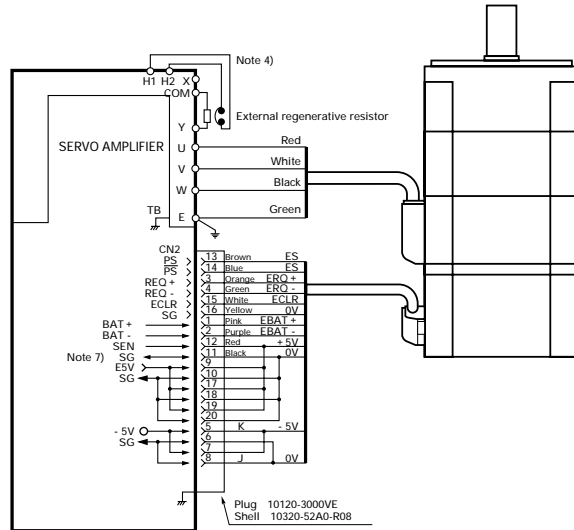
Backlash-less planetary gear	LL	L	LA	LB	E	LC	LR	G	S	QK	Q	K	N	R	LZ	OE	LT	KL	W	T	U	Mass	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg
P30B04010DXS *S	127	57																					
P30B04010DXS *T	154																						
P30B04005DXS *U		66	80	65	8	70	60	40	16	25	28	64.5	50	72	6.6	M4	8	38	5	5	2	0.8	
P30B04005DXS *V	136																						
P30B06040DXS *S	192	68	105	85	10	90	74			20	32	36	83	60		M5	10			6	6	2.5	1.6
P30B06040DXS *T	211							60										50					
P30B06020DXS *U		87	120	100	12	105	84			25	36	42	96	70	104	9	M6	12		8	7	3	2.4
P30B06020DXS *V	183																						
P30B08075DXS *S	216	76	120	100	12	105	84			25	36	42	96	70	116	9	M6	12		8	7	3	2.4
P30B08075DXS *T	236	96	135	115	14	120	105	80		32	50	58	112	90	120	11	M8	16	55		10	8	3.9

External connection diagram for "P3"

Incremental encoder



Absolute sensor (ABS-R)





Capacity
30 to 1,000W (13 types)

Features
High rigidity
Faster servos

Maximum rotating speed of 4,500min⁻¹
for quicker positioning.

Uses
Robots
Machines with windings
Machines for industrial industries

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection system	Fully closed, self-cooling
	P50B03,04 : IP40 P50B05,07,08 : IP55
Presence/lack of seal	P50B03,04 : No P50B05,07,08 : Yes
Ambient temperature	0 to +40
Storage temperature	- 20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V15
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet
Installation method	Flange type

Standard specifications 200 VAC type

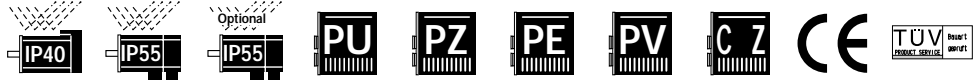
Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle	P50B03003DXS		P50B04006DXS	
	Sq. flange size in ()	Condition	Symbol	Unit
Rated output		PR	W	30
Rated rotating speed		NR	min ⁻¹	3,000
Maximum rotating speed		Nmax	min ⁻¹	4,500
Rated torque		TR	N · m	0.098
Continuous stall torque		TS	N · m	0.108
Instantaneous maximum stall torque		TP	N · m	0.323
Rated armature current		IR	Arms	0.5
Continuous stall armature current		IS	Arms	0.53
Instantaneous maximum stall armature current		IP	Arms	1.8
Torque constant		KT	N · m/Arms	0.206
Induced voltage constant		KE	mV/min ⁻¹	7.2 ± 10%
Phase armature resistance		R		20.5
Rated power rate		QR	kW/S	6.5
Electric time constant		te	ms	0.7
Mechanical time constant (w/o sensor)		tm	ms	2.1
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	0.0197 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		JM	kg · m ² (GD ² /4)	0.0167 × 10 ⁻⁴
Detector wiring-saving INC			P/R	2,000
Detector ABS-RII / RIII			P/R	8,192
Mass including wiring-saving INC		WE	kg	0.24
Brake holding torque		TB	N · m	0.098
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.07 (0.25)
Brake inertia		JB	kg · m ² (GD ² /4)	0.0021 × 10 ⁻⁴
Brake mass		W	kg	0.15
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model	PU0A015- / PZ0A015-	
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	0.2
Amplifier mass	kg	2.2

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle	P50B07040DXS		P50B08050DXS	
	Sq. flange size in ()	Condition	Symbol	Unit
Rated output		PR	W	400
Rated rotating speed		NR	min ⁻¹	3,000
Maximum rotating speed		Nmax	min ⁻¹	4,500
Rated torque		TR	N · m	1.274
Continuous stall torque		TS	N · m	1.372
Instantaneous maximum stall torque		TP	N · m	3.92
Rated armature current		IR	Arms	3.0
Continuous stall armature current		IS	Arms	3.1
Instantaneous maximum stall armature current		IP	Arms	10.0
Torque constant		KT	N · m/Arms	0.481
Induced voltage constant		KE	mV/min ⁻¹	16.8 ± 10%
Phase armature resistance		R		1.65
Rated power rate		QR	kW/S	22.1
Electric time constant		te	ms	4.0
Mechanical time constant (w/o sensor)		tm	ms	1.6
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	0.74 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		JM	kg · m ² (GD ² /4)	0.752 × 10 ⁻⁴
Detector wiring-saving INC			P/R	2,000
Detector ABS-RII / RIII			P/R	8,192
Mass including wiring-saving INC		WE	kg	2.1
Brake holding torque		TB	N · m	0.98
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.08 (0.3)
Brake inertia		JB	kg · m ² (GD ² /4)	0.245 × 10 ⁻⁴
Brake mass		W	kg	0.57
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model	PU0A030- / PZ0A030-	
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	1.3
Amplifier mass	kg	2.2

Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.



P50B04010DXS 《42》	P50B05005DXS 《54》	P50B05010DXS 《54》	P50B05020DXS 《54》	P50B07020DXS 《76》	P50B07030DXS 《76》	Symbol
100	50	100	200	200	300	PR
3,000						NR
4,500						Nmax
0.319	0.159	0.319	0.637	0.637	0.931	TR
0.353	0.167	0.353	0.686	0.686	0.98	TS
0.98	0.49	0.98	1.96	1.96	2.94	TP
1.0	0.85	1.1	1.6	2.2		IR
1.2	0.85	1.2	1.7	2.3	2.2	IS
3.6	2.9	3.7	5.5	7.4	7.5	IP
0.333	0.249	0.319	0.436	0.348	0.483	KT
11.6 ± 10%	8.7 ± 10%	11.1 ± 10%	15.2 ± 10%	12.15 ± 10%	16.86 ± 10%	KE
7.0	9.2	4.9	3.4	2.5	2.9	R
13.8	4.4	10.6	24.2	10.6	17.7	QR
1.5	2.1	2.5	2.9	3.6	3.8	te
1.4	2.6	1.4	0.9	2.4	1.8	tm
0.079×10^{-4}	0.063×10^{-4}	0.101×10^{-4}	0.173×10^{-4}	0.386×10^{-4}	0.495×10^{-4}	JM
0.076×10^{-4}	0.06×10^{-4}	0.098×10^{-4}	0.17×10^{-4}	0.398×10^{-4}	0.507×10^{-4}	JM
2,000						
8,192						
0.59	0.53	0.74	1.07	1.57	1.71	WE
0.319	0.167	0.353	0.353	0.69	0.98	TB
90 (24)						VB
0.07 (0.26)	0.11 (0.4)			0.08 (0.3)		IB
0.0078×10^{-4}	0.029×10^{-4}			0.245×10^{-4}		JB
0.24	0.3			0.57		W

Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

PU0A015- / PZ0A015-

200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase

Temperature: 0 to 55 , humidity: 90% or less (non-condensing)

0.4	0.3	0.4	0.8	1.0	
2.2					

P50B08075DXS 《86》	P50B08100DXS 《86》	Symbol
750	1,000	PR
3,000		NR
4,500		Nmax
2.381	3.185	TR
2.94	3.92	TS
8.82	11.76	TP
6.0	6.7	IR
7.1	7.5	IS
23.7	25.7	IP
0.447	0.553	KT
15.6 ± 10%	19.3 ± 10%	KE
0.43	0.41	R
29.5	38.3	QR
5.8	5.9	te
1.2	1.1	tm
1.926×10^{-4}	2.651×10^{-4}	JM
1.938×10^{-4}	2.663×10^{-4}	JM
2,000		
8,192		
3.9	5.05	WE
2.94		TB
90 (24)		VB
0.08 (0.33)		IB
0.343×10^{-4}		JB
0.8		W

Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

PZ0A050-

200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase

Temperature: 0 to 55 , humidity: 90% or less (non-condensing)

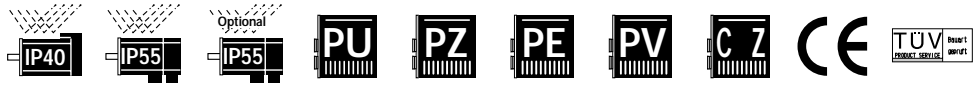
2.0	2.5	
5.2		

Standard specifications 200 VAC type

Motor model (wiring-saving INC, w/o brake) < > dimensions of flange angle	P50B03003PXS		P50B04006PXS		P50B04010PXS		P50B05005PXS		
Sq. flange size in 《 》	Condition	Symbol	Unit	《35》	《42》	《42》	《54》		
Rated output		PR	W	30	60	100	50		
Rated rotating speed		NR	min ⁻¹	3,000					
Maximum rotating speed		Nmax	min ⁻¹	4,500					
Rated torque		TR	N · m	0.098	0.191	0.319	0.159		
Instantaneous maximum stall torque		TP	N · m	0.322	0.647	0.98	0.49		
Rated armature current		IR	Arms	1.0	1.3	1.8	1.6		
Instantaneous maximum stall armature current		IP	Arms	3.6	5.0	6.0	5.0		
Torque constant		K _T	N · m/Arms	0.108	0.164	0.195	0.136		
Induced voltage constant		KE	mV/min ⁻¹	3.79 ± 10%	5.74 ± 10%	6.8 ± 10%	4.76 ± 10%		
Phase armature resistance		R		5.4	2.95	2.35	2.6		
Rated power rate		QR	kW/S	6.5	7.5	13.8	4.4		
Electric time constant		te	ms	0.7	1.5	1.6	2.2		
Mechanical time constant (w/o sensor)		tm	ms	2.0	1.5	1.3	2.4		
Applicable load inertia		JL	kg · m ² (GD ² /4)	0.197 × 10 ⁻⁴	0.54 × 10 ⁻⁴	0.79 × 10 ⁻⁴	0.63 × 10 ⁻⁴		
Detector wiring-saving INC			P/R	2,000					
Inertia (including wiring-saving INC)		JM	kg · m ² (GD ² /4)	0.02 × 10 ⁻⁴	0.054 × 10 ⁻⁴	0.079 × 10 ⁻⁴	0.063 × 10 ⁻⁴		
Mass including wiring-saving INC		WE	kg	0.24	0.46	0.59	0.53		
Detector ABS-RII			P/R	8,192					
Inertia (including ABS-RII)		JM	kg · m ² (GD ² /4)	0.167 × 10 ⁻⁴	0.051 × 10 ⁻⁴	0.076 × 10 ⁻⁴	0.06 × 10 ⁻⁴		
Mass including ABS-RII		WE	kg	0.31	0.52	0.65	0.61		
Brake holding torque		TB	N · m	0.098	0.191	0.319	0.167		
Brake excitation voltage		VB	V	90/24					
Brake excitation current		IB	A	0.07/0.25	0.07/0.26		0.11/0.4		
Brake inertia		JB	kg · m ² (GD ² /4)	0.0021 × 10 ⁻⁴	0.0078 × 10 ⁻⁴		0.029 × 10 ⁻⁴		
Brake mass		W	kg	0.15	0.24		0.3		
Motor operating temperature and humidity	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)								

Applicable amplifier model	PU0B015-								
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase								
Amplifier operating temperature and humidity	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)								
Power capacity (at rating)	kVA	0.2	0.3	0.2	0.2				
Amplifier mass	kg	0.85							

- Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
 2. means values when the windings are at 20 . The values are typical.
 3. The constants are those measured when the motor is mounted on an aluminum plate 305 x 305 x 12mm thick.



	P50B05010PXS 《54》	P50B05020PXS 《54》	P50B07020PXS 《76》	Symbol
	100	200		PR
		3,000		NR
		4,500		Nmax
	0.319	0.637		TR
	0.98	1.96	1.96	TS
	2.1	3.4	4.3	IR
	6.7	11	14.4	IP
	0.176	0.218	0.18	KT
	6.25 ± 10%	7.6 ± 10%	6.3 ± 10%	KE
	1.5	0.85	0.66	R
	10.6	24.2	10.6	QR
	2.6	2.8	3.6	te
	1.4	0.9	2.3	tm
	1.01 × 10 ⁻⁴	1.73 × 10 ⁻⁴	3.86 × 10 ⁻⁴	JL
		2,000		
	0.101 × 10 ⁻⁴	0.173 × 10 ⁻⁴	0.386 × 10 ⁻⁴	JM
	0.74	1.07	1.57	WE
		8,192		
	0.098 × 10 ⁻⁴	0.17 × 10 ⁻⁴	0.398 × 10 ⁻⁴	JM
	0.82	1.15	1.61	WE
	0.353		0.69	TB
	90/24			VB
	0.11/0.4		0.08/0.3	IB
	0.029 × 10 ⁻⁴		0.245 × 10 ⁻⁴	JB
	0.3		0.57	W
	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)			
	PU0B015-	PU0B030-		
	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase			
	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)			
	0.3	0.5	0.6	
	0.85	1.1		

Planetary gears

Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rated rotating speed	Dimensions
	W							
P50B05010DXS *A	100	1/3	30	75	0.72	2.2	1,000	54 × 54mm
P50B05010DXS *B		1/5			1.3	3.9	600	
P50B05010DXS *C		1/9	42	80	2.3	7.1	333	
P50B05010DXS *D		1/15			3.8	11.8	200	
P50B05005DXS *E	50	1/25		70	2.9	8.9	120	
P50B07040DXS *A	400	1/3	24	75	2.9	8.9	1,000	78 × 78mm
P50B07040DXS *B		1/5			4.8	14.8	600	
P50B07040DXS *C		1/9	30	75	8.5	26.3	333	
P50B07040DXS *D		1/15			14.3	44.1	200	
P50B07030DXS *E	300	1/25		70	17.4	55.1	120	
P50B08075DXS *A	750	1/3	24	70	5.4	19.8	1,000	98 × 98mm
P50B08075DXS *B		1/5			8.9	33.1	600	
P50B08075DXS *C		1/9	30	70	15.0	55.5	333	
P50B08075DXS *D		1/15			25.0	92.2	200	

Flat gears

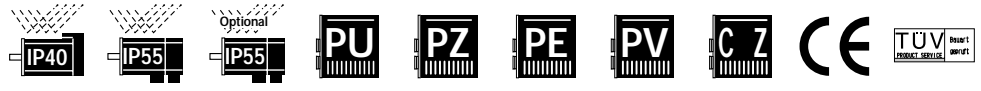
Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rated rotating speed	Dimensions	
	W								Minute
P50B04006DXS *J	60	1/5	60	95	0.9	1.8	600	60 × 60mm	
P50B04006DXS *K		1/10		90	1.7	3.4	300		
P50B04006DXS *L		1/15			2.6	5.2	200		
P50B05020DXS *J	200	1/5		60	95	3.0	6.0	600	82 × 82mm
P50B05020DXS *K		1/10			90	5.7	11.4	300	
P50B05010DXS *L	100	1/15				60	90	4.3	8.6
P50B07040DXS *J	400	1/5	95		6.0			12.0	600
P50B07040DXS *K		1/10	90		11.5		23.0	300	
P50B07030DXS *L	300	1/15			60		90	12.6	25.2
P50B08075DXS *J	750	1/5	80	9.5				19.0	600
P50B08075DXS *K		1/10		19.0			38.0	300	
P50B08050DXS *L	500	1/15	60	90		21.5	43.0	200	

Note: To protect the gears, limit the torques to double their ratings.

Amplifiers can be delivered with different internal settings if you specify them when placing an order.

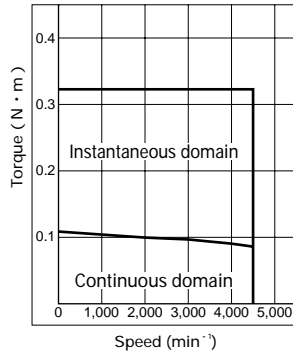
Backlash-less planetary gears

Model	Motor output	Reduction ratio	Backlash	Efficiency	Rated torque	Instantaneous maximum torque	Rated rotating speed	Dimensions
	W							
P50B05010DXS *S	100	1/5	2	75	1.2	3.7	600	70 × 70mm
P50B05010DXS *T		1/11			2.8	8.6	273	
P50B05005DXS *U	50	1/21	3	80	2.7	8.2	143	70 × 70mm
P50B05005DXS *V		1/33			4.2	12.9	91	
P50B07040DXS *S	400	1/5	2	75	4.8	14.7	600	90 × 90mm
P50B07040DXS *T		1/11			10.5	32.3	273	
P50B07030DXS *U	300	1/21	3	75	14.7	46.3	143	105 × 105mm
P50B07020DXS *V	200	1/33			15.8	48.5	91	
P50B08075DXS *S	750	1/5	2	70	8.3	30.9	600	120 × 120mm
P50B08075DXS *T		1/11			18.3	72.8	273	
P50B08050DXS *U	500	1/21	3	70	25.0	92.6	143	

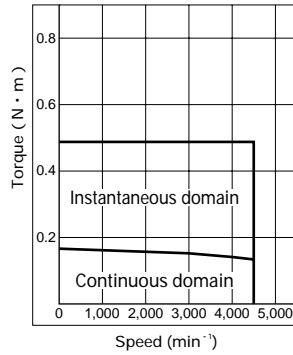


"P5" + "PZ" system: characteristics of torque versus rotating speed

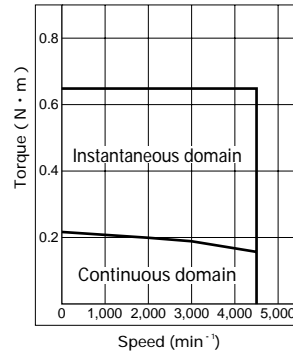
200 VAC type



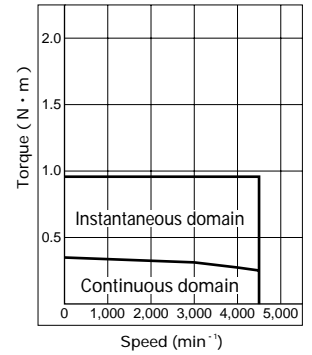
P50B03003D (30W)



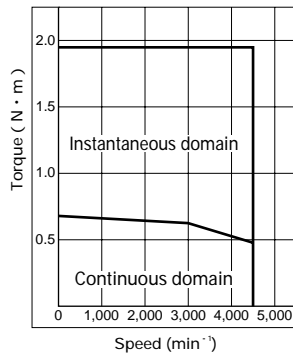
P50B05005D (50W)



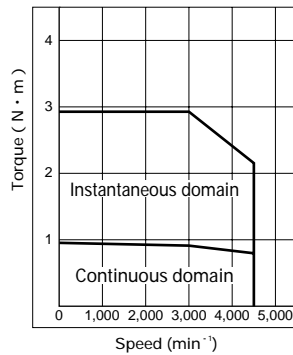
P50B04006D (60W)



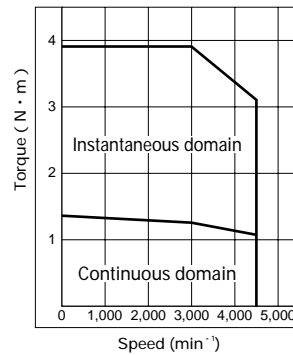
P50B04010D (100W)
P50B05010D (100W)



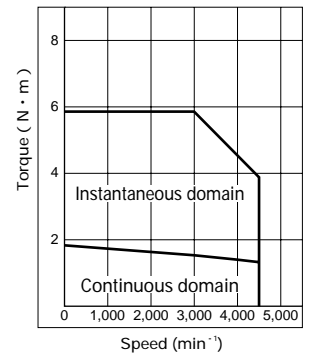
P50B05020D (200W)
P50B07020D (200W)



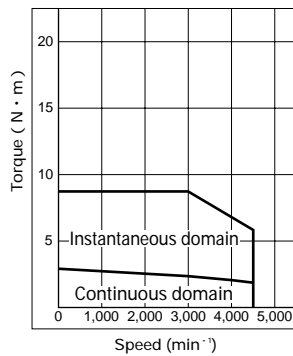
P50B07030D (300W)



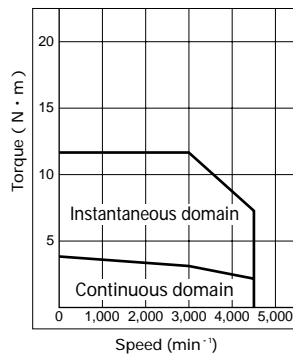
P50B07040D (400W)



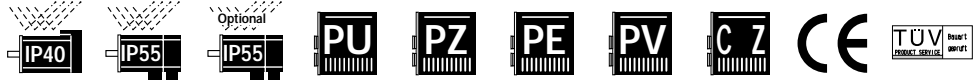
P50B08050D (500W)



P50B08075D (750W)

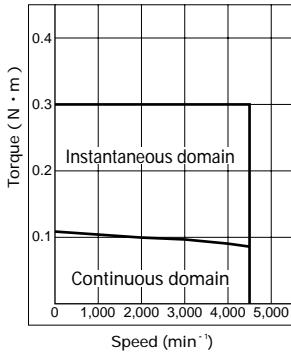


P50B08100D (1000W)

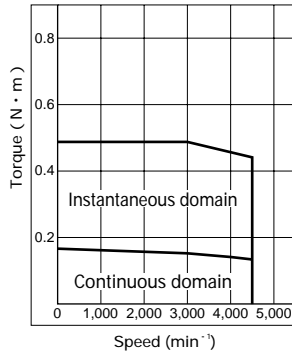


“P5” + “PU” system: characteristics of torque versus rotating speed

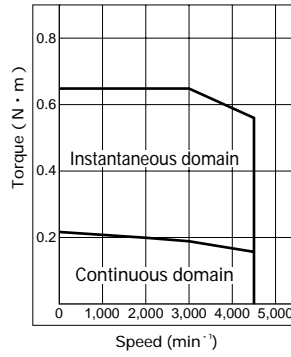
100 VAC type



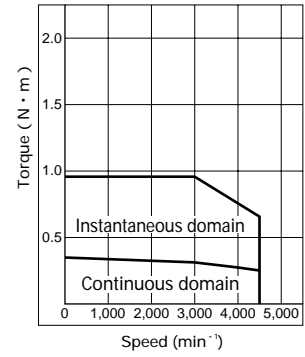
P50B03003P (30W)



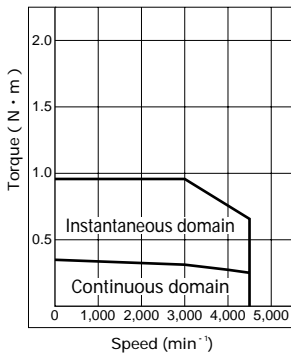
P50B05005P (50W)



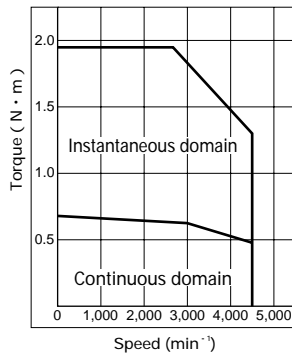
P50B04006P (60W)



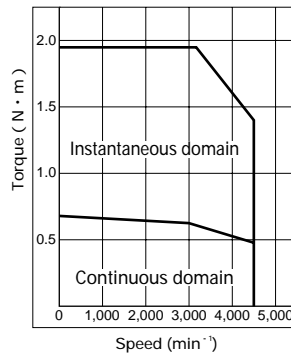
P50B04010P (100W)



P50B05010P (100W)

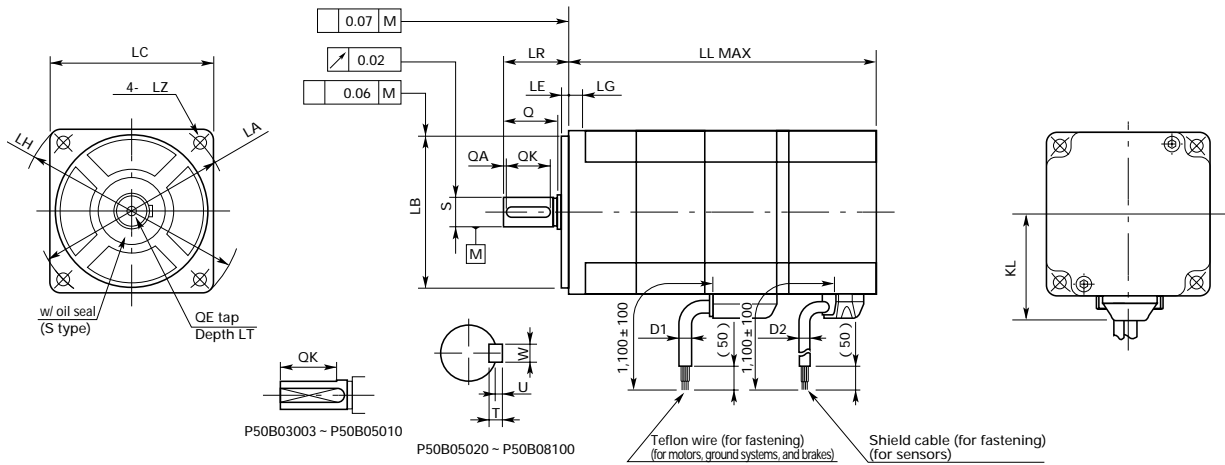


P50B05020P (200W)



P50B07020P (200W)

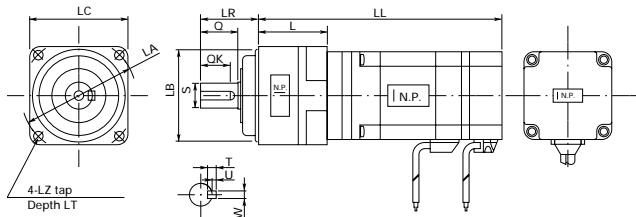
Dimensions [unit:mm]



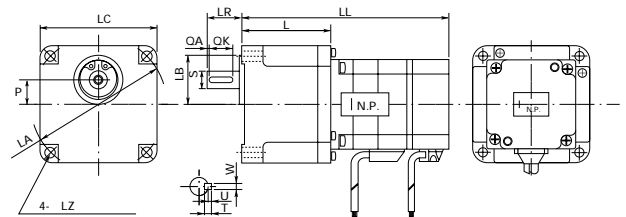
MODEL	Incremental		ABS-R		LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	OE	LT	D1	Incremental	ABS-R	Oil seal	
	w/o brake	w/ brake	w/o brake	w/ brake																				D2	D2		
	LL	LL	LL	LL																							
P50B03003	67.5	98	87	117	4.5	27.5	40	$30 - 0.021$	2	47	35	3.5	15	$5 - 0.008$			11	With 2 slots 4.5 ± 0.2									
P50B04006	82	114	100	132	5	31	48	$34 - 0.025$	2	57	42	3.5	24	$7 - 0.009$	20		15	With 2 slots 6.5 ± 0.2					6			No	
P50B04010	95	127	113	145	5																		5.1				
P50B05005	76	105	95.5	124.5	5	38	60	$50 - 0.025$	2.5	71.5	54	4.5	24	$8 - 0.009$	20		15	With 2 slots 7.5 ± 0.2			M3	8					
P50B05010	86	115	105.5	134.5																			4.7				
P50B05020	105	134	124.5	153.5									30	$11 - 0.011$	25	2	20	4	4	1.5	M4	10					
P50B07020	97	124	102	129																							
P50B07030	103	130	108	135	8	50	90	$70 - 0.030$	3	102.5	76	5.5	30	$14 - 0.011$	25	2	20	5	5	2	M5	12	6.7			Yes	
P50B07040	113	140	118	145																							
P50B08050	126	166	131	171																							
P50B08075	149	189	154	194	8	55	100	$80 - 0.030$	3	115	86	6.6	35	$16 - 0.011$	30	2	25	5	5	2	M5	12					
P50B08100	172	212	177	217																							

Note: ABS-E and ABS-R111 come with sensors having different dimensions.

Planetary gears



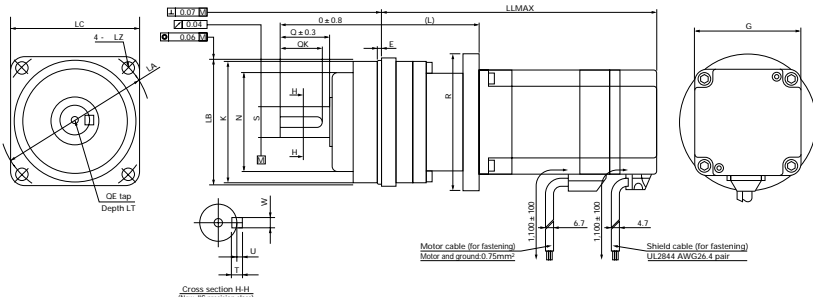
Flat gears



Flat gears	LL	L	LA	LB	LC	S	LR	Q	LZ	LT	QK	W	T	U	Mass of gear only Kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
P50B05010DXS *A	129	43													0.5
P50B05010DXS *B															
P50B05010DXS *C			60	50	54	12	32	20	M5	10	16	4	4	1.5	0.65
P50B05010DXS *D	144	58													
P50B05005DXS *E	134														
P50B07040DXS *A	173	60													1.85
P50B07040DXS *B															
P50B07040DXS *C															
P50B07040DXS *D	193	80	90	70	78	19	50	30	M6	12	22	6	6	2.5	2.3
P50B07030DXS *E	183														
P50B08075DXS *A	209	60													1.85
P50B08075DXS *B															
P50B08075DXS *C															
P50B08075DXS *D	243	94	115	90	96	24	61	40	M8	16	30	8	7	3	3.5

Flat gears	LL	L	LA	LB	LC	S	LR	LZ	LT	QK	QA	W	T	U	Mass of gear only Kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
P50B04006DXS *J															
P50B04006DXS *K	129	47	70	18	60	8	32	4.5	6	12	2	3	3	0.4	
P50B04006DXS *L														1.5	
P50B05020DXS *J	156	51	94	44	82	12	26.5	6.6	8	16	2	4	4	0.7	
P50B05020DXS *K															
P50B05010DXS *L	137														
P50B07040DXS *J	191	78	120	40	102	15	32	6.5	10	20	2	5	5	2	1.3
P50B07040DXS *K															
P50B07030DXS *L	181														
P50B08075DXS *J	229														
P50B08075DXS *K	80	146	50	120	19	35	9	12	25	2	6	6	2.5	1.5	
P50B08050DXS *L	206														

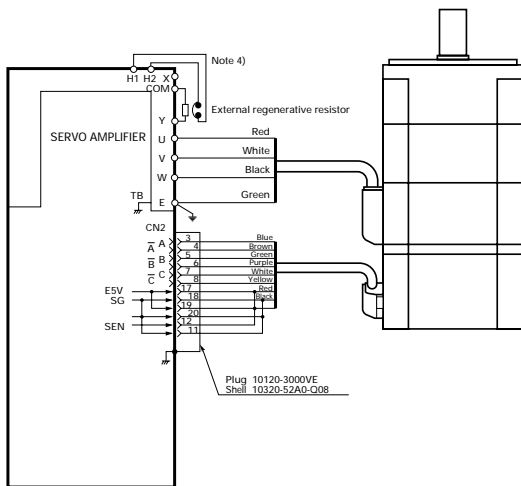
Backlash-less planetary gears



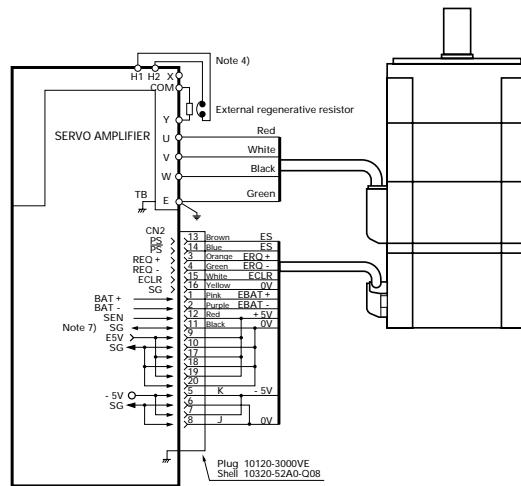
Backlash-less planetary gear	LL	L	LA	LB	E	LC	LR	G	S	QK	Q	K	N	R	LZ	QE	LT	KL	W	T	U	Mass	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg
P50B05010DXS *S	136	50																					
P50B05010DXS *T	145																						
P50B05005DXS *U	135	59	80	65	8	70	60	54	16	25	28	64.5	50	72	6.6	M4	8	38	5	5	2	0.8	
P50B05005DXS *V	135																						
P50B07040DXS *S	174	61	105	85	10	90	74		20	32	36	83	60			M5	10		6	6	2.5	1.6	
P50B07040DXS *T	193																						
P50B07030DXS *U	183	80	120	100	12	105	84	76	25	36	42	96	70	104	9	M6	12	50	8	7	3	2.4	
P50B07020DXS *V	177																						
P50B08075DXS *S	217	68	120	100	12	105	84		25	36	42	96	70	116	9	M6	12		8	7		2.4	
P50B08075DXS *T	237																						
P50B08050DXS *U	214	88	135	115	14	120	105	86	32	50	58	112	90	120	11	M8	16	55	10	8	3	3.9	

External connection diagram for "P5"

Incremental encoder



Absolute sensor (ABS-R)





Capacity
0.5 to 30kW (18 types)

Features

Small and highly rigid

Faster servos

Maximum rotating speed of 4,500min⁻¹ for quicker positioning.

Uses

Robots

General-purpose machine tools

Transfer machines

Food processors

Medical equipment

Machines for industrial industries

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection method	Fully closed, self-cooled, IP67 Models with 20kW through 30kW fans are forcefully cooled, IP45.
Presence/lack of seal	Yes
Ambient temperature	0 to +40
Storage temperature	- 20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V15
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet
Installation method	Flange type

Standard specifications

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P60B13050HXS 《130》	P60B13100HXS 《130》
Sq. flange size in 《 》	Condition	Symbol	Unit	
Rated output		PR	kW	0.5
Rated rotating speed		NR	min ⁻¹	2,000
Maximum rotating speed		Nmax	min ⁻¹	3,000
Rated torque		TR	N · m	2.5
Continuous stall torque		TS	N · m	3.0
Instantaneous maximum stall torque		TP	N · m	7.0
Rated armature current		IR	Arms	4.5
Continuous stall armature current		IS	Arms	5.2
Instantaneous maximum stall armature current		IP	Arms	15.0
Torque constant		KT	N · m/Arms	0.65
Induced voltage constant		KE	mV/min ⁻¹	22.5
Phase armature resistance		R		0.64
Rated power rate		QR	kW/S	22
Electric time constant		te	ms	9.1
Mechanical time constant (w/o sensor)		tm	ms	1.3
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	2.8 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		JM	kg · m ² (GD ² /4)	2.8 × 10 ⁻⁴
Detector wiring-saving INC		P/R		2,000
Detector ABS-RII / RIII		P/R		8,192
Mass including wiring-saving INC		WE	kg	4.7
Brake holding torque		TB	N · m	3.5
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.25 (0.91)
Brake inertia		JB	kg · m ² (GD ² /4)	0.5 × 10 ⁻⁴
Brake mass		W	kg	1.5
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model		PZ0A030	PZ0A050
Amplifier power supply	---	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity		Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	1.4	2.5
Amplifier mass	kg	2.2	4.4

Motor model (wiring-saving INC, w/o brake): < > dimensions of flange angle			P60B18750RXS 《180》	P60B22550MXS 《220》
Sq. flange size in 《 》	Condition	Symbol	Unit	
Rated output		PR	kW	7.5
Rated rotating speed		NR	min ⁻¹	1,500
Maximum rotating speed		Nmax	min ⁻¹	2500
Rated torque		TR	N · m	48.0
Continuous stall torque		TS	N · m	54.9
Instantaneous maximum stall torque		TP	N · m	118
Rated armature current		IR	Arms	58
Continuous stall armature current		IS	Arms	65
Instantaneous maximum stall armature current		IP	Arms	155
Torque constant		KT	N · m/Arms	0.90
Induced voltage constant		KE	mV/min ⁻¹	31.6
Phase armature resistance		R		0.014
Rated power rate		QR	kW/S	243
Electric time constant		te	ms	26
Mechanical time constant (w/o sensor)		tm	ms	0.49
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	95.1 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		JM	kg · m ² (GD ² /4)	95.1 × 10 ⁻⁴
Detector wiring-saving INC		P/R		2,000
Detector ABS-RII / RIII		P/R		8,192
Mass including wiring-saving INC		WE	kg	44.7
Brake holding torque		TB	N · m	54.9
Brake excitation voltage		VB	V	90 (24)
Brake excitation current		IB	A	0.37 (1.4)
Brake inertia		JB	kg · m ² (GD ² /4)	4.5 × 10 ⁻⁴
Brake mass		W	kg	6.0
Cooling fan		PF	W	10.4
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

Applicable amplifier model		PZ0A300	PZ0A150
Amplifier power supply	---	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase	
Amplifier operating temperature and humidity		Temperature: 0 to 55 , humidity: 90% or less (non-condensing)	
Power capacity (at rating)	kVA	12.6	10.1
Amplifier mass	kg	22	8.5

Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.



P60B13150HXS 《130》	P60B13200HXS 《130》	P60B15300HXS 《150》	P60B18200HXS 《180》	P60B18350HXS 《180》	P60B18450RXS 《180》	P60B18550RXS 《180》	Symbol
1.5	2.0	3.0	2.0	3.5	4.5	5.5	PR
2,000						1,500	NR
3,000			2,500				Nmax
7.5	9.5	14.5	9.5	17.0	21.5	35.0	TR
9.0	12.0	18.0	12.0	22.0	32.0	37.3	TS
20.0	30.0	44.0	30.0	50.0	70.0	88.3	TP
9.4	15.5	25.0	14.6	26.4	24.9	32	IR
10.7	18.3	28.1	17.0	32.3	34.0	33	IS
26.5	52.4	77.7	48.7	80.2	81.2	83	IP
0.90	0.69	0.68	0.74	0.75	1.03	1.18	KT
31.4	24.1	23.5	25.7	26.0	36.0	41.2	KE
0.27	0.10	0.048	0.079	0.048	0.052	0.040	R
67	77	102	42	83	98	198	QR
10	12	17	20	19	23	23	te
0.82	0.75	0.65	0.94	0.89	0.69	0.52	tm
8.3×10^{-4}	12.1×10^{-4}	20.1×10^{-4}	22.1×10^{-4}	34.1×10^{-4}	47.1×10^{-4}	61.9×10^{-4}	JM
8.3×10^{-4}	12.1×10^{-4}	20.1×10^{-4}	22.1×10^{-4}	34.1×10^{-4}	47.1×10^{-4}	61.9×10^{-4}	JM
2,000							
8,192							
7.8	9.8	13.4	13.6	17.7	21.7	31.7	WE
9.0	12.0	20.0	12.0	32.0		54.9	TB
90 (24)							VB
0.25 (0.86)	0.28 (1.0)	0.27 (1.0)	0.28 (1.0)	0.37 (1.4)			IB
0.5×10^{-4}		0.68×10^{-4}	0.5×10^{-4}	3.4×10^{-4}		4.5×10^{-4}	JB
1.5	1.7	2.6	1.9	5.0		6.0	W

Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

PZ0A050	PZ0A100	PZ0A150	PZ0A100	PZ0A150
200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase				
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)				
3.9	5.0	6.9	5.0	7.4
4.4	6.0	8.5	6.0	8.5

P60B22700SXS 《220》	P60B2211KBXS 《220》	P60B2215KBXS 《220》	P60B2220KBXS 《220》	P60B2820KMXS 《275》	P60B2825KMXS 《275》	P60B2830KMXS 《275》	Symbol
7.0	11	15	20		25	30	PR
1,000			1,500				NR
1,000		2,000			1,500		Nmax
67.0	70.0	95.5	127.4		156.8	191.1	TR
70.0	88.3	95.5	127.4		156.8	191.1	TS
150.0	181	240	280.3	313.6	362.6	411.6	TP
31.3	51	58	104.7	97.5	108.2	117.7	IR
32.4	64	58	98.3	87.1	94.7	109.5	IS
77.1	142	155	180.6	179	177.3	185.3	IP
2.32	1.48	1.78	1.38	1.49	1.74	1.88	KT
80.9	51.5	62.3	48.1	52.1	60.7	65.7	KE
0.063	0.0155	0.020	0.012	0.014	0.015	0.014	R
254	217	367	655	428	581	821	QR
32	39	37	33	34	36	38	te
0.62	0.53	0.47	0.47	0.71	0.63	0.53	tm
177×10^{-4}	225×10^{-4}	248×10^{-4}	248×10^{-4}	380×10^{-4}	424×10^{-4}	445×10^{-4}	JM
177×10^{-4}	225×10^{-4}	248×10^{-4}	248×10^{-4}	380×10^{-4}	424×10^{-4}	445×10^{-4}	JM
2,000							
8,192							
52.8	67.5	77.5	83	95	100	109	WE
90.0				191.1			TB
90 (24)							VB
0.44 (1.7)				0.75 (2.46)			IB
24×10^{-4}				11.8×10^{-4}			JB
10.4				19.1			W
				65			PF

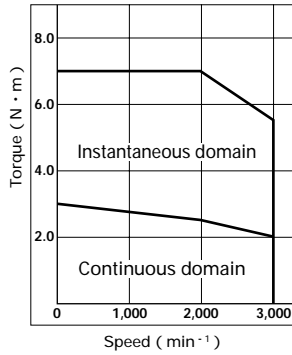
Temperature: 0 to 40 , humidity: 90% or less (non-condensing)

PZ0A150	PZ0A300	PZ0A600
200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase		
Temperature: 0 to 55 , humidity: 90% or less (non-condensing)		
12.2	15.7	21.4
8.5	22	

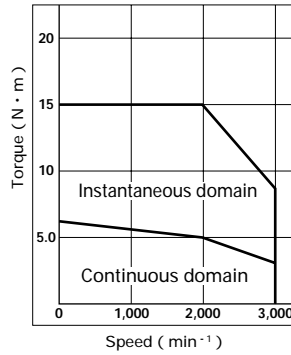
“P6” + “PZ” system: characteristics of torque versus rotating speed

P series

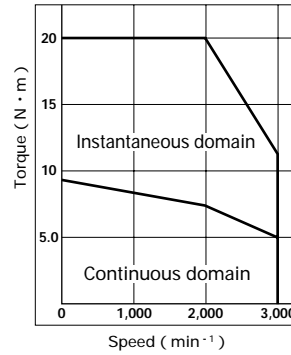
P6



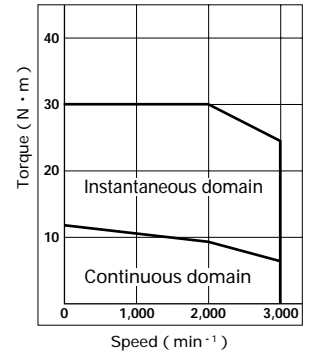
P60B13050H (0.5kW)



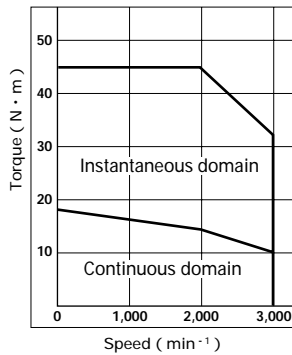
P60B13100H (1.0kW)



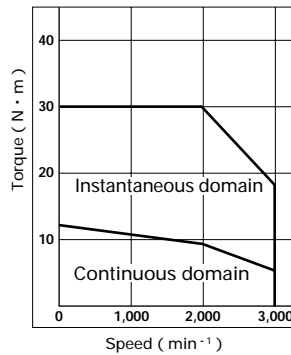
P60B13150H (1.5kW)



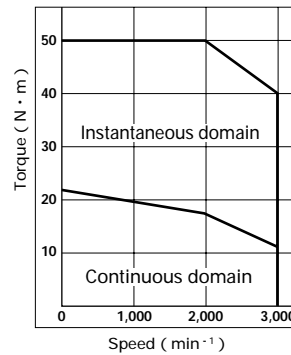
P60B13200H (2.0kW)



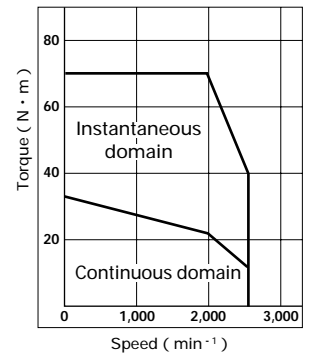
P60B15300H (3.0kW)



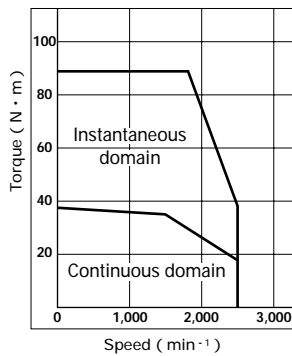
P60B18200H (2.0kW)



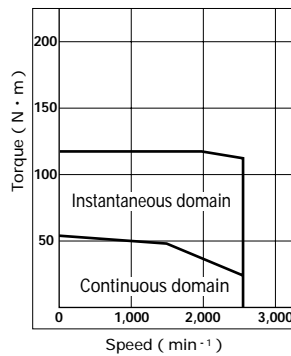
P60B18350H (3.5kW)



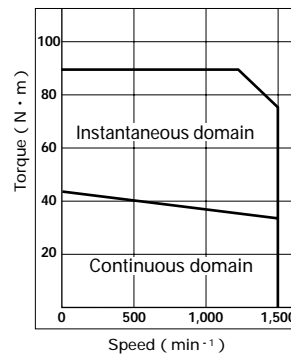
P60B18450R (4.5kW)



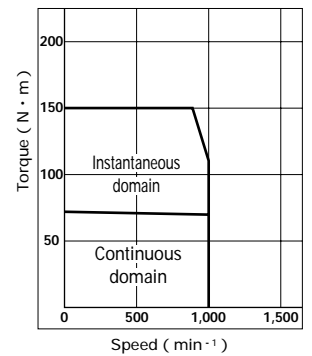
P60B18550R (5.5kW)



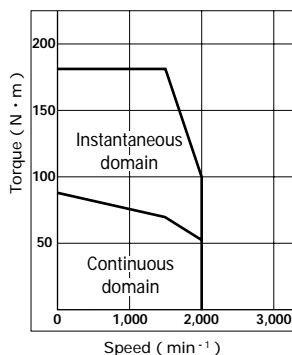
P60B18750R (7.5kW)



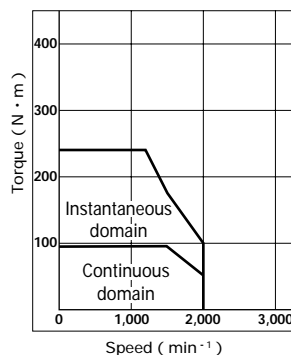
P60B22550M (5.5kW)



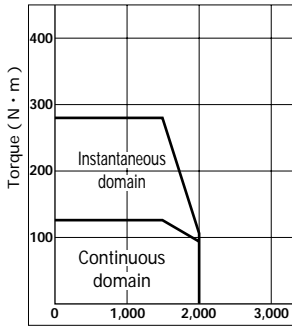
P60B22700S (7.0kW)



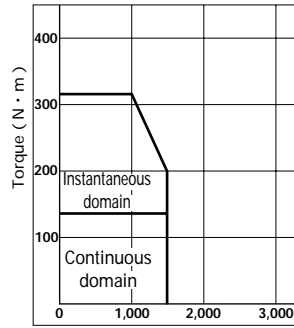
P60B2211KB (11kW)



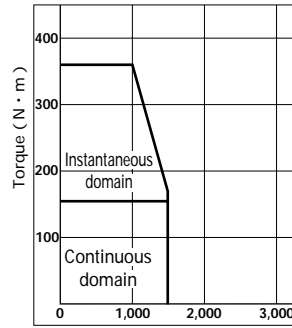
P60B2215KB (15kW)



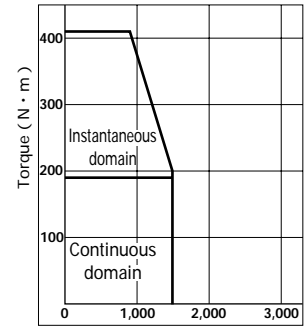
P60B2220KB (20kW)



P60B2820KM (20kW)



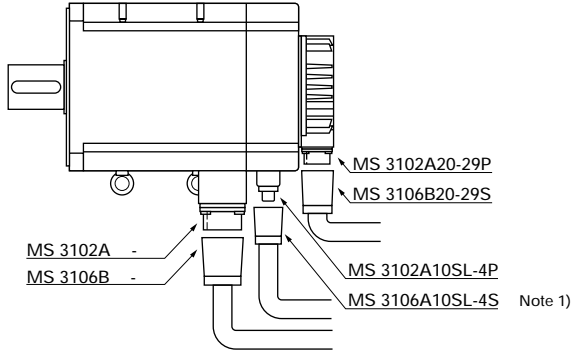
P60B2825KM (25kW)



P60B2830KM (30kW)

External connection diagram for "P6"

1. P60B13050 to 2215K (models with a cannon plug)

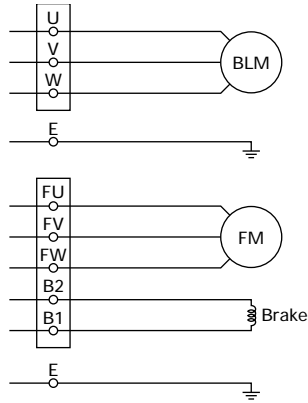


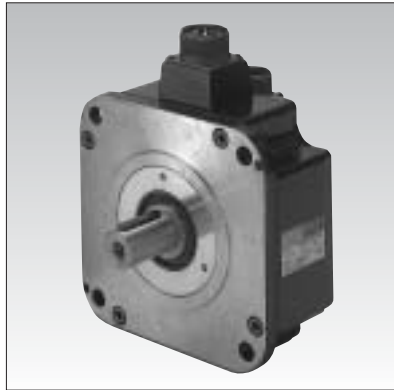
Note 1) Available in P60B18550, 18750, 2211K, and 2215K with a brake.

MODEL	Brake	Plug and clamp	Terminal number				
			U	V	W	E	Brake
Other than those below	Yes	MS3106B24-11S,MS3057-16A	D	E	F	G,H	A,B
	No	(non-waterproof)	D	E	F	G,H	-
P60B18550	Yes	MS3106B32-17S,MS3057-40A	A	B	C	D	
P60B18750		MS3106B10SL-4S,MS3057-4A					A,B
P60B2211K	No						
P60B2215K		MS3106032-17S,MS3057-40A	A	B	C	D	-

2. P60B2220K to 2830K(Terminal block type)

MODEL	Brake	Terminal block	
		Motor	Fan motor and brake
P60B2220K	Yes		
P60B2820K		UF1005-150A-3P	F1005-20S-5P
P60B2825K	No	(M8, hexagon bolt)	(M4, round head sems screw)
P60B2830K			





Capacity
0.75 to 4.5kW (5 types)

Features

Flat

Faster servos

Maximum rotating speed of
4,500min⁻¹ for quicker positioning.

Uses

Robots

General-purpose machine tools

Transfer machines

Machines for industrial industries

Common specifications

Time rating	Continuous
Insulation grade	F type
Dielectric strength	1,500 VAC, 1 minute
Insulation grade	500 VDC, 10 M or more
Protection system	Fully closed, self-cooling, IP67
Presence/lack of seal	Yes
Ambient temperature	0 to +40
Storage temperature	-20 to 65
Ambient humidity	20 to 90% (non-condensing)
Vibration grade	V15
Paint color	Munsell N1.5 or equivalent (circumference)
Excitation system	Permanent magnet
Installation method	Flange type

Standard specifications

Motor model (wiring-saving INC, w/o brake) < > dimensions of flange angle	Condition	Symbol	Unit	P80B15075HXS 《150》	P80B18120HXS 《180》
Sq. flange size in 《 》					
Rated output		PR	W	0.75	1.2
Rated rotating speed		NR	min ⁻¹	2,000	
Maximum rotating speed		Nmax	min ⁻¹	3,000	
Rated torque		TR	N · m	3.6	5.6
Continuous stall torque		TS	N · m	3.7	6.5
Instantaneous maximum stall torque		TP	N · m	9.0	14.0
Rated armature current		IR	Arms	5.2	10.4
Continuous stall armature current		IS	Arms	5.2	10.8
Instantaneous maximum stall armature current		IP	Arms	13.9	26.5
Torque constant		KT	N · m/Arms	0.78	0.73
Induced voltage constant		KE	mV/min ⁻¹	27.0	25.3
Phase armature resistance		R		0.44	0.22
Rated power rate		QR	kW/S	25	27
Electric time constant		te	ms	13	18
Mechanical time constant (w/o sensor)		tm	ms	1.1	1.5
Rotor inertia (INC)		JM	kg · m ² (GD ² /4)	5.3 × 10 ⁻⁴	12.1 × 10 ⁻⁴
Rotor inertia (ABS-RII / RIII)		JM	kg · m ² (GD ² /4)	5.3 × 10 ⁻⁴	12.1 × 10 ⁻⁴
Detector wiring-saving INC			P/R	2,000	
Detector ABS-RII / RIII			P/R	8,192	
Mass including wiring-saving INC		WE	kg	6.2	10.0
Brake holding torque		TB	N · m	9.0	
Brake excitation voltage		VB	V	90 (24)	
Brake excitation current		IB	A	0.25 (0.86)	
Brake inertia		JB	kg · m ² (GD ² /4)	0.5 × 10 ⁻⁴	
Brake mass		W	kg	1.5	
Motor operating temperature and humidity				Temperature: 0 to 40 , humidity: 90% or less (non-condensing)	

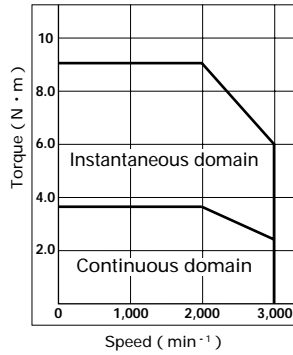
Applicable amplifier model	PZ0A030	PZ0A050	
Amplifier power supply	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase		
Amplifier operating temperature and humidity	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)		
Power capacity (at rating)	kVA	1.8	3.1
Amplifier mass	kg	2.2	4.4

- Notes: 1. means a combination with a standard amplifier after the temperature rises and gets saturated. The values are typical.
2. means values when the windings are at 20 . The values are typical.

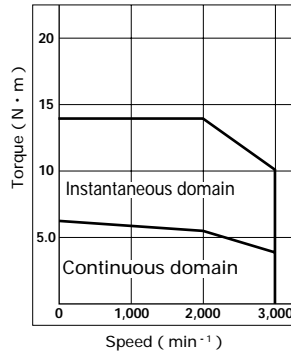


	P80B22250HXS 《220》	P80B22350HXS 《220》	P80B22450RXS 《220》	Symbol
	2.5	3.5	4.5	PR
	2,000			NR
	3,000		2,500	Nmax
	12.0	17.0	21.5	TR
	13.5	22.0	32.0	TS
	30.0	50.0	70.0	TP
	21.4	24.3	24.1	LR
	22.4	29.3	31.6	LS
	55.0	76.1	79.7	LP
	0.66	0.78	1.05	KT
	23.0	27.4	36.7	KE
	0.056	0.036	0.043	R
	52	67	80	QR
	27	31	33	te
	1.1	0.76	0.68	tm
	27.1×10^{-4}	43.1×10^{-4}	58.1×10^{-4}	JM
	27.1×10^{-4}	43.1×10^{-4}	58.1×10^{-4}	JM
	2,000			
	8,192			
	15.5	18.5	22.0	WE
	32.0			TB
	90 (24)			VB
	0.42 (1.6)			LB
	9.9×10^{-4}			JB
	5.9			W
	Temperature: 0 to 40 , humidity: 90% or less (non-condensing)			
	PZ0A100	PZ0A150		
	200 to 230V AC +10% -15% 50/60Hz ±3Hz 3-phase			
	Temperature: 0 to 55 , humidity: 90% or less (non-condensing)			
	5.9	7.4	8.4	
	6.0	8.5		

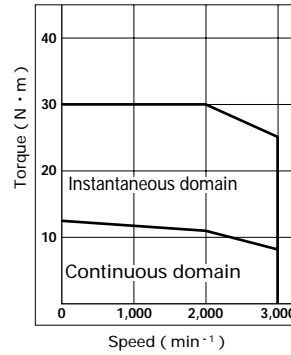
“P8” + “PZ” system: characteristics of torque versus rotating speed



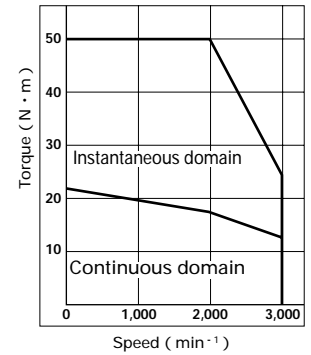
P80B15075H (0.75kW)



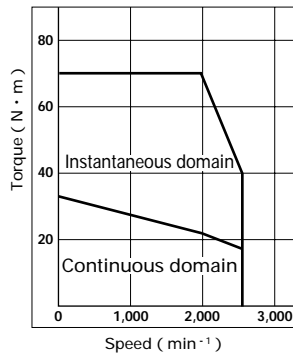
P80B18120H (1.2kW)



P80B22250H (2.5kW)

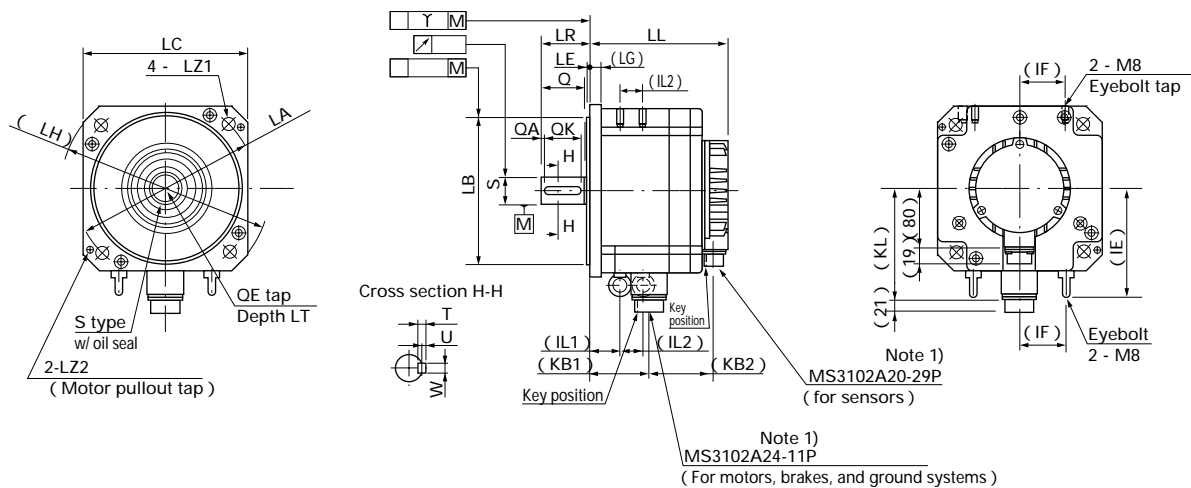


P80B22350H (3.5kW)



P80B22450R (4.5kW)

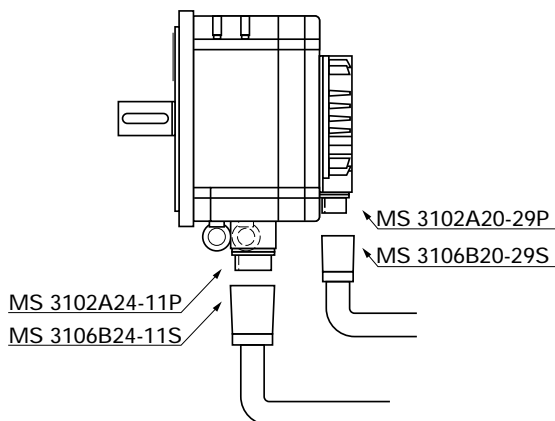
Dimensions [unit:mm]



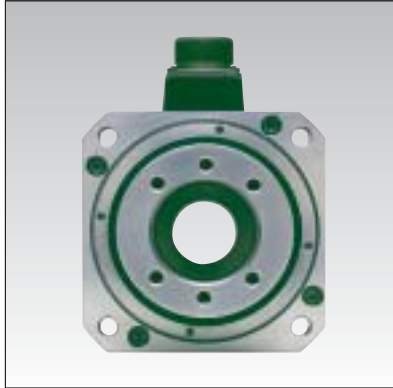
MODEL	Incremental ABS - R				ABS - E				KL	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2		
	w/o brake	w/ brake	w/o brake	w/ brake																														
P80B15075	116	56	150	90	126	66	160	100	106	12	165	$130^{0}_{-0.040}$	4	190	150	11	M6	55	$22^{0}_{-0.013}$	50	3	42	$6^{0}_{-0.030}$	6	2.5	40	M6	20						
P80B18120	119	55	152	88	129	65	162	98	123	12	200	$114.3^{0}_{-0.035}$	3	230	180	13.5	M8	55	$28^{0}_{-0.013}$	50	3	42	$8^{0}_{-0.036}$	7	3	44	M8	25						
P80B22250	122	154	132	164																														
P80B22350	136	52	168	84	146	62	178	94	141	16	235	$200^{0}_{-0.046}$	4	270	220	13.5	M10	65	$35^{0}_{-0.016}$	60	3	50	$10^{0}_{-0.036}$	8	3	64	M8	25	142	60	40	15		
P80B22450	151	183	161	193																														

Note 1): Connectors are waterproof when engaged. To meet the needs of IP67, therefore, use waterproof connectors for receiving plugs.

External connection diagram for "P8"



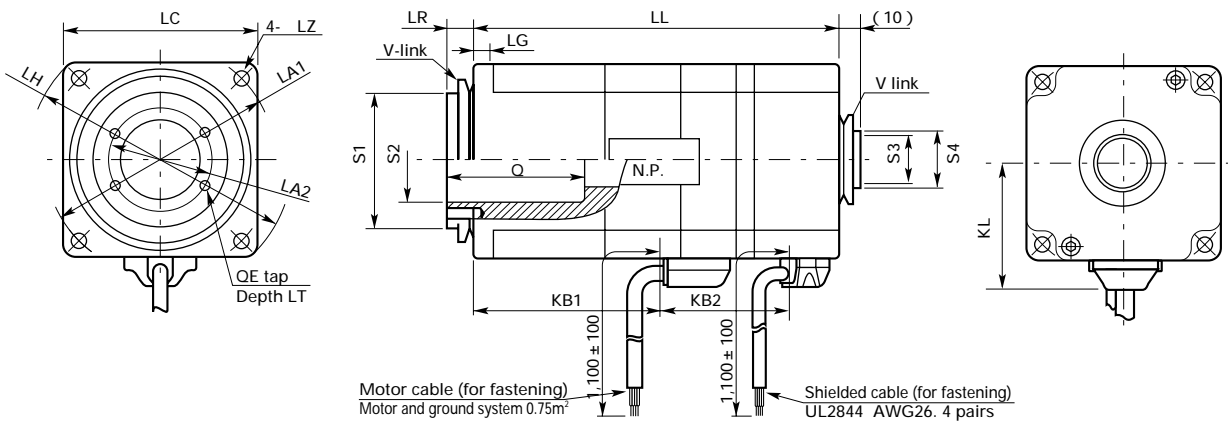
MODEL	Brake	Plug and clamp	Terminal number				
			U	V	W	E	Brake
P80B15075 P80B18120	Yes	MS3106B24-11S,MS3057-16A	D	E	F	G,H	A,B
P80B22250 P80B22350 P80B22450	No	MS3106B24-11S,MS3057-16A	D	E	F	G,H	-



Uses

- Robots
- Machines with windings
- Machines for industrial industries
- General-purpose machine tools
- Transfer machines
- Food processors
- Medical equipment

Dimensions [unit:mm]



MODEL	Motor characteristics						Outside dimensions (note 1)													(Unit: mm)						
	Output W	Rated torque N·m	Instantaneous maximum torque N·m	Rated rotating speed min ⁻¹	Maximum rotating speed min ⁻¹	Applicable ball screw dia	LC	LH	LL	LA1	LZ1	LG	KB1	KB2	KL	LA2	Q	QE	LT	LR	S1	S2	S3	S4		
P50C07020DXS	200	0.637	1.96	3,000	4,500	20mm dia or smaller	76	102.5	124	90	5.5	8	62	47	50	(Note 2)								22 ± 0.2 (Ball screw, 20mm dia or smaller)	25	
P50C07030DXS	300	0.931	2.94						140				68													78
P50C07040DXS	400	1.276	3.92						150				83													83
P50C08050DXS	500	1.589	5.88						165				106													57
P50C08075DXS	750	2.381	8.82						188				106													55
P50C08100DXS	1,000	3.185	11.76						211				129													

How to read model numbers

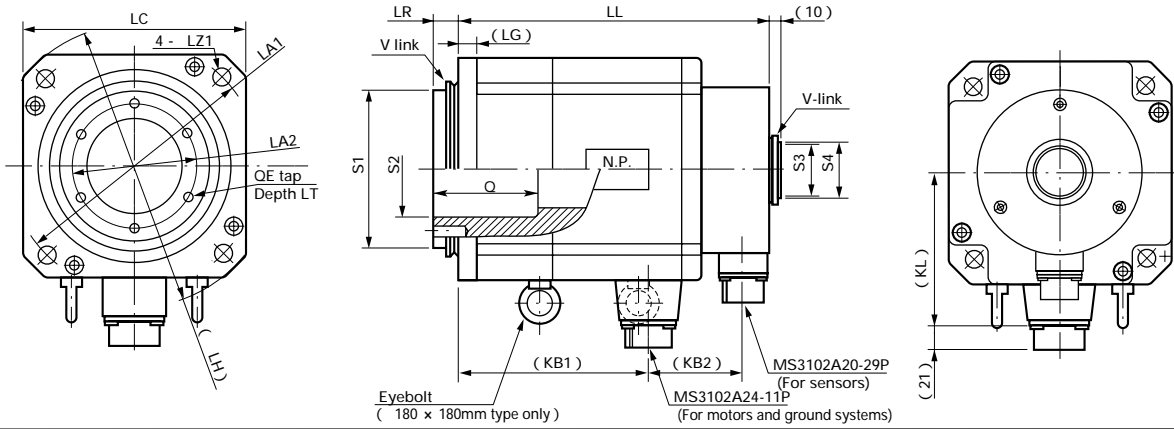
Example: **P50C07020DXS**

Models equipped with a hollow shaft are marked C here. For other symbols, see the Standard Catalog for the "P5" series.

Sensor: Incremental encoder (wiring-saving); number of basic divisions, 2,000P/R

Waterproof: IP55 (except for the shaft end)

Dimensions [unit:mm]



MODEL	Motor characteristics					Outside dimensions (note 1)																(Unit: mm)					
	Output kW	Rated torque N·m	Instantaneous maximum torque N·m	Rated rotating speed min ⁻¹	Maximum rotating speed min ⁻¹	Applicable ball screw dia	LC	LH	LL	LA1	LZ1	KB1	KB2	KL	LG	LA2	Q	QE	LT	LR	S1	S2	S3	S4			
P60C13050HXS	0.5	2.5	7.0	2,000	3,000	45mm dia or smaller	130	165	182	145	9	89	72	98	12	(Note 2)	Q	QE	LT	LR	S1	S2	S3	S4	40±0.3 (Ball screw, 36mm dia or smaller)	50	
P60C13100HXS	1.0	5.0	15.0						202			109															128
P60C13150HXS	1.5	7.5	20.0						221			128															128
P60C13200HXS	2.0	9.5	30.0				240	147	128																		
P60C18200HXS	2.0	9.5	30.0				225	128	128																		
P60C18350HXS	3.5	17.0	50.0				250	153	76	123	16	55															
P60C18450RXS	4.5	21.5	70.0	2,500	45mm dia or smaller	180	230	273	200	13.5	176	76	123	16	55												

How to read model numbers

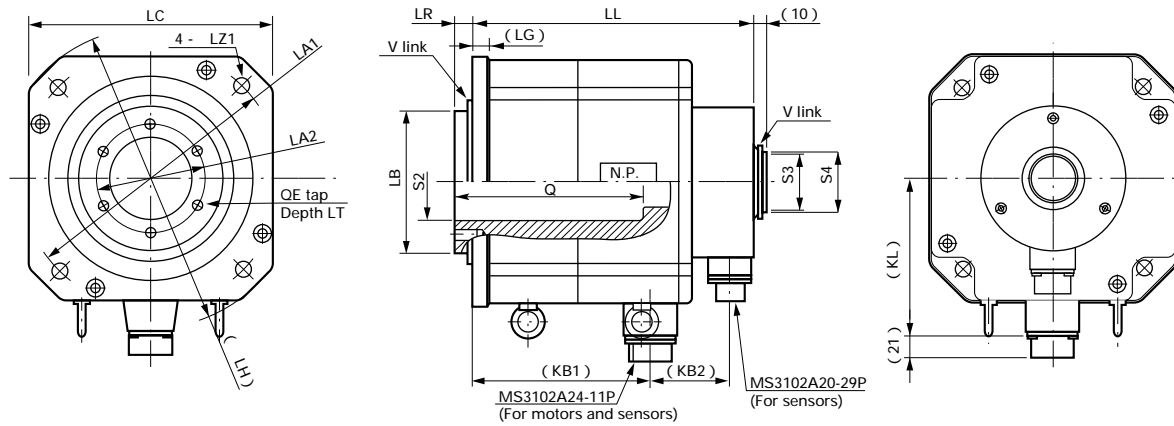
Example: **P60C13050DXS**

Models equipped with a hollow shaft are marked C here. For other symbols, see the Standard Catalog for the "P6" and "P8" Series.

Sensor: Incremental encoder (wiring-saving); number of basic divisions, 2,000P/R

Waterproof: IP55 (except for the shaft end)

Dimensions [unit:mm]



MODEL	Motor characteristics					Outside dimensions (note 1)																(Unit: mm)				
	Output kW	Rated torque N·m	Instantaneous maximum torque N·m	Rated rotating speed min ⁻¹	Maximum rotating speed min ⁻¹	Applicable ball screw dia	LC	LH	LL	LA1	LZ1	KB1	KB2	KL	LG	LA2	Q	QE	LT	LR	S1	S2	S3	S4		
P80C22250HXS	2.5	12	30	2,000	3,000	45mm dia or smaller	220	270	223	235	13.5	129	72.5	141	16	(Note 2)	Q	QE	LT	LR	S1	S2	S3	S4	50±0.3 (Ball screw, 45mm dia or smaller)	55
P80C22350HXS	3.5	17	50						237			143														
P80C22450RXS	4.5	21.5	70						252			158														

How to read model numbers

Example: **P80C22250DXS**

Models equipped with a hollow shaft are marked C here. For other symbols, see the Standard Catalog for the "P6" and "P8" Series.

Sensor: Incremental encoder (wiring-saving); number of basic divisions, 2,000P/R

Waterproof: IP55 (except for the shaft end)

Note 1: The outside dimensions are subject to change. When you consider purchasing any of these models, check their latest specifications with us.

Note 2: The dimensions of the nut bases for ball screws vary with ball screw types. For detailed dimensions, contact us.

Sales network

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AUSTRALIA AVNET PACIFIC PTY LTD.

No.2 Giffnock Avenue, North Ryde, NSW 2113, Australia

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KOREA HAN YANG CORP.

CCMM Bldg., 7F RM 710B, 12 Yoiedo-Dong Youngdungpo-Ku,
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THAI COSMOS POLYTECH LTD.

19/300 Moobanchaikul Moo 10, Rama 2Rd, Kwang Bangmod,
Jomthong, Bangkok 10150

TEL: +66 2 898 5313 FAX: +66 2 898 5314

CHINA BEIJING YANGHAI AUTOMATION TECHNOLOGY CO., LTD.

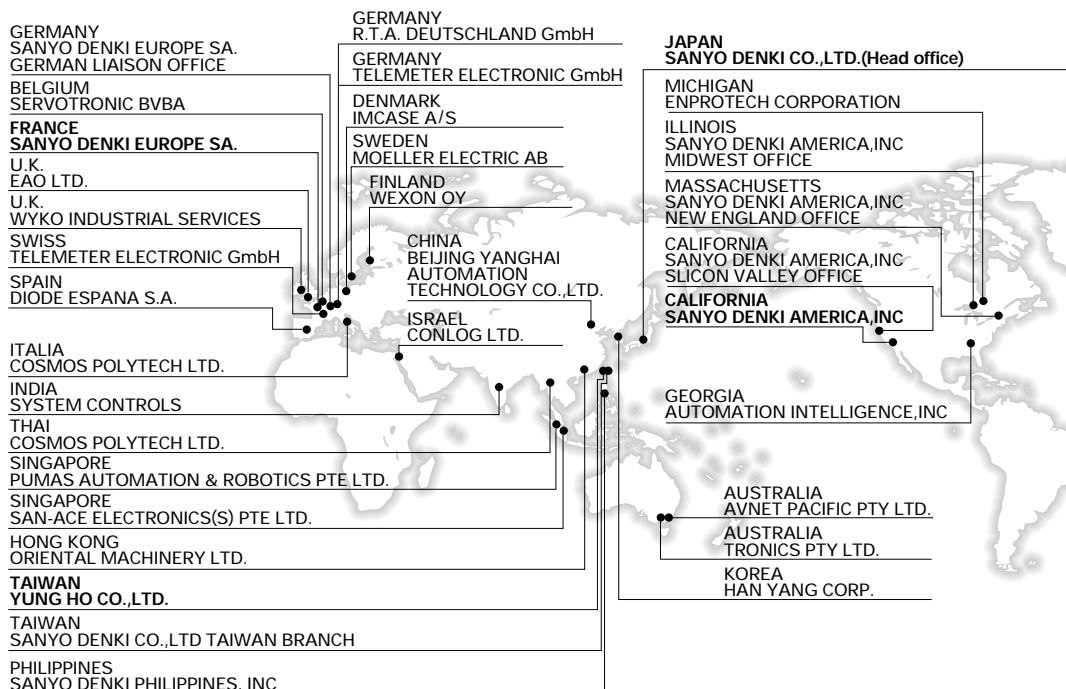
No.708 Room Pacific Building No.52, Haidian Road

Haidian District Beijing City P.R.O.C

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PHILIPPINES SANYO DENKI PHILIPPINES, INC.

(Overseas subsidiary factory) Subic Special Economic and
Freeport Zone(SSEFZ), Subic, Zambales, PHILIPPINES



Specification List of System Configuration

When making an inquiry or placing an order, please fill out the following list.
If you have any question or desire, write them on a separate sheet.

Company name _____		Date: _____ Phone No. +81-3-3917-5151 (Main) FAX No. +81-3-3917-0643
Section _____	Person in charge _____	
Phone No _____		
Fax No _____		

1. Application : _____

2. Machine name : _____ 3. Quantity: _____

4. Enter your desired model to the following item:

- AC Servo System P1 Series P2 Series P3 Series P5 Series P6 Series P8 Series Robustsyn
- S2+SZ Series S6+SZ Series S8+SZ Series
- DC Servo System Super V DA2
- Stepping Motor Two-phase Series Five-phase Series

5. Enter the control method to the following item: Speed control Position control Torque control

6. Enter your desired sensor to the following item:

- Incremental encoder ABS-R ABS-E Tacho-generator
 Incremental encoder + Tacho-generator (DC servo only for and .)

7. Enter the drive direction to the following item: Horizontal Vertical Aslant

8. Fill out the following list referring to the driving method

	Symbol	Unit	1st axis	2nd axis	3rd axis	4th axis	5th axis
(4) Desired Model No.							
(5) Control Method No.							
(6) Desired Sensor No.							
(7) Drive Direction No.							
(8) Driving Method No.							
Desired revolving speed		min ⁻¹					
Mover mass	W	kg					
Driver specific gravity		kg/m ³					
Load inertia	GD ²	kg·m ²					
Loading torque	T _L	N·m					
Tension	F	N					
Pressing force	W	N					
Roll diameter	D	cm					
Friction factor	μ						
Transmission efficiency							
Gear reduction ratio	1/G						
Ball screw pitch	P	cm					
Ball screw diameter	D	cm					
Ball screw length	L	cm					
Pulley diameter (Motor side)	D ₁	cm					
Pulley length (Motor side)	t ₁	cm					
Pulley diameter (Load side)	D ₂	cm					
Pulley length (Load side)	t ₂	cm					
Pinion pitch	P	cm					
Pinion diameter	D	cm					
Pinion thickness	t	cm					

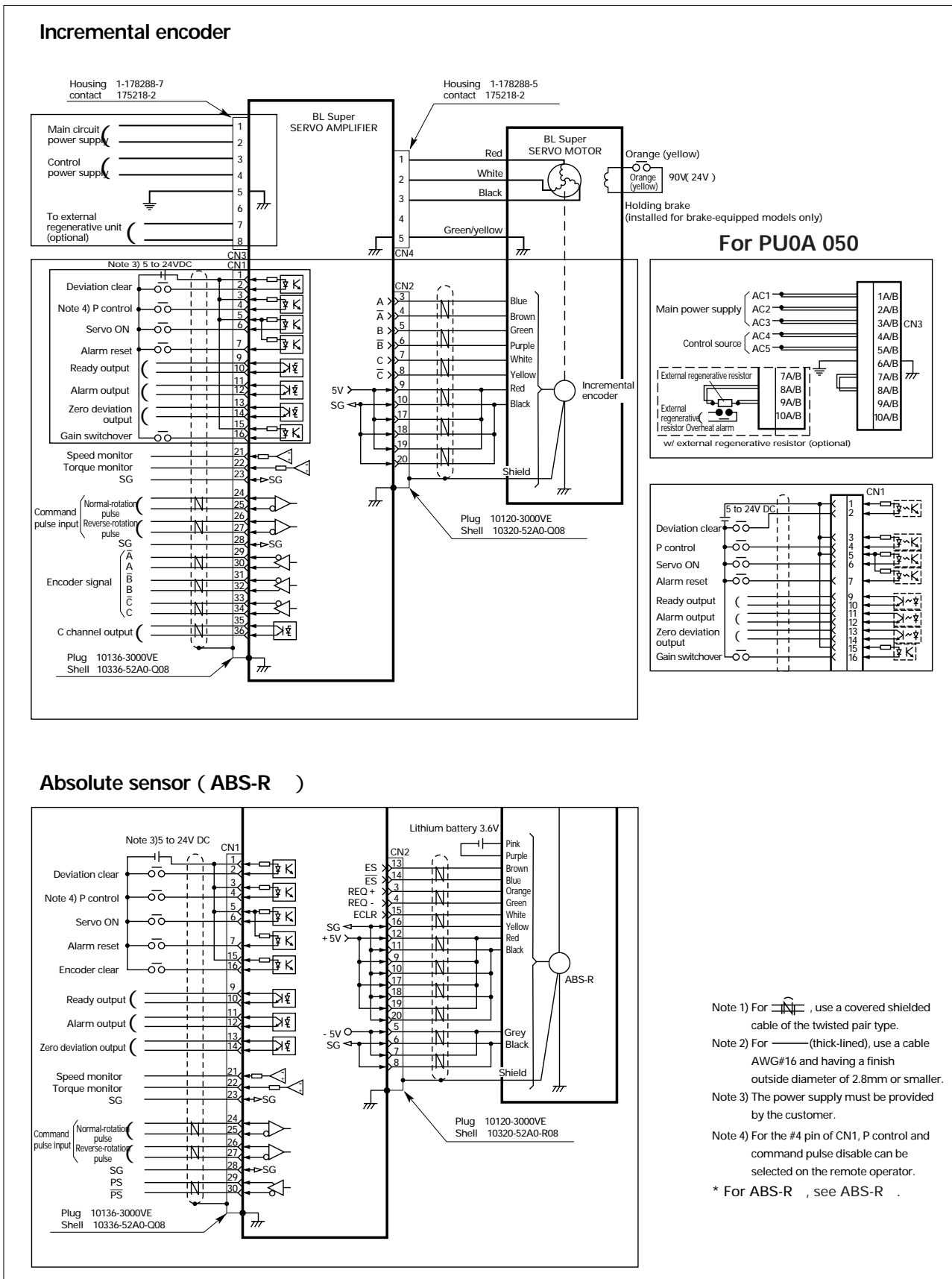
9. Duty Cycle

	Symbol	Unit	1st axis	2nd axis	3rd axis	4th axis	5th axis
Positioning distance	L _p	mm					
Moving part speed	V _p	m/min					
Positioning time	t _r	s					
Accelerating/Decelerating time	t _{a,tb}	s					

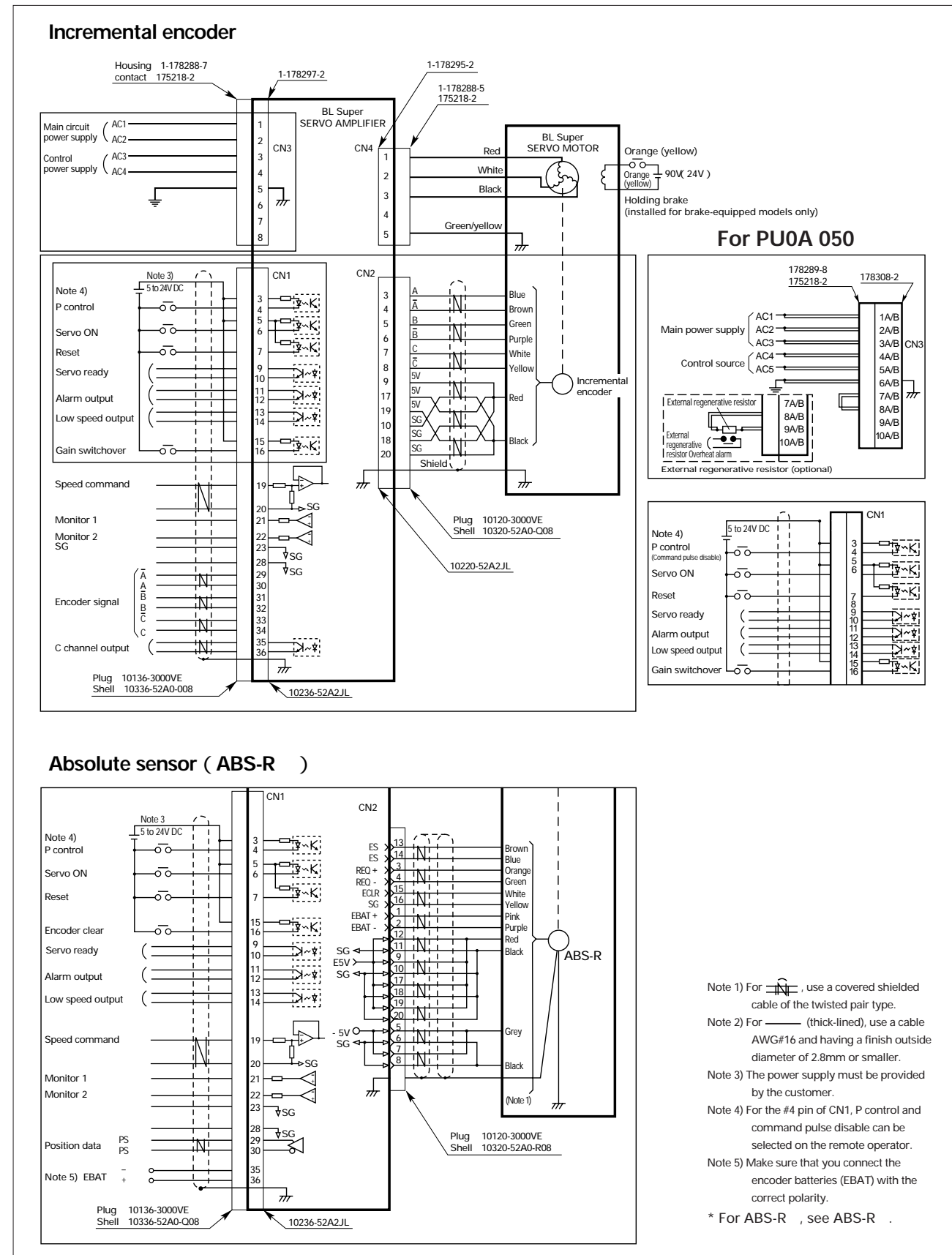
10. Working Environment · Operating temperature _____ ~ _____
 · Others _____

Contact our sales personnel for Servomotor selecting software.

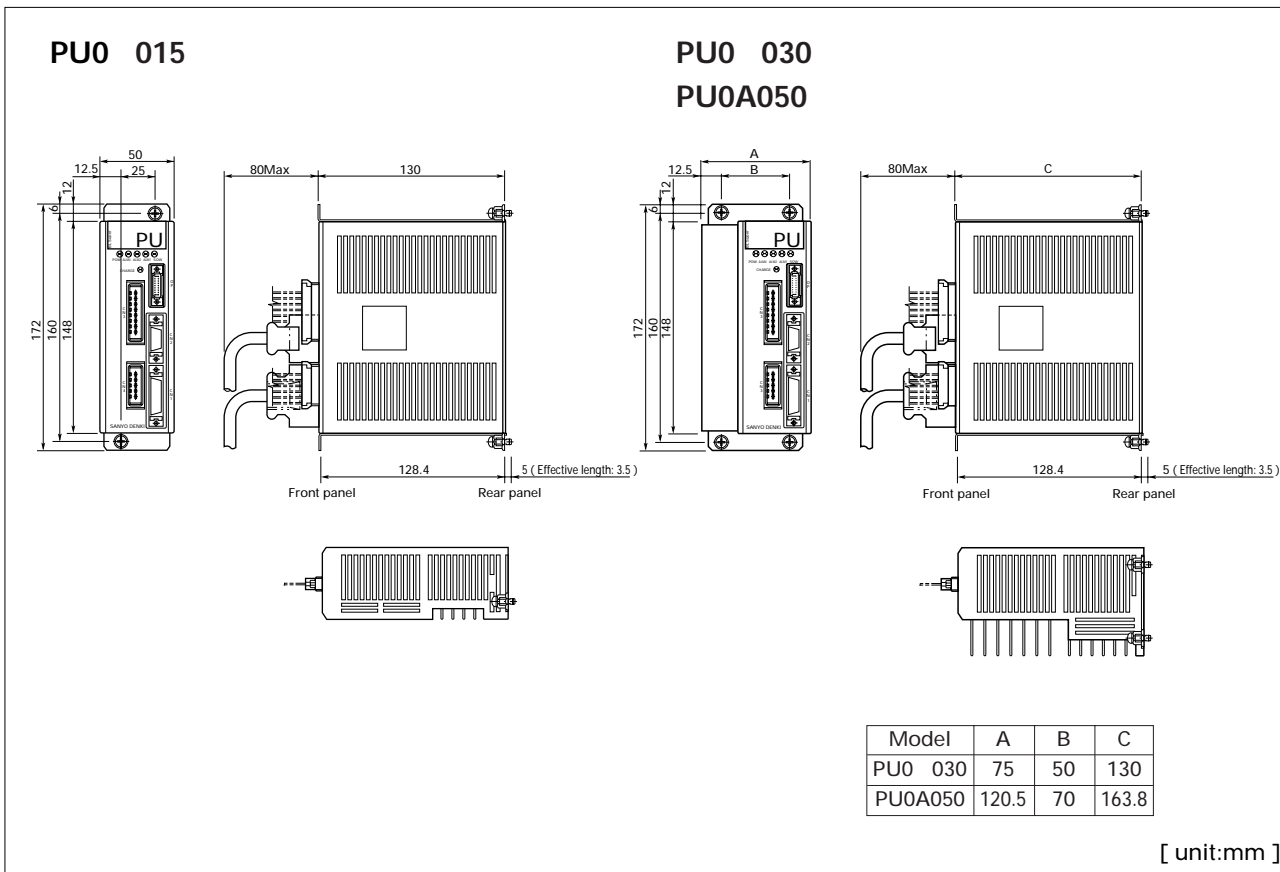
External connection diagram (position control type)



External connection diagram (speed control type)



Dimensions

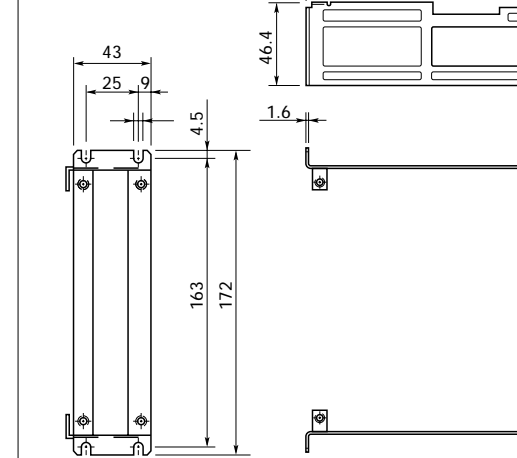


Options

Metal fittings for the "PU" series

"PU" amplifiers are equipped with a standard rear panel. Equipped with metal fittings, you can install the amplifier on the front panel or otherwise, in a variety of manners.

Mounting model
For PU0FA015

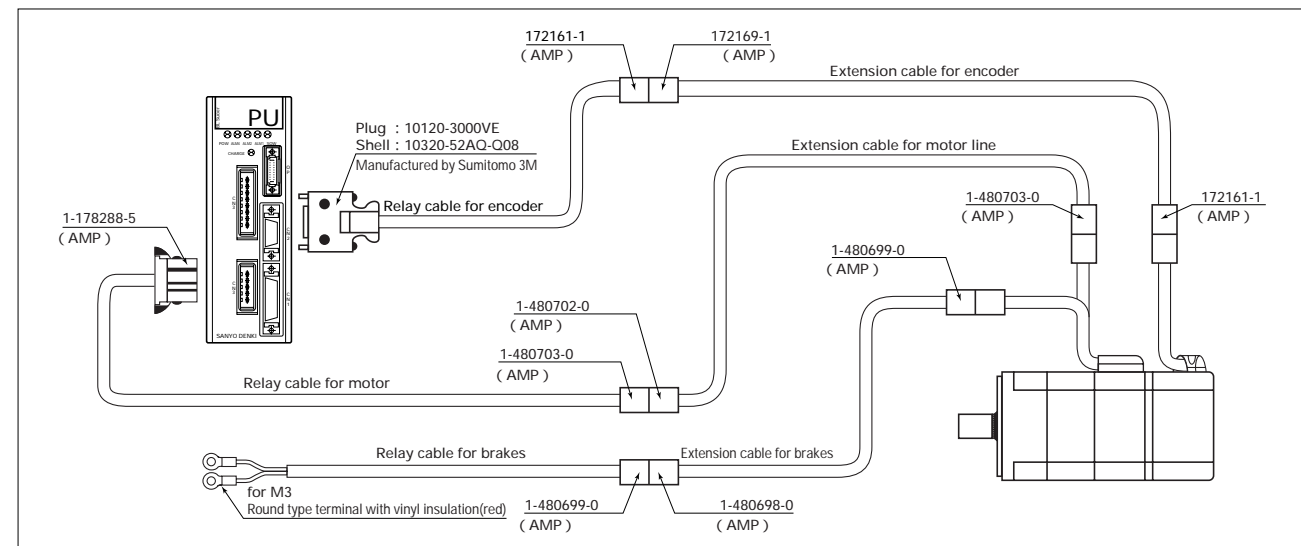
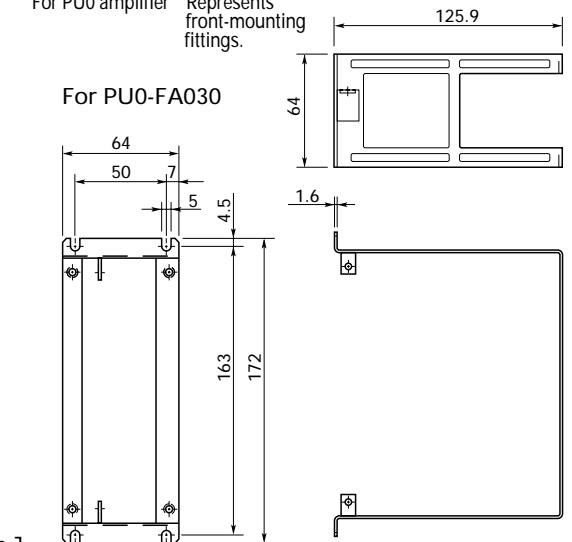


[unit:mm]

Front mounting model

PU0 - FA

For PU0 amplifier Represents front-mounting fittings. 015 : PU0 015E 030 : PU0 030E



Remote operator

Connected to a servo amplifier, the remote operator allows you to set servo parameters and check its internal state.

Model RP-001

Common to "PU", "PZ", "PE", and "PV" amplifiers



Optional cable for PU0 015 and 030: Wiring-saving incremental relay cable (between CN2 and sensor)

Model		L(m)
Connector to connector	Connector to lead	
PU0-CIS1R5	PU0-C1R5	1.5
PU0-CIS03	PU0-CI03	3
PU0-CIS05	PU0-CI05	5

* The standard motor models are with a lead.

Extension cables

Model	L(m)
PU0-CIS05L	5
PU0-CIS10L	10
PU0-CIS15L	15

Relay cable (between CN4 and the motive line of the motor)

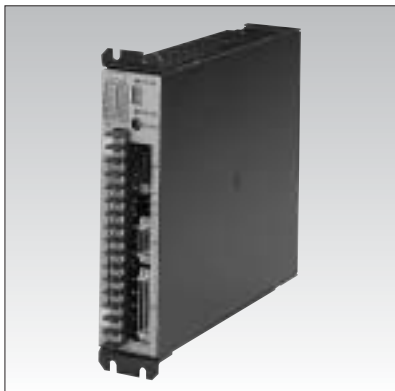
Model		L(m)
Connector to connector	Connector to lead	
PU0-CM1R5	PU0-C1R5	1.5
PU0-CM03	PU0-C03	3
PU0-CM05	PU0-C05	5

* The standard motor models are with a lead.

Extension cables

Model	L(m)
PU0-CM05L	5
PU0-CM10L	10
PU0-CM15L	15

* A standard cable can be combined with any of these extension cables to achieve a wiring length of up to 20m.



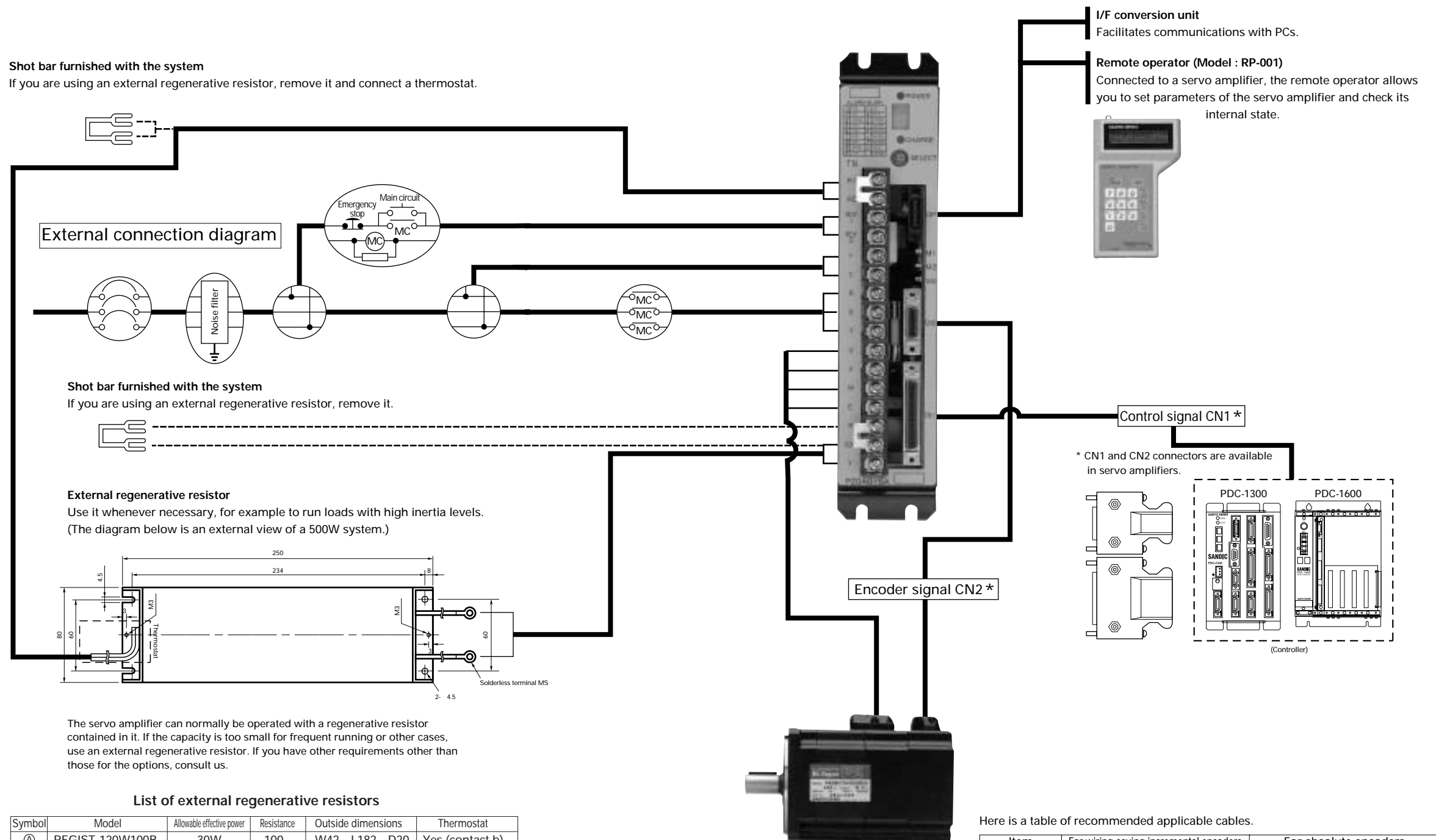
Capacity
15A to 600A (8 types)

Features
High rigidity

Uses
Machines for precision machining
Lathes
Milling machines
Transfer machines
Machines for industrial industries

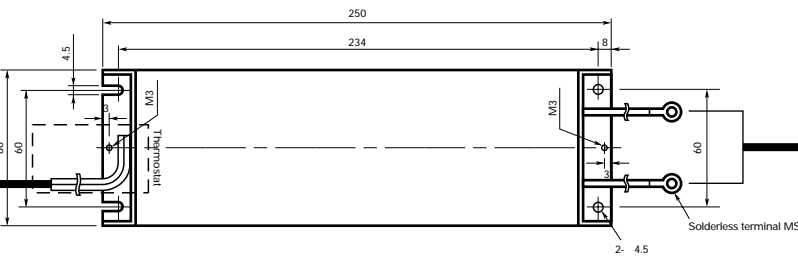
Configuration diagram of a typical amplifier system

"PZ" amplifier systems come optionally with the following peripherals:



Shot bar furnished with the system
If you are using an external regenerative resistor, remove it.

External regenerative resistor
Use it whenever necessary, for example to run loads with high inertia levels.
(The diagram below is an external view of a 500W system.)



The servo amplifier can normally be operated with a regenerative resistor contained in it. If the capacity is too small for frequent running or other cases, use an external regenerative resistor. If you have other requirements other than those for the options, consult us.

List of external regenerative resistors

Symbol	Model	Allowable effective power	Resistance	Outside dimensions	Thermostat
Ⓐ	REGIST-120W100B	30W	100	W42, L182, D20	Yes (contact b)
Ⓑ	REGIST-120W50B	30W	50	W42, L182, D20	Yes (contact b)
Ⓒ	REGIST-220W100B	55W	100	W60, L230, D20	Yes (contact b)
Ⓓ	REGIST-220W50B	55W	50	W60, L230, D20	Yes (contact b)
Ⓔ	REGIST-220W20B	55W	20	W60, L230, D20	Yes (contact b)
Ⓕ	REGIST-500W20B	125W	20	W80, L250, D40	Yes (contact b)
Ⓖ	REGIST-500W10B	125W	10	W80, L250, D40	Yes (contact b)
Ⓗ	REGIST-500W7B	125W	7	W80, L250, D40	Yes (contact b)
Ⓘ	REGIST-500W14B	125W	14	W80, L250, D40	Yes (contact b)
Ⓙ	REGIST-1000W6R7B	250W	6.7	W140, L340, D57	Yes (contact b)

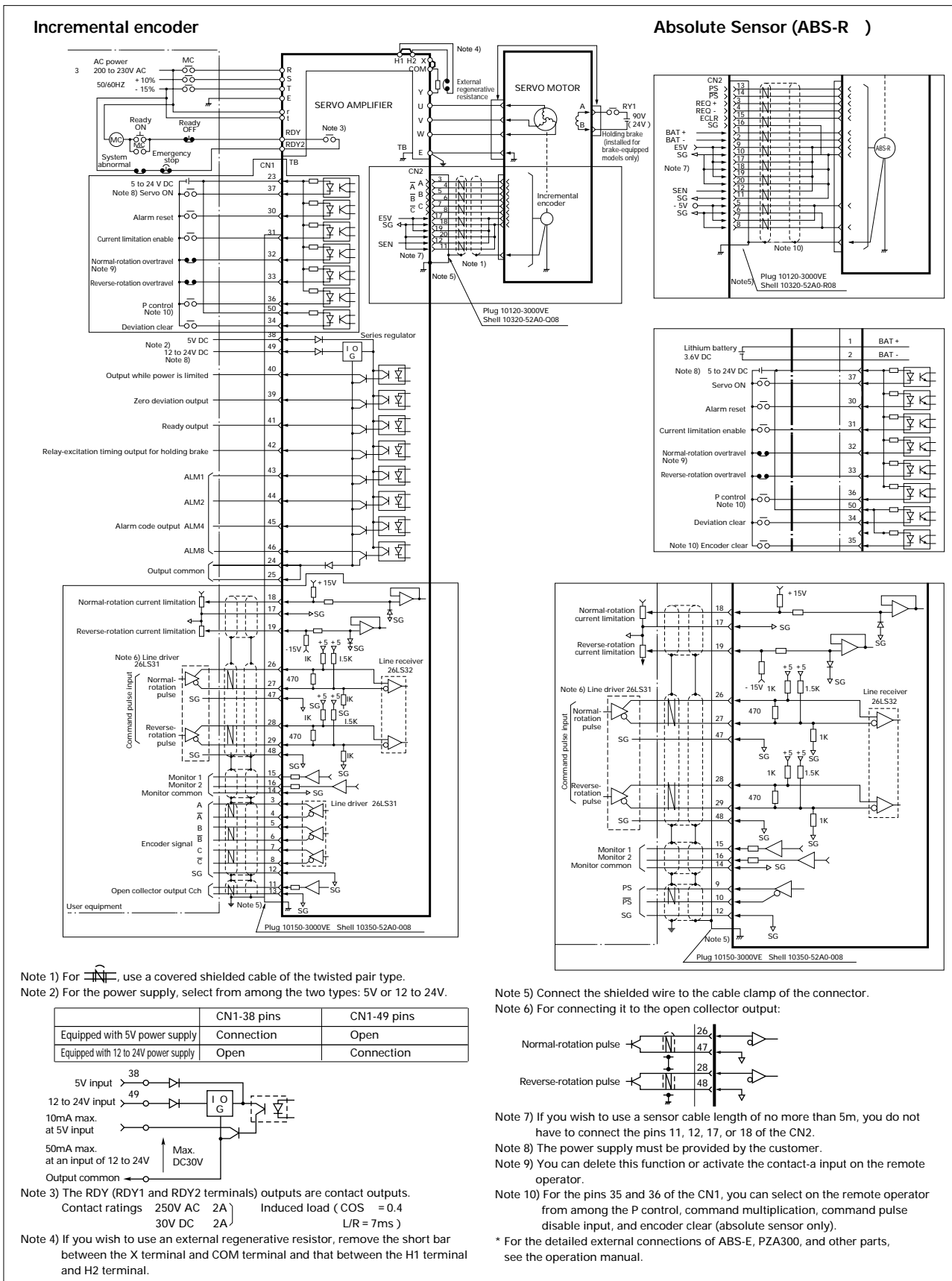
Here is a table of recommended applicable cables.

Item	For wiring-saving incremental encoders	For absolute encoders
Model	6879019-1	6870010-1
Connection system	Soldering	Soldering
Manufacturer	Tonichi Cable	Tatsuta Electric Wire & Cable
Outlined specification	6 pairs × 0.2mm ² (tin-plated mild copper wire)	10 pairs × 0.2mm ² (stranded wire of high-strength copper alloy)
Finish outside dia	8.0mm MAX	10.0mm MAX
Conductor resistance	91 /km MAX	123 /km MAX

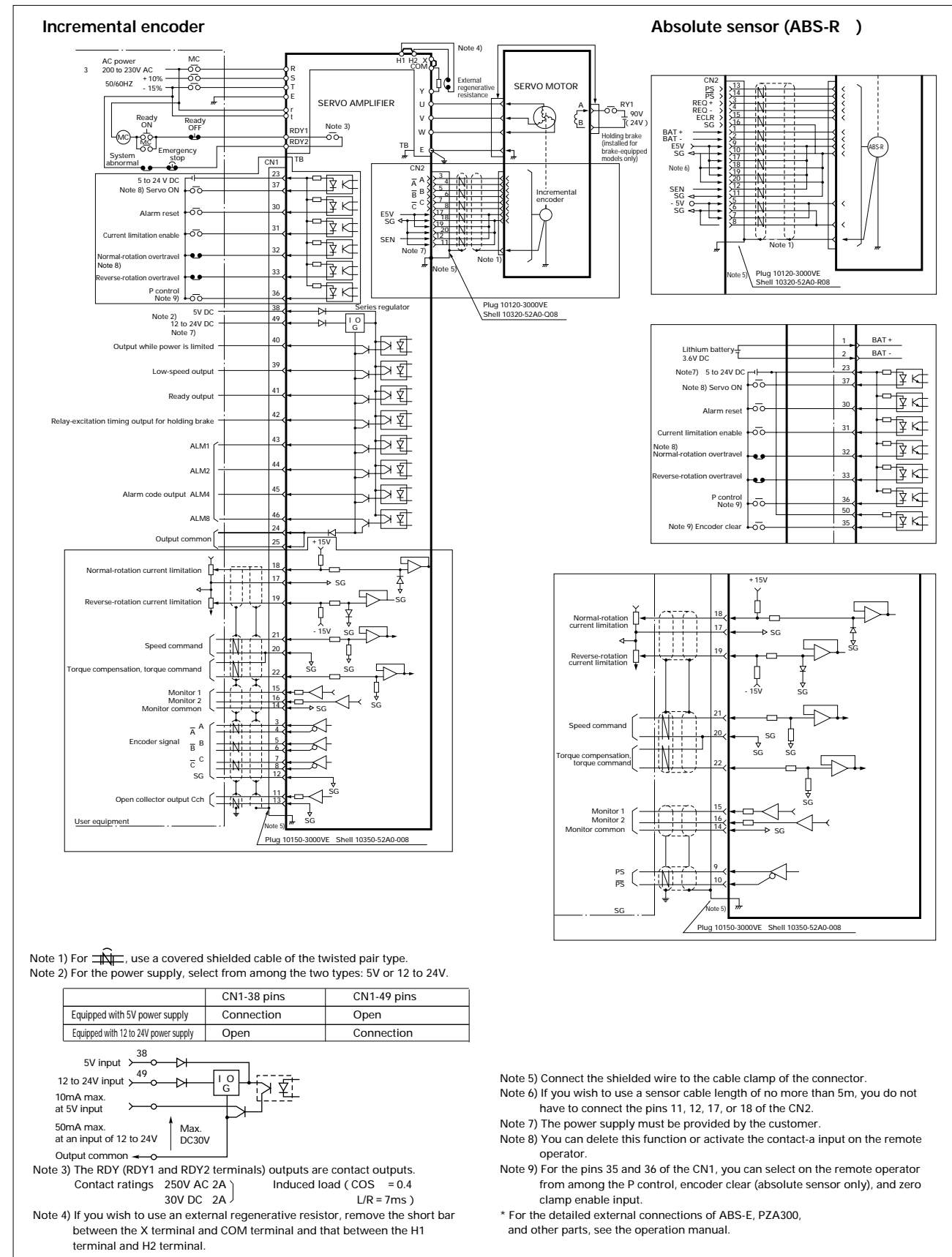
Note 1 : The allowable wiring distance between servo amplifier and motor (PG) is 50m maximum when an applicable cable is used.

Note 2 : For use in a moving part, consult us.

External connection diagram (position control type)

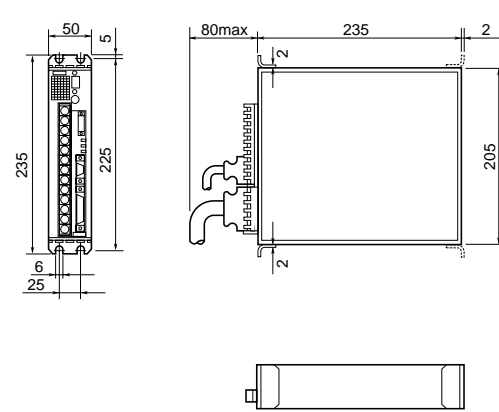


External connection diagram (speed/torque control type)

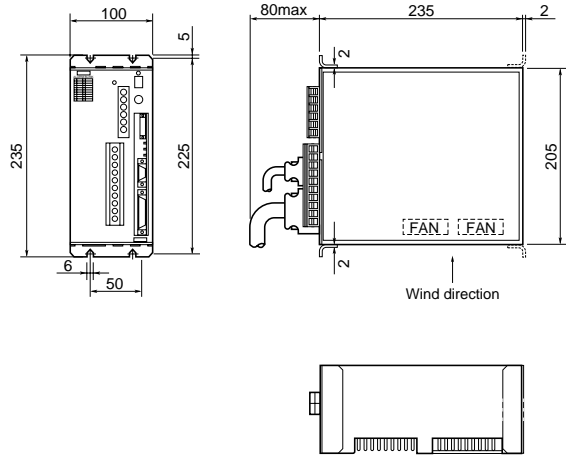


Dimensions

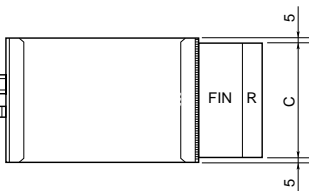
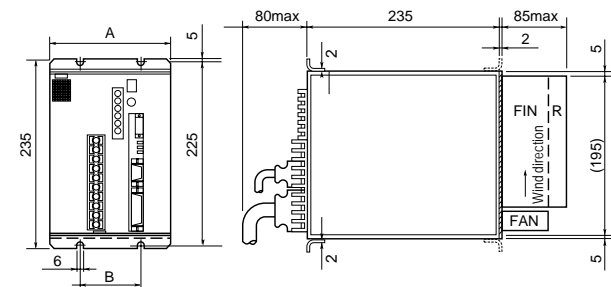
PZ0A015
PZ0A030



PZ0A050

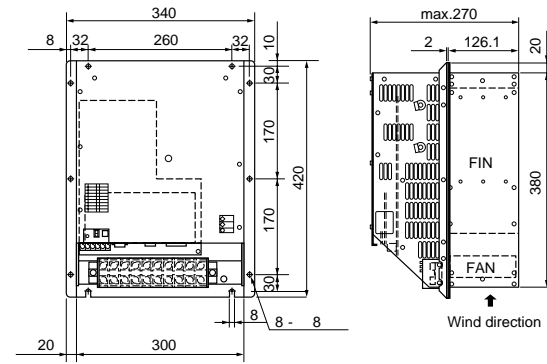


PZ1A050
PZ0A100
PZ0A150

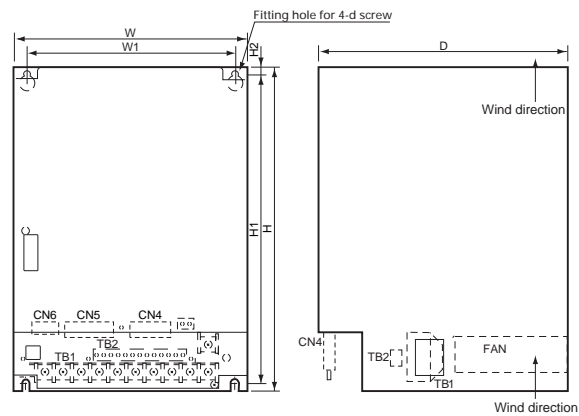


Model	A	B	C
PZ1A050	75	50	65
PZ0A100	100	50	90
PZ0A150	150	75	140

PZ0A300



PZ0A600



Model	Outside dimensions			Installed dimensions			
	W	H	D	W1	H1	H2	d
PZ0A-600	365	430	320	330	411	10	M8

Unit: mm

Options

Remote operator

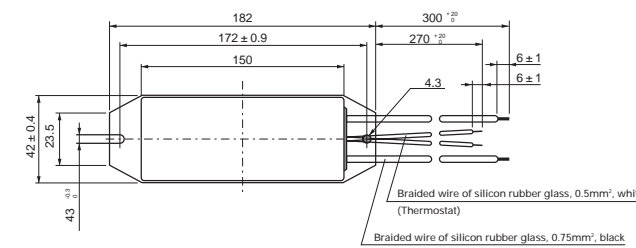
Connected to a servo amplifier, the remote operator allows you to set servo parameters and check its internal state.

Model RP-001

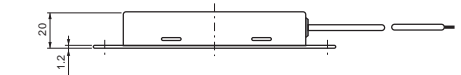
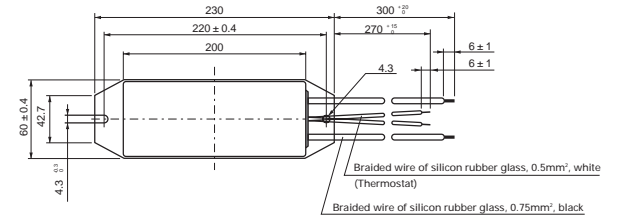
Common to "PU", "PZ", "PE", and "PV" amplifiers



Dimensions of an external regenerative resistor [unit:mm]

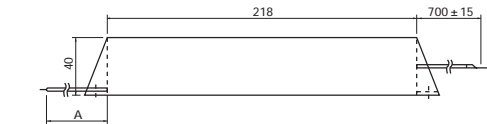
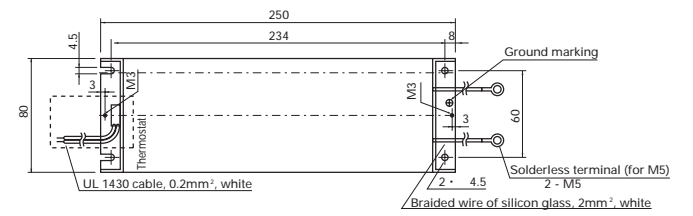
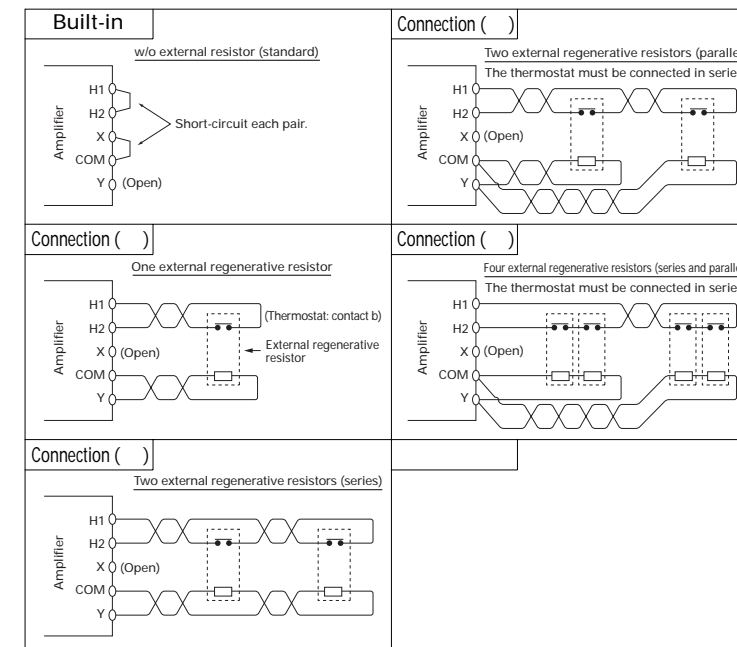


	Model	Remark
1	REGIST-120W100B	Thermostat, contact b
2	REGIST-120W50B	Thermostat, contact b



	Model	Remark
1	REGIST-220W50B	Thermostat, contact b
2	REGIST-220W20B	Thermostat, contact b
3	REGIST-220W100B	Thermostat, contact b

How to connect an external regenerative resistor



	Model	A	Remark
1	REGIST-500W20B	350 ± 15	Thermostat, contact b
2	REGIST-500W20		Without thermostat
3	REGIST-500W10B	350 ± 15	Thermostat, contact b
4	REGIST-500W10		Without thermostat
5	REGIST-500W7B	350 ± 15	Thermostat, contact b
6	REGIST-500W7		Without thermostat
7	REGIST-500W14B	350 ± 15	Thermostat, contact b
8	REGIST-500W14		Without thermostat

Unit : mm



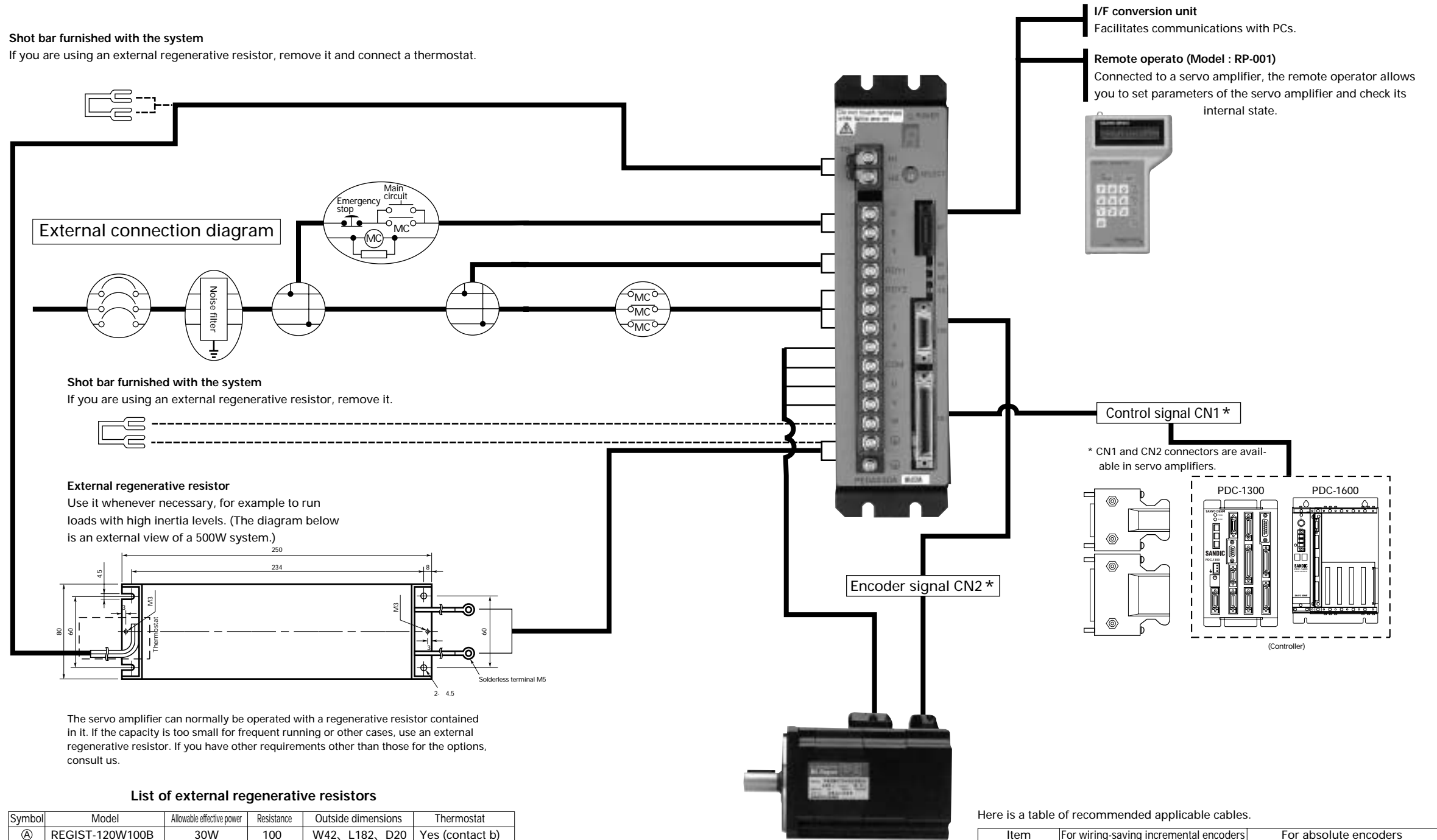
Capacity
15A to 150A (4 types)

Features
High rigidity

Uses
Machines for precision machining
Lathes
Milling machines
Transfer machines
Machines for industrial industries

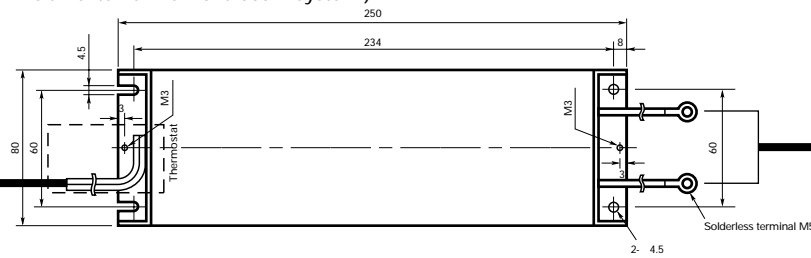
Configuration diagram of a typical amplifier system

"PE" amplifier systems come optionally with the following peripherals:



Shot bar furnished with the system
If you are using an external regenerative resistor, remove it.

External regenerative resistor
Use it whenever necessary, for example to run loads with high inertia levels. (The diagram below is an external view of a 500W system.)



The servo amplifier can normally be operated with a regenerative resistor contained in it. If the capacity is too small for frequent running or other cases, use an external regenerative resistor. If you have other requirements other than those for the options, consult us.

List of external regenerative resistors

Symbol	Model	Allowable effective power	Resistance	Outside dimensions	Thermostat
Ⓐ	REGIST-120W100B	30W	100	W42, L182, D20	Yes (contact b)
Ⓑ	REGIST-120W50B	30W	50	W42, L182, D20	Yes (contact b)
Ⓒ	REGIST-220W100B	55W	100	W60, L230, D20	Yes (contact b)
Ⓓ	REGIST-220W50B	55W	50	W60, L230, D20	Yes (contact b)
Ⓔ	REGIST-220W20B	55W	20	W60, L230, D20	Yes (contact b)
Ⓕ	REGIST-500W20B	125W	20	W80, L250, D40	Yes (contact b)
Ⓖ	REGIST-500W10B	125W	10	W80, L250, D40	Yes (contact b)
Ⓗ	REGIST-500W7B	125W	7	W80, L250, D40	Yes (contact b)
Ⓘ	REGIST-500W14B	125W	14	W80, L250, D40	Yes (contact b)
Ⓙ	REGIST-1000W6R7B	250W	6.7	W140, L340, D57	Yes (contact b)

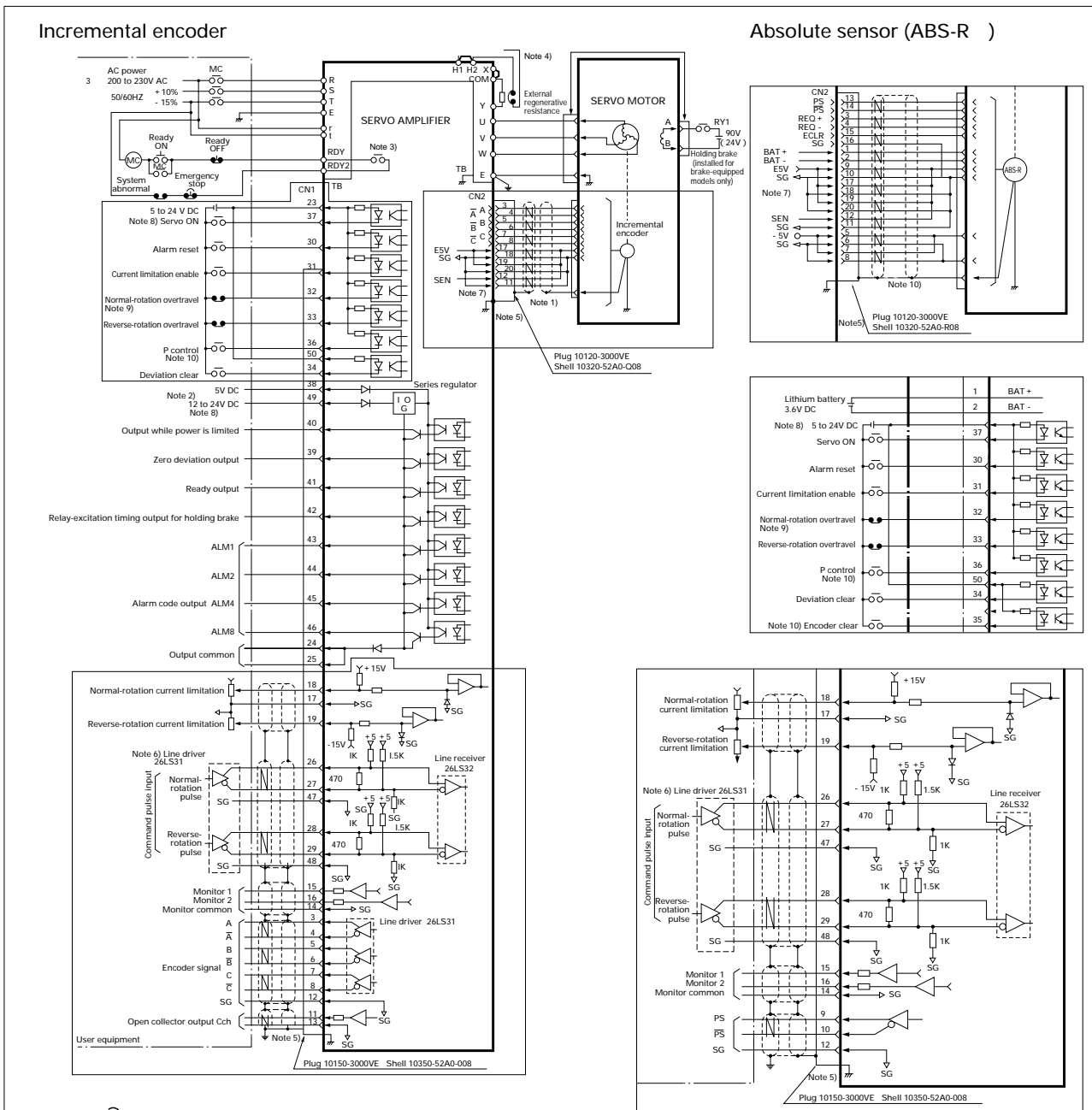
Here is a table of recommended applicable cables.


Item	For wiring-saving incremental encoders	For absolute encoders
Model	6879019-1	6870010-1
Connection system	Soldering	Soldering
Manufacturer	Tonichi Cable	Tatsuta Electric Wire & Cable
Outlined specification	6 pairs × 0.2mm ² (tin-plated mild copper wire)	10 pairs × 0.2mm ² (stranded wire of high-strength copper alloy)
Finish outside dia	8.0mm MAX	10.0mm MAX
Conductor resistance	91 /km MAX	123 /km MAX

Note 1: The allowable wiring distance between servo amplifier and motor (PG) is 50m maximum when an applicable cable is used.

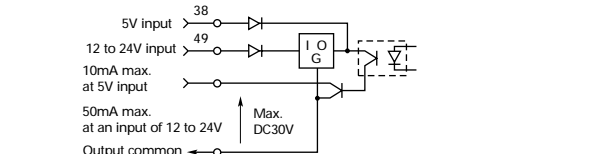
Note 2: For use in a moving part, consult us.

External connection diagram (position control type)



Note 1) For , use a covered shielded cable of the twisted pair type.
 Note 2) For the power supply, select from among the two types: 5V or 12 to 24V.

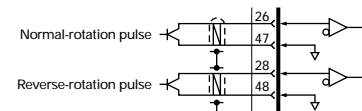
	CN1-38 pins	CN1-49 pins
Equipped with 5V power supply	Connection	Open
Equipped with 12 to 24V power supply	Open	Connection



Note 3) The RDY1 and RDY2 terminals outputs are contact outputs. Contact ratings 250V AC 2A Induced load (COS = 0.4 30V DC 2A L/R = 7ms)

Note 4) If you wish to use an external regenerative resistor, remove the short bar between the X terminal and COM terminal and that between the H1 terminal and H2 terminal.

Note 5) Connect the shielded wire to the cable clamp of the connector.
 Note 6) For connecting it to the open collector output:



Note 7) If you wish to use a sensor cable length of no more than 5m, you do not have to connect the pins 11, 12, 17, or 18 of the CN2.

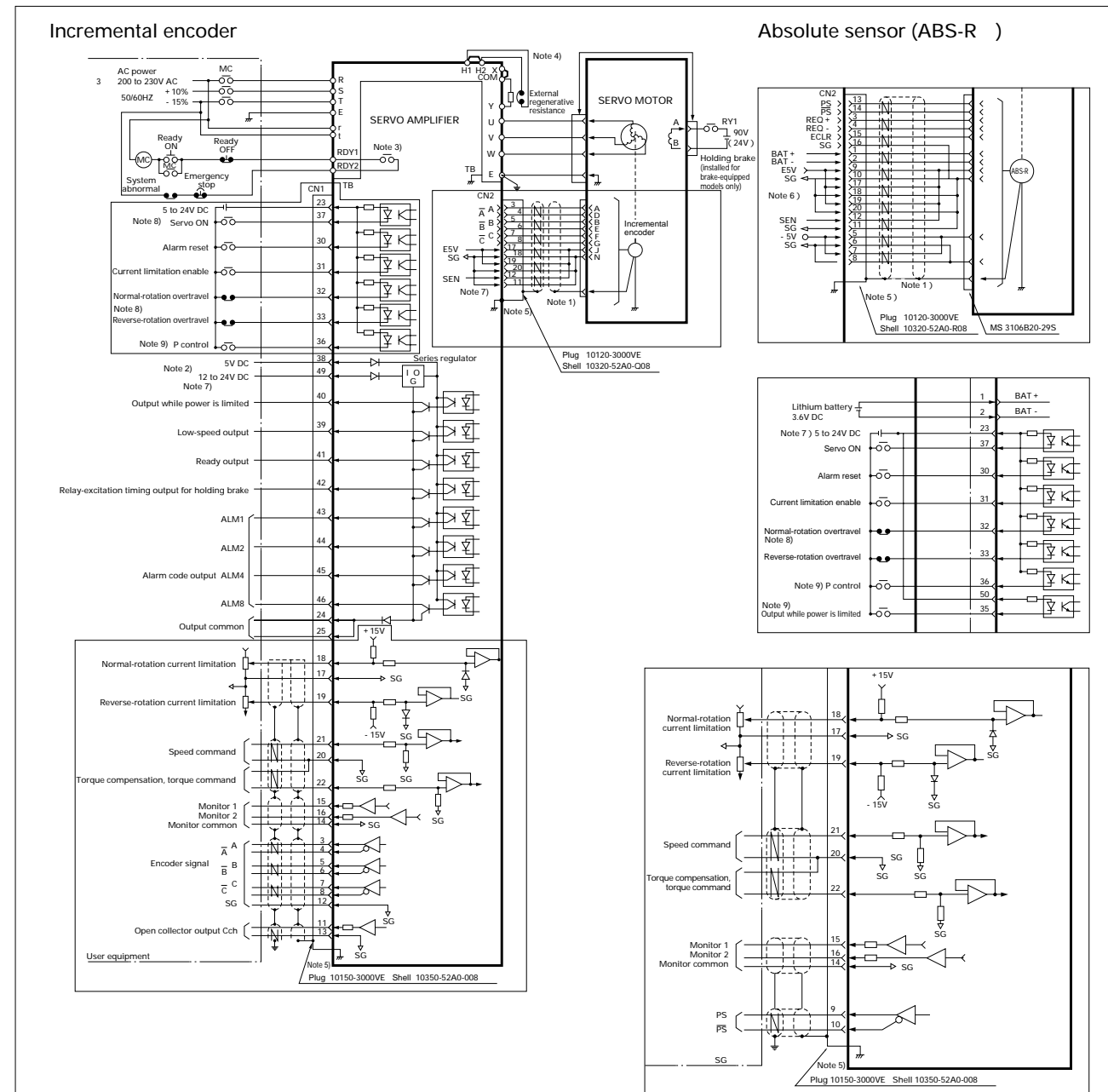
Note 8) The power supply must be provided by the customer.


Note 9) You can delete this function or activate the contact-a input on the remote operator.

Note 10) For the pins 35 and 36 of the CN1, you can select on the remote operator from among the P control, command multiplication, command pulse disable input, and encoder clear (absolute sensor only).

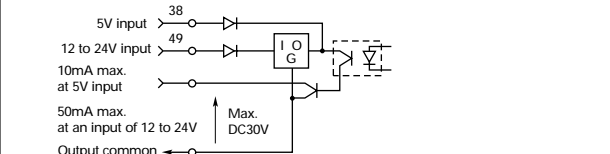
* For the detailed external connections of ABS-E, PZ0A300, and other parts, see the operation manual.

External connection diagram (speed/torque control type)



Note 1) For , use a covered shielded cable of the twisted pair type.
 Note 2) For the power supply, select from among the two types: 5V or 12 to 24V.

	CN1-38 pins	CN1-49 pins
Equipped with 5V power supply	Connection	Open
Equipped with 12 to 24V power supply	Open	Connection



Note 3) The RDY1 and RDY2 terminals outputs are contact outputs. Contact ratings 250V AC 2A Induced load (COS = 0.4 30V DC 2A L/R = 7ms)

Note 4) If you wish to use an external regenerative resistor, remove the short bar between the X terminal and COM terminal and that between the H1 terminal and H2 terminal.

Note 5) Connect the shielded wire to the cable clamp of the connector.
 Note 6) If you wish to use a sensor cable length of no more than 5m, you do not have to connect the pins 11, 12, 17, or 18 of the CN2.

Note 7) The power supply must be provided by the customer.

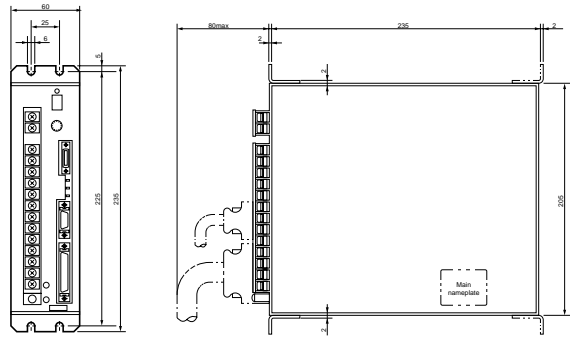
Note 8) You can delete this function or activate the contact-a input on the remote operator.

Note 9) For the pins 35 and 36 of the CN1, you can select on the remote operator from among the P control, encoder clear (absolute sensor only), and zero clamp enable input.

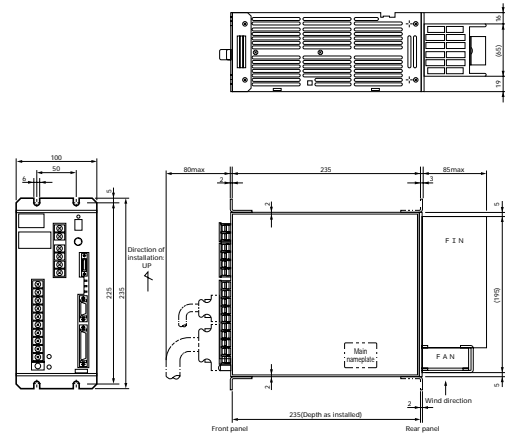
* For the detailed external connections of ABS-E, PZ0A300, and other parts, see the operation manual.

Dimensions

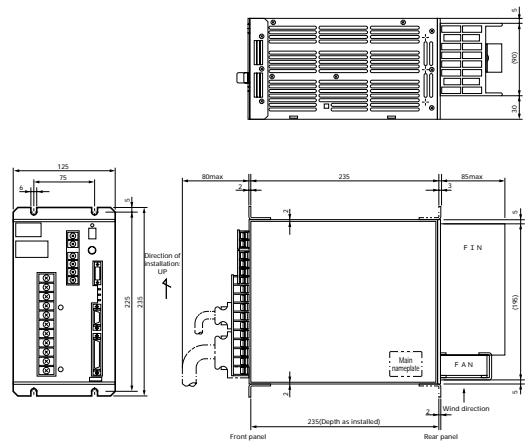
PE2A15A
PE2A30A



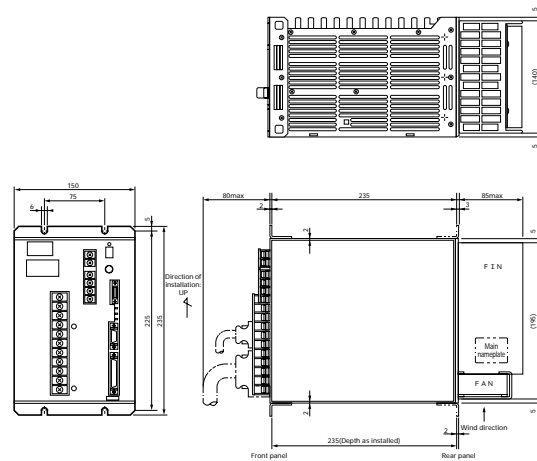
PE2A50A



PE2A100A



PE2A150A

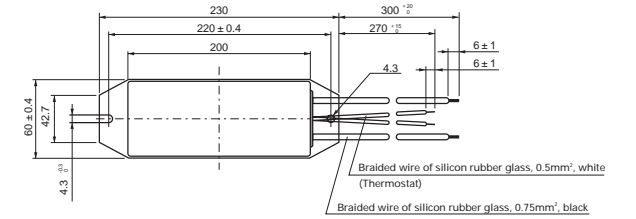


[unit:mm]

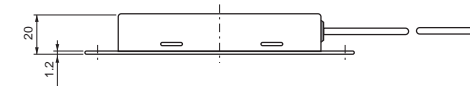
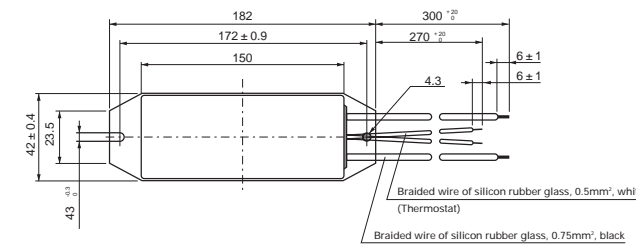
Options

Remote operator

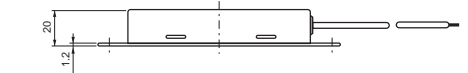
Connected to a servo amplifier, the remote operator allows you to set servo parameters and check its internal state.
Model No. RP-001 :
Common to "PU", "PZ", "PE", and "PV" amplifiers



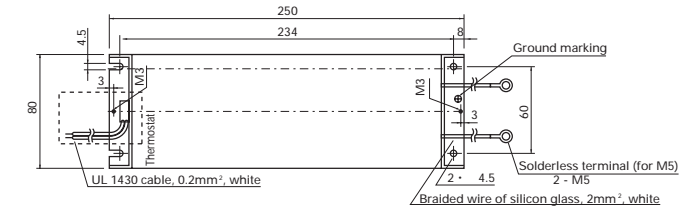
Dimensions [unit:mm]



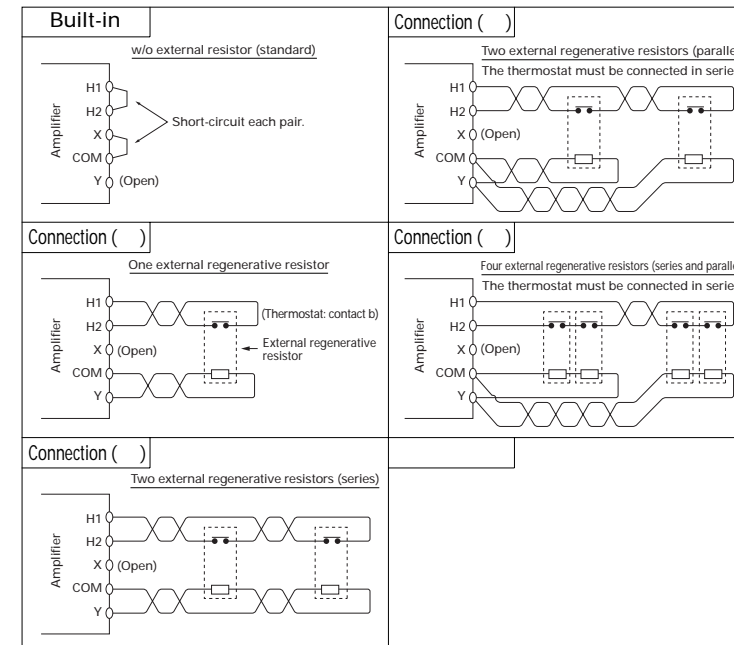
	Model	Remark
1	REGIST-120W100B	Thermostat, contact b
2	REGIST-120W50B	Thermostat, contact b



	Model	Remark
1	REGIST-220W50B	Thermostat, contact b
2	REGIST-220W20B	Thermostat, contact b
3	REGIST-220W100B	Thermostat, contact b



How to connect an external regenerative resistor



	Model	A	Remark
1	REGIST-500W20B	350 ± 15	Thermostat, contact b
2	REGIST-500W20		Without thermostat
3	REGIST-500W10B	350 ± 15	Thermostat, contact b
4	REGIST-500W10		Without thermostat
5	REGIST-500W7B	350 ± 15	Thermostat, contact b
6	REGIST-500W7		Without thermostat
7	REGIST-500W14B	350 ± 15	Thermostat, contact b
8	REGIST-500W14		Without thermostat

Unit: mm



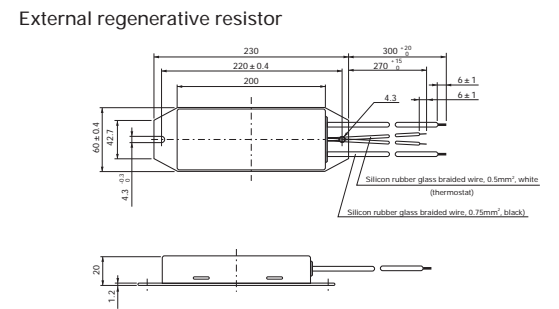
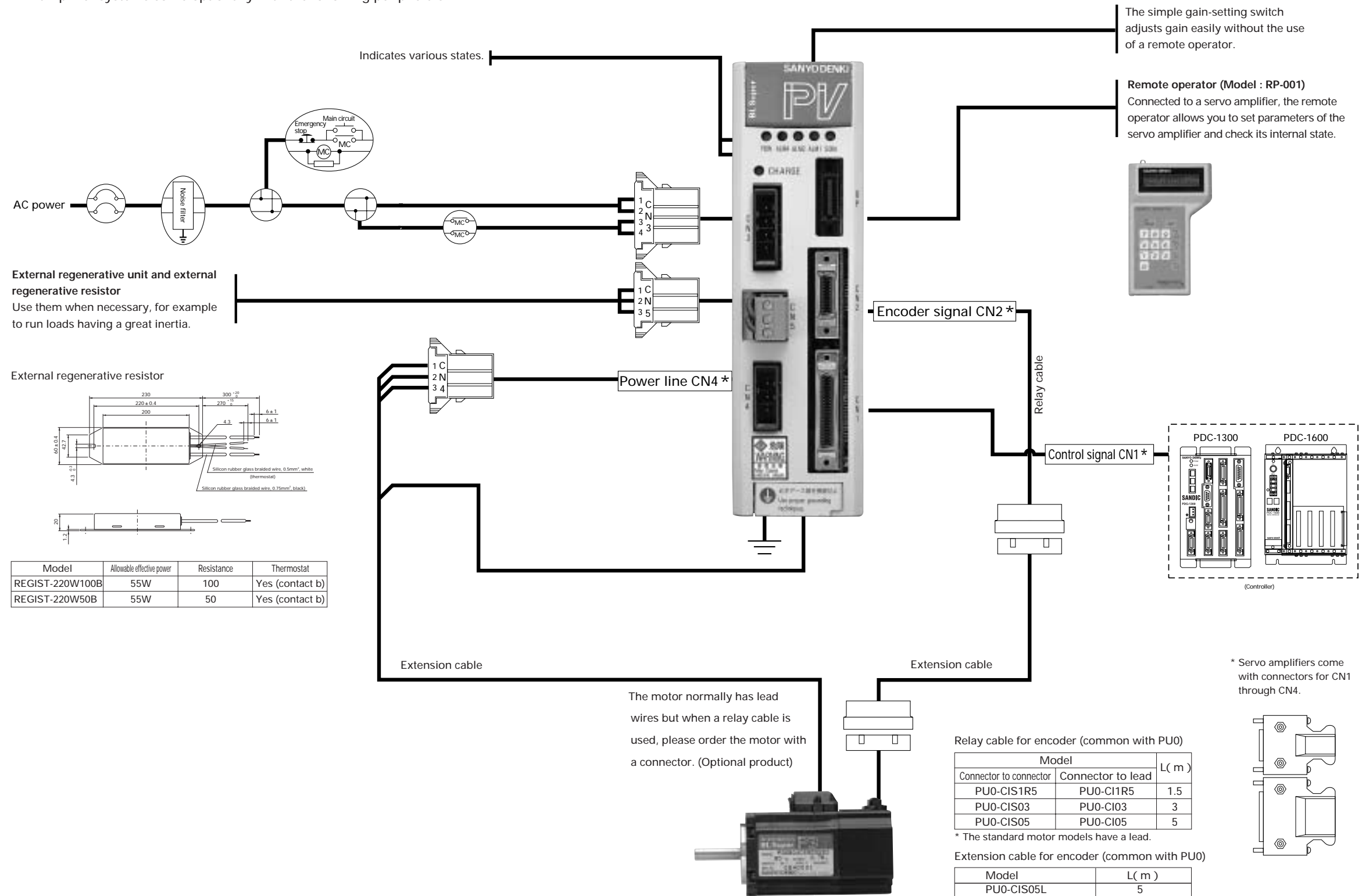
Capacity
15A to 30A (2 types)

Features
High rigidity

Uses
Machines for precision machining
Lathes
Milling machines
Transfer machines
Machines for industrial industries

Configuration diagram of a typical amplifier system

"PV" amplifier systems come optionally with the following peripherals:



Model	Allowable effective power	Resistance	Thermostat
REGIST-220W100B	55W	100	Yes (contact b)
REGIST-220W50B	55W	50	Yes (contact b)

Relay cable for encoder (common with PU0)

Model		L (m)
Connector to connector	Connector to lead	
PU0-CIS1R5	PU0-CI1R5	1.5
PU0-CIS03	PU0-CI03	3
PU0-CIS05	PU0-CI05	5

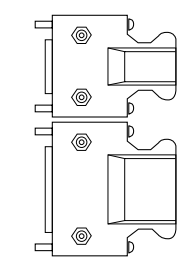
* The standard motor models have a lead.

Extension cable for encoder (common with PU0)

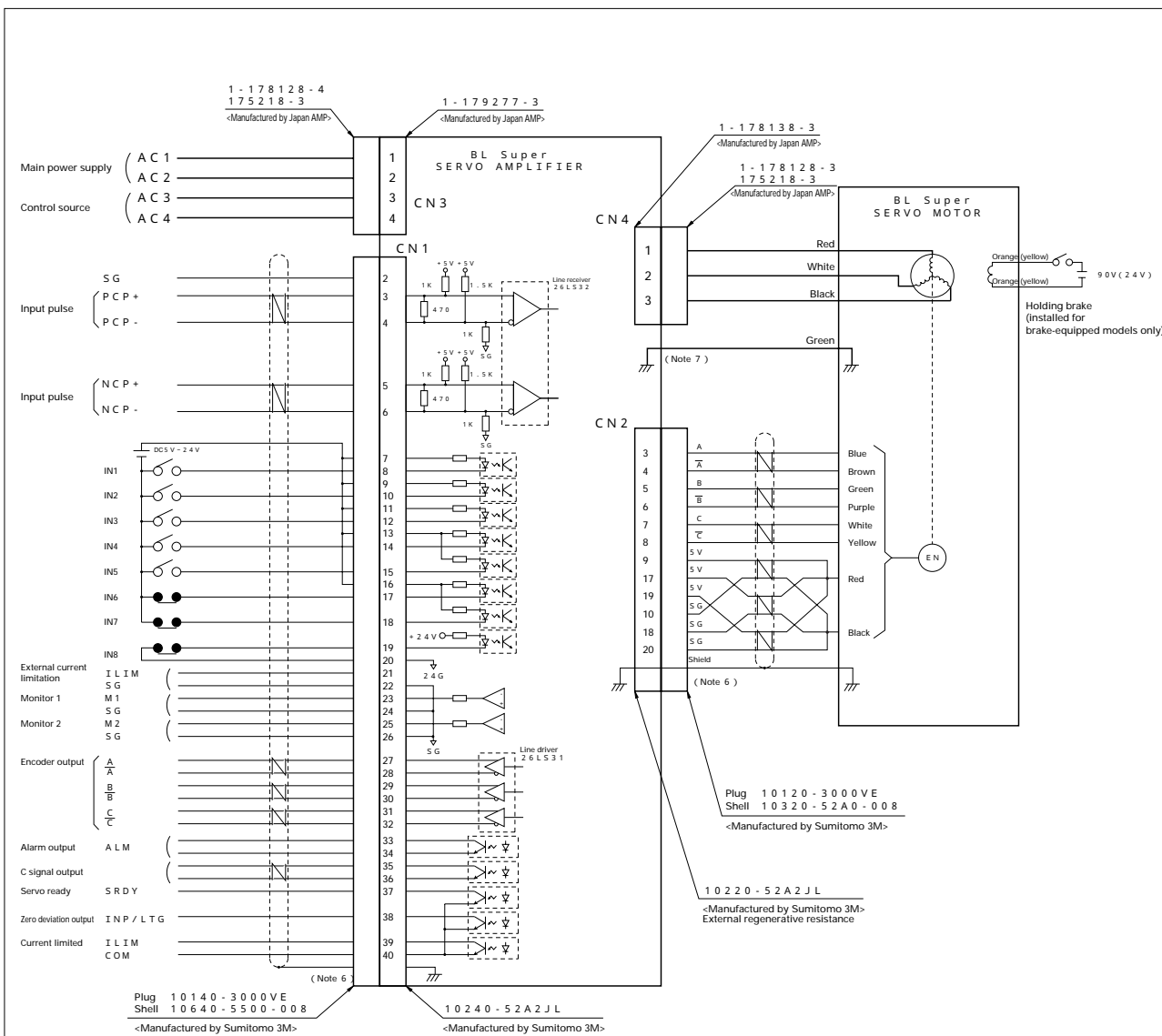
Model	L (m)
PU0-CIS05L	5
PU0-CIS10L	10
PU0-CIS15L	15

* For the relay cable and extension cable, see page 67.

* Servo amplifiers come with connectors for CN1 through CN4.



External connection diagram (position/torque control type)



Note 1) For use a covered shielded cable of the twisted pair type.

Note 2) <Applicable cable> AWG#16 wire

Note 3) The power supply for IN1 through IN7 must be provided by the customer.

Note 4) () represents a case with a 24V holding brake.

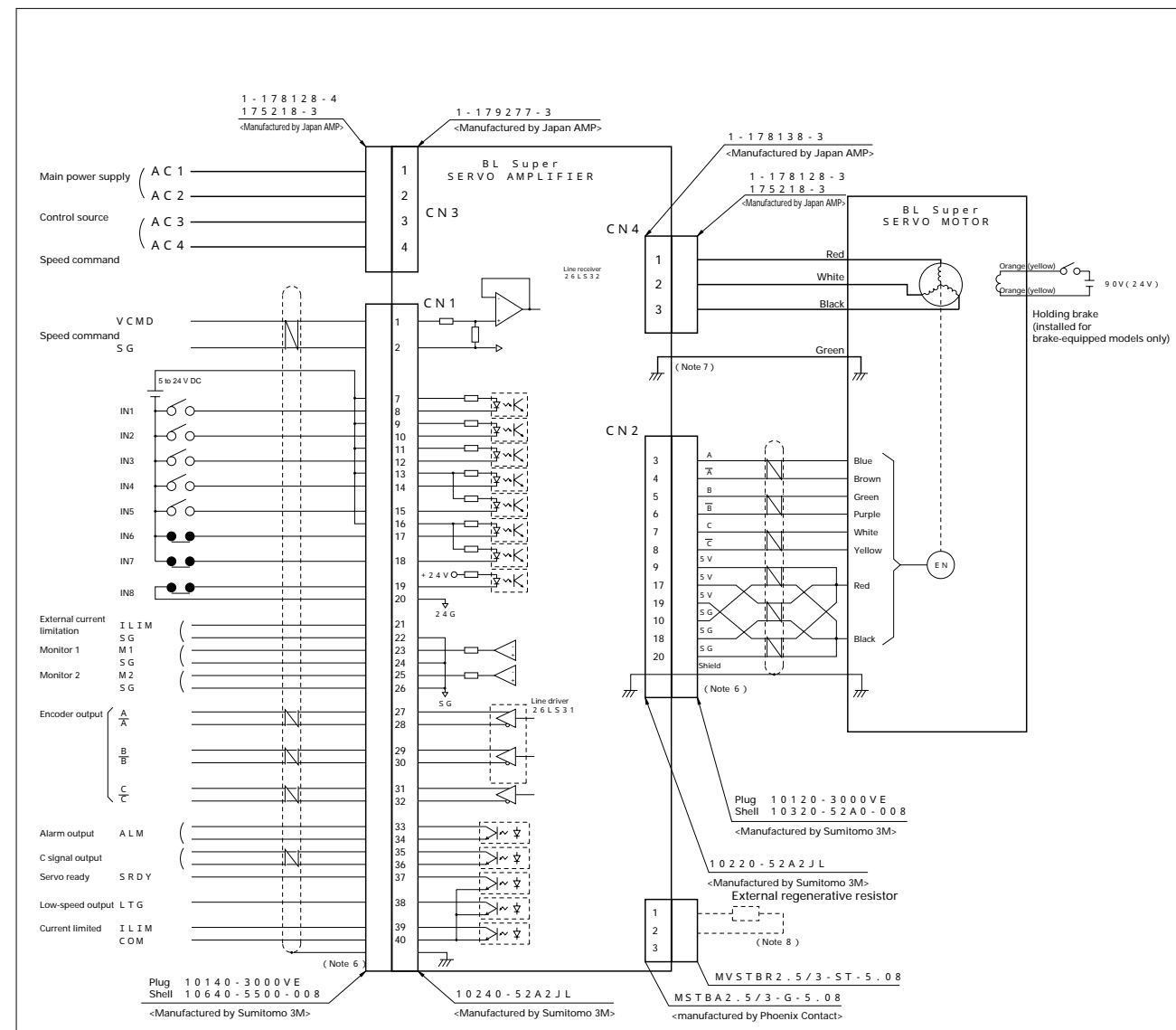
Note 5) Main power supply and control power supply

	Main power supply	Main power supply
	AC1 to AC2	AC3 to AC4
PV1	AC200	AC200

Note 6) Connect the shielded wire to the cable clamp of the connector.

Note 7) The ground conductor of the motor must be connected to the ground tap of the servo amplifier.

External connection diagram (speed/torque control type)



Note 1) For use a covered shielded cable of the twisted pair type.

Note 2) <Applicable cable> AWG#16 wire

Note 3) The power supply for IN1 through IN7 must be provided by the customer.

Note 4) () represents a case with a 24V holding brake.

Note 5) Main power supply and control power supply

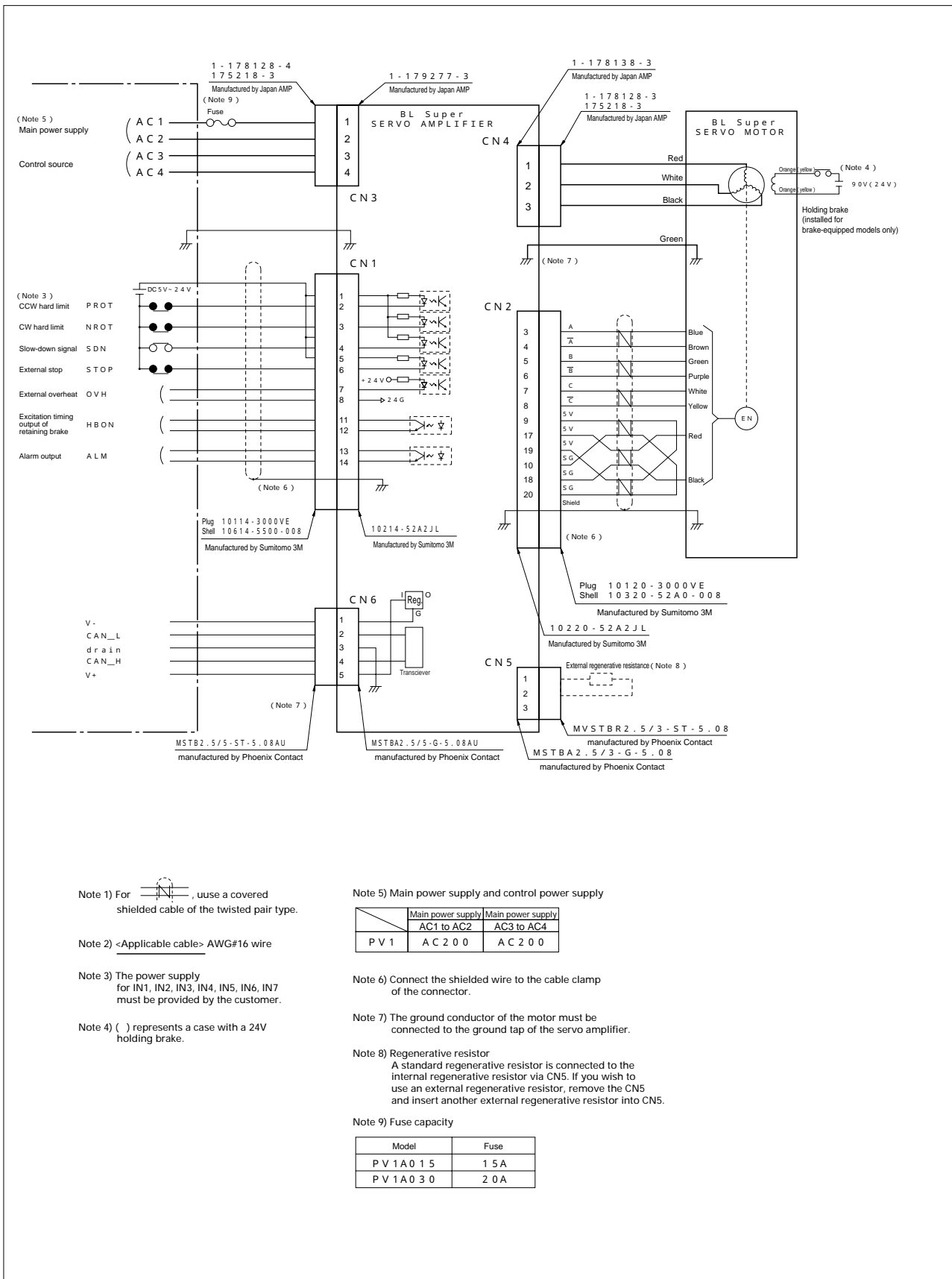
	Main power supply	Main power supply
	AC1 to AC2	AC3 to AC4
PV1	AC200	AC200

Note 6) Connect the shielded wire to the cable clamp of the connector.

Note 7) The ground conductor of the motor must be connected to the ground tap of the servo amplifier.

Note 8) Regenerative resistor
The standard type regenerative resistor is connected with the internal regenerative resistor through CN5. When using the external regenerative resistor, remove CN5 and newly insert the external regenerative resistor into CN5.

External connection diagram (of the CAN and DeviceNet types)



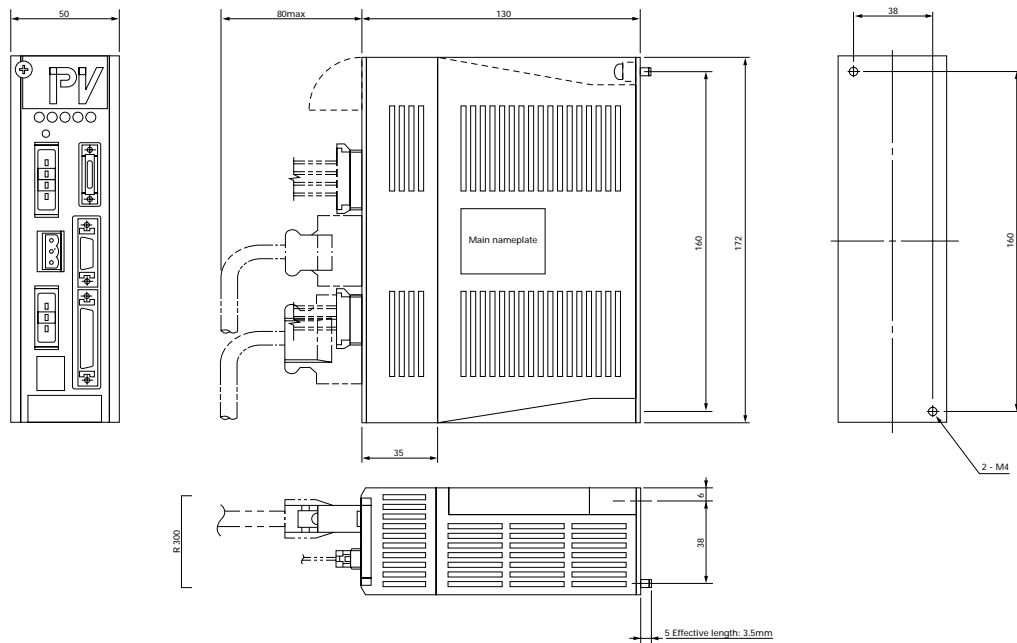
Functions of input signals (For details, see the manual.)

Input signal	Speed control, position control, and torque control types		Speed selection type	
	Standard function (abbreviation)	Function selection (abbreviation)	Function selection (abbreviation)	
IN1	Servo ON (SÖN)		Servo ON (SÖN)	Speed selection 2 (VC2) Acceleration/deceleration selection (TA1)
IN2	Alarm reset (ARST)		Alarm reset (ARST)	
IN3	Deviation clear (HCLR)	Current limitation enable (ILM) Command disable (INH / ZCMD) Command multiplication enable (PMUL)	Acceleration selection Q (TAQ)	Current limitation enable (ILM)
IN4	Proportional control of speed line (PCON)		Normal-rotation command (CCW)	Reverse-rotation command (CW)
IN5	Current limitation enable (ILM)		Reverse-rotation command (CW)	Normal-rotation command (CCW)
IN6		Normal-rotation overtravel (PRÖT)	Speed selection Q (VCQ)	Normal-rotation overtravel (PRÖT)
IN7		Reverse-rotation overtravel (NRÖT)	Speed selection I (VCI)	Reverse-rotation overtravel (NRÖT)
IN8		External heatup (EXÖH)		External heatup (EXÖH)

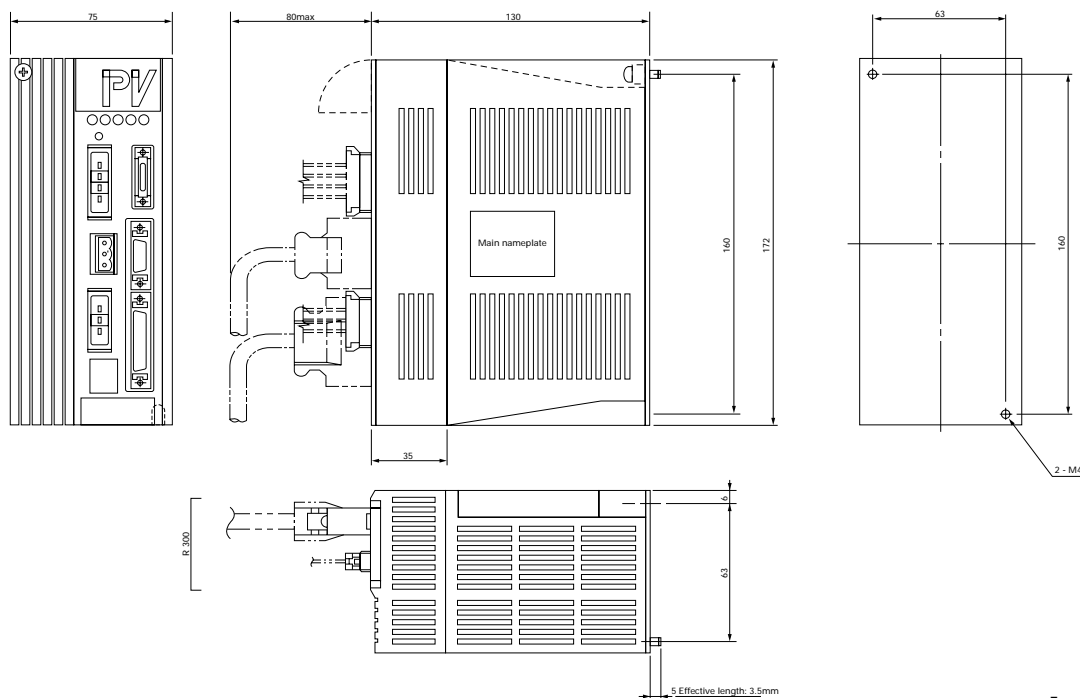
- IN6 through 8 need no connection if you decide not to select functions.
- IN8 is an input for connecting the thermal output of the external regenerative resistor. (If you wish to use one, select functions on the operator.)
- For the external current limitation input, select functions on the operator. It will not become effective unless you enter an ILM.
- The speed selective type is optional. The standard type is not applicable.

Dimensions

PV1A015



PV1A030



[unit:mm]

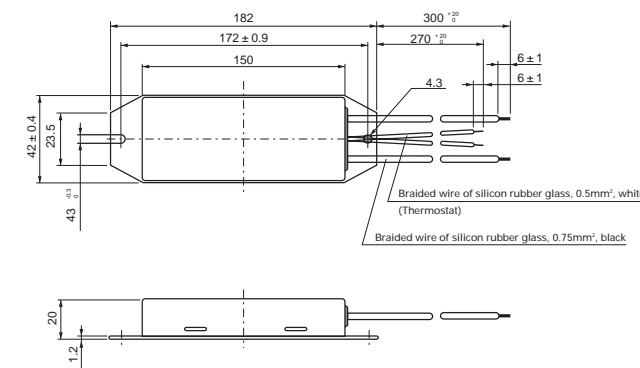
Options

Remote operator

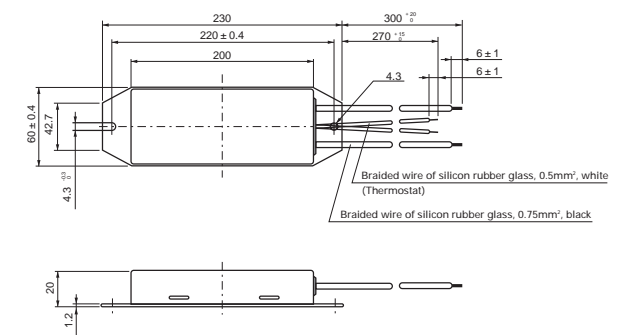
Connected to a servo amplifier, the remote operator allows you to set servo parameters and check its internal state.
Model RP-001 :
Common to "PU", "PZ", "PE", and "PV" amplifiers



Dimensions of an external regenerative resistor [unit:mm]



Model	Remark
REGIST-120W100B	Thermostat, contact b



Model	Remark
REGIST-220W100B	Thermostat, contact b

Relay cables

If you wish to use a relay cable, order an appropriate model according to the information given below.
All cables can be common with PU0.

Relay cables for encoders
(connector to connector)

Model	L (m)
PU0-CIS1R5	1.5
PU0-CIS03	3
PU0-CIS05	5

Relay cables for brakes

Model	L (m)
PU0-CBM1R5	1.5
PU0-CBM03	3
PU0-CBM05	5

Extension cables for encoders

Model	L (m)
PU0-CIS05L	5
PU0-CIS10L	10
PU0-CIS15L	15

Extension cables for brakes

Model	L (m)
PU0-CBM05L	5
PU0-CBM10L	10
PU0-CBM15L	15