SPEED CONTROLLED MOTOR

- Easy Wiring and Speed Control
- Built-in Electronic Brake Circuits for Instant Braking
- Wide Range of Variable Speeds
- Parallel Rotation Performance
- High-Responsive and Great Stability in Speed Control
- Linkable to Other Control Systems

ASSEMBLED TYPE (US Series)

Circuits, capacitor, and variable resistor are assembled into one control box, which is attached to the motor via connector. Ready-to-use.

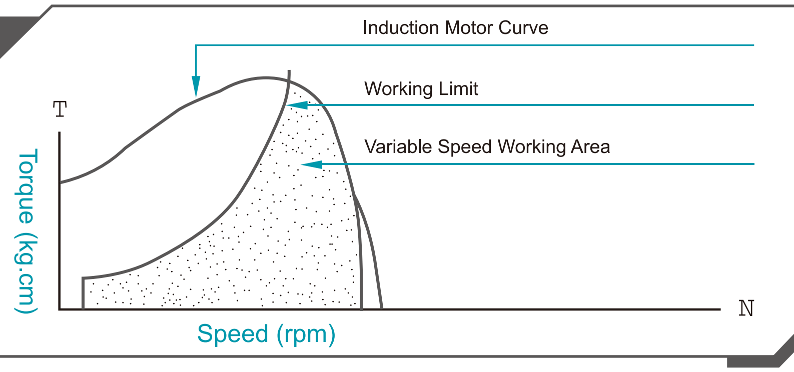
◎ Output: 6W-90W
◎ Motor should be used along with an assembled type controller.

SEPARATED TYPE (SS Series)

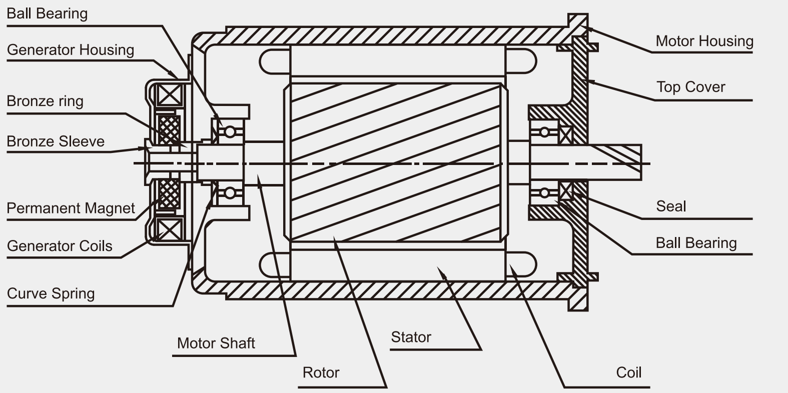
According to different purpose and needs, induction and reversible motors equipped with generators will adopt various wiring methods and controller types.

◎ Variable Speed, Forward/Reverse
◎ Instant Braking
◎ Parallel Rotation
◎ Connectable to Other Systems
◎ Output: 6W-90W

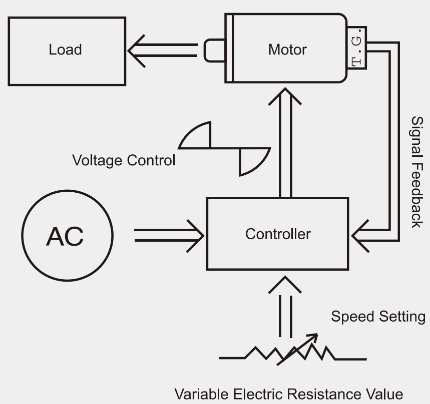
SPEED-TORQUE CURVE



SPEED CONTROLLED MOTOR CONSTRUCTION



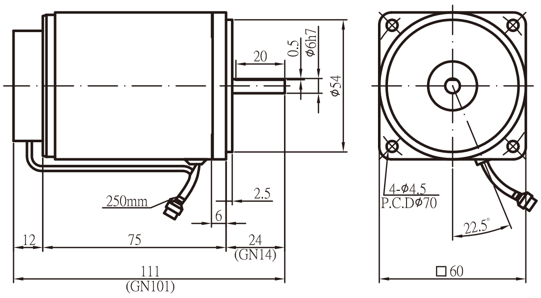
CONTROL PRINCIPLES



Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

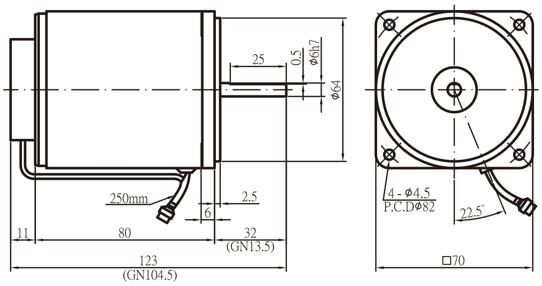
■ OUTLINE & SPECIFICATION
■ UNIT：mm

ASSEMBLED TYPE, VARIABLE SPEED, INDUCTION/REVERSIBLE MOTOR



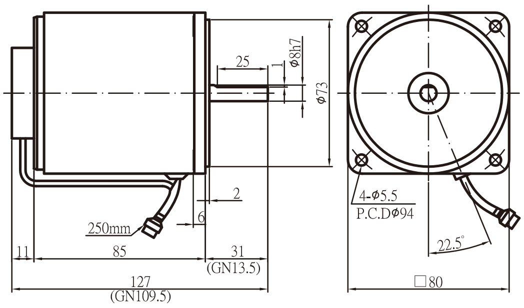
6W

6W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M206-(0/4)01	Continuous	6	100/110	50/60	4	0.22/0.21	90~1400/90~1700	0.7/0.63	0.4/0.55	0.72/0.5
	M206-(0/4)02	Continuous	6	200/220	50/60	4	0.1/0.1	90~1400/90~1700	0.65/0.7	0.44/0.66	0.6/0.7
	M206-(0/4)02E	Continuous	6	230/240	50	4	0.11/0.1	90~1400	0.74/0.77	0.39/0.52	0.72/0.8
REVERSIBLE	M206-(0/4)11	30 /minutes	6	100/110	50/60	4	0.24/0.25	90~1400/90~1700	0.72/0.7	0.3/0.49	0.6/0.52
	M206-(0/4)12	30 /minutes	6	200/220	50/60	4	0.13/0.15	90~1400/90~1700	0.72/0.8	0.26/0.52	0.67/0.7
	M206-(0/4)12E	30 /minutes	6	230/240	50	4	0.14/0.14	90~1400	0.95/0.94	0.36/0.31	0.8/0.8



15W

15W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M315-(0/4)01	Continuous	15	100/110	50/60	4	0.36/0.35	90~1400/90~1700	0.88/1.04	0.9/1.5	1.0/1.1
	M315-(0/4)02	Continuous	15	200/220	50/60	4	0.18/0.18	90~1400/90~1700	0.75/1.1	1.1/1.5	1.0/1.1
	M315-(0/4)02E	Continuous	15	230/240	50	4	0.17/0.17	90~1400	1.06/1.06	1.40/1.32	1.02/1.25
REVERSIBLE	M315-(0/4)11	30 /minutes	15	100/110	50/60	4	0.37/0.44	90~1400/90~1700	1.17/1.24	1.1/1.2	0.9/0.85
	M315-(0/4)12	30 /minutes	15	200/220	50/60	4	0.20/0.23	90~1400/90~1700	0.96/1.34	1.4/1.2	0.9/0.85
	M315-(0/4)12E	30 /minutes	15	230/240	50	4	0.19/0.21	90~1400	1.36/1.31	1.52/1.4	1.20/1.10

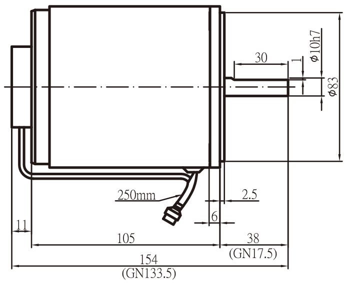


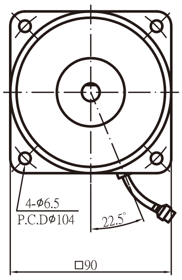
25W

25W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M425-(0/4)01	Continuous	25	100/110	50/60	4	0.57/0.45	90~1400/90~1700	1.4/1.4	2.17/2.5	1.4/1.4
	M425-(0/4)02	Continuous	25	200/220	50/60	4	0.28/0.25	90~1400/90~1700	1.57/1.38	2.1/2.4	1.6/1.3
	M425-(0/4)02E	Continuous	25	230/240	50	4	0.25/0.24	90~1400	1.38/1.55	2.2/2.4	1.5/1.7
REVERSIBLE	M425-(0/4)11	30 /minutes	25	100/110	50/60	4	0.56/0.51	90~1400/90~1700	1.65/1.92	2.2/2.9	1.5/1.9
	M425-(0/4)12	30 /minutes	25	200/220	50/60	4	0.29/0.3	90~1400/90~1700	1.98/1.94	2.4/2.6	1.9/1.8
	M425-(0/4)12E	30 /minutes	25	230/240	50	4	0.25/0.25	90~1400	2.22/2.19	2.7/2.9	2.24/2.3

ASSEMBLED TYPE, VARIABLE SPEED, INDUCTION/REVERSIBLE MOTOR

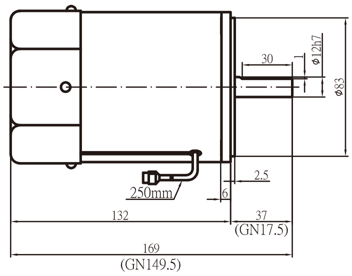
■ OUTLINE & SPECIFICATION
■ UNIT：mm

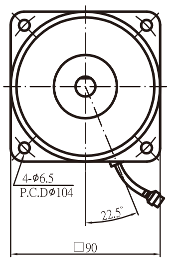


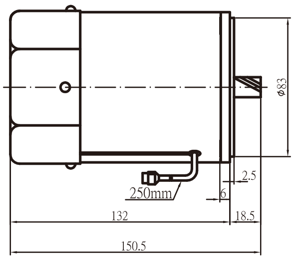


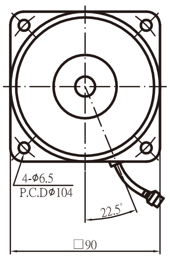
40W

40W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M540-(0/4)01	Continuous	40	100/110	50/60	4	0.87/0.76	90~1400/90~1700	2.14/2.66	3.18/4.2	2.2/2.8
	M540-(0/4)02	Continuous	40	200/220	50/60	4	0.4/0.34	90~1400/90~1700	1.75/2.17	3.6/4.2	1.8/2.1
	M540-(0/4)02E	Continuous	40	230/240	50	4	0.32/0.32	90~1400	2.3/2.58	4.4/4.6	2.4/2.6
REVERSIBLE	M540-(0/4)11	30 /minutes	40	100/110	50/60	4	0.99/1.01	90~1400/90~1700	2.43/3.1	2.8/3.4	1.9/2.4
	M540-(0/4)12	30 /minutes	40	200/220	50/60	4	0.54/0.53	90~1400/90~1700	3.76/2.37	3/3.4	3/2.2
	M540-(0/4)12E	30 /minutes	40	230/240	50	4	0.49/0.44	90~1400	2.4/3.17	3/3.9	2/2.6



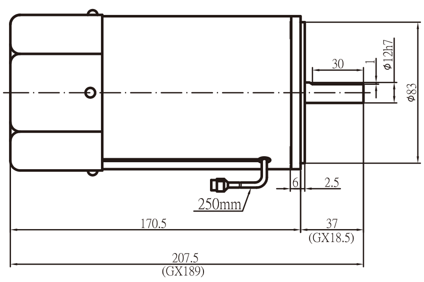


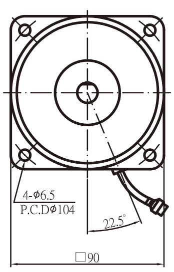




60W/
60W-GX

60W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M560-(0/4/6)01	Continuous	60	100/110	50/60	4	1.8/1.12	90~1400/90~1700	2.6/2.94	5.6/6.9	3.5/4.0
	M560-(0/4/6)02	Continuous	60	200/220	50/60	4	0.64/0.54	90~1400/90~1700	3.62/4.41	5.9/6.9	3.6/4.3
	M560-(0/4/6)02E	Continuous	60	230/240	50	4	0.56/0.55	90~1400	4.14/5.22	6.17/7.2	4.37/5.2
REVERSIBLE	M560-(0/4/6)11	30 /minutes	60	100/110	50/60	4	1.34/1.25	90~1400/90~1700	3.08/4.03	4.6/5.6	3.2/3.3
	M560-(0/4/6)12	30 /minutes	60	200/220	50/60	4	0.75/0.73	90~1400/90~1700	2.38/2.97	5.5/5.8	2.3/2.5
	M560-(0/4/6)12E	30 /minutes	60	230/240	50	4	0.57/0.63	90~1400	4.33/4.72	6.02/5.6	4.73/4.10





90W

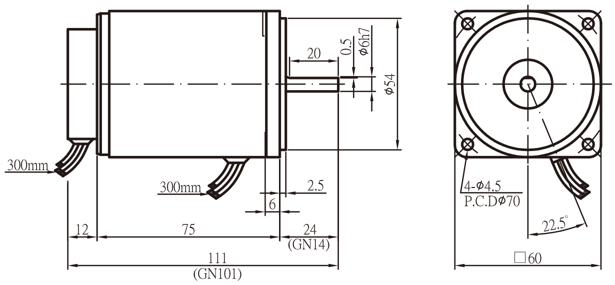
■ The GN of 90W denotes light loading

90W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm)	
										1200rpm	90rpm
INDUCTION	M590-(0/6)01	Continuous	90	100/110	50/60	4	1.5/1.41	90~1400/90~1700	4.76/5.86	8.4/10.2	5/6.1
	M590-(0/6)02	Continuous	90	200/220	50/60	4	0.76/0.72	90~1400/90~1700	4.3/4.21	8/8.7	5.7/6.0
	M590-(0/6)02E	Continuous	90	230/240	50	4	0.66/0.68	90~1400	4.93/5.08	9.8/10.2	5.2/5.6

NOTES：The Assembled Type, Variable Speed Reversible Motor is used in the same way as the Reversible Motor, Lead-Wire Type.

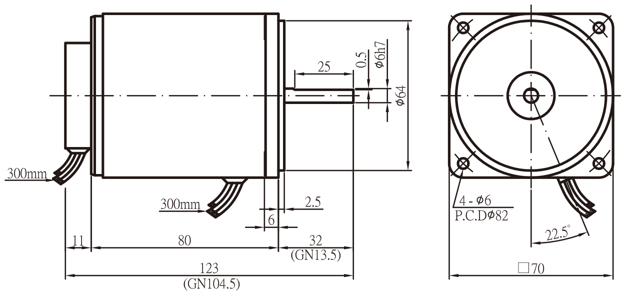
OUTLINE & SPECIFICATION
UNIT：mm

SEPARATED TYPE, VARIABLE SPEED, INDUCTION/REVERSIBLE MOTOR -IP22



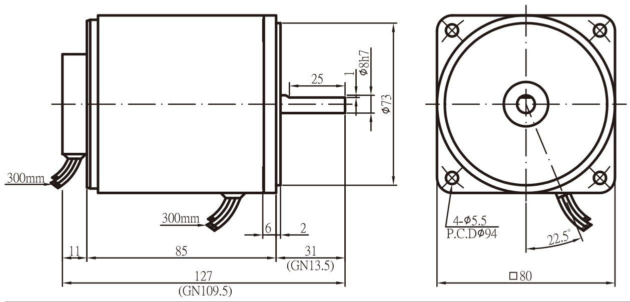
6W

6W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm
INDUCTION	2IK6RA(GN)-A	Continuous	6	100/110	50/60	4	0.22/0.21	90~1400/90~1700	0.7/0.63	0.4/0.55	0.72/0.5
	2IK6RA(GN)-C	Continuous	6	200/220	50/60	4	0.1/0.1	90~1400/90~1700	0.65/0.7	0.44/0.66	0.6/0.7
	2IK6RA(GN)-CE	Continuous	6	230/240	50	4	0.11/0.1	90~1400	0.74/0.77	0.39/0.52	0.72/0.8
REVERSIBLE	2RK6RA(GN)-A	30 /minutes	6	100/110	50/60	4	0.24/0.25	90~1400/90~1700	0.72/0.7	0.3/0.49	0.6/0.52
	2RK6RA(GN)-C	30 /minutes	6	200/220	50/60	4	0.13/0.15	90~1400/90~1700	0.72/0.8	0.26/0.52	0.67/0.7
	2RK6RA(GN)-CE	30 /minutes	6	230/240	50	4	0.14/0.14	90~1400	0.95/0.94	0.36/0.31	0.8/0.8



15W

15W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm
INDUCTION	3IK15RA(GN)-A	Continuous	15	100/110	50/60	4	0.36/0.35	90~1400/90~1700	0.89/1.24	0.9/1.5	1.0/1.1
	3IK15RA(GN)-C	Continuous	15	200/220	50/60	4	0.18/0.18	90~1400/90~1700	0.75/1.10	1.1/1.5	1.0/1.1
	3IK15RA(GN)-CE	Continuous	15	230/240	50	4	0.17/0.17	90~1400	1.06/1.06	1.40/1.32	1.02/1.25
REVERSIBLE	3RK15RA(GN)-A	30 /minutes	15	100/110	50/60	4	0.37/0.44	90~1400/90~1700	1.17/1.24	1.1/1.2	0.9/0.85
	3RK15RA(GN)-C	30 /minutes	15	200/220	50/60	4	0.20/0.23	90~1400/90~1700	0.96/1.34	1.4/1.2	0.9/0.85
	3RK15RA(GN)-CE	30 /minutes	15	230/240	50	4	0.19/0.21	90~1400	1.36/1.31	1.5/1.4	1.20/1.15

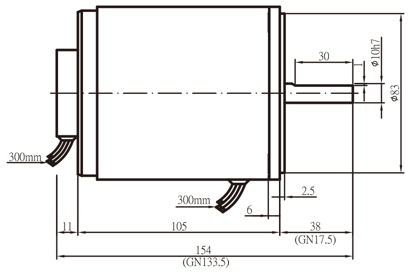


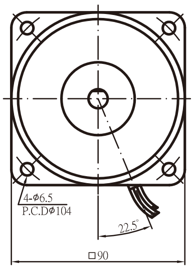
25W

25W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm
INDUCTION	4IK25RA(GN)-A	Continuous	25	100/110	50/60	4	0.57/0.45	90~1400/90~1700	1.4/1.4	2.17/2.5	1.4/1.4
	4IK25RA(GN)-C	Continuous	25	200/220	50/60	4	0.28/0.25	90~1400/90~1700	1.57/1.38	2.1/2.4	1.6/1.3
	4IK25RA(GN)-CE	Continuous	25	230/240	50	4	0.25/0.24	90~1400	1.38/1.55	2.2/2.4	1.5/1.7
REVERSIBLE	4RK25RA(GN)-A	30 /minutes	25	100/110	50/60	4	0.56/0.51	90~1400/90~1700	1.65/1.92	2.2/2.9	1.5/1.9
	4RK25RA(GN)-C	30 /minutes	25	200/220	50/60	4	0.29/0.3	90~1400/90~1700	1.98/1.94	2.4/2.6	1.9/1.8
	4RK25RA(GN)-CE	30 /minutes	25	230/240	50	4	0.25/0.25	90~1400	2.22/2.19	2.7/2.9	2.24/2.3

SEPARATED TYPE, VARIABLE SPEED, INDUCTION/REVERSIBLE MOTOR -IP22

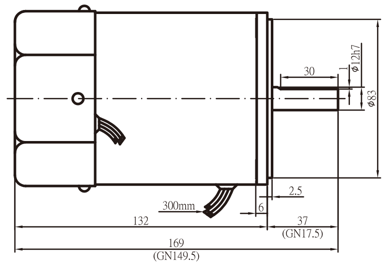
■ OUTLINE & SPECIFICATION
■ UNIT：mm

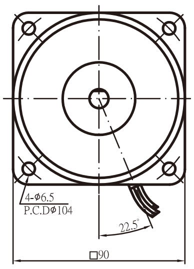


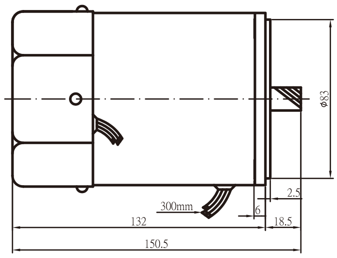


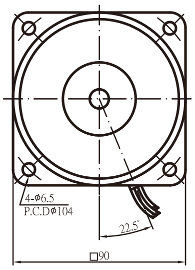
40W

40W TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm
INDUCTION	5IK40RA(GN)-A	Continuous	40	100/110	50/60	4	0.87/0.76	90~1400/90~1700	2.14/2.66	3.18/4.2	2.2/2.8
	5IK40RA(GN)-C	Continuous	40	200/220	50/60	4	0.4/0.34	90~1400/90~1700	1.75/2.17	3.6/4.2	1.8/2.1
	5IK40RA(GN)-CE	Continuous	40	230/240	50	4	0.32/0.32	90~1400	2.3/2.58	4.4/4.6	2.4/2.6
REVERSIBLE	5RK40RA(GN)-A	30 /minutes	40	100/110	50/60	4	0.99/1.01	90~1400/90~1700	2.43/3.1	2.8/3.4	1.9/2.4
	5RK40RA(GN)-C	30 /minutes	40	200/220	50/60	4	0.54/0.53	90~1400/90~1700	3.76/2.37	3/3.4	3/2.2
	5RK40RA(GN)-CE	30 /minutes	40	230/240	50	4	0.49/0.44	90~1400	2.41/3.17	3/3.9	2/2.6





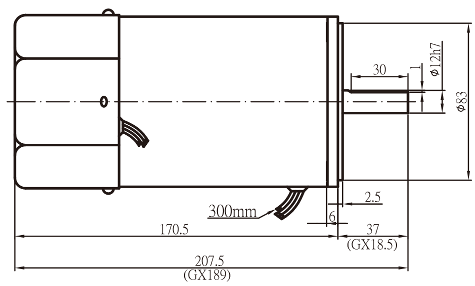


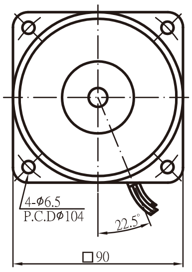


■ The GN of 60W denotes light loading

60W/60W-GX

60W/60W-GX TYPE	MODEL	RATED TIME	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm
INDUCTION	5IK60RA(GN)-AF 5IK60RGX-AF	Continuous	60	100/110	50/60	4	1.80/1.12	90~1400/90~1700	2.60/2.94	5.6/6.9	3.5/4.0
	5IK60RA(GN)-CF 5IK60RGX-CF	Continuous	60	200/220	50/60	4	0.64/0.54	90~1400/90~1700	3.62/4.41	5.9/6.9	4.6/4.4
	5IK60RA(GN)-CEF 5IK60RGX-CEF	Continuous	60	230/240	50	4	0.56/0.55	90~1400	4.14/5.22	6.17/7.2	4.37/5.2
REVERSIBLE	5RK60RA(GN)-AF 5RK60RGX-AF	30 /minutes	60	100/110	50/60	4	1.34/1.25	90~1400/90~1700	3.08/4.03	4.60/5.60	3.20/3.30
	5RK60RA(GN)-CF 5RK60RGX-CF	30 /minutes	60	200/220	50/60	4	0.75/0.73	90~1400/90~1700	2.38/2.97	5.5/5.8	2.3/2.5
	5RK60RA(GN)-CEF 5RK60RGX-CEF	30 /minutes	60	230/240	50	4	0.57/0.63	90~1400	4.33/4.72	6.02/5.60	4.73/4.10





90W

■ The GN of 90W denotes light loading

90W MODEL	RATED OUTPUT (W)	VOLTAGE (V)	FREQ. (HZ)	POLE (P)	CURRENT (A)	ADJUSTABLE RANGE (rpm)	STARTING TORQUE (Kg.cm)	MAXIMUM TORQUE/ PRE-SET TURNNINGS (Kg.cm) 1200rpm	90rpm	CAPACITOR CAPACITY (μF)	CAPACITOR WITHSTAND VOLTAGE (VAC)
5IK90RA(GS, GX)-AF	90	100/110	50/60	4	1.5/1.41	90~1400/90~1700	4.76/5.86	8.4/10.2	5/6.1	22	250
5IK90RA(GS, GX)-CF	90	200/220	50/60	4	0.76/0.72	90~1400/90~1700	4.3/4.21	8/8.7	4.4/4.4	5	450
5IK90RA(GS, GX)-CEF	90	230/240	50	4	0.66/0.68	90~1400	4.93/5.08	9.8/10.2	5.2/5.6	5	450

NOTES：Above models are rated continuously.

ASSEMBLED TYPE SPEED CONTROLLER

INSTRUCTION & PRECAUTIONS

- Power supply leads should be thicker than 0.75mm^2.
- Variable speed ranges from 90-1400rpm at 50Hz, and 90-1700rpm at 60Hz.
- Due to the construction of the gear motor, please reverse the CW/CCW wires when you wish to switch to an opposite rotational direction.
- The STOP and RUN switches are for short interval stops only.
  If the motor must be stopped for a longer period, please turn off the power supply.

INDUCTION MOTOR MODELS

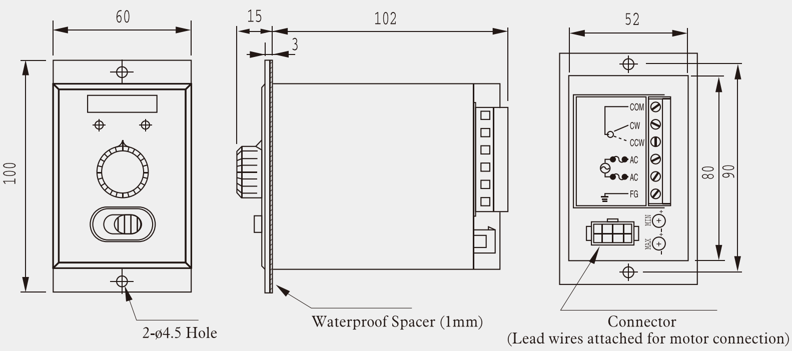
VOLTAGE \ MODEL	NAME	= MOTOR	+ CONTROLLER
1ø 100V~125V	US206-001 US206-401	M206-001 M206-401	US206-01
	US315-001 US315-401	M315-001 M315-401	US315-01
	US425-001 US425-401	M425-001 M425-401	US425-01
	US540-001 US540-401	M540-001 M540-401	US540-01
	US560-001 US560-401 US560-601	M560-001 M560-401 M560-601	US560-01
	US590-001 US590-601	M590-001 M590-601	US590-01
1ø 200V	US206-002 US206-402	M206-002 M206-402	US206-02
	US315-002 US315-402	M315-002 M315-402	US315-02
	US425-002 US425-402	M425-002 M425-402	US425-02
	US540-002 US540-402	M540-002 M540-402	US540-02
	US560-002 US560-402 US560-602	M560-002 M560-402 M560-602	US560-02
	US590-002 US590-602	M590-002 M590-602	US590-02
1ø 240V 50Hz	US206-002E US206-402E	M206-002E M206-402E	US206-02E
	US315-002E US315-402E	M315-002E M315-402E	US315-02E
	US425-002E US425-402E	M425-002E M425-402E	US425-02E
	US540-002E US540-402E	M540-002E M540-402E	US540-02E
	US560-002E US560-402E US560-602E	M560-002E M560-402E M560-602E	US560-02E
	US590-002E US590-602E	M590-002E M590-602E	US590-02E

REVERSIBLE MOTOR MODELS

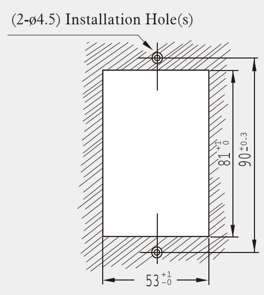
VOLTAGE \ MODEL	NAME	= MOTOR	+ CONTROLLER
1ø 100V~125V	US206-011 US206-411	M206-011 M206-411	US206-11
	US315-011 US315-411	M315-011 M315-411	US315-11
	US425-011 US425-411	M425-011 M425-411	US425-11
	US540-011 US540-411	M540-011 M540-411	US540-11
	US560-011 US560-411 US560-611	M560-011 M560-411 M560-611	US560-11
1ø 200V	US206-012 US206-412	M206-012 M206-412	US206-12
	US315-012 US315-412	M315-012 M315-412	US315-12
	US425-012 US425-412	M425-012 M425-412	US425-12
	US540-012 US540-412	M540-012 M540-412	US540-12
	US560-012 US560-412 US560-612	M560-012 M560-412 M560-612	US560-12
1ø 240V 50Hz	US206-012E US206-412E	M206-012E M206-412E	US206-12E
	US315-012E US315-412E	M315-012E M315-412E	US315-12E
	US425-012E US425-412E	M425-012E M425-412E	US425-12E
	US540-012E US540-412E	M540-012E M540-412E	US540-12E
	US560-012E US560-412E US560-612E	M560-012E M560-412E M560-612E	US560-12E

DIMENSIONS OF ASSEMBLED TYPE SPEED CONTROLLER

SCALE：1/4 UNIT：mm WEIGHT：0.5kg



THE MACHINING OF THE INSTALLATION HOLES



GENERAL PURPOSE MOTOR
SPEED CONTROLLED MOTOR
CONTROLLER
BRAKE MOTOR
CLUTCH BRAKE MOTOR
TORQUE MOTOR
SPEED REDUCER
COMPONENTS

SEPARATED TYPE SPEED CONTROLLER

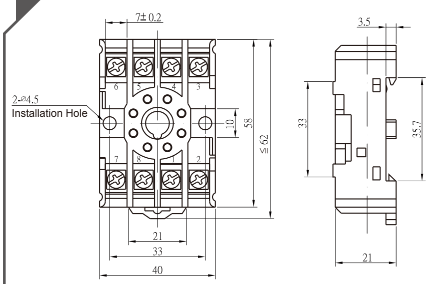
SS21 /SS22

SS31-HR /SS32-HR

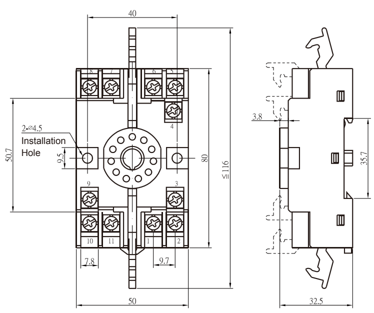
MODEL SPECIFICATIONS

MODEL	SS21	SS22	SS31-HR	SS32-HR
POWER RANGE	100~125V	200~240V	100~125V	200~240V
FREQUENCY	50/60Hz			
MAX. CURRENT ALLOWED	2A	2A	3A	3A
SUITABLE MOTOR	6W-90W			
SPEED CONTROL RANGE	90~1400rpm (50Hz) / 90~1700rpm (60Hz)			
VARIABLE SPEED RATIO	5%	5%	3%	3%
INSTANT BRAKE	–	–	Electronic Brake	Electronic Brake
BRAKE HOLDING TIME	–	–	0.5 Second	0.5 Second
INSULATION RESISTANCE	Tested value at 10MΩ and above, measured by DC 500V Hi-Resistance meter between the housing and terminals.			
HI-POT INSULATION	No damages caused after 1kV at 60Hz was tested between the housing and terminals.			
AMBIENT TEMPERATURE	-10~+40°			
STORAGE TEMPERATURE	-20~+60°			

8-PIN BASE

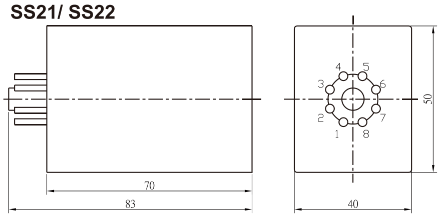


11-PIN BASE

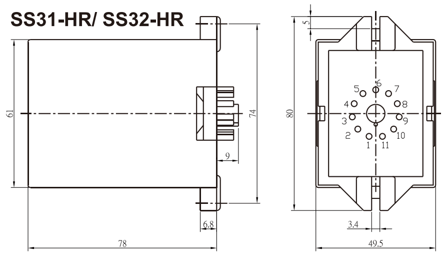


DIMENSIONS

SS21/ SS22



SS31-HR/ SS32-HR

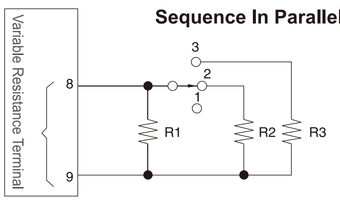


APPLICATION OF STEPPED SPEED

Once applicable speed is decided, as speed is changed, variable electric resistance value can be fixed.
1. Parallel Type: the switch first makes contact with the connecting terminal, then returns to the original terminal point.
2. Series Type: the switch leaves the previous connecting point, then makes contact with another terminal point.
Either type is applicable, please wire accordingly. When using the parallel type switch, an open-circuit mode is created at the instant of switching, where a rapid increase of motor speed must be taken into precaution.

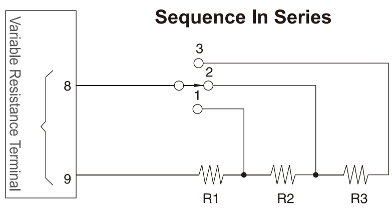
SS21、SS31-HR
SS22、SS32-HR

Sequence In Parallel



SS21、SS31-HR
SS22、SS32-HR

Sequence In Series



■ **Sequence In Parallel Resistance Value (MAX. 20KΩ) R** $= \frac{R1 \times R2}{R1+R2}$, $\frac{R1 \times R3}{R1+R3}$

■ **Sequence In Series Resistance Value (MAX. 20KΩ) R** $=$ **R1 +R2 +R3**

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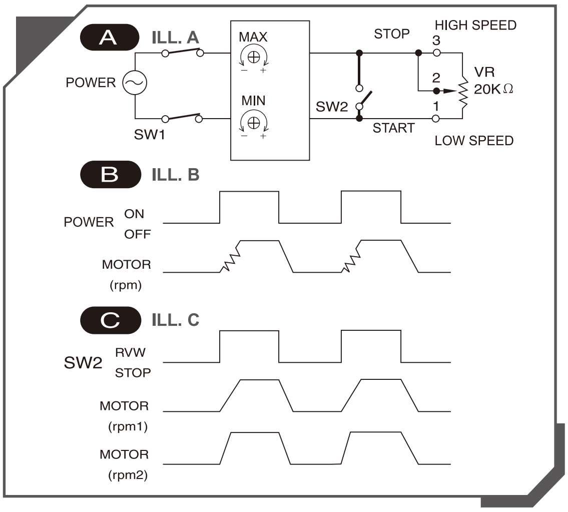
WIRING APPLICATION FOR SEPARATE TYPE CONTROLLER

HOW TO IMPROVE STARTING FEATURES ON INTERVAL USAGE

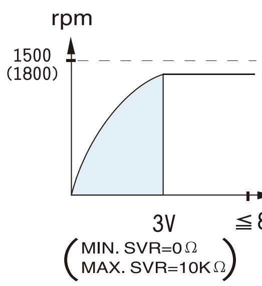
When turning on power switch (SW1) of the controller, the motor needs more time to start. The surges between ON/OFF cause motor starting speed un-steady temporarily. (see ILL. B)
On interval usage or motor is not in use for short time, please leave power connected to the controller. A better starting feature is available by controlling RUN/STOP with SW2. (see MOTOR rpm1 of ILL. C)
To get a better starting response, turn SVR on MIN. clockwise slightly (but keep the motor still stop) to raise a substitution on bias voltage from zero. (see MOTOR rpm2 of ILL. C)



THE USAGE OF SPEED CONTROL IN DC VOLTAGE

- The variable resistance used for speed control could be replaced by inputting a DC voltage. The wiring below is for application reference.
- Be cautious in application that voltage input must not exceed 8V, and the SVR of MIN. must be turned left to zero.
- Special attention to the isolation status between control signal side (V in) and power supply side (see Table 1) to avoid controller burn down and current leakage.
- Be sure to connect 220Ω, 1/2W resistor.

ILL.A Curves of motor speed against V in



ILL.B Wiring diagram of controller V in-GND terminals

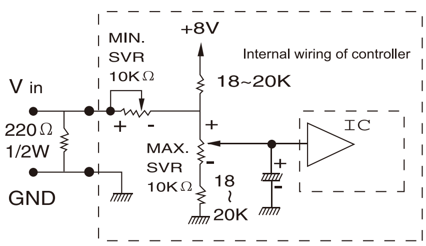
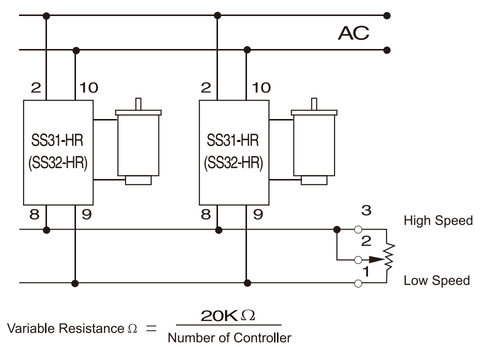


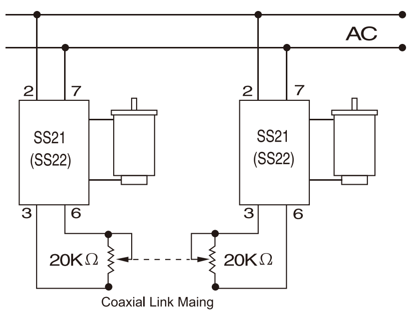
Table 1. isolation for connecting terminals and power

Model name	V in connecting terminals	GND connecting terminals	Isolation beside power supply
SS21 SS22	6	3	NO
SS31-HR SS32-HR	8	9	YES

PARALLEL ROTATION

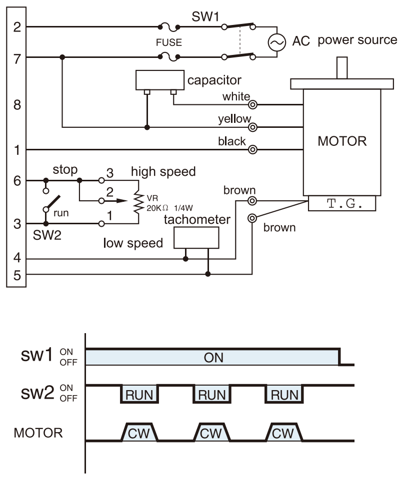
When a single variable resistance (only for SS31/SS32) or coaxial multi-variable resistances (only for SS21/SS22) are used to control several motors, the wiring of the controller are shown as below.
Speed of each motor may have minor variation due to different loading and product tolerance.





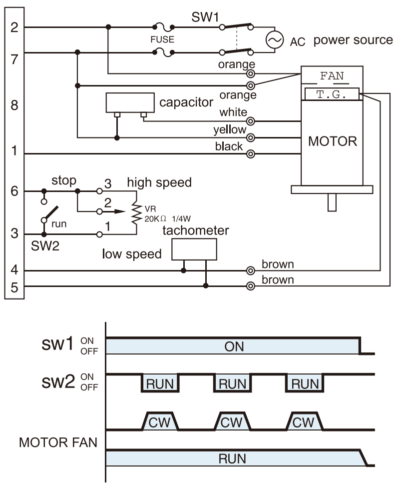
SS21 SS22 EXTERNAL WIRING CONNECTIONS

SINGLE ROTATING DIRECTION + VARIABLE SPEED



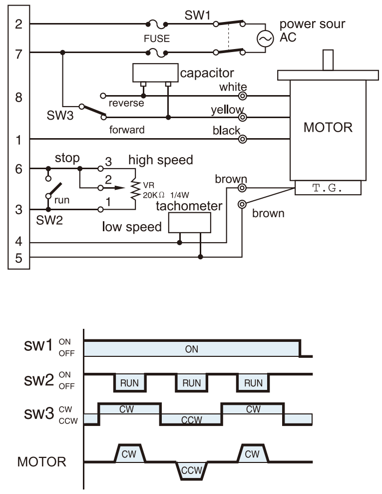
SWITCH NUMBER	SPECIFICATION
SW1	AC250V,5A above
SW2	DC20V,10mA
Variable resistance(VR)	20KΩ,1/4W , B Character

SINGLE ROTATING DIRECTION + FAN + VARIABLE SPEED



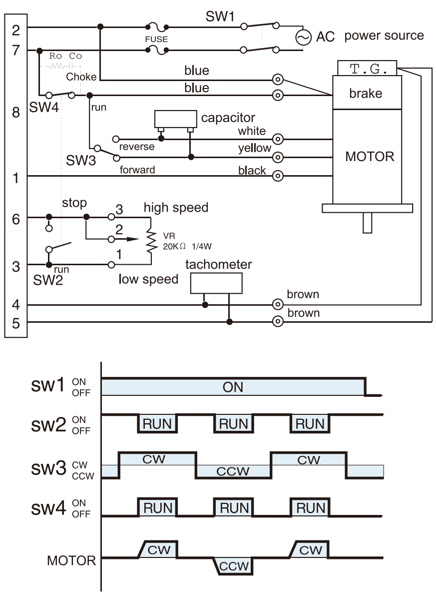
SWITCH NUMBER	SPECIFICATION
SW1	AC250V,5A above
SW2	DC20V,10mA
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + VARIABLE SPEED



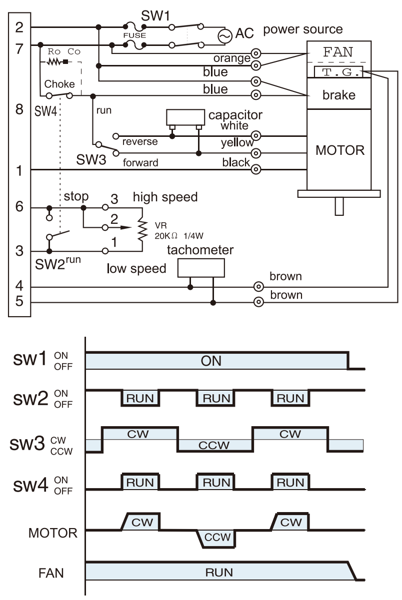
SWITCH NUMBER	SPECIFICATION
SW1,SW3	AC250V,5A above
SW2	DC20V,10mA
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + MAGNETIC BRAKE + VARIABLE SPEED



SWITCH NUMBER	SPECIFICATION
SW1,SW3,SW4	AC250V,5A above
SW2	DC20V,10mA
Contacting point protection(Ro Co)	Ro=5~200Ω (1/2W above) Co=0.1~0.2 μF (400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + FAN + MAGNETIC BRAKE + VARIABLE SPEED



SWITCH NUMBER	SPECIFICATION
SW1,SW3,SW4	AC250V,5A above
SW2	DC20V,10mA
Contacting point protection(Ro Co)	Ro=5~200Ω (1/2W above) Co=0.1~0.2 μF (400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

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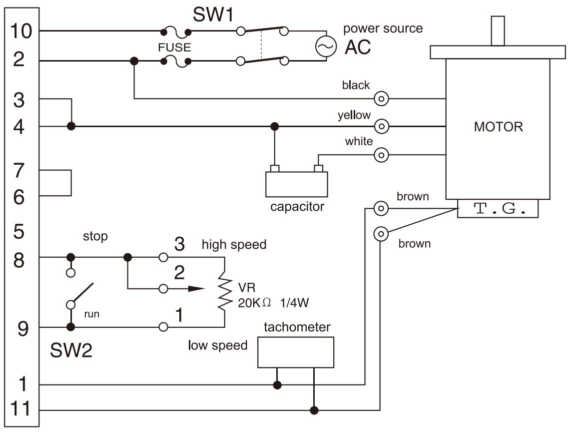
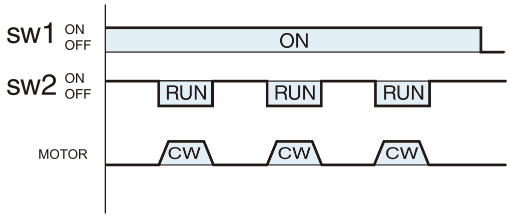
SS31-HR SS32-HR EXTERNAL WIRING CONNECTIONS

SINGLE ROTATING DIRECTION + VARIABLE SPEED





SWITCH NUMBER	SPECIFICATION
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SW2	DC20V,10mA
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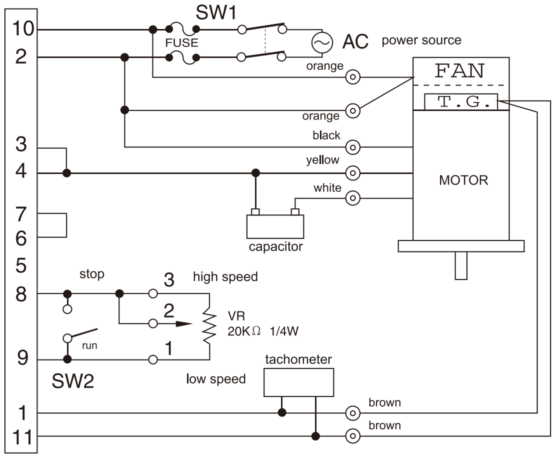
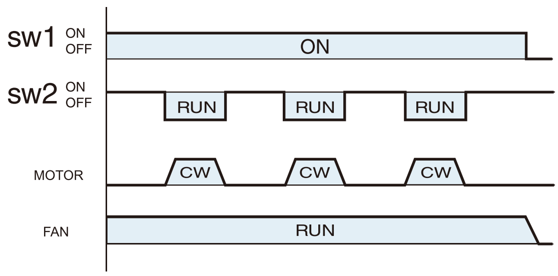
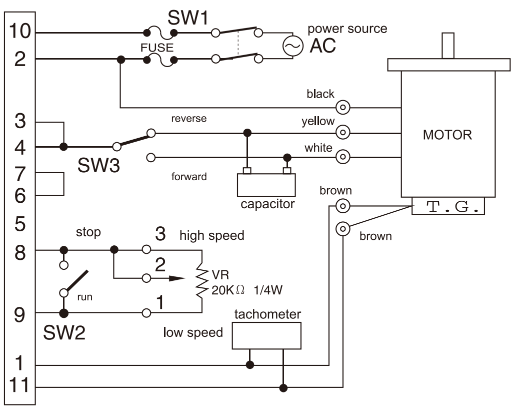
SINGLE ROTATING DIRECTION + FAN + VARIABLE SPEED

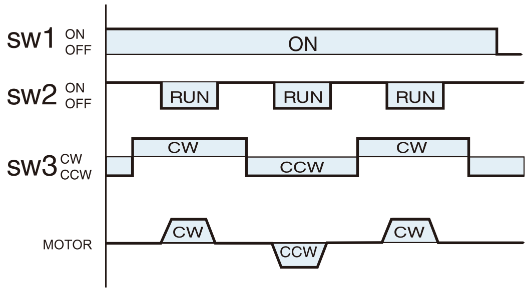




SWITCH NUMBER	SPECIFICATION
SW1	AC250V,5A above
SW2	DC20V,10mA
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + VARIABLE SPEED

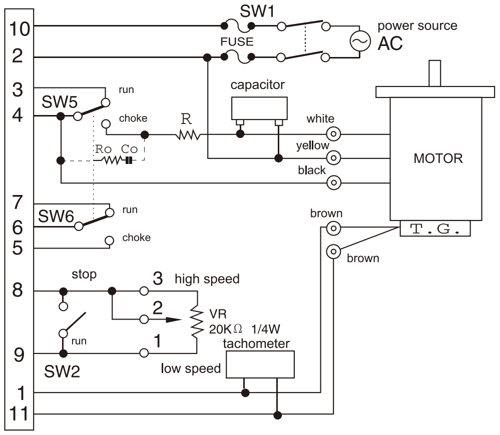


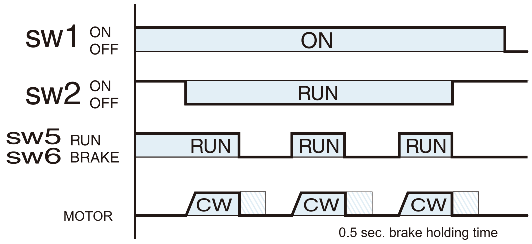


SWITCH NUMBER	SPECIFICATION
SW1,SW3	AC250V,5A above
SW2	DC20V,10mA
Variable resistance(VR)	20KΩ,1/4W , B Character

SS31-HR SS32-HR EXTERNAL WIRING CONNECTIONS

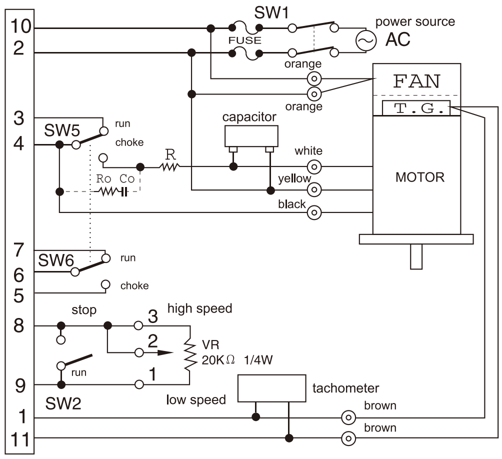
SINGLE ROTATING DIRECTION + VARIABLE SPEED + ELECTRONIC BRAKE

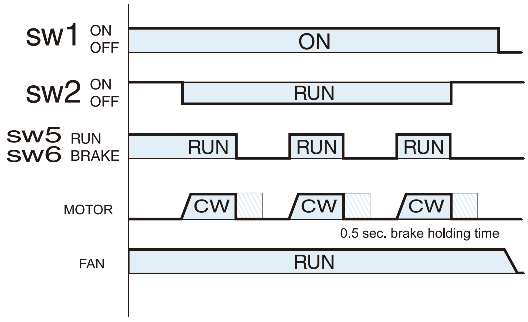




SWITCH NUMBER	SPECIFICATION
SW1,SW5,SW6	AC250V,5A above
SW2	DC20V,10mA
External resistance(Ro Co)	10W 10Ω
Contacting point protection(Ro Co)	Ro=5~200Ω(1/2W above) Co=0.1~0.2μF(400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

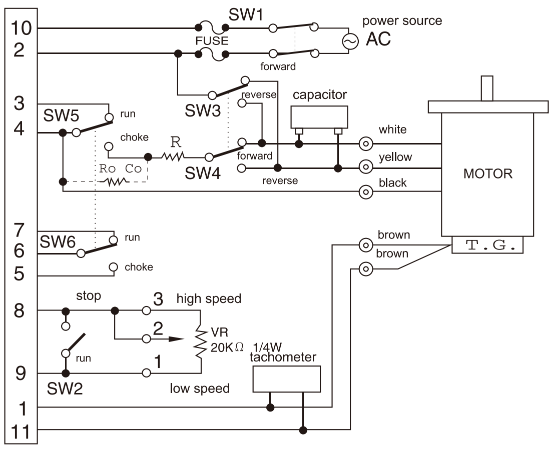
SINGLE ROTATING DIRECTION + FAN + VARIABLE SPEED + ELECTRONIC BRAKE

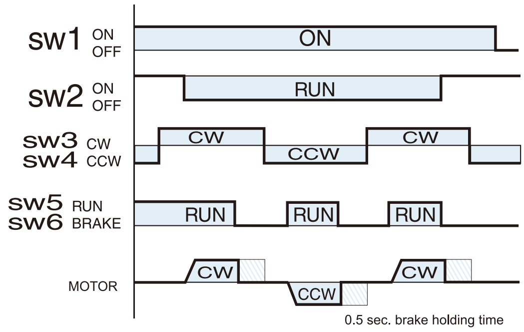




SWITCH NUMBER	SPECIFICATION
SW1,SW3,SW4,SW5,SW6	AC250V,5A above
SW2	DC20V,10mA
External resistance(R)	10W 10Ω
Contacting point protection(Ro Co)	Ro=5~200Ω(1/2W above) Co=0.1~0.2μF(400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + VARIABLE SPEED + ELECTRONIC BRAKE





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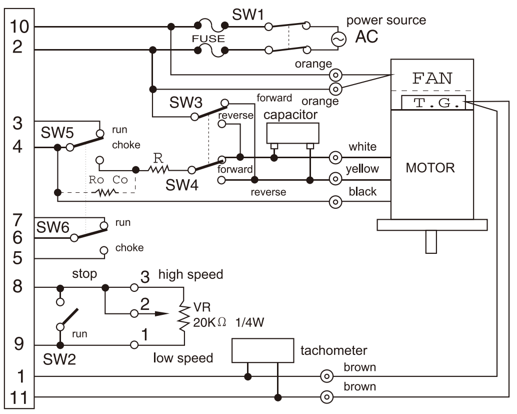
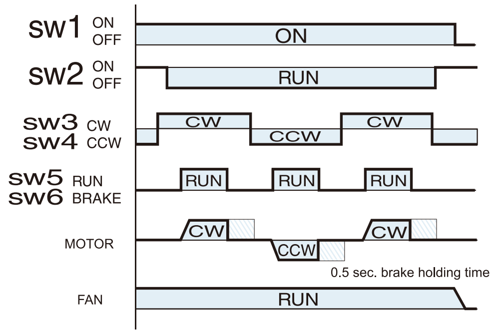
SS31-HR SS32-HR EXTERNAL WIRING CONNECTIONS

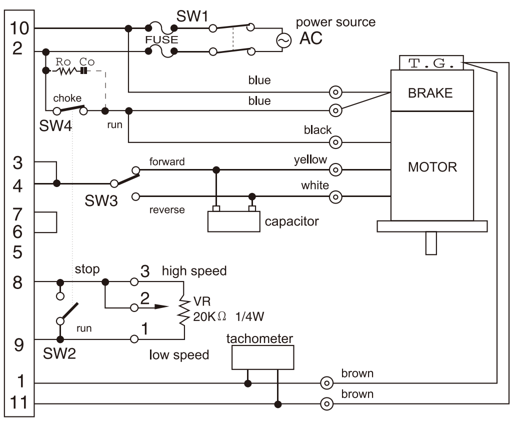
REVERSIBLE + FAN + VARIABLE SPEED + ELECTRONIC BRAKE

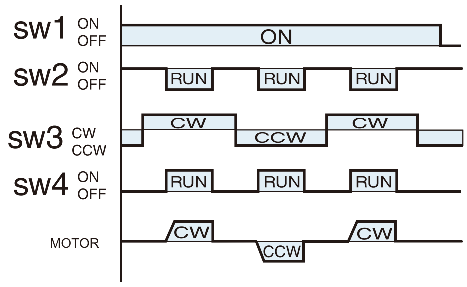




SWITCH NUMBER	SPECIFICATION
SW1,SW3,SW4,SW5,SW6	AC250V,5A above
SW2	DC20V,10mA
External resistance(Ro Co)	10W 10Ω
Contacting point protection(Ro Co)	Ro=5~200Ω (1/2W above) Co=0.1~0.2μF (400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

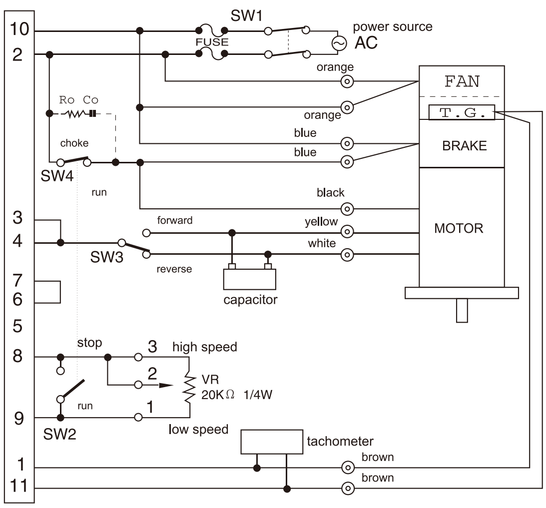
REVERSIBLE + MAGNETIC BRAKE + VARIABLE SPEED

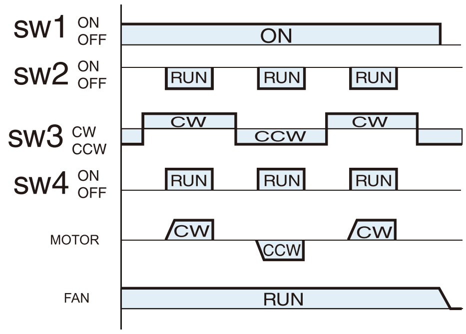




SWITCH NUMBER	SPECIFICATION
SW1,SW3,SW4	AC250V,5A above
SW2	DC20V,10mA
Contacting point protection(Ro Co)	Ro=5~200Ω (1/2W above) Co=0.1~0.2μF (400VAC above)
Variable resistance(VR)	20KΩ,1/4W , B Character

REVERSIBLE + FAN + MAGNETIC BRAKE + VARIABLE SPEED





SPEED REDUCER

■ OUTLINE & SPECIFICATION
■ UNIT：mm

HOW TO SELECT A SPEED REDUCER

■ ROTATION AND TORQUE GIVEN FROM CONJUNCTION WITH SPEED REDUCER

Following is the calculation formula:

Rotations : $N_G = \frac{N_m}{i}$

Torque : $T_G = T_M \cdot i \cdot \eta$

N_G : Rotations after conjunction with speed reducer (rpm)

N_M : Rotations of motor (rpm)

i : Ratio

T_G : Torque after conjunction with speed reducer (kg•cm)

T_M : Torque of motor (kg•cm)

η : The transmission efficiency of speed reducer

■ MAXIMUM TORQUE ALLOWED

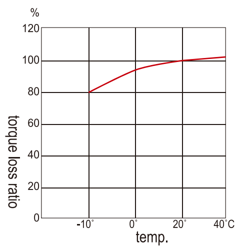
The maximum torque a speed reducer can tolerate is limited due to materials or other specs. Please see the specification of speed reducer for maximum torque allowed at different ratio.

■ ALLOWABLE RADIAL LOAD AND AXIAL LOAD

Radial load refers to the bending load of output shaft at the 1/2 point, commonly used in units linked by chains. Radial load can be disregarded if a coupling is used. Do not over-load since radial load and axial load may affect service life and strength.

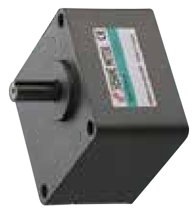
■ ADJUSTED THE SPEED REDUCER RATIO VIA ENVIRONMENT TEMPERATURE

Transmission efficiency of a speed reducer apparently does affected by the environment temperature. The graphic display the torque loss percentage at different ambient temperature (for reference only).



■ MOTOR EQUIP WITH ROUND SHAFT AND GEAR SHAFT, ONLY GEAR SHAFT CAN CONJUNCT WITH SPEED REDUCER.

Speed Reducer
4GN15K
▲△



Motor (Gear shaft)
4IK25GN-A
▲ △

Motor (Round shaft)
4IK25A-A

Speed Reducer
4GN15K

Intermediate Speed Reducer
4GN10X

Motor (Gear shaft)
4IK25GN-A

■ LOAD PATTERNS VS. LIFESPAN OF SPEED REDUCER

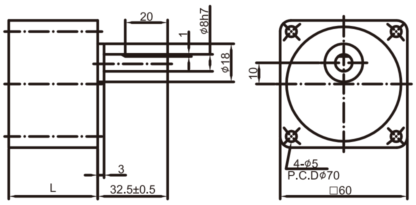
Speed Reducer lifespan will be vary by ways of loading including but not limit to operation time frame, different type of bearing. The following table assumes that the load gear is under the maximum permissible torque. (Reference for engineers)

Unit：hrs

	BEARING			BALL BEARING			
LOAD PATTERN	5 hrs/day	8 hrs/day	24 hrs/day	5 hrs/day	8 hrs/day	24 hrs/day	Application instructions
FIXED LOAD	2000	1500	1000	6250	5000	3400	Operated in one direction, such as conveyors.
SLIGHT IMPACT	1500	1250	800	4200	3400	2500	Frequent start/stop, ex. cam operaton.
STRONG IMPACT	800 ~1000	700 ~1000	600 ~700	2000 ~2500	1700 ~2500	1400 ~1700	Reversible motors, instant moment reversed, with brake system in an instant brake.

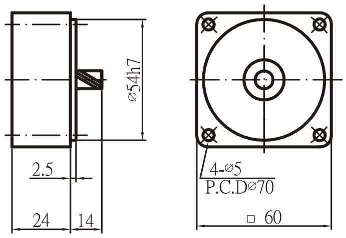
Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

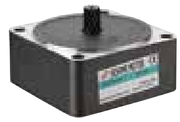
■2 GN□KE . 2 GN□ / SPEED REDUCER



2GN3-18 L=32
2GN25-180 L=42

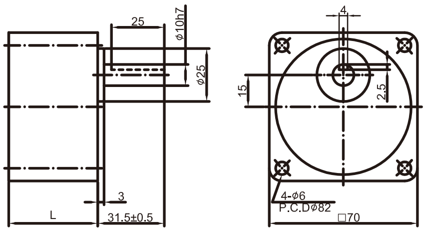
■2GN10X . 2GN10XK / INTERMEDIATE SPEED REDUCER





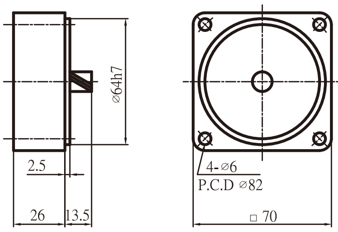
SPEED(rpm)	500	300	200	180	150	120	100	60	50	30	20	15	10
SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	50	75	100	150
SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	60	90	120	180
MAX. TORQUE (kgf.cm)	1.1	1.8	2.7	3.0	3.9	4.5	5.4	8.1	9.7	15	23	25	25

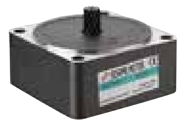
■3 GN□KE . 3 GN□ / SPEED REDUCER



3GN3-18 L=32
3GN25-180 L=42

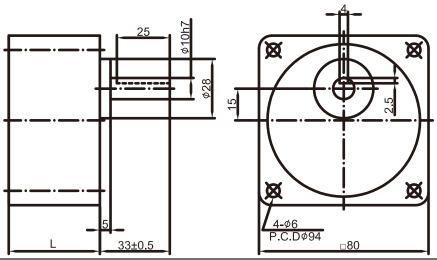
■3GN10X . 3GN10XK / INTERMEDIATE SPEED REDUCER





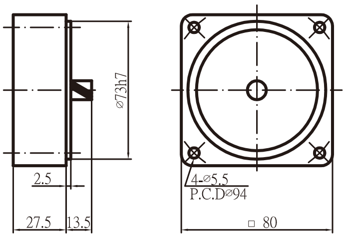
SPEED(rpm)	500	300	200	180	150	120	100	60	50	45	37.5	30	20	15	10
SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	-	40	50	75	100	150
SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	40	-	60	90	120	180
MAX. TORQUE (kgf.cm)	2.6	4.4	6.6	7.4	9.8	11	13	20	24	24	32	36	50	50	50

■4 GN□KE . 4 GN□ / SPEED REDUCER



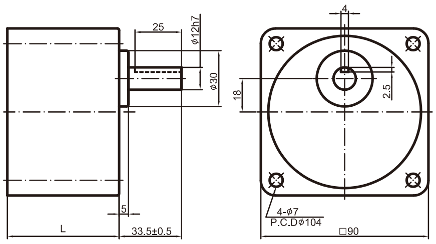
4GN3-180 L=43

■4GN10X . 4GN10XK / INTERMEDIATE SPEED REDUCER



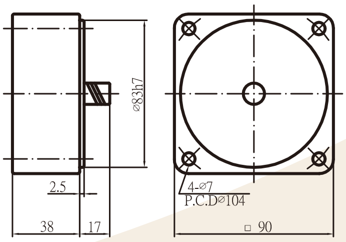
SPEED(rpm)	500	300	200	180	150	120	100	60	50	45	37.5	30	20	15	10
SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	25	30	-	40	50	75	100	150
SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	30	36	40	-	60	90	120	180
MAX. TORQUE (kgf.cm)	4.4	7.4	11	12	15	11	22	33	40	40	50	60	80	80	80

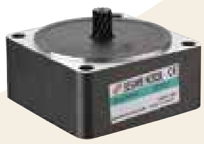
■5 GN□KE . 5 GN□ / SPEED REDUCER



5GN3-18 L=42
5GN20-180 L=60

■5GN10X . 5GN10XK / INTERMEDIATE SPEED REDUCER



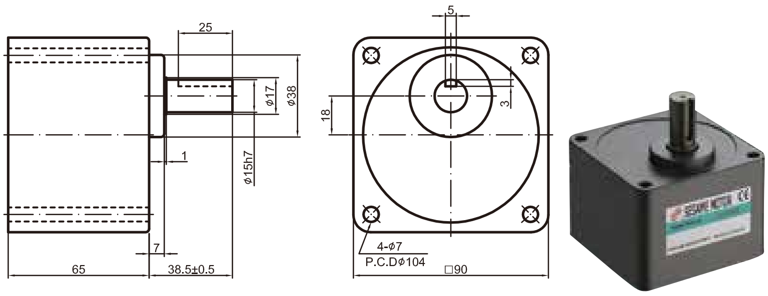


SPEED(rpm)	500	300	200	180	150	120	100	90	75	60	50	45	37.5	30	20	15	10
SPEED REDUCTION RATIO 50HZ	3	5	7.5	-	10	12.5	15	-	20	25	30	-	40	50	75	100	150
SPEED REDUCTION RATIO 60HZ	3.6	6	9	10	-	15	18	20	-	30	36	40	-	60	90	120	180
MAX. TORQUE (kgf.cm)	10	17	26	29	36	43	52	52	65	78	93	93	100	100	100	100	100

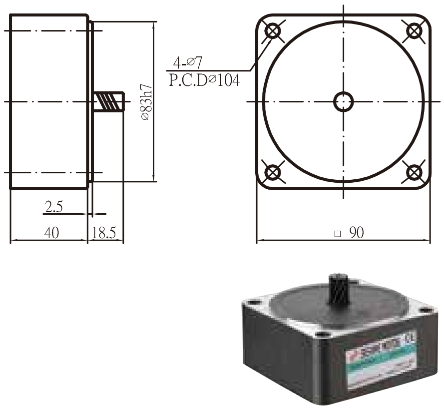
SPEED REDUCER

■ OUTLINE & SPECIFICATION
■ UNIT：mm

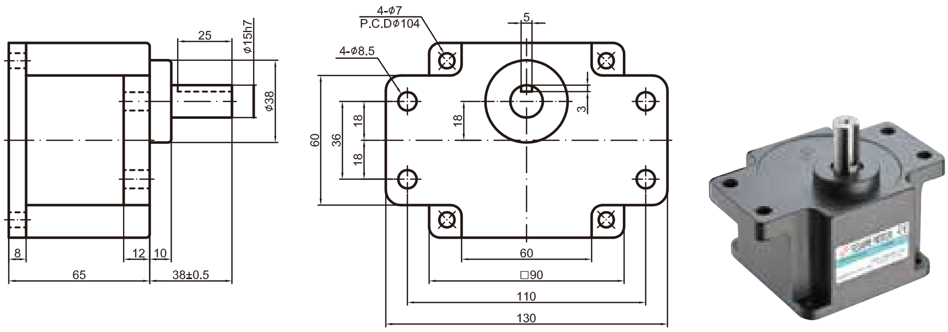
■5 GX□KB / SPEED REDUCER



■5GX10XK / INTERMEDIATE SPEED REDUCER

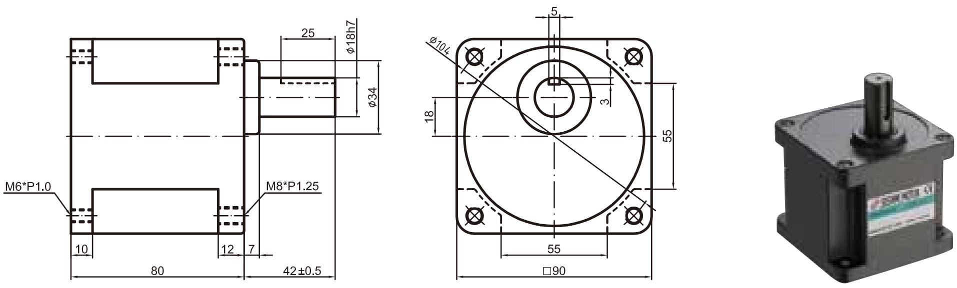


■5 GX□K / SPEED REDUCER



SPEED(rpm)	500	300	200	120	100	90	75	60	50	30	20	15	10	9	7.5
SPEED REDUCTION RATIO 50HZ	3	5	7.5	12.5	15	-	20	25	30	50	75	100	150	-	200
SPEED REDUCTION RATIO 60HZ	3.6	6	9	15	18	20	-	30	36	60	90	120	180	200	-
MAX. TORQUE (kgf.cm)	15	26	38	57	69	69	86	103	124	200	200	200	200	200	200

■5 GX□KBH / GRAVITY FORCE TYPE REDUCER



SPEED(rpm)	30	20	15	10	9	7.5
SPEED REDUCTION RATIO 50HZ	50	75	150	150	-	200
SPEED REDUCTION RATIO 60HZ	60	90	180	120	200	-
MAX. TORQUE(kgf.cm)	350	350	350	350	350	350

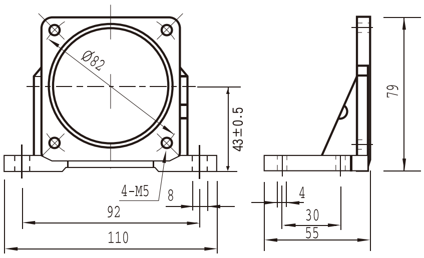
NOTES：

1. Please fill in the required speed reduction ratio in the □ (square) after the speed reducer model no.
2. Rotational speed is calculated by dividing the synchronous speed of the motor (50Hz: 1500rpm; 60Hz: 1800rpm) with the reduction ratio. Depending on total load, actual rotational speed is 2%~20~ less.
3. Speed reducers marked in the highlighted areas have opposite rotational direction to the motor. Others unmarked have the same rotational direction as the motor.
4. Attention: metal chips or objects in speed reducer will result in gear damage, noise and shorten service-life when assembling with motor.
5. Please make sure that the shaft size of the motor matches to that of the accompanying reducer model before assembly, otherwise inconformity will occur.

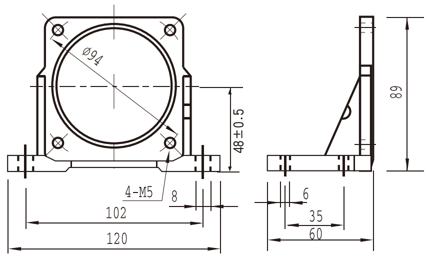
COMPONENTS

L TYPE BASE BRACKET FOR MOTOR INSTALLATION

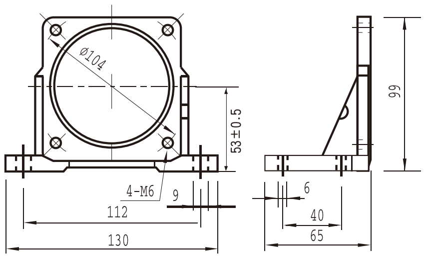
PAL-3N (□70mm)



PAL-4N (□80mm)

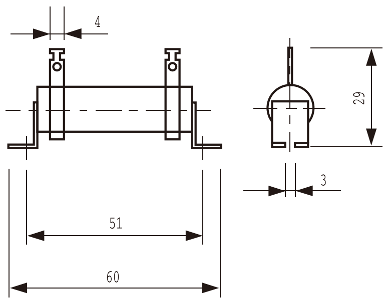


PAL-5N (□90mm)

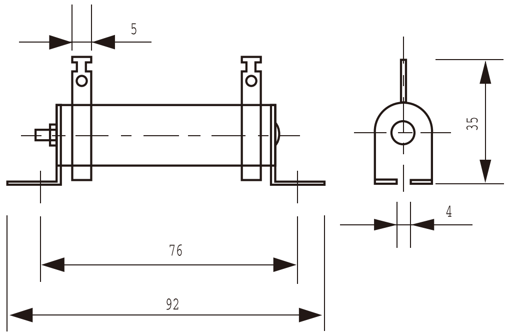


EXTERNAL RESISTOR FOR ELECTRONIC BRAKE CIRCUITS

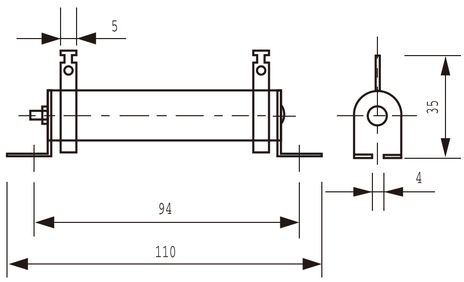
DDR10W10ΩJ (10/10)



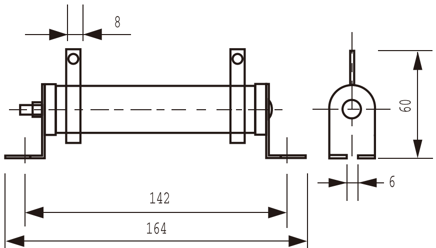
DDR20W20ΩJ (20/20)



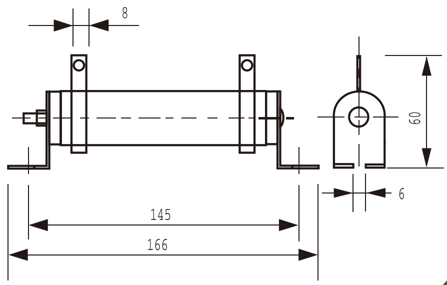
DDR30W20ΩJ (30/20)



DDR50W50ΩJ (50/50)

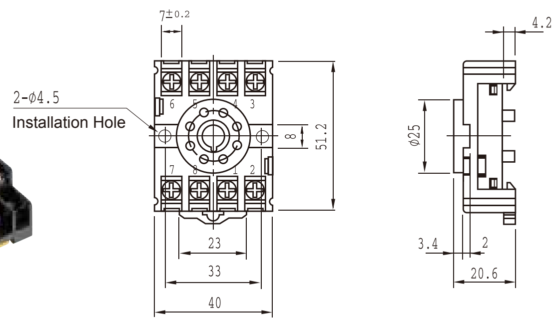


DDR80W50ΩJ (80/50)



EXTENDED BASE BRACKET

PF-083A PIN Base (8 PIN)



11-PFA PIN Base (11 PIN)