



# BLDC GEARED MOTOR X-TOR





# BLDC GEARED MOTOR **X-TOR**

Compact, High Power X-TOR



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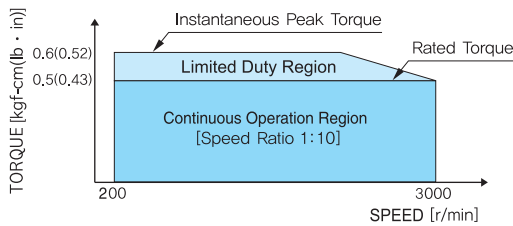
- ⑤ XWA SERIES
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- ④⑨ XQA SERIES
- ⑥① XFA SERIES
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## FEATURES OF BRUSHLESS MOTOR

### EXCELLENT SPEED STABILITY, CONSTANT TORQUE

By comparing the feedback signal and the setting speed reference in the motor. This allows stable operate from low speed to high speed while the load torque changes. Additionally, in the full torque range from no-load to rated torque, it is possible to control the speed in the wide range.



### COMPACT, HIGH POWER, REDUCED POWER LOSS

Due to the permanent magnet Rotor, the BLDC motor cuts down power loss by 50% in compared with AC induction motor. Thanks to this, the motor becomes smaller in size while generating the same amount of output. 42.5mm(1.67in) [□60(□2.36), □80(□3.15)], 57mm(2.24in)[□90(□3.54)].

### EASY CONNECTION

Motor can operate simply by connecting the motor connector to control unit.

### EXTERNAL CONTROL

Run/Stop, Change of rotation direction and instantaneous stop can be controlled with external signals(Sequencer or relay switch).

### HIGH STRENGTH, LONG LIFE GEAR HEAD

Optimal gear design, strengthened case and advanced bearing design improved life of the gear head 2 times longer(10,000hrs) than that of AC Motor gear head. Also, 300kgf-cm[260.15(lb · in)], permissible torque has been achieved in identical size to the AC Motor gear head.



### LOW NOISE

Achieved low-noise using new structure, design and processing technique of motor.

### COMBINED MOTOR AND GEAR HEAD DESIGN

Features a simply configuration design where the motor and the gear head can be assembled easily using an exclusive bolt for safe, damage free assembly of the two units. This two units may also be purchased separately as replacement parts.

### VARIOUS FUNCTIONS

SLOW RUN/SLOW STOP functions are included. Various protection functions are also included.

### OTHERS

- The motor is designed as IP65, making it be safe against intermittent exposure to water. (cannot be used in places where water is constantly present).

## MOTOR

### RATED RPM

Motor RPM at rated output.

### RATED TORQUE

Is maximum torque that motor can continuously generate.

### STARTING (INSTANTANEOUS PEAK) TORQUE

Generates up to 120% of the rated torque for approximately five seconds. Effective for accelerating under inertia load, etc.

### PERMISSIBLE INERTIA LOAD(GD<sup>2</sup>)

Commonly expressed in multiples of rotor inertial moment.

### RATE OF SPEED FLUCTUATION

Indicate percentile value of the motor speed fluctuation with respect to load change, temperature change and voltage fluctuation.

### CONTINUOUS OPERATION REGION

A region where the motor can continuously operate against the load in N-T graph.

### LIMITED DUTY REGION

A region where the motor can operate for approximately 5 seconds. This region is correspond to the case of accelerating inertia load.

### OVERLOAD PROTECTION

Automatically blocks motor input if the motor torque exceeds the rated level for longer than five seconds, preventing damages to the motor and diver.

### SPEED SIGNAL OUTPUT

Generates a pulsewave signal the frequency of that is proportion to the motor speed by an Opencollector method. The user is then able to monitor motor speed with this signal.

### ALARM SIGNAL OUTPUT

Activated when the protection function works. Once activated, the red LED turns on and the motor comes to a halt.

## GEAR HEAD

### ■ REDUCTION RATIO

Ratio of the gear head reducing the motor speed, RPM of gear head output shaft becomes (1/reduction ratio) of motor RPM.

### ■ MAXIMUM PERMISSIBLE TORQUE

This value is determined depending on reduction ration and the gear head type.

### ■ SERVICE FACTOR

This factor was determined from experienced factors as types of load, surface temperature and other application conditions.

### ■ TRANSFER EFFICIENCY

Efficiency of gear head amplifying torque. This value is dependent on bearing, gear friction and viscosity of lubricant.

### ■ OVERHANG LOAD

Load at a right angle to the gear head output shaft. Maximum load that the gear head can bear is called permissible overhang load, which is dependent on type to the gear head and distance from end of the output shaft. Forms of the load include belt tension, etc.

### ■ THRUST LOAD

Load along the gear head output shaft. Maximum load that the gear head can bear is called permissible thrust load, which is dependent of type of the gear head.

## CAUTION FOR USING

**Before using, make sure to use it after reading the Instruction Manual closely. For the suggestions on using, they are classified as caution and warning**



### CAUTION

- Use only according to the specification of speed controller. If not, there will be dangerous fire, electric shock, injury and damage of the unit.
- Do not put the fingers or things into the outlet of the unit. There may be the electric shock, injury or danger of fire.
- Do not operate with the wet hands. The electric shock may occur.
- In case of moving, do not catch the output shaft, connecting part or the lead wire. There may be the injury by the drop.
- Make sure to check whether the things are what you ordered. If you install the other thing, there may occur the injury and the fire.
- The motor should be used after it is fixed tightly. If not, there may occur the injury and the damage of the unit.
- Make sure to install the cover not to touch the rotatory part. If not, there will be injury.
- Make sure to check the rotatory direction before connecting the machine. If not, there may occur the injury and the damage of the unit.
- Do not touch the side of the motor output shaft (key way, cutting part) with the naked hands. If not, there may occur the injury.
- Make sure to install the overload device, for the protection device is not attached to the motor.  
It is desirable to install the protection device leakage shorter electricity except the overload protection device.  
If not, the fire may occur.
- In case of putting out power plug, do not draw with grasping the plug for the electric shock and fire may occur.
- The motor and the controlling unit should be used only by the designated compounding. If not, the fire may occur.
- Before connecting with the machine and beginning to operate, make sure to install the parameter for the machine. If not, the damage may take place.
- In case of connecting with the machine and beginning to operate, do in the state of emergency stop anytime.  
If not, the damage will occur.
- If there are abnormal cases, turn off the power at once. If not, there will be the electric shock, injury and the damage.
- In operating, do not touch the rotor(output shaft). If not, the damage will take place because of winding.
- In operating and right after the operation, do not touch the controlling device by your hands or body. The fire will occur.



### WARNING

- Never put around the explosive atmosphere, gas to be burnt, corrosive air, the location to be wet and combustibles. If not, there may occur the electric shock and the fire.
- In case of movement, connection and checking of motor, please turn off the electric power.
- Make sure to connect motor and speed controller based on the specification. If not, there may occur the electric shock and the fire.
- The power cable and the lead line should not be bent, pulled and inserted by force. If not, the electric shock and the fire may occur.
- In case the motor and controlling unit are attached to the machine, never touch by hand or connect with the earth.  
If not, the electric shock may take place.
- Never operate in the state of exposing the flowing current. If not, the electric shock may take place.
- In case of interruption of electric power and working the protection of overheat, please turn off the power.  
When motors are working continuously, there may be injury and damage of the unit.
- For the 30 seconds after the power off, do not touch the output terminal of the controlling unit.  
If not, the electric shock may occur because of the residual volts.



## XWA series

5

XBA series

25

XQA series

49

XFA series

61

XVA series

81

OPTION

99

## OVERVIEW

XWA Series is consisting with basic functions required to control the speed, is a brushless DC motor of small · high power and the unit of panel type driver and lines up 10W~90W for power. Dedicated gearhead had combined with motor and is combination type to susceptible to install.



## FEATURE

### ■ SMALL · HIGH POWER

This product is □90mm(3.54 in) of installation dimension, 57mm(2.24 in) of overall length, operates 90W High Power and attributes to the space saving of equipment.

### ■ STABILITY FOR EXCELLENT SPEED

Implement excellent speed stability with less speed variation, Speed is not almost change by load such as inverter. Rate for speed variation : below large load  $\pm 1\%$ , below large voltage, below large  $\pm 1\%$

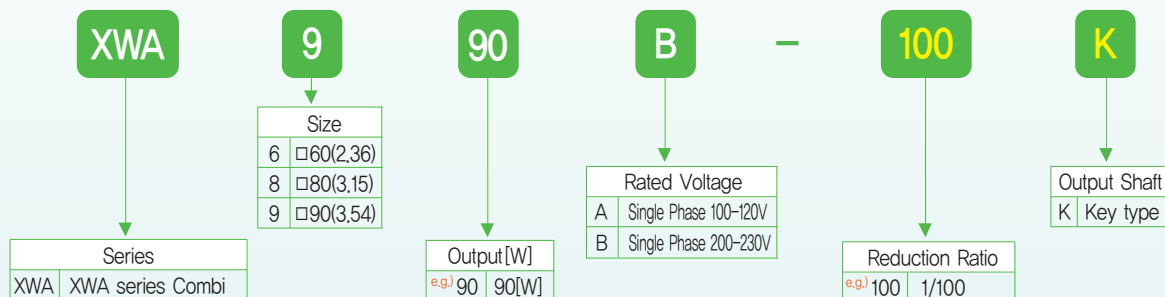
### ■ On-variable control functions

Speed setting of multistage, instant stop as well as slow start, slow down function that shows great power in a sensitive transportation, can be performed and respond to variable usage methods.

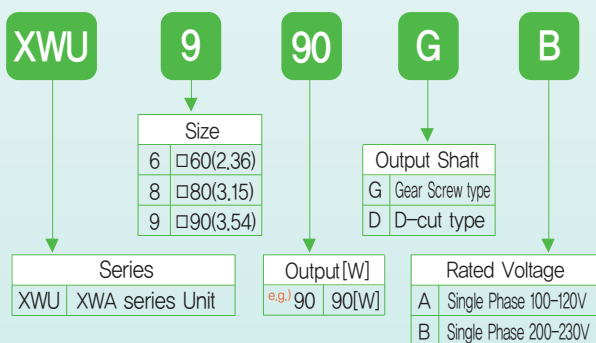
In addition, following features exist.

- Response for high impact gearhead.
- Capable of respond for extending to maximum 10.5m(413.39 in) between motor and driver (Using option cable)
- Speed can be set by external speed adjuster with internal adjuster is not used. (Using the external speed adjuster)

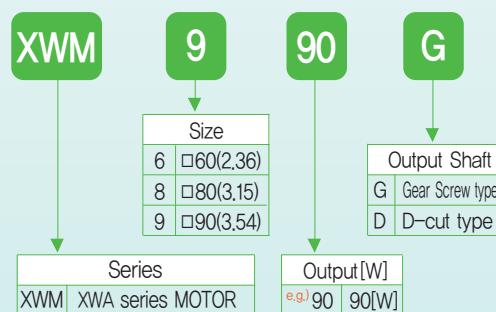
## CONTROL UNIT+MOTOR+GEAR HEAD



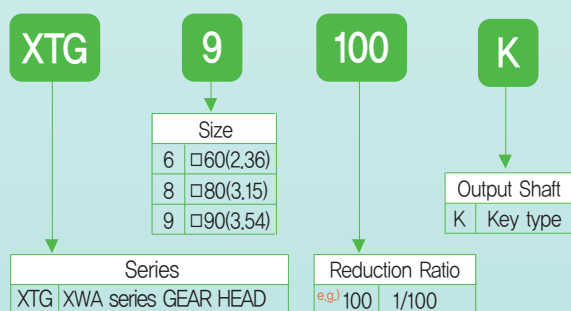
## MOTOR+CONTROL UNIT



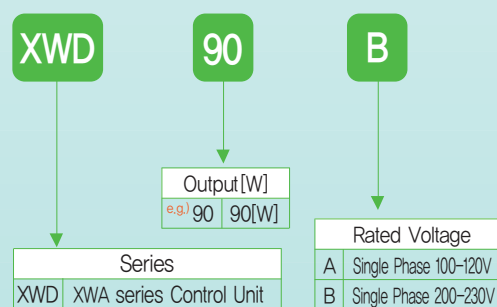
## MOTOR



## GEAR HEAD



## CONTROL UNIT



## SPECIFICATIONS

Title		Combi type	XWA610A-□	XWA610B-□	XWA825A-□	XWA825B-□	XWA940A-□	XWA940B-□	XWA990A-□	XWA990B-□		
		Gear type	XWM610G		XWM825G		XWM940G		XWM990G			
		D-Cut type	XWM610D		XWM825D		XWM940D		XWM990D			
Rated Output (continuous)			W	10		25		40		90		
Power Input	Voltage	V	Single Phase 100~120	Single Phase 200~230	Single Phase 100~120	Single Phase 200~230	Single Phase 100~120	Single Phase 200~230	Single Phase 100~120	Single Phase 200~230		
	Frequency	Hz	50/60		50/60		50/60		50/60			
	Rated Input Current	A	0.6	0.35	0.9	0.56	1.0	0.64	2.0	1.2		
	Maximum Input Current	A	0.8	0.5	1.2	0.8	1.3	0.9	2.6	1.6		
Rated Torque			N·m(kgf·cm)(lb·in)		0.05(0.5) (0.43)		0.125(1.25) (1.08)		0.20(2.0) (1.73)		0.45(4.5) (3.9)	
Starting Torque			N·m(kgf·cm)(lb·in)		0.06(0.6) (0.52)		0.15(1.5) (1.3)		0.24(2.4) (2.08)		0.54(5.4) (4.68)	
Permissible Load Inertia			J kg·m <sup>2</sup> (oz·in <sup>2</sup> )		0.5x10 <sup>-4</sup> (2.7)		1.8x10 <sup>-4</sup> (9.8)		3.3x10 <sup>-4</sup> (18.1)		5.8x10 <sup>-4</sup> (31.7)	
Rated Speed			r/min		2,000							
Speed Control Range			r/min		100 to 2,000 (Speed Ratio 1:20)							
Speed Regulation	Load		Less than ±1% (0 ~ rated torque, at rated speed)									
	Voltage		Less than ±1% (supply voltage ±10%, at rated speed with no load)									
	Temperature		Less than ±1% (0 to +40°C (+32 to +104°F), at rated speed with no load)									

※ For permissible load inertia in the geared motor, refer to 9 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## COMMONALITIES

Category	Specifications
SLOW RUN / SLOW STOP	0.5 to 15 seconds (Applicable for both Slow Run and Slow Stop)
Speed Control	1. Built-in Potentiometer 2. External Potentiometer (20KΩ 1/4W)
Input Signal	Photocoupler input method, input resistance: 3KΩ, operates at DC 24V±10%, common for EXT., CW, and CCW
Output Signal	Opencollector output, external use conditions: Less than 26.4V 10mA, common for Speed Out and Alarm Out.
Protection Feature	<p>If following protection functions are operated, control unit alarm signal is output and motor come to stop.</p> <ul style="list-style-type: none"> <li>● Overload protection : If load exceeds a rated torque in the motor, is approved over approximately 5 seconds.</li> <li>● Overvoltage protection : If voltage approved in control unit, exceeds top limit in the rated voltage allowable range.</li> <li>● Under voltage protection: If voltage approved in control unit, less than rated voltage allowable range.</li> <li>● Icing protection : If sensor wire of cable is shorted during operating the motor.</li> <li>● Overspeed protection : If motor RPM exceeds 2800 r/min.</li> </ul>
Motor Insulation Level	Class B (130°C)
Time Rating	Continuous

## GENERAL SPECIFICATIONS

Item	Motor	Control Unit
Dielectric Strength	If applying 60Hz, 1,500V between the coil and the case for 1 minute after continuous operating under normal temperature and humidity conditions, any fault is not occurred.	If applying 60Hz, 1,500V between protection ground terminal and power input for 1 minute, any fault is not occurred.
Insulation Resistance	After continuous operating under normal temperature and humidity conditions, if measured the resistance value between the coil and the case using DC500V Mega Tester, should be over 100M $\Omega$ .	If the resistance value between protection ground terminal and power input is measured using DC500V Mega Tester, should be over 100M $\Omega$ .
Ambient Temperature	0°C to +40°C(+32°F to +104°F) (nonfreezing)	0°C to +40°C(+32°F to +104°F) (nonfreezing)
Ambient Humidity	Less than 85% (non condensing)	
Atmosphere	No corrosive gas or dust.	
Degree of Protection	IP65 (excluding the output shaft side)	IP10

**Caution)** Use it, ensuring that surface temperature of motor does not exceed over 90°C.

## PERMISSIBLE LOAD INERTIA ( J )—GEARED MOTOR

 $J \times 10^{-4} \text{ kgf-m}^2(\text{oz} \cdot \text{in}^2)$ 

Model	Gear Ratio	5	10	15	20	30	50	100	200
XWA610( )-□K		1.55 (8.5)	6.2 (33.9)	14 (76.5)	24.8 (135.6)	55.8 (305.1)	155 (847.5)	155 (847.5)	155 (847.5)
XWA825( )-□K		5.5 (30.1)	22 (120.3)	49.5 (270.6)	88 (481.1)	198 (1083)	550 (3007)	550 (3007)	550 (3007)
XWA940( )-□K		10 (54.7)	39 (213.2)	90 (492.1)	130 (710.8)	360 (1968)	1000 (5467)	1000 (5467)	1000 (5467)
XWA990( )-□K		25 (136.7)	100 (546.7)	225 (1230)	400 (2187)	900 (4921)	2500 (13669)	2500 (13669)	2500 (13669)

※ □ indicates deceleration ratio.

※ ( ) indicates voltage specification.

## PERMISSIBLE TORQUE-GEARED MOTOR

N·m / [kgf·cm(lb·in)]

Item	Speed Control Range [r/min]	20~400	10~200	6.7~133	5~100	3.3~67	2~40	1~20	0.5~10
	Gear Ratio	5	10	15	20	30	50	100	200
XWA610( )-□K		0.22 2.2(1.91)	0.45 4.5(3.91)	0.68 6.8(5.90)	0.90 9.0(7.81)	1.3 13(11.28)	2.1 21(18.23)	4.2 42(36.45)	6.0 60.0(52.08)
XWA825( )-□K		0.56 5.6(4.86)	1.12 11.2(9.72)	1.68 16.8(14.58)	2.20 22.0(19.09)	3.2 32(27.77)	5.3 53(46.00)	10.6 106(92.00)	16.0 160(138.87)
XWA940( )-□K		0.90 9.0(7.81)	1.80 18.0(15.62)	2.70 27.0(23.43)	3.60 36.0(31.25)	5.1 51(44.27)	8.5 85(73.78)	17.0 170(147.55)	30.0 300(260.38)
XWA990( )-□K		2.10 20.0(17.36)	4.10 40.0(34.72)	6.00 60.0(52.08)	8.00 80.0(69.44)	11.5 115(99.44)	19.3 193(167.51)	30.0 300(260.38)	30.0 300(260.38)

※ □ indicates deceleration ratio.

※ Direction indicated in color □ is the same direction of the motor. The other is reverse direction.

※ ( ) indicates voltage specification.

## PERMISSIBLE OVERHANG LOAD AND PERMISSIBLE THRUST LOAD

Model		Deceleration Ratio	Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937 in) from end of the output shaft.		20mm(0.7874 in) from end of the output shaft.			
			N	kgf(lbs.)	N	kgf(lbs.)	N	kgf(lbs.)
Geared Motor	XWA610( )-□K	5	100	10(22.03)	150	15(33.04)	40	4(8.81)
		10~20	150	15(33.04)	200	20(44.05)		
		30~200	200	20(44.05)	300	30(66.08)		
	XWA825( )-□K	5	200	20(44.05)	250	25(55.07)	100	10(22.03)
		10~20	300	30(66.08)	350	35(77.09)		
		30~200	450	45(99.12)	550	55(121.15)		
	XWA940( )-□K	5	300	30(66.08)	400	40(88.11)	150	15(33.04)
		10~20	400	40(88.11)	500	50(110.13)		
		30~200	500	50(110.13)	650	65(143.17)		
	XWA990( )-□K	5	300	30(66.08)	400	40(88.11)	150	15(33.04)
		10~20	400	40(88.11)	500	50(110.13)		
		30~200	500	50(110.13)	650	65(143.17)		
Motor	XWM610D		87.2	8.72(19.21)	107	10.7(23.57)	● Do not engage the thrust load. If unavoidable, engage below 50% of motor weight.	
	XWM825D		117	11.7(25.77)	137	13.7(30.17)		
	XWM940D		156	15.6(34.36)	176	17.6(38.77)		
	XWM990D		156	15.6(34.36)	176	17.6(38.77)		

※ □ indicates deceleration ratio.

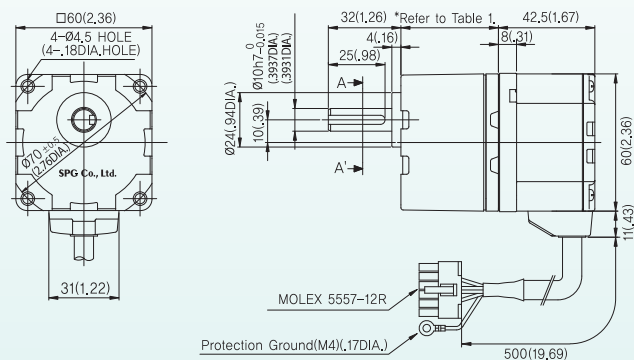
※ ( ) indicates voltage specification.

## GEARED MOTOR

## ■ Model : XWA610( )-□K

[Unit : mm(inch)]

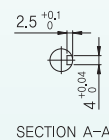
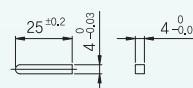
- Motor : XWM610G
- Gear Head : XTG65K~XTG6200K
- Control Unit : XWD10( )



- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set (refer to P14 for specifications).
- ※ ( ) indicates voltage specification.

## ■ Key(accessories)

## ■ Key Groove



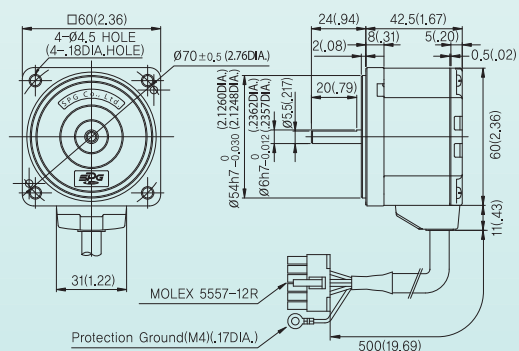
※ Table 1

Gear Ratio	Size:mm(inch)
XTG65K~XTG620K	34(1.34)
XTG630K~ XTG6100K	38(1.50)
XTG6200K	43(1.69)

## MOTOR

## ■ Model : XWM610D

[Unit : mm(inch)]



※ Table 2-Weight

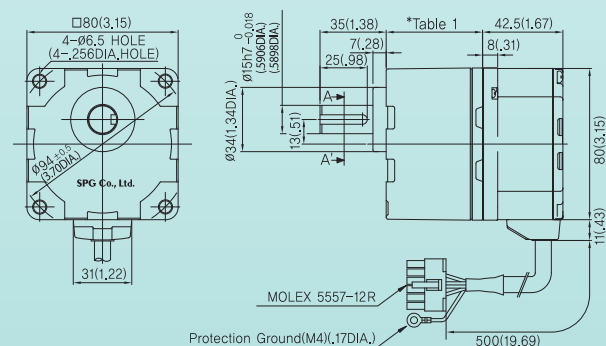
Part		Weight:kg.(lbs)
Motor		0.48(1.06)
Gear Head	XTG65K~XTG620K	0.28(0.62)
	XTG630K~ XTG6100K	0.33(0.73)
	XTG6200K	0.37(0.82)

## GEARED MOTOR

## ■ Model : XWA825( )-□K

[Unit : mm(inch)]

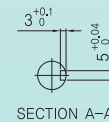
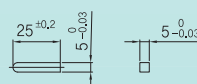
- Motor : XWM825G
- Gear Head : XTG85K~XTG8200K
- Control Unit : XWD25( )



- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set (refer to P14 for specifications).
- ※ ( ) indicates voltage specification.

## ■ Key(accessories)

## ■ Key Groove



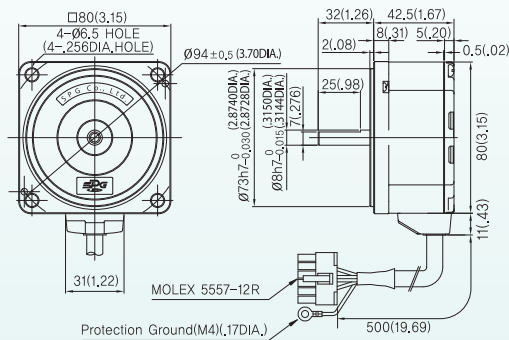
※ Table 1

Gear Ratio	Size:mm(inch)
XTG85K~XTG820K	41(1.61)
XTG830K~ XTG8100K	46(1.81)
XTG8200K	51(2.01)

## MOTOR

## ■ Model : XWM825D

[Unit : mm(inch)]



※ Table 2-Weight

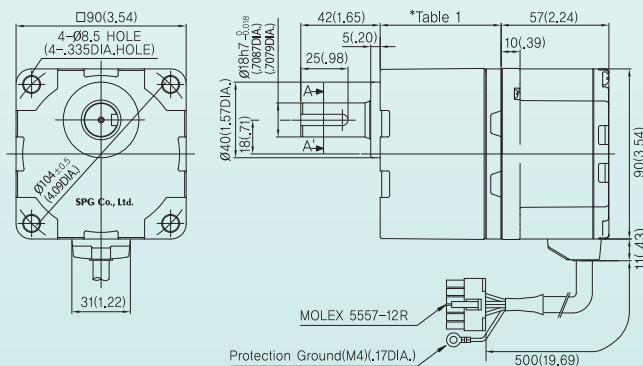
Part		Weight:kg.(lbs)
Motor		0.75(1.65)
Gear Head	XTG85K~XTG820K	0.61(1.34)
	XTG830K~ XTG8100K	0.72(1.59)
	XTG8200K	0.80(1.76)

## GEARED MOTOR

## ■ Model : XWA940( )-□K

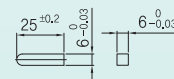
[Unit : mm(inch)]

- Motor : XWM940G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XWD40( )

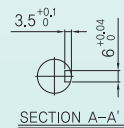


- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set (refer to P14 for specifications).
- ※ ( ) indicates voltage specification.

## ■ Key(accessories)



## ■ Key Groove



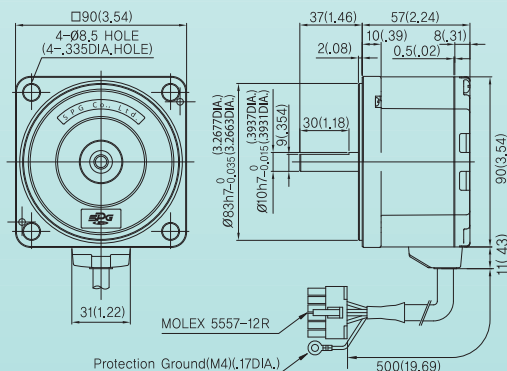
※ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## ■ Model : XWM940D

[Unit : mm(inch)]



※ Table 2-Weight

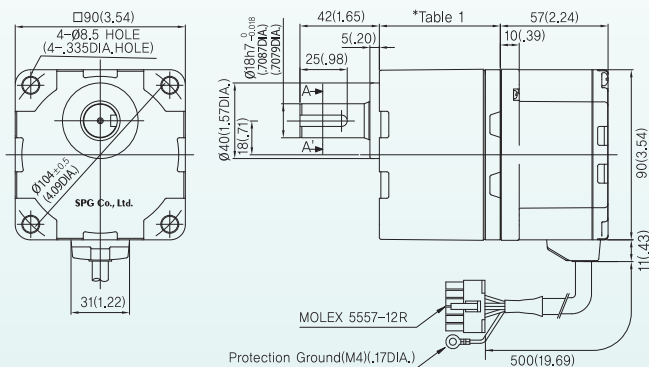
Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## GEARED MOTOR

## ■ Model : XWA990( )-□K

[Unit : mm(inch)]

- Motor : XWM990G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XWD90( )

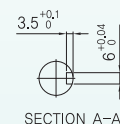


- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set (refer to P14 for specifications).
- ※ ( ) indicates voltage specification.

## ■ Key(accessories)



## ■ Key Groove



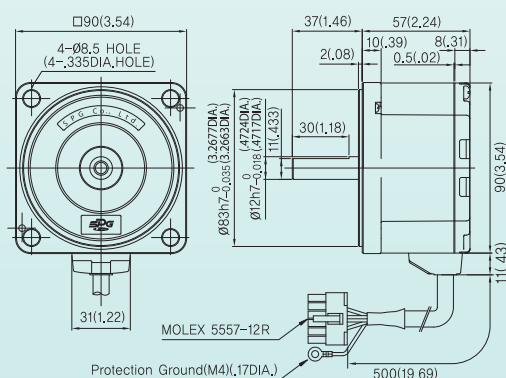
※ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## ■ Model : XWM990D

[Unit : mm(inch)]



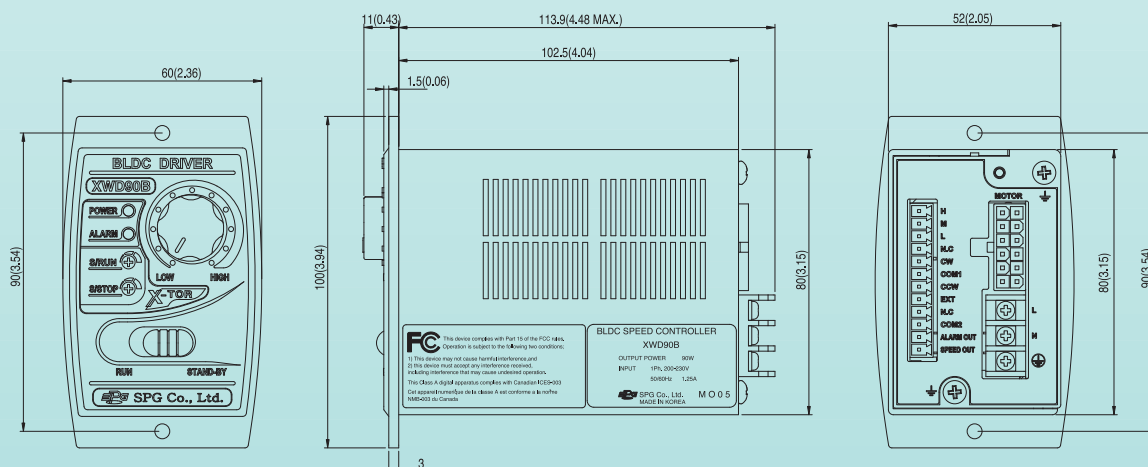
※ Table 2-Weight

Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## CONTROL UNIT

## ■ Model(Applicable to all models) : XWD10( ), XWD25( ), XWD40( ), XWD90( ) (Weight : 0.4kg)

[Unit : mm(inch)]

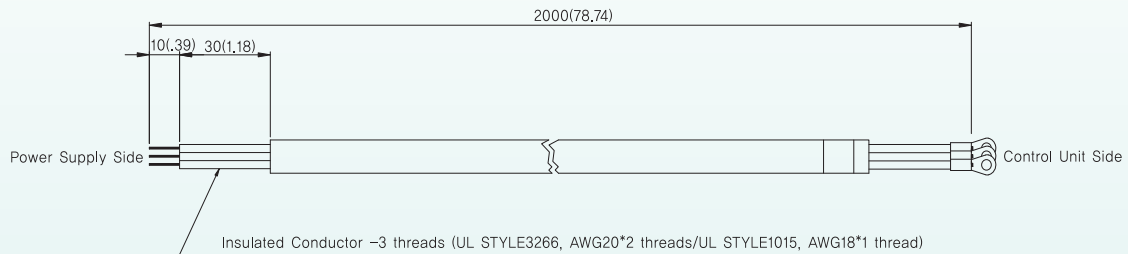


- ※ ( ) indicates voltage specification.

## CONTROL UNIT POWER SUPPLY CABLE

- Applicable to all models (accessories)

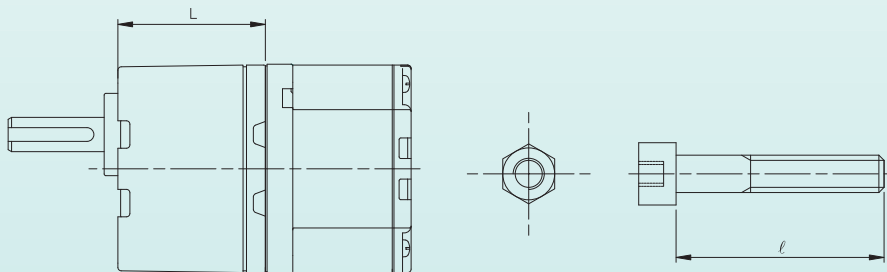
[Unit : mm(inch)]



## ASSEMBLY BOLT MEASUREMENTS

- Assembled bolt is attached to gear head or geared motor.

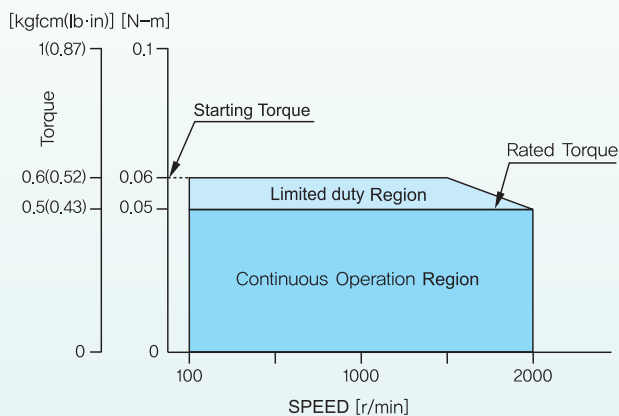
[Unit : mm(inch)]



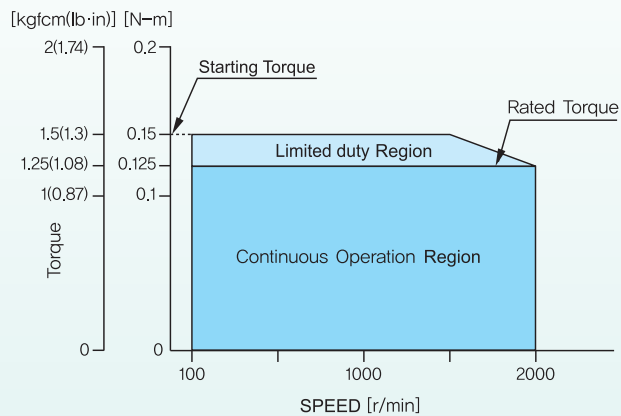
Model		Accessory Bolts (Flat W/S, Spring W/S, hexagonal nut X 4)		
Gear Head	Geared Motor	L(mm)(in)	ℓ(mm)(in)	Bolt Names
XTG65K~XTG620K	XWA610( )-5K~XWA610( )-20K	34(1.34)	50(1.97)	M4 P0.7
XTG630K~ XTG6100K	XWA610( )-30K~XWA610( )-100K	38(1.50)	55(2.17)	
XTG6200K	XWA610( )-200K	43(1.69)	60(2.36)	
XTG85K~XTG820K	XWA825( )-5K~XWA825( )-20K	41 (1.61)	65(2.56)	M6 P1.0
XTG830K~XTG8100K	XWA825( )-30K~XWA825( )-100K	46(1.81)	70(2.76)	
XTG8200K	XWA825( )-200K	51 (2.01)	75(2.95)	
XTG95K~XTG920K	XWA940( )-5K~XWA940( )-20K	45(1.77)	75(2.95)	M8 P1.25
	XWA990( )-5K~XWA990( )-20K			
XTG930K~XTG9100K	XWA940( )-30K~XWA940( )-100K	58(2.28)	90(3.54)	
	XWA990( )-30K~XWA990( )-100K			
XTG9200K	XWA940( )-200K	64(2.52)	95(3.74)	
	XWA990( )-200K			

※ ( ) indicates voltage specification.

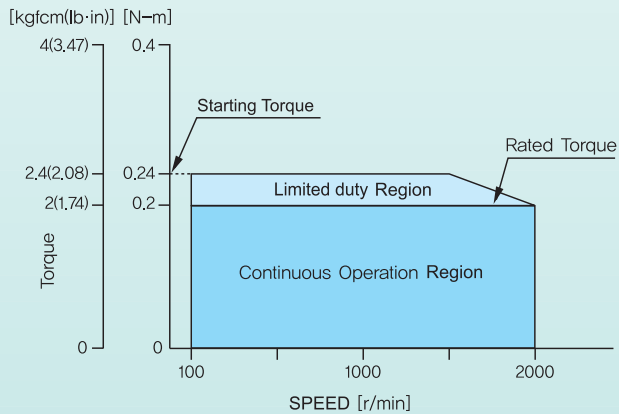
## XWU610G( )/XWU610D( )



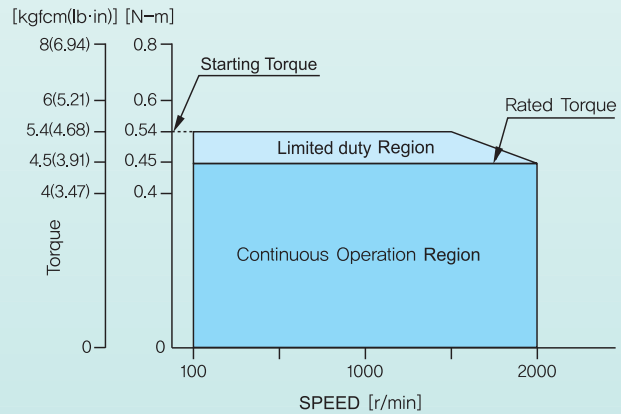
## XWU825G( )/XWU825D( )



## XWU940G( )/XWU940D( )



## XWU990G/XWU990D( )



※ ( ) indicates voltage specification.

## CONTROL UNIT STRUCTURE &amp; FUNCTIONS

**Power LED (Green)**

Illuminate when power switches on.

**Alarm LED (Red)**

Illuminate when protection function is operated.

**Slow Run Time Dial \***

Speed increases slowly when motor operates. Time can be set within 0.5~15 seconds (2000 r/min, during no load) range.

**Slow Stop Time Dial \***

The motor comes to a gradual stop. Time can be set to within 0.5 to 15 seconds (2000 RPM, zero load).

**Speed Potentiometer**

Rotate the speed dial clockwise to increase the motor's RPM. Speed can be set within 100~2000 r/min range. Upon delivery, it had been set to 0 r/min.

**Run / Stand-by Switch**

If Run side is selected, motor operates, and if Stand-by mode is turned, motor stops. Upon delivery, it had been set to stand-by mode.

**\* Slow Run/Slow Stop Time Dial**

Rotate clockwise to extend the time. Use a precise, insulated phillips head driver to set. Upon delivery, it had been set to minimum time.



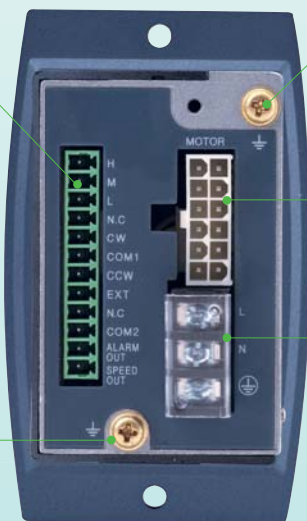
〈Control Unit, Front〉

**I/O signal terminal**

(Use a twisted pair or shielded wire for connecting).

**Ground Terminal**

(Use the grounding wire of motor's connector to ground.)

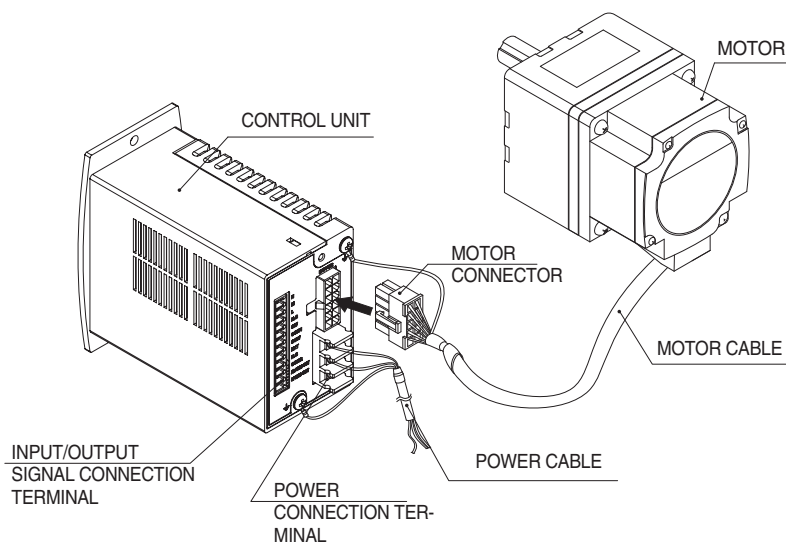
**Motor Terminal****Power Terminal****Ground Terminal**

〈Control Unit, Rear〉

**\* Caution**

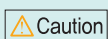
- Run/Stand-by switch is not ON/OFF switch for power.
- Switch off the power of control unit when motor is stopped for a long time.

## INTERFACE DIAGRAM



## Motor Interface

- Connect motor cable's connector to the connector for connecting the motor of control unit.
- If the motor and the control unit are extended, extension cable(purchase separately) can be extended up to 10.5 m (413.39in).



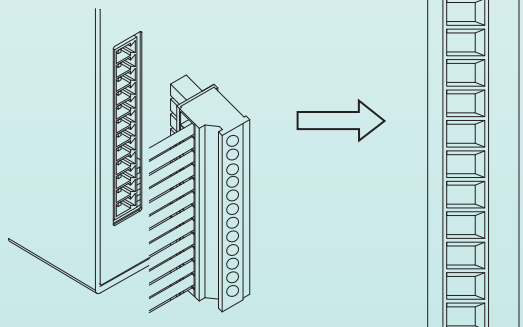
• Do not machine or modify the motor cable, extension cable. If another product is installed, may result in person's injury and fire.  
• Do not remove cable coating or ground/touch the shield wire. May result in electrical shock.

## Grounding

- Use a AWG 18 or higher cable to ground.

## Wiring the Signal I/O Terminal

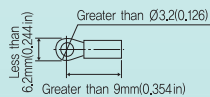
- Signal I/O Terminal



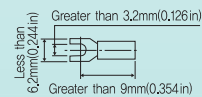
## Power Supply

- Connect the power cable to the power terminal of control unit.
- Power Connection Terminal's Size of Terminal Screw and Cable Size In case of connecting the power connection terminal, use a circular compressed terminal that is insulated and adhesive.

## Applied Pressure Terminal

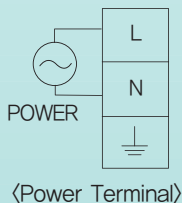


〈Insulated Terminal (Round)〉



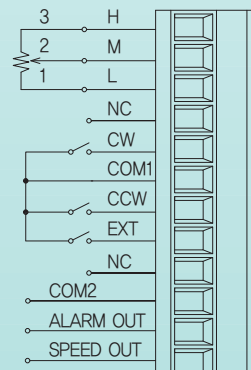
〈Insulated Terminal (Open)〉

- The size of a terminal screw : M3
- Fastening torque : 0.8 ~ 1 Nm(113~142 oz.in)
- The size of a cable available for connection: AWG16~18 (1.25~0.75 mm<sup>2</sup>)



〈Power Terminal〉

Name	Function
H	Input terminal for external speed setting
M	
L	
NC	No Connection
CW	CW signal input terminal
CCW	CCW signal input terminal
EXT	Input terminal for internal/external speed adjuster selection
COM1/COM2	Common GND for input/output signals
Alarm Out	ALARM signal output terminal
Speed Out	SPEED signal output terminal



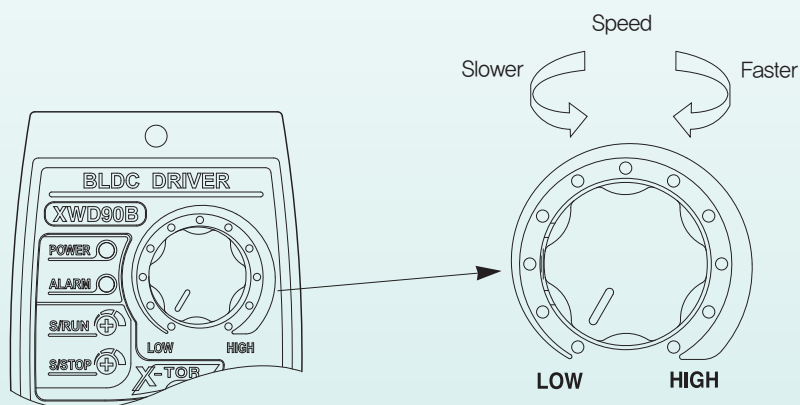
## OPERATION

### Selecting operation speed

The speed of the motor can be controlled by the internal speed controller within the control unit. It can also be controlled through the attached external speed controller or external direct current voltage. Speed selection ranges are 100~2000r/min. The speed selection can be controlled two ways by using the mixture of internal speed controller/external speed controller and internal speed controller/external direct current voltage(refer to P23).

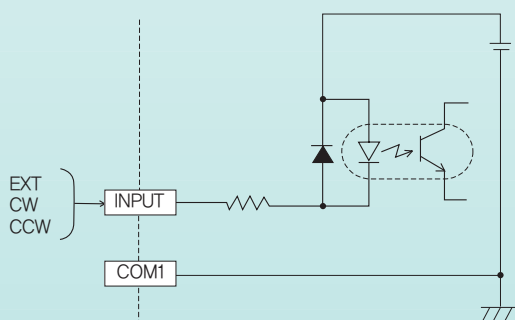
EX) Selecting by internal speed controller.

Winding it clock-wise will operate the motor faster. (Factory setting : 0 r/min)



## SIGNAL INPUT CIRCUIT

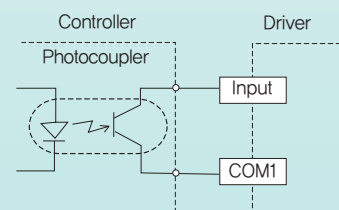
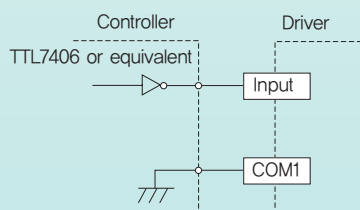
### (1) Input Circuit



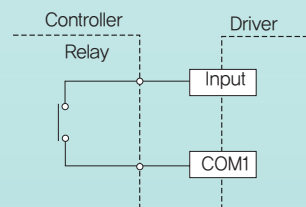
### (2) Input Circuit Connection

This connection is used for EXT, CW, CCW

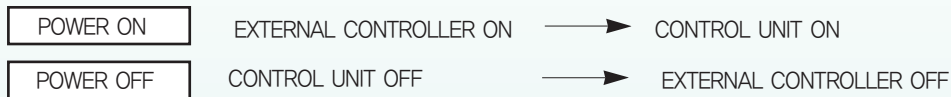
#### 〈Non-contact control〉



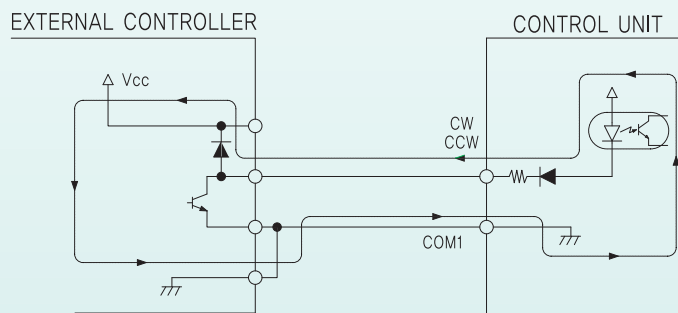
#### 〈Contact control〉



Do not use a solid state relay.(SSR) to turn on or off power. The motor control unit may be damaged if it is used.  
When you want to use the controller with a built-in clamp diode, pay attention to the sequence of turning on or off the power.



If the control unit power is turned on first when connected as shown on the right, or the controller power is turned off with the control unit power turned on, current will be applied, as indicated by arrow mark of the diagram, and this may cause the motor to be driven. When the power is turned on or off simultaneously, the motor may be driven temporarily due to differences in power capacity. The controller power must be turned on first, and control unit power must be turned off first.



### H/M/L

It is a terminal connected for external speed controller and external direct current voltage. Please refer to page 23.

### CW input

When CW input is <on>, it accelerates and operates in direction of the CW in accordance to time set up by the slow run time controller. When CW input is <off>, it automatically slows downs.

### CCW input

When CCW input is <on>, it accelerates and operates towards the CCW in accordance to time set up by the slow run time controller. When CCW input is <off>, it automatically slows downs.

### [Important]

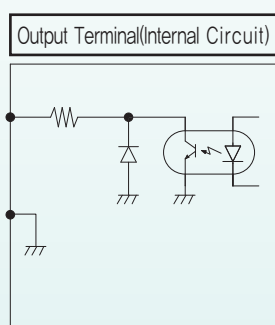
- When CW input and CCW input get turned <on> at the same time CW has priority
  - Immediate seize operation is impossible
  - Please have 20msec of time in between CW and CCW input

### EXT input

In <off>(H level) mode, choose internal speed controller. In <on>(L level), choose external speed controller or external direct current voltage.

## SIGNAL OUTPUT CIRCUIT

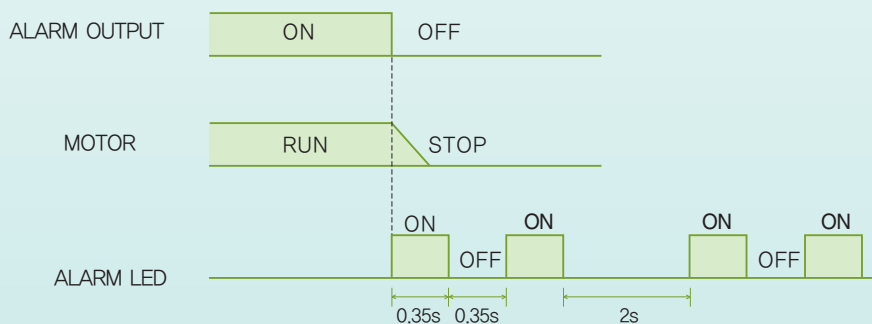
The signal status does not show the voltage level but its photocoupler's (on : electricity flows), (off : electricity does not flow) status



### Alarm Out

In the following condition, the protection guard of the control unit comes on, alarm out function turns (On) (L level), and the motor gets turned off.

※ It is shown by the LED's on/flashing sign. Make sure to be informed of the protection guard function.



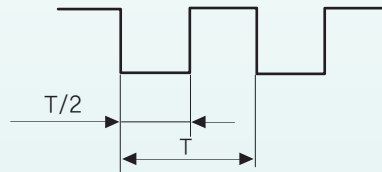
Type of protection function	Alarm LED ON/OFF Cycle	Action
Overload protection	1 Cycle	Activated when a load exceeding the rated torque (load torque or motor current of 130% max. of rated load or rated motor current) is applied to the motor for 5 seconds or more or when the motor is operated in short cycles of stopping/starting or CW/CCW rotation.
Open-Phase protection	3 Cycle	Prevents motor malfunction when the sensor cable within the motor cable is disconnected during motor operation. (An alarm signal will not be output while the motor is at a standstill.)
Under voltage protection	4 Cycle	Activated when a input voltage to the driver is less than specified voltage.
Overspeed Protection	6 Cycle	Activated when the speed of the motor exceed 2800r/min or when it shows abnormal speed.
Overvoltage protection	ON	Protects the driver against damage when the motor is driving an inertial load exceeding the permissible inertial load, or when the motor shaft is turned by the load (during lowering operation).

When connected as above, alarm out gets <off>(H level) if the control unit is normal, and <on>(L level) when it alarms. When the alarm out is <on>, stop the operation of the motor and shut down the control unit. When the motor cable is normal, re-check the usage conditions (overload torque, operation patterns, voltage)

### Speed out

In accordance to the motor operation, it outputs 12/15 pulse per cycle(of the motor's output shaft). Thus it is possible to calculate the cycling speed of the motor by measuring the output frequency of the speed out.

$$\text{Speed out output frequency(Hz)} = \frac{1}{T}$$



### With 10W/40W/90W

$$\text{Cycling speed of the motor(r/min)} = \frac{\text{Output frequency of the Speed Out(Hz)}}{12} \times 60$$

### With 25W

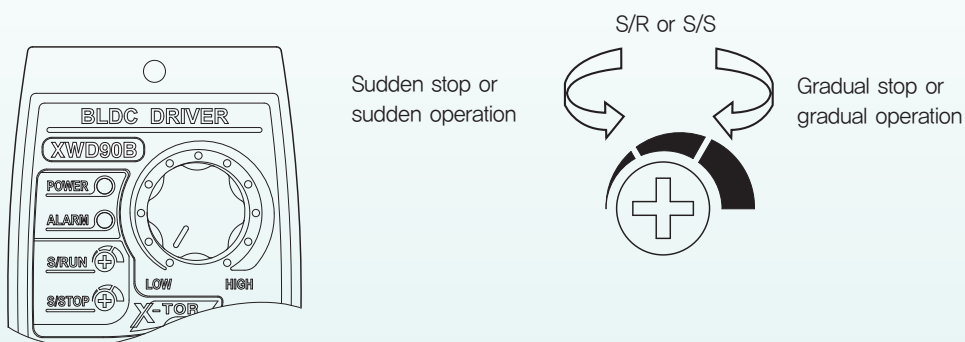
$$\text{Cycling speed of the motor(r/min)} = \frac{\text{Output frequency of the Speed Out(Hz)}}{15} \times 60$$

If you need the cycling speed of the motor's cycling head or that of reduction gear, Digital Speed Indicator(SID 250) is available.(Sold separately)

[Important]

- To extend the input/output cables, please do so under 2m.
- Input/output cables should be wired separately from power cables and motor cables.

## SLOW RUN / SLOW STOP TIME SETTING

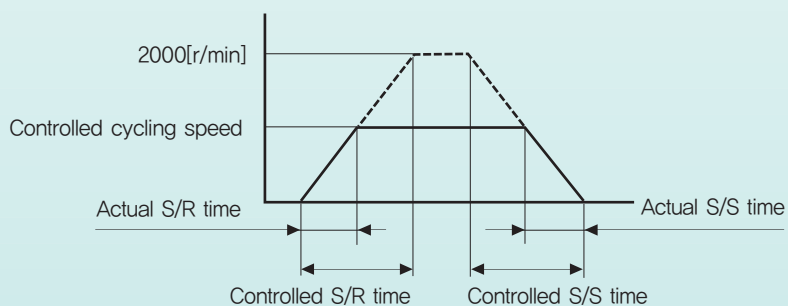


## Slow Run Time Setting Potentiometer

The length of time between the start of the engine to the reach of desired speed is controlled by the "Slow Run Time Controller". When it is wound clock-wise, the time expands. The range of selection is in between 0.5sec ~ 15sec.

## Slow Stop Time Setting Potentiometer

The length of time between the regular operation of the engine to a full stop of the engine is controlled by the "Slow Stop Time Controller". When it is wound clock-wise, the time expands. The range of selection is in between 0.5sec ~ 15sec.



## [Important]

- To change the cycling direction of the motor, slow down the motor with "Slow Stop Time Controller" and start the motor with "Slow Run Time Controller".

## SPEED SETTING

## For internal speed adjuster

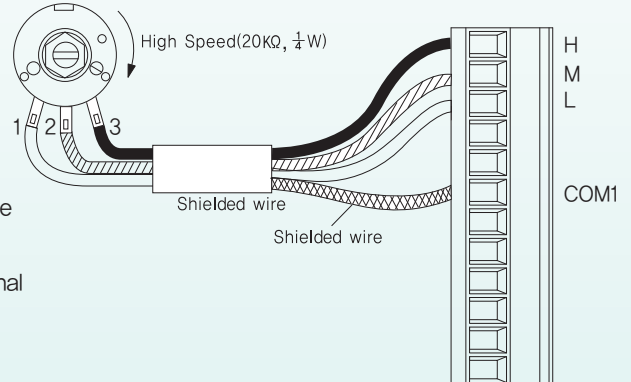
- Speed is set with speed adjuster on the front panel of control unit.  
When EXT. input is off, internal speed adjuster will be selected.

## Connecting External Speed Adjuster

When connecting an external speed adjuster, use the enclosed external speed adjuster and the signal wire exclusively designed for the external speed adjuster.

- Among signal wires for the external speed adjuster (referred as signal wire from now on), connect the lead wire to the terminal 3 of the external speed adjuster and H input terminal.
- Connect the lead wire of the signal wire to the terminal 2 of the external speed adjuster and M input terminal.
- Connect the lead wire of the signal wire to the terminal 1 of the external speed adjuster and L input terminal.
- Connect the shield wire of the signal wire to the terminal of COM1.  
(Make sure that the shield wire of the external speed adjuster does not touch other terminals.)

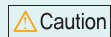
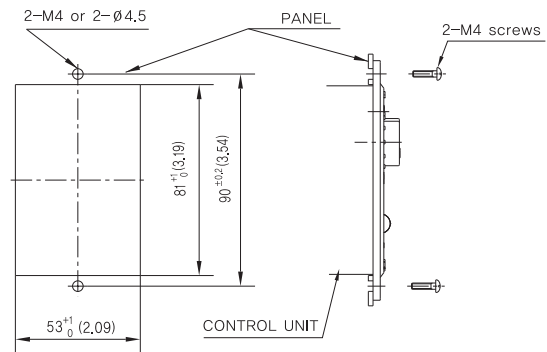
External Speed Dial(Optional)



## INSTALLATION

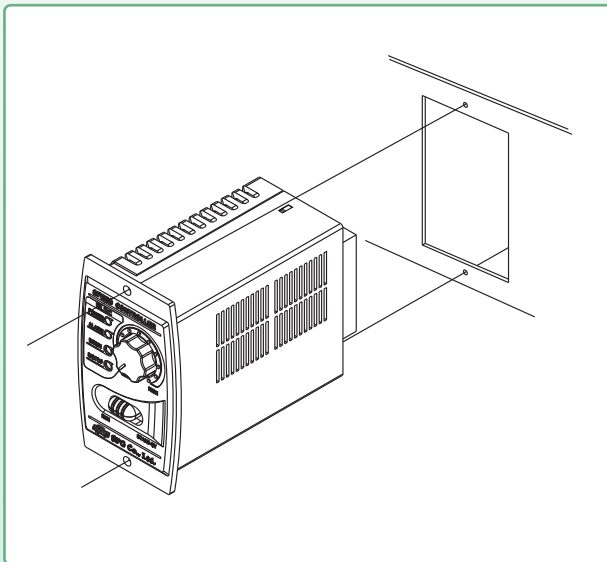
- Install the control unit on a flat, metal panel that has strong endurance to vibration.
- When installation hole of control unit is used, tighten it with M4 screw and nut.
- When control unit is installed, install it with one of the two vents is facing downward.
- Install it with separating the control unit from the installation box and other instrument inside installation box over 25 mm in the horizontal, over 50 mm in the vertical.

### Control Unit Panel Process Criterion



Caution

- Tightening torque for screw must be below 10kgf · cm (8.68 lb·in). If torque exceeding 10kgf · cm(8.68 lb·in) is applied, may result in damage to the control unit.





XWA series

5

## XBA series

25

XQA series

49

XFA series

61

XVA series

81

OPTION

99

## OVERVIEW

XBA series consist of small high power bldc motor and high level box type driver and line up 20~400W output power. Exclusive gear head had combined with motor and made a combination simple to install.



## FEATURE

### ■ SMALL · HIGH POWER

This product have a dimension 90X90mm(3.54in×3.54in) in side length and 57mm(2.24) in thickness, operates 150W high power and attributes to the space saving of equipment.

### ■ EXCELLENT STABILITY FOR SPEED

Implement excellent speed stability with less speed fluctuation. Speed change due to change of the load is very small.

### ■ WIDE SPEED CONTROL RANGE, CONSTANT TORQUE

Speed can be widely controlled from 200r/min to 3000r/min.

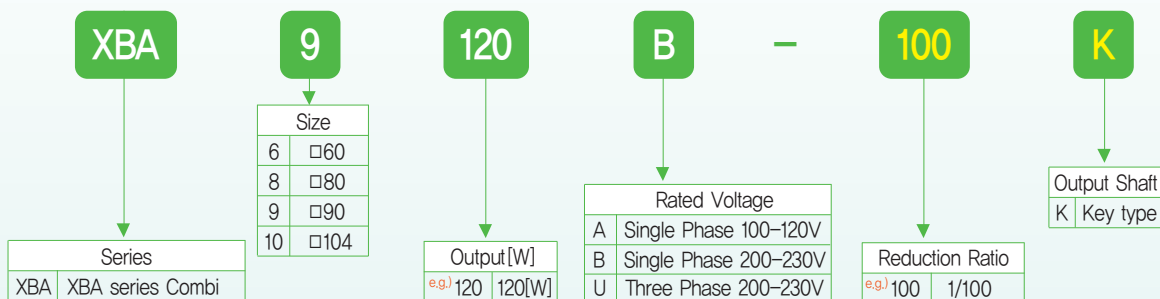
### ■ VARIABLE CONTROL FUNCTION

Speed setting of multistep, instantaneous stop as well as slow start, slow down function that shows great power in a sensitive transportation can be performed and respond to variable usage methods.

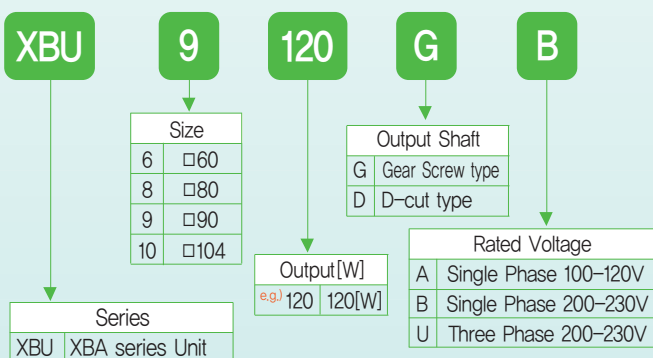
In addition, following features exist.

- Response for single phase 100V, 200V three phase 200V, power input.
- Response for high impact gearhead.
- Meet foreign safety specification and response world voltage.
- Capable of respond for extending to maximum 10.5m(413.39in) between motor and driver (Using option cable)
- Equipped the plate for DIN rail (option)

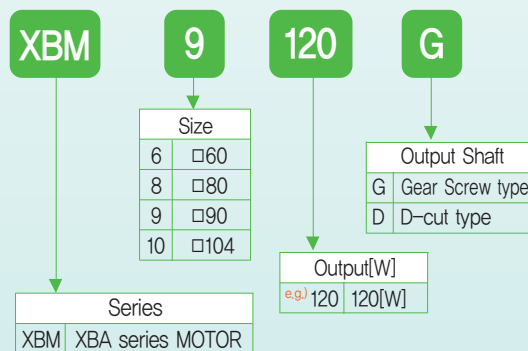
## CONTROL UNIT+MOTOR+GEAR HEAD



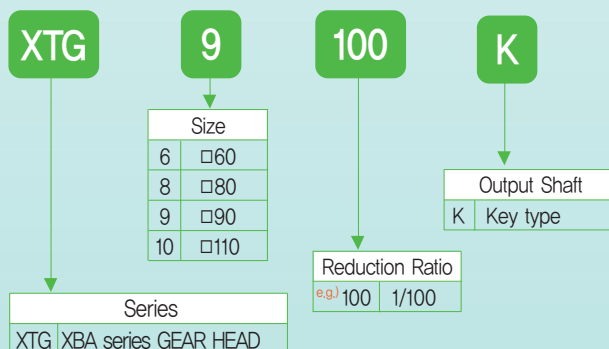
## MOTOR+CONTROL UNIT



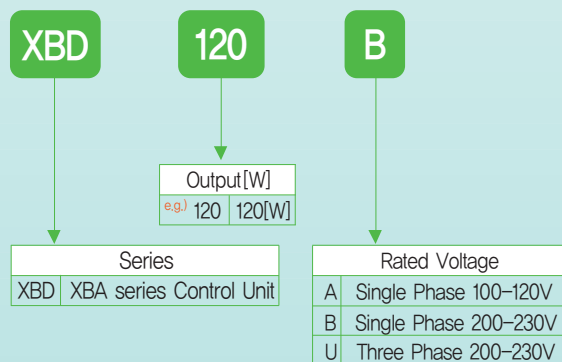
## MOTOR



## GEAR HEAD



## CONTROL UNIT



## SPECIFICATION

Title		Combi type	XBA620A-□	XBA620B-□	XBA620U-□	XBA840A-□	XBA840B-□	XBA840U-□	XBA975A-□	XBA975B-□	XBA975U-□
		Gear type	XBM620G			XBM840G			XBM975G		
		D-Cut type	XBM620D			XBM840D			XBM975D		
Rated Output (continuous) W			20			40			75		
Power Input	Voltage V	Single Phase 100-120	Single Phase 200-230	Three Phase 200-230	Single Phase 100-120	Single Phase 200-230	Three Phase 200-230	Single Phase 100-120	Single Phase 200-230	Three Phase 200-230	
	Frequency Hz	50/60			50/60			50/60			
	Rated Input Current A	0.70	0.40	0.27	1.10	0.66	0.43	1.80	1.00	0.75	
	Maximum Input Current A	1.30	0.90	0.50	2.00	1.30	0.88	2.60	2.00	1.20	
Rated Torque N·m(kgf·cm) (lb·in)		0.066(0.66) (0.57)			0.133(1.33) (1.15)			0.25(2.5) (2.17)			
Starting Torque N·m(kgf·cm) (lb·in)		0.08(0.8) (0.69)			0.16(1.6) (1.39)			0.32(3.2) (2.78)			
Permissible Load Inertia J kg·m <sup>2</sup> (oz·in <sup>2</sup> ) Moment		1.25x10 <sup>-4</sup> (6.8)			2.5x10 <sup>-4</sup> (13.7)			3.75x10 <sup>-4</sup> (20.5)			
Rated Speed r/min		3,000									
Speed Control Range r/min		200 to 3,000 (Speed Ratio 1:15)									
Speed Regulation	Load	Less than ±1% (0 ~ rated torque, at rated speed)									
	Voltage	Less than ±1% (supply voltage ±10%, at rated speed with no load)									
	Temperature	Less than ±1% (0 to +40°C (+32 to +104°F), at rated speed with no load)									

※ For permissible load inertia in the geared motor, refer to 32 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## SPECIFICATION

Title		Combi type	XBA9120A-□	XBA9120B-□	XBA9120U-□	XBA9150A-□	XBA9150B-□	XBA9150U-□
		Gear type	XBM9120G			XBM9150G		
		D-Cut type	XBM9120D			XBM9150D		
Rated Output (continuous) W		120				150		
Power Input	Voltage V	Single Phase 100-120	Single Phase 200-230	Three Phase 200-230	Single Phase 100-120	Single Phase 200-230	Three Phase 200-230	
	Frequency Hz	50/60			50/60			
	Rated Input Current A	2.50	1.50	1.00	3.00	1.80	1.15	
	Maximum Input Current A	3.80	2.70	1.60	4.64	3.23	1.96	
Rated Torque N·m(kgf·cm) (lb·in)		0.4(4.0) (3.47)			0.5(5.0) (4.34)			
Starting Torque N·m(kgf·cm) (lb·in)		0.5(5.0) (4.34)			0.63(6.3) (5.47)			
Permissible Load Inertia J kg·m² (oz·in²) Moment		6.0x10 <sup>-4</sup> (32.8)			6.0x10 <sup>-4</sup> (32.8)			
Rated Speed r/min		3,000						
Speed Control Range r/min		200 to 3,000 (Speed Ratio 1:15)						
Speed Regulation	Load	Less than ±1% (0 ~ rated torque, at rated speed)						
	Voltage	Less than ±1% (supply voltage ±10%, at rated speed with no load)						
	Temperature	Less than ±1% (0 to +40°C (+32 to +104°F), at rated speed with no load)						

※ For permissible load inertia in the geared motor, refer to 32 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## SPECIFICATIONS

Title	Combi type	XBA10200B-□	XBA10200U-□	XBA10400U-□
	Gear type	XBM10200G		XBM10400G
	D-Cut type	XBM10200D		XBM10400D
Rated Output (continuous) W		200		400
Power Input	Voltage V	Single Phase 200-230	Three Phase 200-230	Three Phase 200-230
	Frequency Hz	50/60		50/60
	Rated Input Current A	2.10	1.75	2.30
	Maximum Input Current A	3.36	2.80	3.68
Rated Torque N·m(kgf·cm) (lb·in)		0.65(6.5) (5.75)		1.3(13) (11.5)
Starting Torque N·m(kgf·cm) (lb·in)		0.81(8.1) (7.17)		1.6(16) (14.16)
Motor Permissible Load Inertia J kg·m <sup>2</sup> (oz·in <sup>2</sup> )		8.75×10 <sup>-4</sup> (47.84)		15×10 <sup>-4</sup> (82.01)
Rated Speed r/min		3,000		
Speed Control Range r/min		200~3,000 (Speed Ratio 1:15)		
Speed Regulation	Load	Less than ±1% (0 ~ rated torque, at rated speed)		
	Voltage	Less than ±1% (supply voltage ±10%, at rated speed with no load)		
	Temperature	Less than ±1% (0 to +40°C (+32 to +104°F), at rated speed with no load)		

※ For permissible load inertia in the geared motor, refer to 32 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## COMMONALITIES

Category	Specifications
SLOW RUN / SLOW STOP	0.5 to 15 seconds (Applicable for both Slow Run and Slow Stop)
Speed Control Method	1. Built-in Potentiometer 2. External Potentiometer (20K $\Omega$ 1/4W) 3. External DC Voltage(0~5 Volt)
Input Signal	Photocoupler input method, input resistance: 2K $\Omega$ , operates at DC 12V $\pm$ 10%, common for EXT, CW, and CCW
Output Signal	Opencollector output, external use conditions: Less than 26.4V 10mA, common for Speed Out and Alarm Out.
Protection Functions	<p>If following protection functions are operated, control unit alarm signal is output and motor will come to stop.</p> <ul style="list-style-type: none"> <li>● Protection for machine overload : When an overload that exceeds the motor's rate torque has been continued for more than 5 seconds</li> <li>● Protection for overvoltage : When the voltage permitted for the control unit has exceed specified voltage</li> <li>● Protection guard for image formation : When malfunction occurs in the motor feedback signals due to cables disconnection and connector disconnection.</li> <li>● Protection for undervoltage : When the voltage permitted at the control unit has shortage of more than specified voltage</li> <li>● Protection for over speeding : When the speed of the motor exceed 3800r/min</li> </ul>
Motor Insulation Class	Class B (130°C)
Rating	Continuous

## GENERAL SPECIFICATIONS

Item	Motor	Control Unit
Dielectric Strength	If applying 60Hz 1,500V between the coil and the case for 1 minute after continuous operating under normal temperature and humidity conditions, any fault is not occurred.	Sufficient to withstand 3.0kV at 50Hz applied between power supply terminal (I/O terminal) and I/O terminals for 1 minute, and 1.5kV at 50Hz applied between protective earth terminal and power supply terminals.
Insulation Resistance	After continuous operating under normal temperature and humidity conditions, if measured the resistance value between the coil and the case using DC500V Mega Tester, should be over 100M $\Omega$ .	If the resistance value between protection ground terminal and power input is measured using DC500V Mega Tester, should be over 100M $\Omega$ .
Ambient Temperature	0°C to +40°C(+32°F to +104°F) (nonfreezing)	0°C to +50°C(+32°F to +122°F) (nonfreezing)
Ambient Humidity	Less than 85% (non condensing)	
Atmosphere	No corrosive gas or dust.	
Degree of Protection	IP65 (excluding the output shaft side)	IP10

**Caution** Use it, ensuring that surface temperature of motor does not exceed over 90°C.

## PERMISSIBLE TORQUE – GEARED MOTOR

N · m / [kgf·cm](lb · in)

Item	Speed Control Range [r/min]	60~600	30~300	20~200	15~150	10~100	6~60	3~30	1.5~15
	Gear Ratio	5	10	15	20	30	50	100	200
XBA620( )-□K		0.29 2.9(2.57)	0.59 5.9(5.22)	0.88 8.8(7.79)	1.2 12(10.62)	1.7 17(15.05)	2.8 28(24.78)	5.6 56(49.56)	6.0 60(54.10)
XBA840( )-□K		0.59 5.9(5.22)	1.2 12(10.62)	1.8 18(15.93)	2.3 23(20.36)	3.4 34(30.09)	5.6 56(49.56)	11.2 112(99.13)	16.0 160(141.61)
XBA975( )-□K		1.1 11(9.74)	2.3 23(20.36)	3.4 34(30.09)	4.5 45(39.83)	6.5 65(57.53)	10.8 108(95.59)	21.5 215(190.29)	30 300(265.52)
XBA9120( )-□K		1.8 18(15.93)	3.6 36(31.86)	5.4 54(47.79)	7.2 72(63.73)	10.3 103(91.16)	17.2 172(152.23)	30 300(265.52)	30 300(265.52)
XBA9150( )-□K		2.2 22(19.48)	4.6 46(40.92)	6.8 68(60.18)	9.0 90(79.66)	13.0 130(115.06)	21.6 216(191.18)	30 300(265.52)	30 300(265.52)
XBA10200( )-□K		2.9 29(25.67)	5.9 59(52.22)	8.8 88(77.89)	11.7 117(103.55)	16.8 168(148.69)	38.0 280(247.82)	52.7 527(466.43)	70 700(619.55)
XBA10400U-□K		5.9 59(52.22)	11.7 117(103.55)	17.6 176(155.77)	23.4 237(207.11)	33.5 335(296.50)	55.9 559(494.76)	70 700(619.55)	70 700(619.55)

※ ( ) of item name represents voltage specification

※ □ of item name represents the reduction ratio.

※ Rotation direction is the same direction of additional motor marked in the □, others is reverse direction.



## PERMISSIBLE LOAD INERTIA ( J )-GEARED MOTOR

 $J \times 10^{-4} (\text{oz} \cdot \text{in}^2)$  $J \times 10^{-4} \text{ kgf-m}^2 (\text{GD}^2 \text{ kgf-cm}^2)$ 

Model	Gear Ratio	5	10	15	20	30	50	100	200
XBA620( )-□K		(8.5)	(33.9)	(76.5)	(135.6)	(305.1)	(847.5)	(847.5)	(847.5)
		1.55	6.2	14	24.8	55.8	155	155	155
		(6.2)	(24.8)	(56.0)	(99.2)	(223.2)	(620.0)	(620.0)	(620.0)
XBA840( )-□K		(30.1)	(120.3)	(270.6)	(481.1)	(1083)	(3007)	(3007)	(3007)
		5.5	22	49.5	88	198	550	550	550
		(22.5)	(88.0)	(198.0)	(352.0)	(792.0)	(2200)	(2200)	(2200)
XBA975( )-□K		(109.3)	(426.5)	(984.1)	(1422)	(3937)	(10935)	(10935)	(10935)
		20	78	180	260	720	2000	2000	2000
		(80.2)	(312.0)	(720.0)	(1040)	(2880)	(8000)	(8000)	(8000)
XBA9120( )-□K		(136.7)	(546.7)	(1230)	(2187)	(4921)	(13669)	(13669)	(13669)
		25	100	225	400	900	2500	2500	2500
		(100.0)	(400.0)	(900.0)	(1600)	(3600)	(10000)	(10000)	(10000)
XBA9150( )-□K		(136.7)	(546.7)	(1230)	(2187)	(4921)	(13669)	(13669)	(13669)
		25	100	225	400	900	2500	2500	2500
		(100.0)	(400.0)	(900.0)	(1600)	(3600)	(10000)	(10000)	(10000)
XBA10200( )-□K		(205)	(820.1)	(1848)	(3280)	(7381)	(20503)	(20503)	(20503)
		37.5	150	338	600	1350	3750	3750	3750
		(150)	(600)	(1352)	(2400)	(5400)	(15000)	(15000)	(15000)
XBA10400U-□K		(205)	(820.1)	(1848)	(3280)	(7381)	(20503)	(20503)	(20503)
		37.5	150	338	600	1350	3750	3750	3750
		(150)	(600)	(1352)	(2400)	(5400)	(15000)	(15000)	(15000)

※ ( ) indicates voltage specification.

※ □ indicates deceleration ratio.

## PERMISSIBLE OVERHANG LOAD AND PERMISSIBLE THRUST LOAD

Model		Gear Ratio	Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
Geared Motor	XBA620( )-□K	5	100	10(22.05)	150	15(33.07)	40	4(8.82)
		10~20	150	15(33.07)	200	20(44.09)		
		30~200	200	20(44.09)	300	30(66.14)		
	XBA840( )-□K	5	200	20(44.09)	250	25(55.12)	100	10(22.05)
		10~20	300	30(66.14)	350	35(77.16)		
		30~200	450	45(99.21)	550	55(121.25)		
	XBA975( )-□K	5	300	30(66.14)	400	40(88.18)	150	15(33.07)
		10~20	400	40(88.18)	500	50(110.23)		
		30~200	500	50(110.23)	650	65(143.30)		
	XBA9120( )-□K	5	300	30(66.14)	400	40(88.18)	150	15(33.07)
		10~20	400	40(88.18)	500	50(110.23)		
		30~200	500	50(110.23)	650	65(143.30)		
	XBA9150( )-□K	5	300	30(66.14)	400	40(88.18)	150	15(33.07)
		10~20	400	40(88.18)	500	50(110.23)		
		30~200	500	50(110.23)	650	65(143.30)		

Model		Deceleration Ratio	Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
Geared Motor	XBA10200( )-□K	5~20	550	55(121.25)	800	80(176.37)	200	20(44.09)
		30~50	1000	100(220.46)	1250	125(275.58)	300	30(66.14)
		100~200	1400	140(308.65)	1700	170(374.79)	400	40(88.18)
	XBA10400U-□K	5~20	550	55(121.25)	800	80(176.37)	200	20(44.09)
		30~50	1000	100(220.46)	1250	125(275.58)	300	30(66.14)
		100~200	1400	140(308.65)	1700	170(374.79)	400	40(88.18)
Motor	XBM620D		87.2	8.72(19.22)	107	10.7(23.59)	● Do not engage the thrust load. If unavoidable, engage below 50% of motor weight.	
	XBM840D		117	11.7(25.79)	137	13.7(30.20)		
	XBM975D		156	15.6(34.39)	176	17.6(38.80)		
	XBM9120D		156	15.6(34.39)	176	17.6(38.80)		
	XBM9150D		156	15.6(34.39)	176	17.6(38.80)		
	XBM10200D		197	19.7(43.43)	221	22.1(48.72)		
	XBM10400D		197	19.7(43.43)	221	22.1(48.72)		

※ ( ) indicates voltage specification.

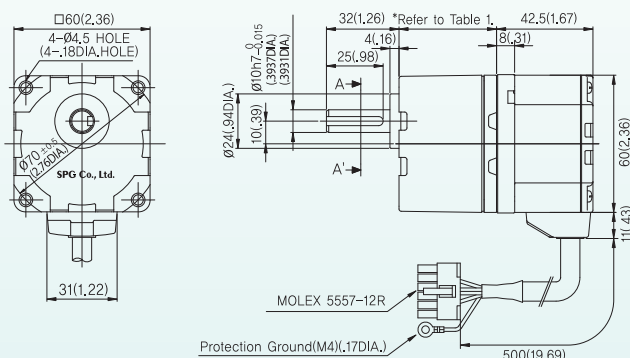
※ □ indicates deceleration ratio.

## GEARED MOTOR

## ■ Model : XBA620( )-□K

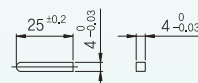
[Unit : mm(inch)]

- Motor : XBM620G
- Gear Head : XTG65K~XTG6200K
- Control Unit : XBD20( )

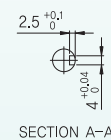


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).

## ■ Key(accessories)



## ■ Key Groove



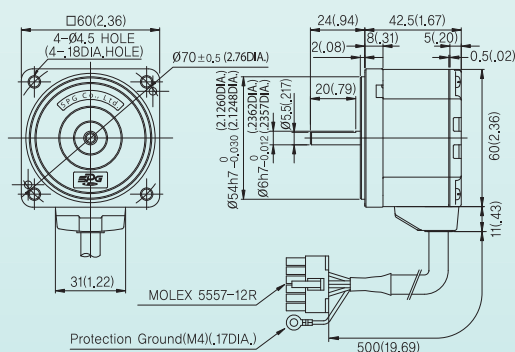
※ Table 1

Gear Ratio	Size:mm(inch)
XTG65K~XTG620K	34(1.34)
XTG630K~ XTG6100K	38(1.50)
XTG6200K	43(1.69)

## MOTOR

## ■ Model : XBM620D

[Unit : mm(inch)]



※ Table 2-Weight

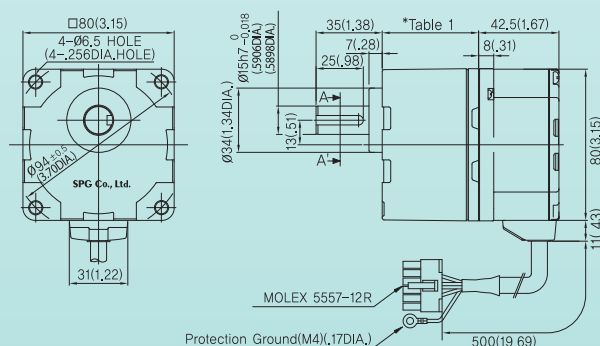
Part		Weight:kg.(lbs)
Motor		0.48(1.06)
Gear Head	XTG65K~XTG620K	0.28(0.62)
	XTG630K~ XTG6100K	0.33(0.73)
	XTG6200K	0.37(0.82)

## GEARED MOTOR

## ■ Model : XBA840( )-□K

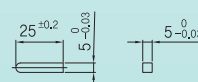
[Unit : mm(inch)]

- Motor : XBM840G
- Gear Head : XTG85K~XTG8200K
- Control Unit : XBD40( )

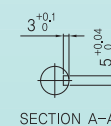


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).

## ■ Key(accessories)



## ■ Key Groove



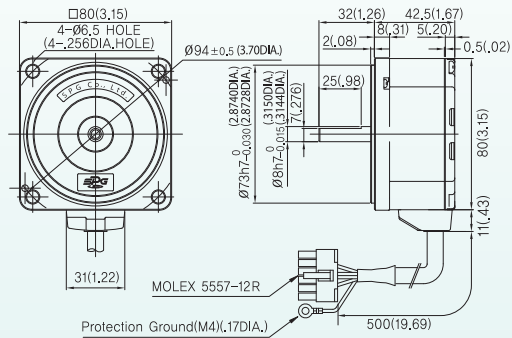
※ Table 1

Gear Ratio	Size:mm(inch)
XTG85K~XTG820K	41(1.61)
XTG830K~ XTG8100K	46(1.81)
XTG8200K	51(2.01)

## MOTOR

## ■ Model : XBM840D

[Unit : mm(inch)]



※ Table 2-Weight

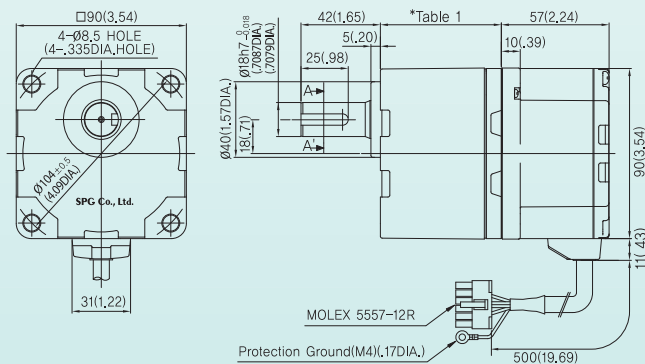
Part		Weight:kg.(lbs)
Motor		0.75(1.65)
Gear Head	XTG85K~XTG820K	0.61(1.34)
	XTG830K~ XTG8100K	0.72(1.59)
	XTG8200K	0.80(1.76)

## GEARED MOTOR

## ■ Model : XBA975( )-□K

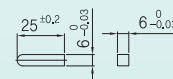
[Unit : mm(inch)]

- Motor : XBM975G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XBD75( )

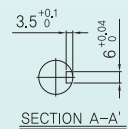


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).

## ■ Key(accessories)



## ■ Key Groove



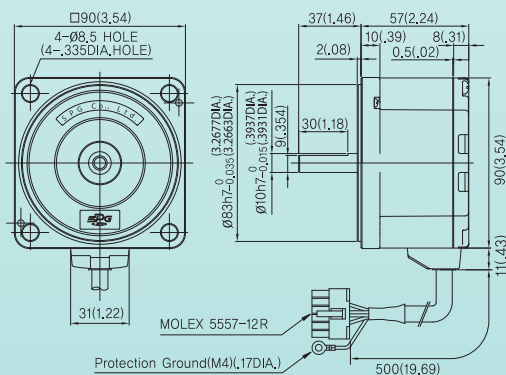
※ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## ■ Model : XBM975D

[Unit : mm(inch)]



※ Table 2-Weight

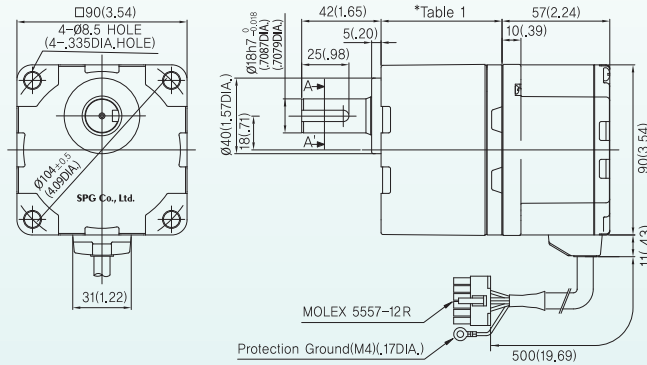
Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## GEARED MOTOR

■ Model : XBA9120( )-□K

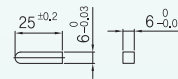
[Unit : mm(inch)]

- Motor : XBM9120G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XBD120( )

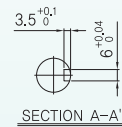


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).

- Key (accessories)



- Key Groove



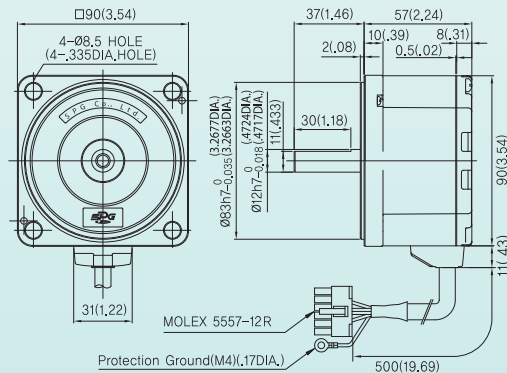
✖ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

■ Model : XBM9120D

[Unit : mm(inch)]



✖ Table 2-Weight

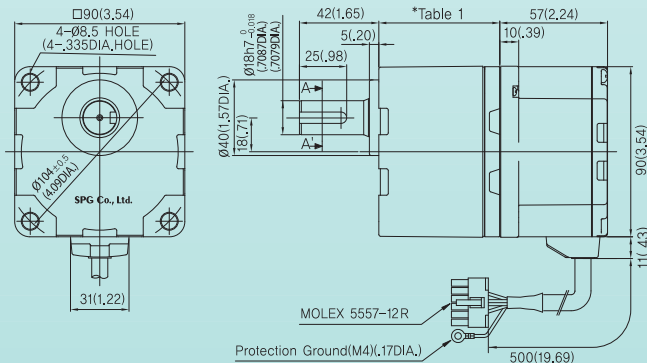
Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## GEARED MOTOR

■ Model : XBA9150( )-□K

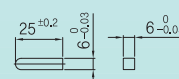
[Unit : mm(inch)]

- Motor : XBM9150G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XBD150( )

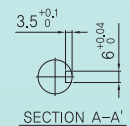


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).

- Key(accessories)



- Key Groove



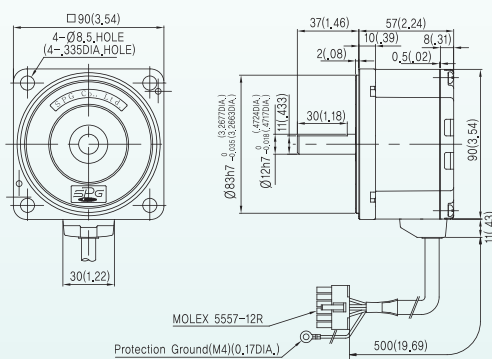
✖ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## ■ Model : XBM9150D

[Unit : mm(inch)]



※ Table2-Weight

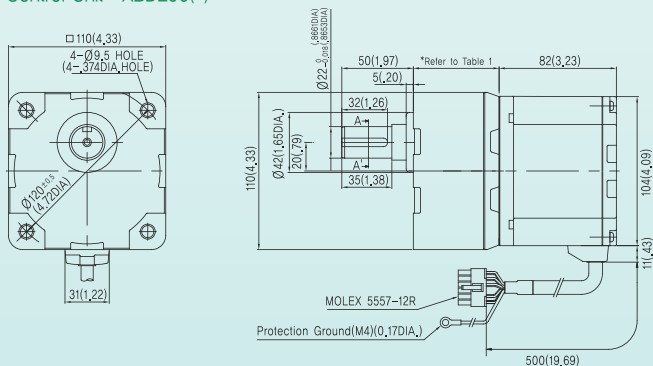
Part		Weight(kg)(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## GEARED MOTOR

## ■ Model : XBA10200( )-□K

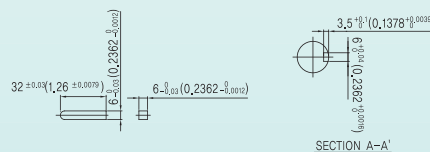
[Unit : mm(inch)]

- Motor : XBM10200G
- Gear Head : XTG105K~XTG10200K
- Control Unit : XBD200( )



## ■ Key(accessories)

## ■ Key Groove



※ Table 1

Gear Ratio	Size(mm)(in)
XTG105K~XTG1020K	60(2.36)
XTG1030K~ XTG1050K	72(2.83)
XTG10100K~XTG10200K	86(3.39)

※ ( ) indicates voltage specification.

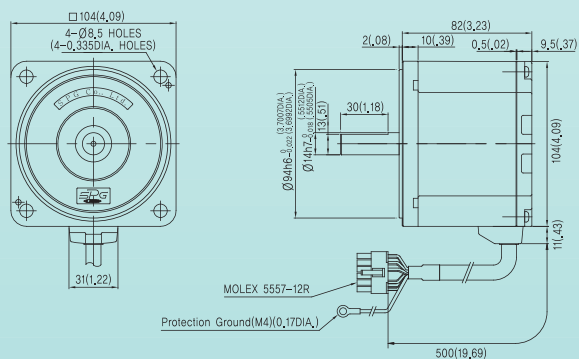
※ □ indicates deceleration ratio.

※ Gear head motor is enclosed with a bolt set (refer to P40 for specifications).

## MOTOR

## ■ Model : XBM10200D

[Unit : mm(inch)]



※ Table 2-Weight

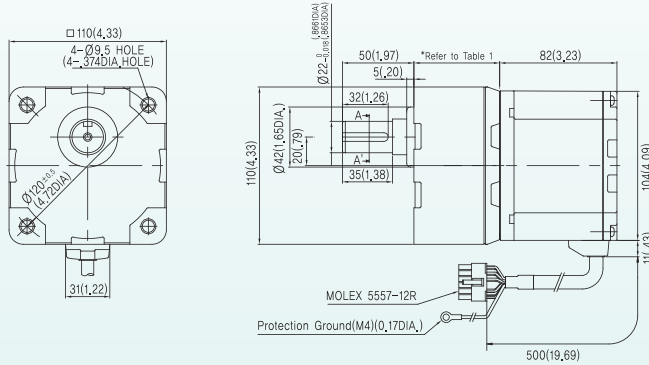
Part		Weight(kg)(lbs)
Motor		2.4(5.29)
Gear Head	XTG105K~XTG1020K	3.0(6.61)
	XTG1030K~ XTG1050K	
	XTG10100K~XTG10200K	

## GEARED MOTOR

## ■ Model : XBA10400U-□K

[Unit : mm(inch)]

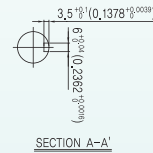
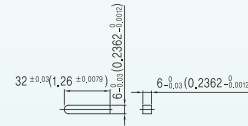
- Motor : XBM10400G
- Gear Head : XTG105K~XTG10200K
- Control Unit : XBD400U



- ※ ( ) indicates voltage specification.
- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set (refer to P40 for specifications).

## ■ Key(accessories)

## ■ Key Groove



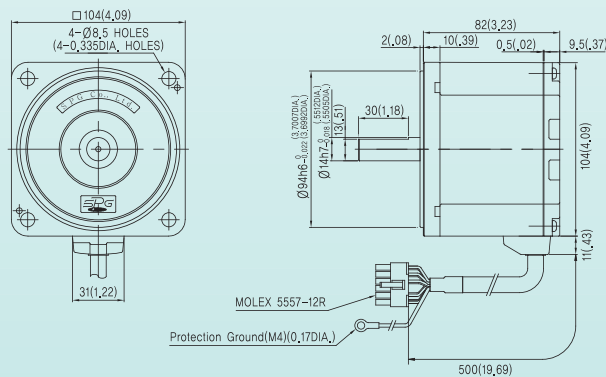
※ Table 1

Gear Ratio	Size(mm)(in)
XTG105K~XTG1020K	60(2.36)
XTG1030K~ XTG1050K	72(2.83)
XTG10100K~XTG10200K	86(3.39)

## MOTOR

## ■ Model : XBM10400D

[Unit : mm(inch)]



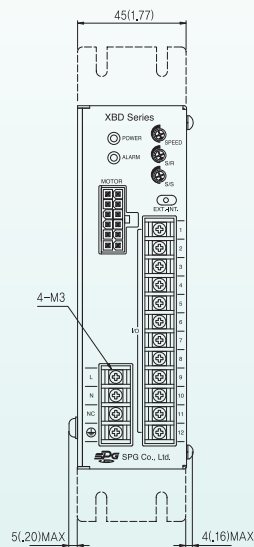
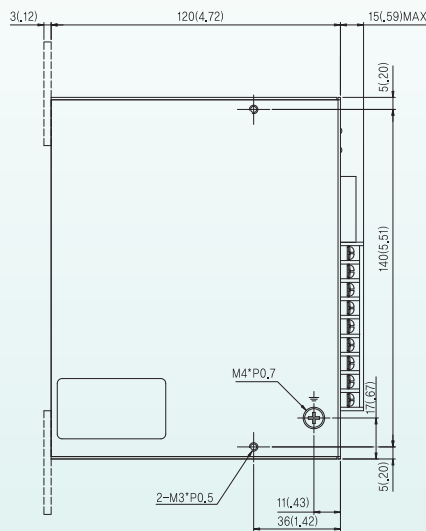
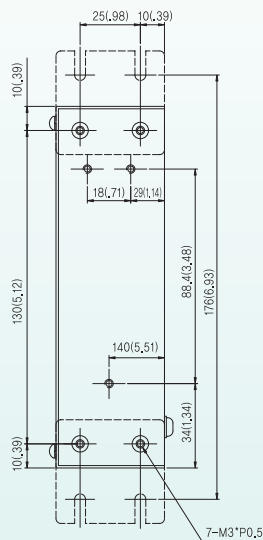
※ Table 2-Weight

Part	Weight(kg)(lbs)
Motor	2.4(5.29)
Gear Head	3.0(6.61)

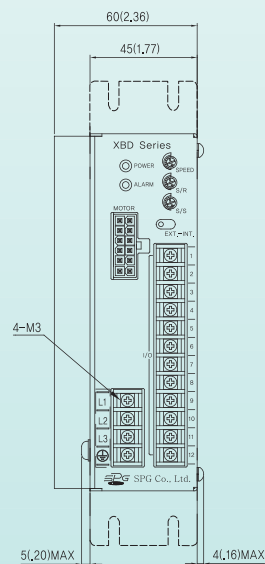
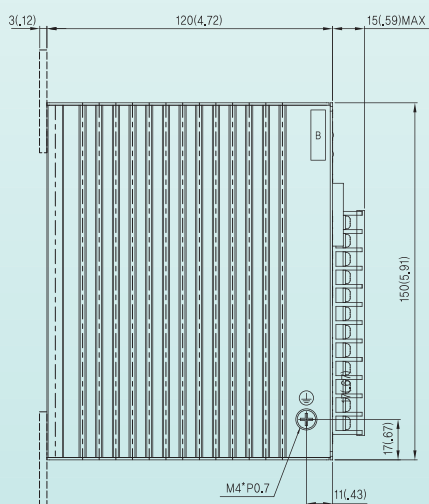
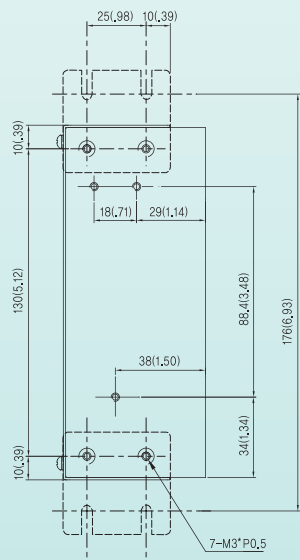
## CONTROL UNIT

■ Model : XBD20( ), XBD40( ), XBD75( ), XBD120( ), XBD150( ) (Weight : 0.7kg)

[Unit : mm(inch)]



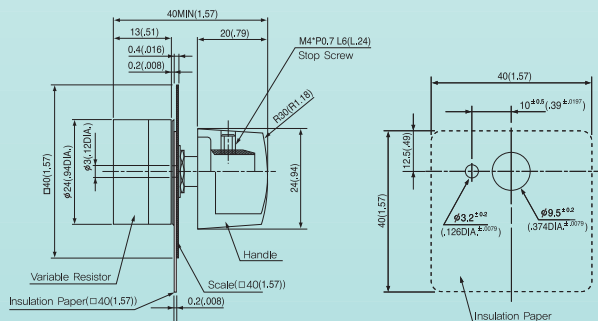
■ Model : XBD200( ), XBD400U (Weight : 1.0kg)



## EXTERNAL SPEED DIAL

- Dimension

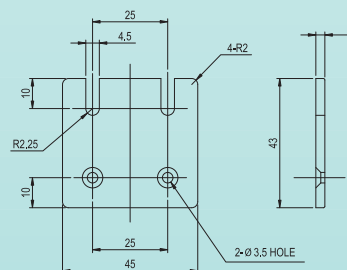
[Unit : mm(inch)]



**MOUNTING PLATE [1set (2EA)]**

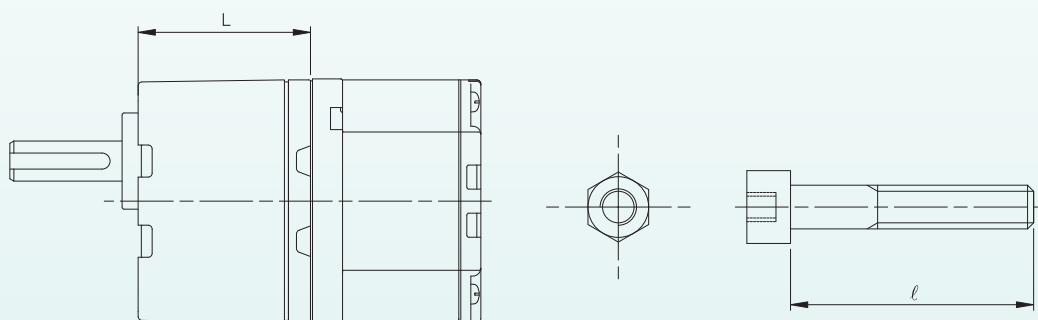
- Dimension

[Unit : mm(inch)]



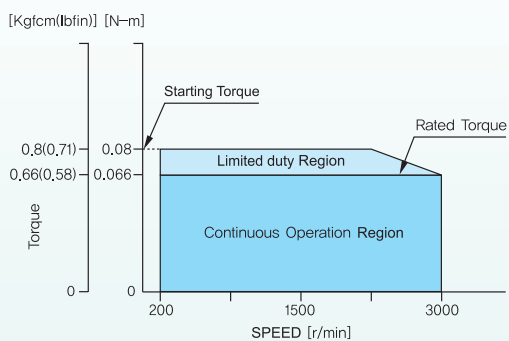
## CONTROL UNIT

- Assembled bolt is attached to gear head or geared motor.

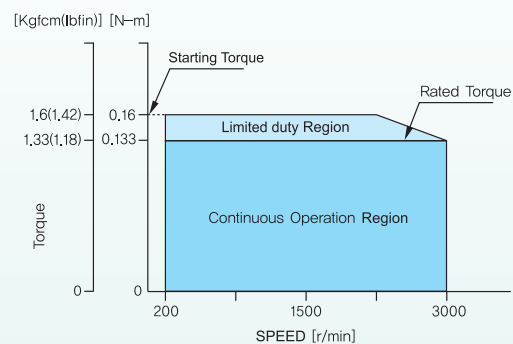


Model	Accessory Bolts (Flat W/S, Spring W/S, hexagonal nut×4)		
	L(mm)(in)	ℓ (mm)(in)	Bolt Names
XTG65K~XTG620K	34(1.34)	50(1.97)	M4 P0.7
XTG630K~ XTG6100K	38(1.50)	55(2.17)	
XTG6200K	43(1.69)	60(2.36)	
XTG85K~XTG820K	41(1.61)	65(2.56)	M6 P1.0
XTG830K~XTG8100K	46(1.81)	70(2.76)	
XTG8200K	51(2.01)	75(2.95)	
XTG95K~XTG920K	45(1.77)	75(2.95)	M8 P1.25
XTG930K~XTG9100K	58(2.28)	90(3.54)	
XTG9200K	64(2.52)	95(3.74)	
XTG105K~XTG10200K	70(2.76)	95(3.74)	M8 P1.25
XTG1030K~XTG10500K	82(3.23)	110(4.33)	
XTG10100K~XTG10200K	96(3.78)	120(4.72)	

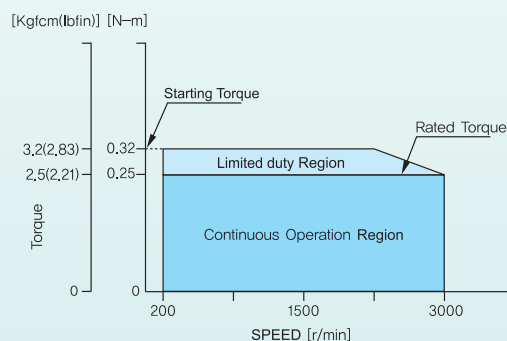
## XBU620G( )/XBU620D( )



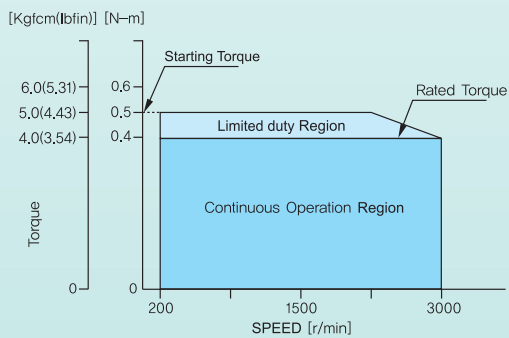
## XBU840G( )/XBU840D( )



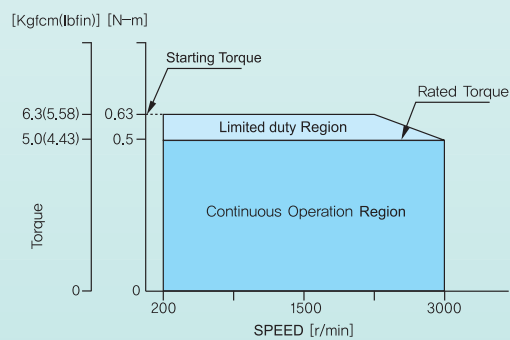
## XBU975G( )/XBU975D( )



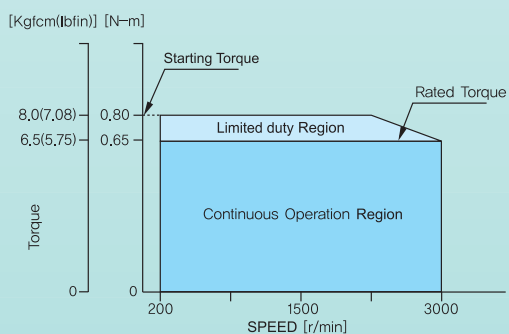
## XBU9120G( )/XBU9120D( )



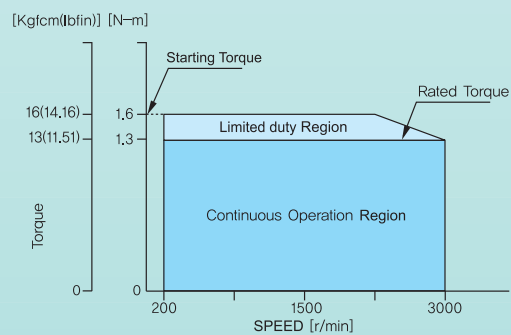
## XBU9150G( )/XBU9150D( )



## XBU10200G( )/XBU10200D( )



## XBU10400GU/XBU10400DU



## NAME AND FUNCTION FOR DRIVER'S EACH PART

## INTERFACE AND OPERATION

DISPLAY	FUNCTION	LIGHTING CONDITION
POWER	POWER Indicator	When power is supplied
ALARM	ALARM Indicator	When protection circuit is operated.

For motor Connector

Terminal for power input



## INTERNAL ADJUSTER

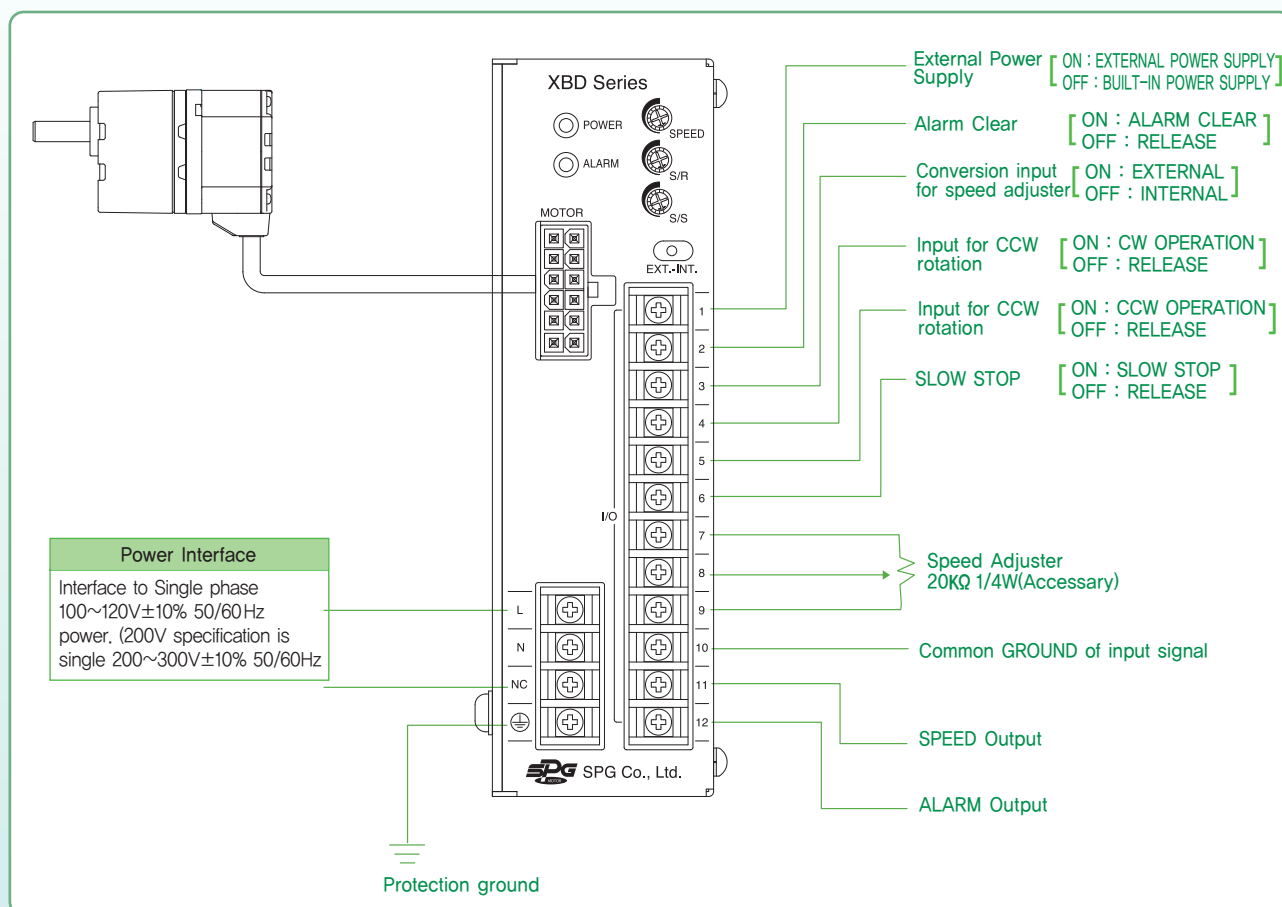
DISPLAY	Function
SPEED	Built-in Speed Potentiometer
S/R	SLOW RUN Potentiometer
S/S	SLOW STOP Potentiometer

I/O power supply switch

## Connector for input and output signal

DISPLAY	Signal	Function and Operation
+24V IN	External Power Supply	I/O power supply switch (UL 24Vdc class II)
A/CLR	ALARM RELEASE INPUT	After alarm occurs, input the release signal, however, use over-current and overload ALARM after resetting the input power.
EXT	SPEED POTENTIOMETER SELECTION INPUT	Selection input signal of internal and external potentiometer
CW	CLOCKWISE ROTATION INPUT	Clockwise rotation
CCW	COUNTER-CLOCKWISE ROTATION INPUT	Counterclockwise rotation
S/STOP	SLOW STOP	Input it, if SLOW STOP function uses.
H M L	SPEED SETTING INPUT	Common ground for input and output signal
COM	COMMON	Common ground terminal for input/output Signals
SPEED. OUT	SPEED OUTPUT (OPEN COLLECTOR OUTPUT)	When rotation speed for motor is monitored, use it.
ALARM. OUT	ALARM OUTPUT (OPEN COLLECTOR OUTPUT)	when protection is operated

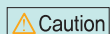
## INTERFACE DIAGRAM



- When motor cable is extended, use below 10.5m(413.39 in) cable. 0.5m(19.685 in) connector attached cable is fitted, but if it is further extended, use the cable(option) for extension.
- Should be separated the instrument or power wiring of noise source from the wiring, motor cable for signal.

### Motor Interface

- Connect motor cable's connector to the connector for connecting the motor of control unit.
- If the motor and the control unit are extended, extension cable (purchase separately) can be extended up to 10.5 m(413.39in).

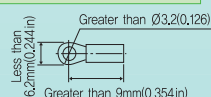


- Do not machine or modify the motor cable, extension cable. If another product is installed, may result in person's injury and fire.
- Do not remove cable coating or ground/touch the shield wire. May result in electrical shock.

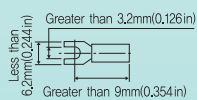
### Power Supply

- Connect the power cable to the power terminal of control unit.
- When power cable is used, use the AWG 22 or higher cable.

### Applied Pressure Terminal



〈Insulated Terminal (Round)〉



〈Insulated Terminal (Open)〉

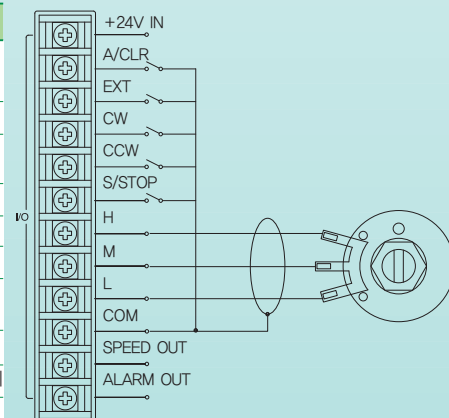
### Grounding

- Use a AWG 18 or higher cable to ground.

### Wiring the Signal I/O Terminal

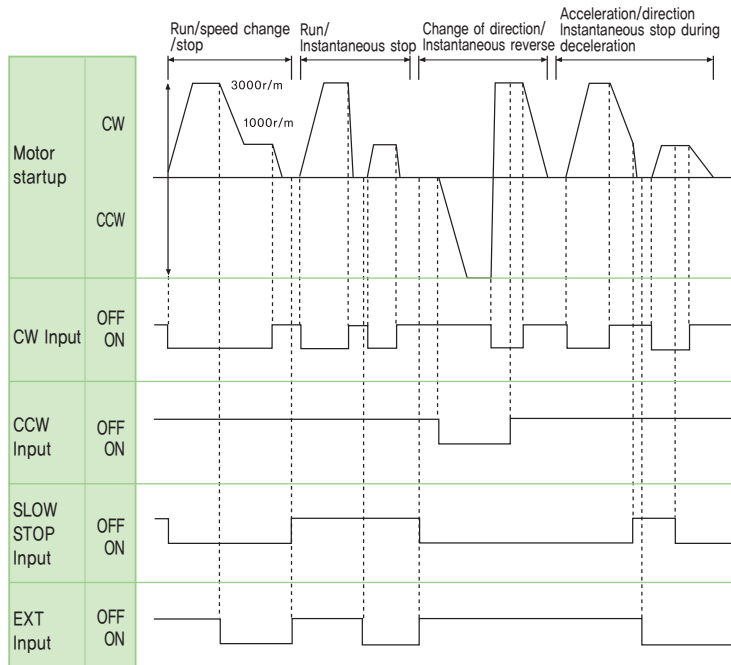
- Signal I/O Terminal

Designation	Function
+24V IN	I/O power supply switch (UL 24Vdc class II)
A/CLR	ALARM CLEAR input terminal
EXT	Input terminal for internal/external speed adjuster selection
CW	CW signal input terminal
CCW	CCW signal input terminal
S/STOP	SLOW STOP input terminal
H / M / L	External speed adjuster / input terminal for external DC power
COM	Input / output signal common GND
SPEED OUT	SPEED signal output terminal
ALARM OUT	ALARM signal output terminal



## OPERATION

### Example of a run timing chart



※ If CW input and CCW input are ON simultaneously, CW input has priority.

※ After momentarily stopping, if operation signal for reverse rotation is provided for 0.5 second, motor would be operated.

### If control unit is operated as single item.

- Operation condition is determined by interface condition on the front of control unit.
- If interfaced in the CW-COM, it operates in the CW and if CCW-COM is switched on, it operates in the CCW.

### If it is operated by external signal.

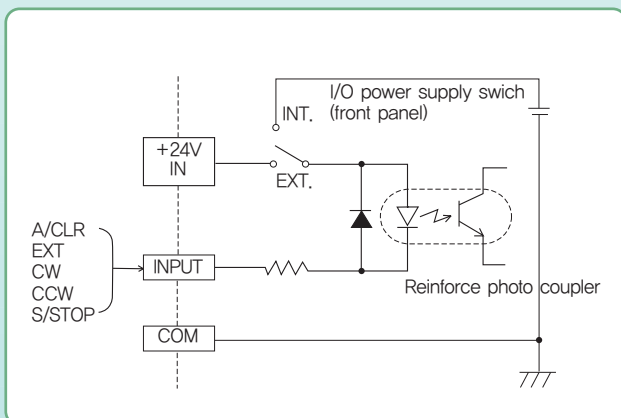
- For interface, refer to "signal input circuit".

### Cautions

- Maintain 20 ms or higher time for CW and CCW input signal.
- Use the motor, with motor case's temperature is below 90°C or radiation panel's temperature is below 80°C.
- In applications where the motor shaft rotates the load side, such as winding down load operation etc, as primary inverter voltage exceeds the allowable value and activates the protection circuit, it can be used.

## SIGNAL INPUT CIRCUIT (Common for CW, CCW, COM, and EXT.)

### Interface Example



The input circuits function by means of photocoupler input, as shown in the diagram at left. The input photocoupler can be driven by either the internal power supply or by an external DC power supply (DC24V class to) Input circuit is insulated dangerous voltages by the reinforce photo couplers.

- If CW input is on, motor rotates in the CW.  
If CW input is off, the motor stops.
- If CCW input is on, motor rotates in the CCW.  
If CCW input is off, the motor stops.
- If EXT input is on, speed is set by external volume or DC power.
- If CW input and CCW input is on, CW input has priority.  
Momentary normal and reverse operation is impossible.

### Caution

- Ensure 20ms or higher for CW signal input and CCW signal input.
- Do not use the SSR(Solid State Relay) in the power ON/OFF. This may result in damage to motor or control unit.
- When controller equipped in the clamp diode is used, Pay attention to the power ON/OFF sequence.

Power ON : Controller ON ⇒ Control Unit ON  
Power OFF : Control Unit OFF ⇒ Controller OFF

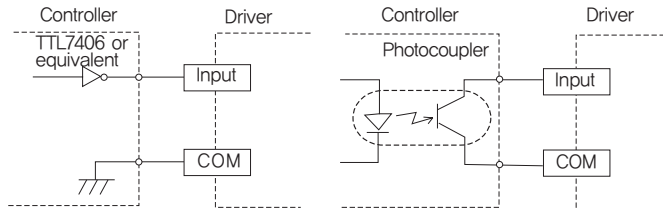
If sequence gets exchange, this may result in motor's mis-operation.

- COM terminal is not used in common with F.G. (Frame ground).

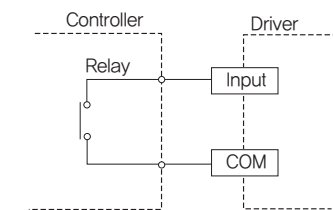
### ■ When using the driver's built-in power supply

Flip the I/O power supply switch to "INT." Signals will not be input if it is set to "EXT."

#### <Non-contact control>

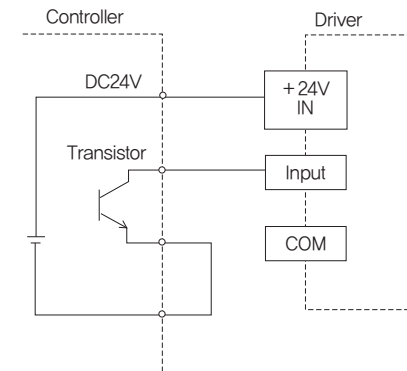


#### <Contact control>

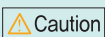
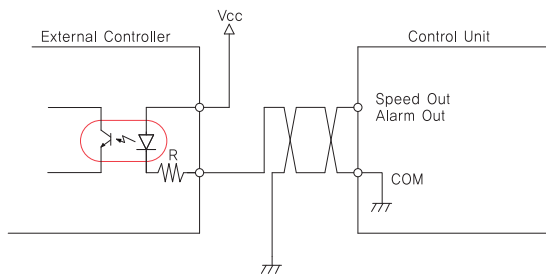


### ■ When using an external DC power supply

Flip the I/O power supply switch to "EXT." (set at time of shipment)



## SIGNAL OUTPUT CIRCUIT



- Signal input uses the open collector method.
- Use DC26.4V or below as the power supply and wire a resistor (R) to prevent output current from exceeding 10mA.

### Alarm Out

- If following is applied, the protection function is operated, Alarm Out function comes to On(L-level), motor stops. For this case, as LED is flashed and illuminated, verify the status of protection function.  
※When power is applied, this is normal that LED is illuminated momentarily.

Type of protection function	Action
Overload protection	Activated when a load exceeding the rated torque (load torque or motor current of 130% max. of rated load or rated motor current) is applied to the motor for 5 seconds or more or when the motor is operated in short cycles of stopping/starting or CW/CCW rotation.
Overvoltage protection	Protects the driver against damage when the motor is driving an inertial load exceeding the permissible inertial load, or when the motor shaft is turned by the load (during lowering operation).
Under voltage protection	Activated when a input voltage to the driver is less than specified voltage.
Open-Phase protection	Prevents motor malfunction when the sensor cable within the motor cable is disconnected during motor operation. (An alarm signal will not be output while the motor is at a standstill.)
Overspeed Protection	Activated when the speed of the motor exceed 4000r/min or when it shows abnormal speed.

- If Alarm Out is connected such as above condition, it is at H-level when the control unit is normal(off) and at L-level when the alarm is on. When Alarm Out is On(L-level), Switch off the power of control unit after stopping.

If fault is not found in the motor cable, Re-check that operation condition(load torque, operation pattern, power voltage, etc). After removing the cause of protection function occurrence, apply power again and then reset the ALARM OUT.

### Speed Out

- Synchronize motor operation to output pulse signal per 1 rotation in the motor output shaft. Rotation speed of motor can be calculated by measuring the output frequency for Speed Out.

$$\text{Motor Speed [RPM]} = \frac{\text{Speed Out Output Frequency [Hz]}}{K(\text{Pulse})} \times 60$$

$$\text{Speed Out Output Frequency [Hz]} = \frac{1}{T}$$

Model	□60/20W	□80/40W	□90/75W, 120W, 150W
K (Pulse)	12	15	15

- If display for rotation speed of the motor output shaft or the speed reducer output shaft is required, use the digital speed indicator SID250(purchase separately).



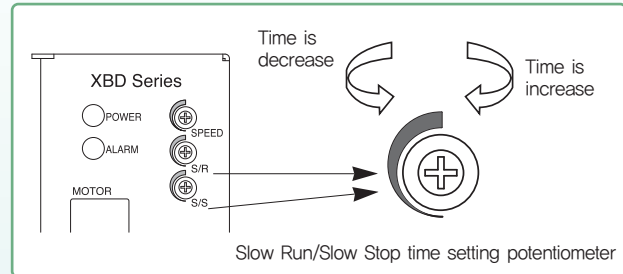
- When I/O signal cable is wired, shortly install within 2m(78.74in) of a wire.
- After I/O signal cable is disconnected to power cable or motor cable, install it.
- COM terminal is not used in common with F.G. (Frame ground).

## SLOW RUN/SLOW STOP TIME SETTING

- When motor is driven, start to run slowly and then when it is stopped, can be stopped slowly.
- Time for SLOW RUN and SLOW STOP can be set within 0.5~15 seconds (when 3000 r/min).



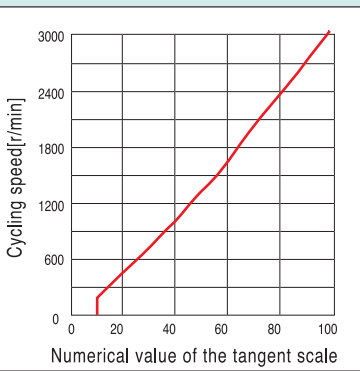
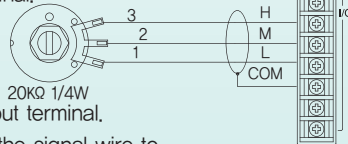
When SLOW STOP function is set, should be set the S/STOP signal of signal input terminal to On.



## SETTING WITH EXTERNAL SPEED ADJUSTER

When connecting an external speed adjuster, use the enclosed external speed adjuster and the signal wire exclusively designed for the external speed adjuster.

- Among signal wires for the external speed adjuster (referred as signal wire from now on), connect the lead wire to the terminal 3 of the external speed adjuster and H input terminal.
- Connect the lead wire of the signal wire to the terminal 2 of the external speed adjuster and M input terminal.
- Connect the lead wire of the signal wire to the terminal 1 of the external speed adjuster and L input terminal.
- Connect the shield wire of the signal wire to the terminal of COM. (Make sure that the shield wire of the external speed adjuster does not touch other terminals.)

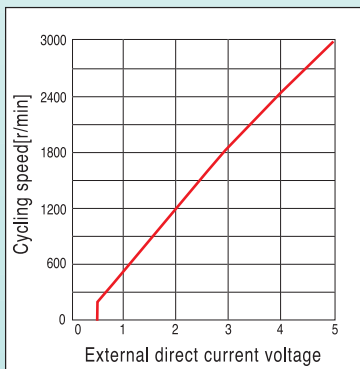
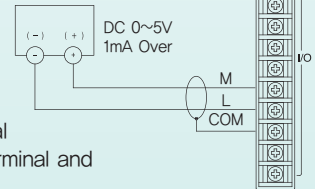


When the external speed controller is connected to the control unit terminal, the speed can be selected through the range of 200~3000 r/min. To stop the motor, adjust the potentiometer counter clock-wise.

## Connecting External Direct Current Power

Use a direct current power(DC0~5V) of which primary and secondary are highly insulated to be used for an external direct current.

- Connect the lead wire of the signal wire intended for the external speed adjuster (signal wire) to the external direct current's +terminal and M input terminal.
- Connect the lead wire of the signal wire to external direct current's -terminal and L input terminal.
- Connect the shield wire of the signal wire to the terminal of COM. (Make sure that the shield wire of the external speed adjuster does not touch other terminals.) L input is connected to GND inside CONTROL UNIT.



With an external direct current of 0~5V, the speed of the motor can be changed through the range of 200~3000r/min, When the direct current hits 0V, the motor will stop. (Please have direct current of with capacity of over 1mA prepared)

## INSTALLATION

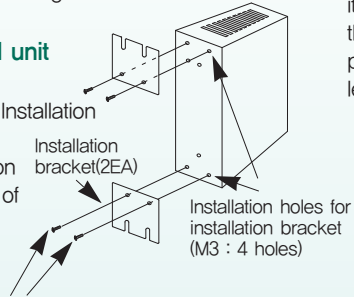
Please install the control unit on a flat, metal panel that has strong endurance to vibration and is high in heat conduction

### ■ Installation by using the control unit installation bracket

1. By using the provided "Control Unit Installation Bracket Screws", install control unit installation bracket into the installation holes(4 holes), which is in the back of the control unit.

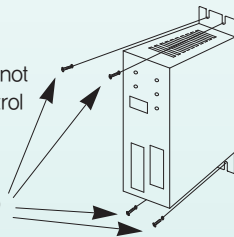
※Fastening torque : 0.5~0.6 Nm  
(71~85 oz.in)

Screws for installation bracket



2. Fixate the control unit with 4 screws (M4, not included) and the installation holes in control unit installation bracket so that the steel plates won't create any space in between them.

M4 (not included)



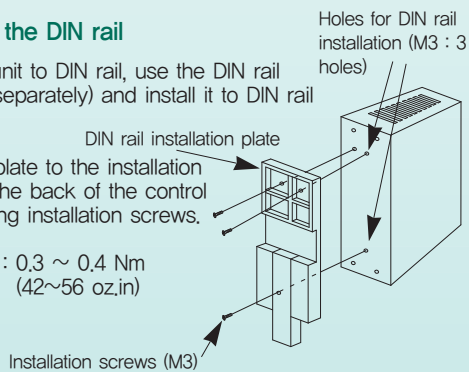
- [Important]
- The Installation holes in the back of the installation bracket should not be used for purposes other than fixation.
  - During the fixation of the control unit's installation, provided screws must only be used

### ■ Installation using the DIN rail

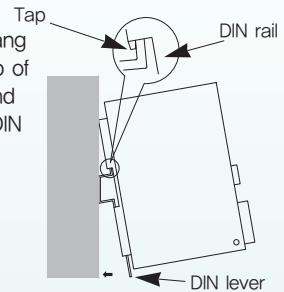
To install the control unit to DIN rail, use the DIN rail installation plate(sold separately) and install it to DIN rail with 35mm width.

1. Install the DIN rail plate to the installation holes (Which is in the back of the control unit-3 holes) by using installation screws.

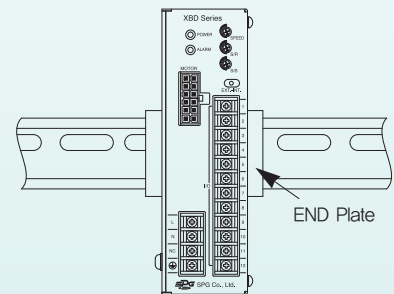
※Fastening torque : 0.3 ~ 0.4 Nm  
(42~56 oz.in)



Pull the DIN lever down and hang it to the tap (Which is in the top of the DIN rail installation plate) and push the control unit until the DIN lever is full fixated.

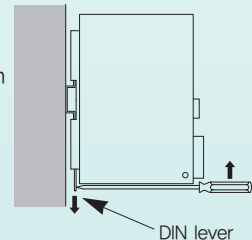


Fixate the control unit with the end plate  
(Not included)



### ■ Disassembling from the DIN rail

You may disassemble it by pulling the DIN lever with screw driver and push up the control unit from below. When pulling the lever down, do so with the strength of 10N~20N (2.2~4.5lb). Excessive force may damage the DIN lever



#### [Important]

- The Installation holes in the back of the control unit should not be used for purposes other than fixing DIN rail installation plate.
- The included screws must only be used for fixing the DIN rail installation plate. Using screws that goes in deeper than 3mm(0.1181 in) from the surface of the control unit may damage the control unit.

# MEMO



XWA series

5

XBA series

25

**XQA series**

**49**

XFA series

61

XVA series

81

OPTION

99

## OVERVIEW

XBA series consist of small high power bldc motor and high level box type driver and line up 20~400W output power. Exclusive gear head had combined with motor and made a combination simple to install.



## FEATURE

### ■ CC-Link respond, simple wiring

- Connection with high level control gear is simple by using Link CC-Link Cable
- geography and Data setting can be performed by using CC-Link communication.
- Real time monitoring is possible.

### ■ SMALL · HIGH POWER

This product have a dimension 90X90mm(3.54in×3.54in) in side length and 57mm(2.24) in thickness, operates 120W high power and attributes to the space saving of equipment.

### ■ EXCELLENT STABILITY FOR SPEED

Implement excellent speed stability with less speed fluctuation. Speed change due to change of the load is very small.

### ■ WIDE SPEED CONTROL RANGE, CONSTANT TORQUE

Speed can be widely controlled from 200r/min to 4000r/min.

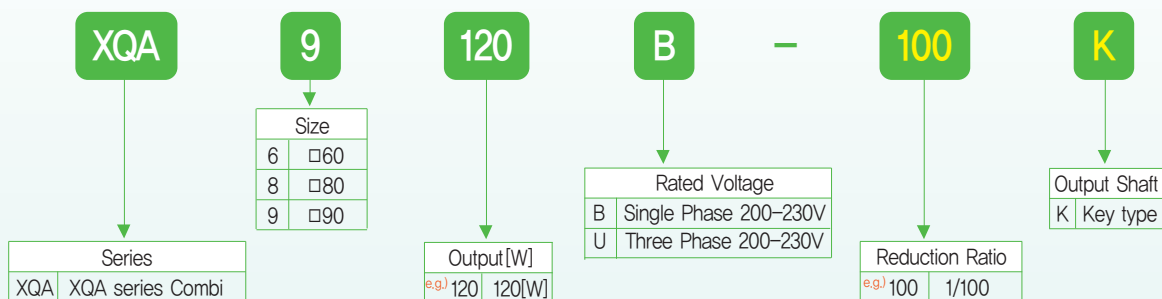
### ■ VARIABLE CONTROL FUNCTION

Speed setting of multistep, instantaneous stop as well as slow start, slow down function that shows great power in a sensitive transportation can be performed and respond to variable usage methods.

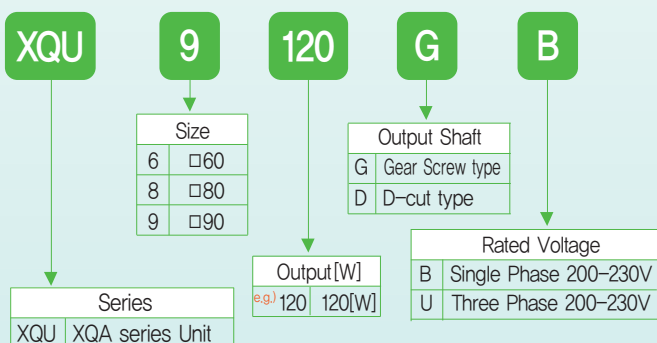
In addition, following features exist.

- Single phase 200V, three phase 200V power input response
- Response for high impact gearhead.
- Meet foreign safety specification and response world voltage.
- Capable of respond for extending to maximum 10.5m(413.39in) between motor and driver (Using option cable)
- Equipped the plate for DIN rail (option)

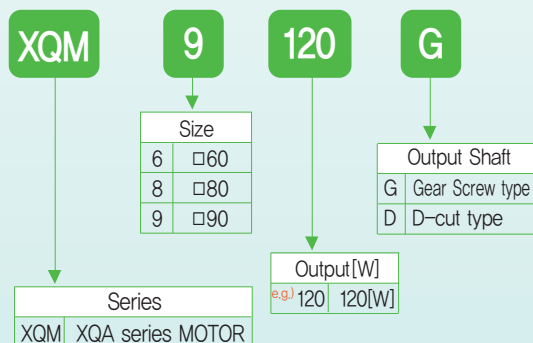
## CONTROL UNIT+MOTOR+GEAR HEAD



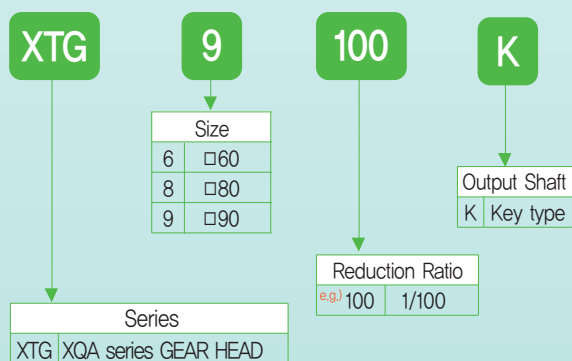
## MOTOR+CONTROL UNIT



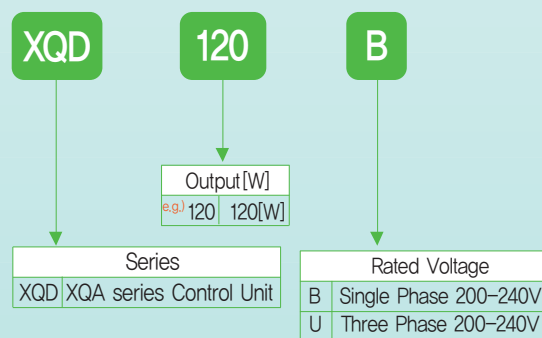
## MOTOR



## GEAR HEAD



## CONTROL UNIT



## SPECIFICATION

Title		Combi type	XQA630B-□	XQA630U-□	XQA860B-□	XQA860U-□	XQA975B-□	XQA975U-□	XQA9120B-□	XQA9120U-□
		Gear type	XQM630G		XQM860G		XQM975G		XQM9120G	
		D-Cut type	XQM630D		XQM860D		XQM975D		XQM9120D	
Rated Output (continuous) W			30		60		75		120	
Power Input	Voltage V	Single Phase 200-240	Three Phase 200-240	Single Phase 200-240	Three Phase 200-240	Single Phase 200-240	Three Phase 200-240	Single Phase 200-240	Three Phase 200-240	
	Frequency Hz	50/60		50/60		50/60		50/60		
	Rated Input Current A	0.5	0.2	0.8	0.4	1.0	0.4	1.6	0.6	
	Maximum Input Current A	1.3	0.5	1.8	0.9	2.2	0.9	3.5	1.3	
Rated Torque N·m(kgf·cm) (lb·in)			0.1(1.0) (0.86)		0.2(2.0) (1.74)		0.25(2.5) (2.17)		0.4(4.0) (3.47)	
Starting Torque N·m(kgf·cm) (lb·in)			0.2(2.0) (1.74)		0.4(4.0) (3.47)		0.5(5.0) (4.34)		0.8(8.0) (6.94)	
Motor Permissible Load Inertia J kg·m <sup>2</sup> (oz·in <sup>2</sup> )			1.25x10 <sup>-4</sup> (6.8)		2.5x10 <sup>-4</sup> (13.7)		3.75x10 <sup>-4</sup> (20.5)		6.0x10 <sup>-4</sup> (32.8)	
Rated Speed r/min			3,000							
Speed Control Range			200~4,000 (Speed Ratio 1:20)							
Speed Regulation	Load	Less than ±0.2% (0 ~ rated torque, at rated speed)								
	Voltage	Less than ±0.2% (supply voltage ±10%, at rated speed with no load)								
	Temperature	Less than ±0.2% (0 to +40℃ (+32 to +104ℱ), at rated speed with no load)								

※ For permissible load inertia in the geared motor, refer to 54 page.

## COMMONALITIES

Category	Specifications
Slow Run / Slow Stop	0.2 to 15 seconds (Applicable for both Slow Run and Slow Stop)
Input Signal	Photocoupler input method, input resistance: 4.7K $\Omega$ , operates at DC 20.4~28.8V $\pm$ 10%
Output Signal	Opencollector output, external use conditions: Less than 4.5~30V 40mA
Protection Functions	over-voltage, main line Off, under voltage, Sensor malfunction, main circuit output malfunction, overload, over speed, EEPROM malfunction, Sensor malfunction in initial operation, no initial operation, regenerative resistance overheat, External stop, NetworkBus malfunction.
Motor Insulation Class	Class B (130°C)
Rating	Continuous

## GENERAL SPECIFICATIONS

Item	Motor	Control Unit
Dielectric Strength	If applying 60Hz 1,500V between the coil and the case for 1 minute after continuous operating under normal temperature and humidity conditions, any fault is not occurred.	Sufficient to withstand 3.0kV at 50Hz applied between power supply terminal (I/O terminal) and I/O terminals for 1 minute, and 1.5kV at 50Hz applied between protective earth terminal and power supply terminals.
Insulation Resistance	After continuous operating under normal temperature and humidity conditions, if measured the resistance value between the coil and the case using DC500V Mega Tester, should be over 100M $\Omega$ .	If the resistance value between protection ground terminal and power input is measured using DC500V Mega Tester, should be over 100M $\Omega$ .
Ambient Temperature	0°C to +40°C(+32°F to +104°F) (nonfreezing)	0°C to +50°C(+32°F to +122°F) (nonfreezing)
Ambient Humidity	Less than 85% (non condensing)	
Atmosphere	No corrosive gas or dust.	
Degree of Protection	IP65 (excluding the output shaft side)	IP20

**Caution)** Use it, ensuring that surface temperature of motor does not exceed over 90°C.

## CC-Link Communication specification

Category	Specifications
Communication standard	CC-Link Ver.1.10
Kind of station	Remote Device station
Number of inherent station	1 station inherent
Transmission speed	156 kbps/625 kbps/2.5 Mbps/5 Mbps/10 Mbps
Maximum transmission distance	Can be different depend on transmission speed. 42 Unit
Number of Maximum access unit	Number of Maximum access unit can be different from composition of CC-Link System. Please check specification of CC-Link System Master(or Local) device.
Communication Cable	Cable for CC-Link

## PERMISSIBLE TORQUE – GEARED MOTOR

N · m / [kgf·cm](lb · in)

Item	Speed Control Range [r/min]	40~800	20~400	13.4~267	10~200	6.7~133	4~80	2~40	1~20
	Gear Ratio	5	10	15	20	30	50	100	200
XQA630( )-□K	0.45	0.9	1.4	1.8	2.6	4.3	6.0	6.0	6.0
	4.5 (3.91)	9 (7.81)	14 (12.15)	18 (15.62)	26 (22.57)	43 (37.32)	60 (52.08)	60 (52.08)	60 (52.08)
XQA860( )-□K	0.9	1.8	2.7	3.6	5.2	8.6	16.0	16.0	16.0
	9 (7.81)	18 (15.62)	27 (23.44)	36 (31.25)	52 (45.14)	86 (74.65)	160 (138.88)	160 (138.88)	160 (138.88)
XQA975( )-□K	1.1	2.3	3.4	4.5	6.5	10.8	21.5	30	30
	11 (9.55)	23 (19.96)	34 (29.51)	45 (39.06)	65 (56.42)	108 (93.74)	215 (186.62)	300 (260.4)	300 (260.4)
XQA9120( )-□K	1.8	3.6	5.4	7.2	10.3	17.2	30	30	30
	18 (15.62)	36 (31.25)	54 (46.87)	72 (62.50)	103 (89.40)	172 (149.30)	300 (260.4)	300 (260.4)	300 (260.4)

※ ( ) of item name represents voltage specification

※ □ of item name represents the reduction ratio.

※ Rotation direction is the same direction of additional motor marked in the □, others is reverse direction.

## PERMISSIBLE LOAD INERTIA ( J )—GEARED MOTOR

 $J \times 10^{-4} \text{ kgf-m}^2 (\text{oz} \cdot \text{in}^2)$ 

Model	Gear Ratio	5	10	15	20	30	50	100	200
XQA630( )-□K		1.55 (8.5)	6.2 (33.9)	14 (76.5)	24.8 (135.6)	55.8 (305.1)	155 (847.5)	155 (847.5)	155 (847.5)
XQA860( )-□K		5.5 (30.1)	22 (120.3)	49.5 (270.6)	88 (481.1)	198 (1083)	550 (3007)	550 (3007)	550 (3007)
XQA975( )-□K		10 (54.7)	39 (213.2)	90 (492.1)	130 (710.8)	360 (1968)	1000 (5467)	1000 (5467)	1000 (5467)
XQA9120( )-□K		25 (136.7)	100 (546.7)	225 (1230)	400 (2187)	900 (4921)	2500 (13669)	2500 (13669)	2500 (13669)

※ ( ) indicates voltage specification.

※ □ indicates deceleration ratio.

## PERMISSIBLE OVERHANG LOAD AND PERMISSIBLE THRUST LOAD

Model		Gear Ratio	Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
Geared Motor	XQA630( )-□K	5	100	10(22.03)	150	15(33.04)	40	4(8.81)
		10~20	150	15(33.04)	200	20(44.05)		
		30~200	200	20(44.05)	300	30(66.08)		
	XQA860( )-□K	5	200	20(44.05)	250	25(55.07)	100	10(22.03)
		10~20	300	30(66.08)	350	35(77.09)		
		30~200	450	45(99.12)	550	55(121.15)		
	XQA975( )-□K	5	300	30(66.08)	400	40(88.11)	150	15(33.04)
		10~20	400	40(88.11)	500	50(110.13)		
		30~200	500	50(110.13)	650	65(143.17)		
	XQA9120( )-□K	5	300	30(66.08)	400	40(88.11)	150	15(33.04)
		10~20	400	40(88.11)	500	50(110.13)		
		30~200	500	50(110.13)	650	65(143.17)		

Model		Permissible Overhang Load				Permissible Thrust Load
		10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.		
		N	kgf(lbs)	N	kgf(lbs)	
Motor	XQM630D	87.2	8.72(19.21)	107	10.7(23.57)	• Do not engage the thrust load. If unavoidable, engage below 50% of motor weight.
	XQM860D	117	11.7(25.77)	137	13.7(30.17)	
	XQM975D	156	15.6(34.36)	176	17.6(38.77)	
	XQM9120D	156	15.6(34.36)	176	17.6(38.77)	

※ ( ) indicates voltage specification.

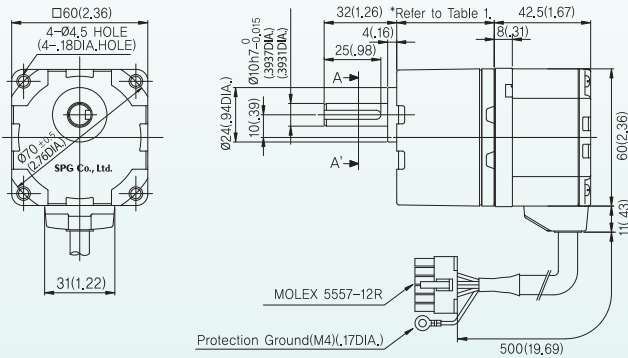
※ □ indicates deceleration ratio.

## GEARED MOTOR

## ■ Model : XQA630( )-□K

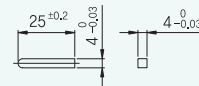
[Unit : mm(inch)]

- Motor : XQM630G
- Gear Head : XTG65K~XTG6200K
- Control Unit : XQD30( )

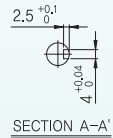


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).
- ※ please visit our website for details.

## ■ Key(accessories)



## ■ Key Groove



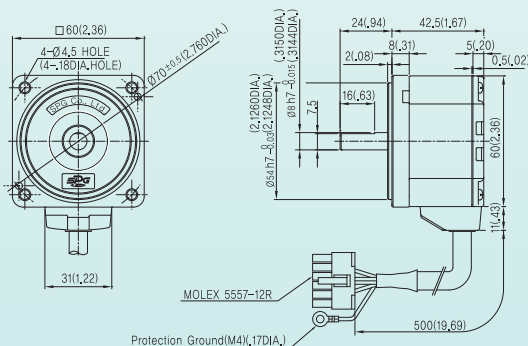
※ Table 1

Gear Ratio	Size:mm(inch)
XTG65K~XTG620K	34(1.34)
XTG630K~ XTG6100K	38(1.50)
XTG6200K	43(1.69)

## MOTOR

## ■ Model : XQM630D

[Unit : mm(inch)]



- ※ please visit our website for details.

※ Table 2-Weight

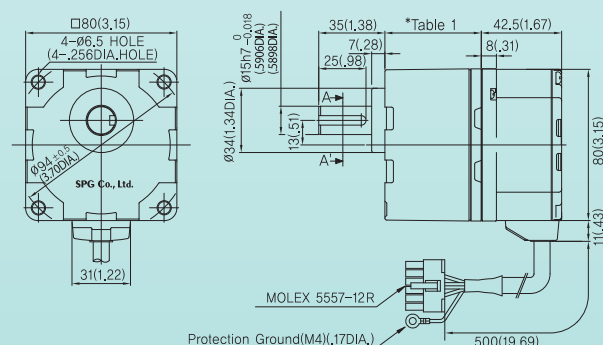
Part		Weight:kg.(lbs)
Motor		0.48(1.06)
Gear Head	XTG65K~XTG620K	0.28(0.62)
	XTG630K~ XTG6100K	0.33(0.73)
	XTG6200K	0.37(0.82)

## GEARED MOTOR

## ■ Model : XQA860( )-□K

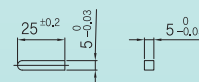
[Unit : mm(inch)]

- Motor : XQM860G
- Gear Head : XTG85K~XTG8200K
- Control Unit : XQD60( )

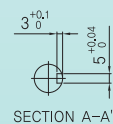


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).
- ※ please visit our website for details.

## ■ Key(accessories)



## ■ Key Groove



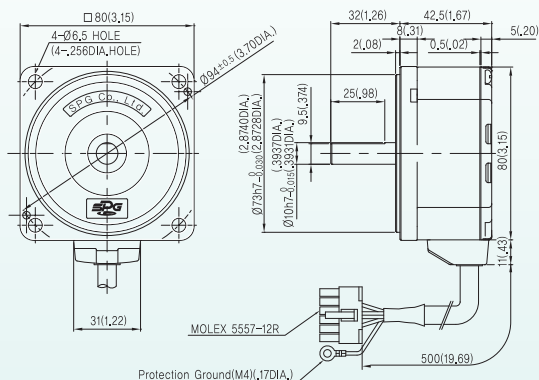
※ Table 1

Gear Ratio	Size:mm(inch)
XTG85K~XTG820K	41(1.61)
XTG830K~ XTG8100K	46(1.81)
XTG8200K	51(2.01)

## MOTOR

## Model : XQM860D

[Unit : mm(inch)]



\* please visit our website for details.

\* Table 2-Weight

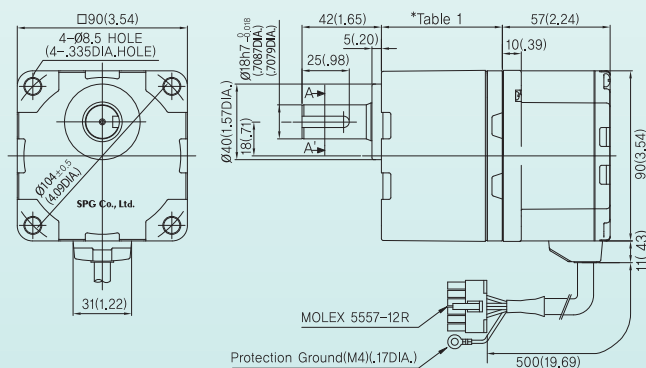
Part		Weight:kg.(lbs)
Motor		0.75(1.65)
Gear Head	XTG85K~XTG820K	0.61(1.34)
	XTG830K~ XTG8100K	0.72(1.59)
	XTG8200K	0.80(1.76)

## GEARED MOTOR

## Model : XQA975( )-□K

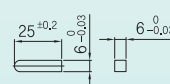
[Unit : mm(inch)]

- Motor : XQM975G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XQD75( )

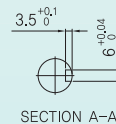


- \* ( ) of item name represents voltage specification
- \* □ indicates deceleration ratio.
- \* Geared motor includes the bolt set for installing. (for specification, refer to 40 page).
- \* please visit our website for details.

## Key(accessories)



## Key Groove



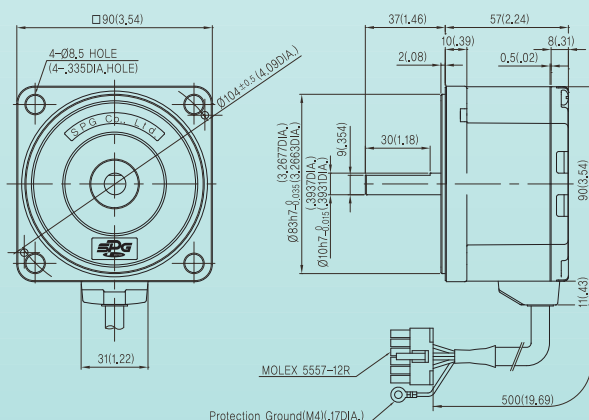
\* Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## Model : XQM975D

[Unit : mm(inch)]



\* please visit our website for details.

\* Table 2-Weight

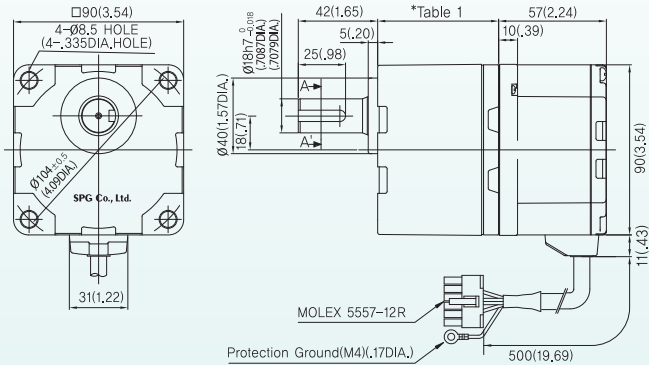
Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## GEARED MOTOR

## ■ Model : XQA9120( )-□K

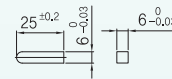
[Unit : mm(inch)]

- Motor : XQM9120G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XQD120( )

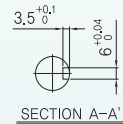


- ※ ( ) of item name represents voltage specification
- ※ □ indicates deceleration ratio.
- ※ Geared motor includes the bolt set for installing. (for specification, refer to 40 page).
- ※ please visit our website for details.

## ■ Key(accessories)



## ■ Key Groove



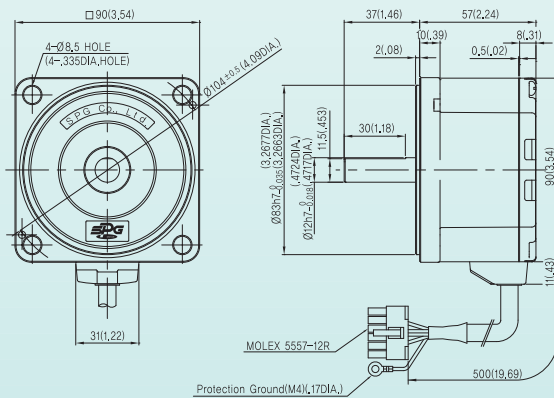
※ Table 1

Gear Ratio	Size:mm(inch)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

## MOTOR

## ■ Model : XQM9120G

[Unit : mm(inch)]



- ※ please visit our website for details.

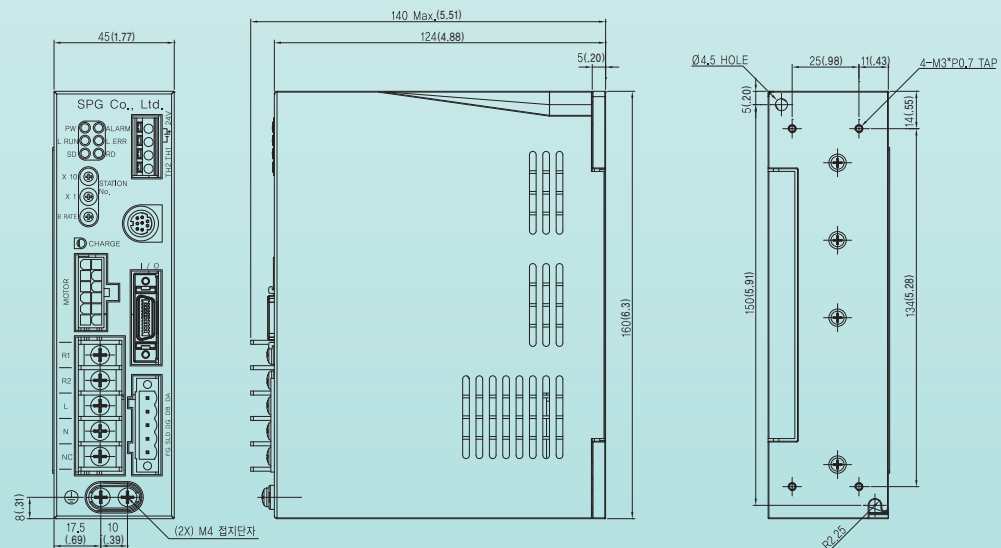
※ Table 2-Weight

Part		Weight:kg.(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

## CONTROL UNIT

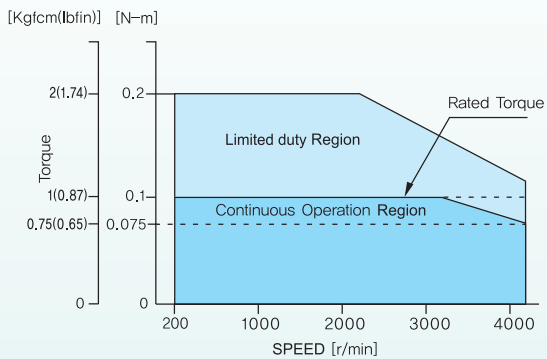
## ■ Model : XQD30( ), XQD60( ), XQD75( ), XQD120( ) (Weight : 0.7kg)

[Unit : mm(inch)]

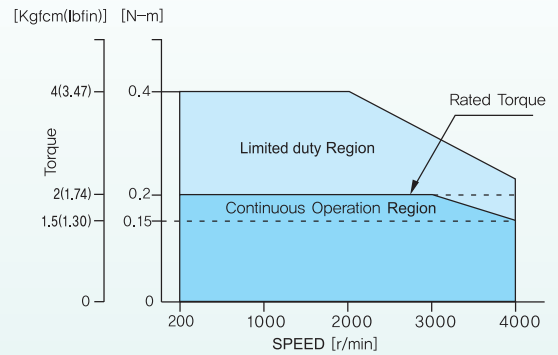


- ※ please visit our website for details.

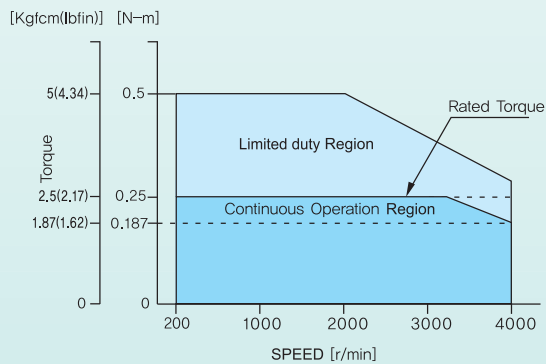
XQU630G( )/XBU630D( )



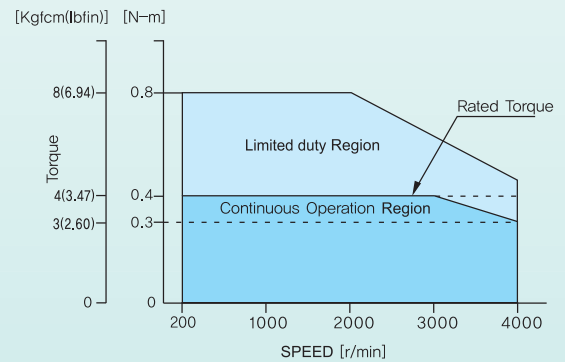
XQU860G( )/XBU860D( )



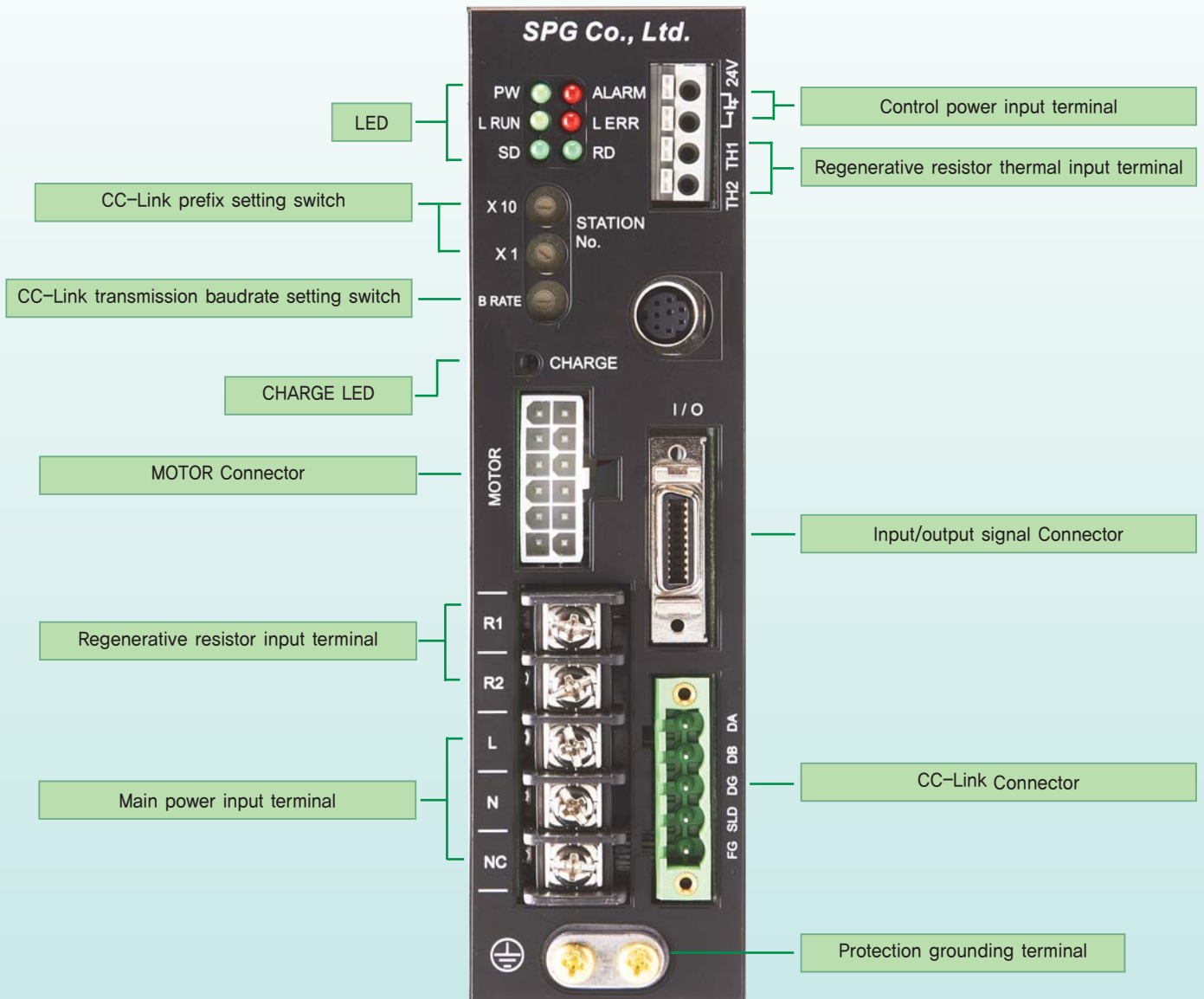
XQU975G( )/XQU975D( )



XQU9120G( )/XQU9120D( )



NAME AND FUNCTION FOR DRIVER'S EACH PART



## NAME AND FUNCTION FOR DRIVER'S EACH PART

Name	Description
LED	Indicates the communication status of the driver or CC-link. Power (green) : Activated when the control power is turned on. Alarm (red) : Activated when the protection function is turn on. L RUN (green) : Activated when communication is under control. L ERR (red) : Activated and blinks when communication error occurs SD (green) : Activated when the date is sent SD (green) : Activated when the date is received
CC-link prefix switch [STATION NO.]	Sets the national boundaries from 01 to 64. When connecting to two or more CC-link response models, set the national boundaries without causing them to overlap. [x10] : Sets 10 digits/ [x1]: Sets 1 digit Setting at shipping time: 01
CC-link transmission baud rate Setting switch [B-rate]	Sets the communication speed of the CC-link. Setting at shipping time: 0 (156 kbps)
Not used [CN1]	Not used.
Charge Led (red)	Activated when the main power is not turned on. It will deactivate when the main power is turned off and the internal residual voltage reduces to a safe level.
MOTOR Connector	Connects the connector for motor power of the motor cable or the connecting cable.
Regenerative resistor connection terminal	Connects the regenerative resistor (150Ω) of the option (sold separately).
Main power input terminal [L,N] [L1,L2,L3]	Connects the main power. • In case of single-phase 200~240 V L, N : Connects the single-phase AC 200~240 V NC : Not used • In case of three-phase 200~240 V L1, L2, L3: Connects the three-phase 200~240 V
Control power input terminal [24V+, 24V-]	Connects the control power of the driver. (DC24V~15~+20%)
Regenerative resistor thermal input terminal [TH1, TH2]	Connects the thermal input of the regenerative resistor (150Ω) of the option (sold separately).
Motor signa Connector	Connects the connector for motor signal of the motor cable or the connecting cable.
Input/output signal Connector	Connects the input/output signal of the programmable controller.
CC-Link Connector	Connects the CC-link communication cable.
Protection grounding terminal	Please ground using the ground line of AWG18~14 (0.75~2.0mm <sup>2</sup> ).
Installation hole (2 holes on the back side)	Fix the driver by tightening the screws.



XWA series

5

XBA series

25

XQA series

49

**XFA series**

61

XVA series

81

OPTION

99

## OVERVIEW

XFA series consist of small high power bldc motor and high level box type driver and line up 30~100W output power. Exclusive gear head had combined with motor and made a combination simple to install.



## FEATURE

### ■ SMALL · HIGH POWER

This product have a dimension 90X90mm(3.54in×3.54in) in side length and 57mm(2.24) in thickness, operates 100W high power and attributes to the space saving of equipment.

### ■ EXCELLENT STABILITY FOR SPEED

Implement excellent speed stability with less speed fluctuation. Speed change due to change of the load is very small.

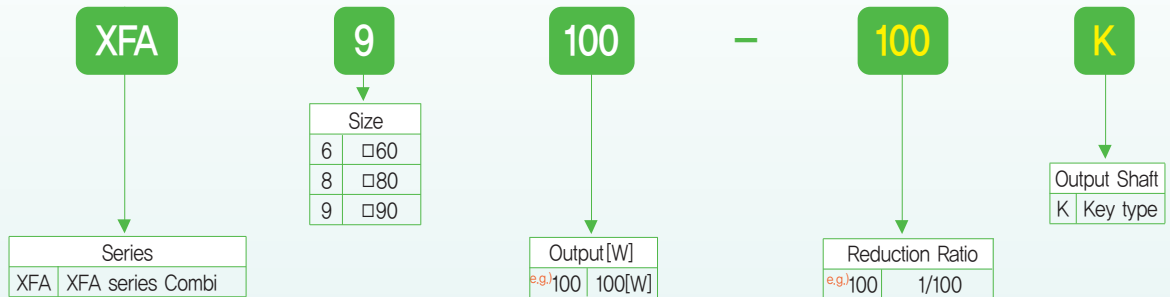
### ■ WIDE SPEED CONTROL RANGE, CONSTANT TORQUE

Speed can be widely controlled from 200r/min to 3000r/min.

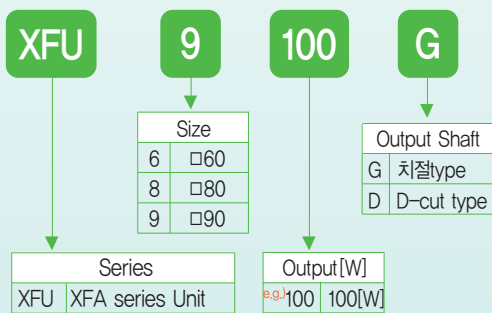
### ■ VARIABLE CONTROL FUNCTION

Speed setting of multistep, instantaneous stop as well as slow start, slow down function that shows great power in a sensitive transportation can be performed and respond to variable usage methods.

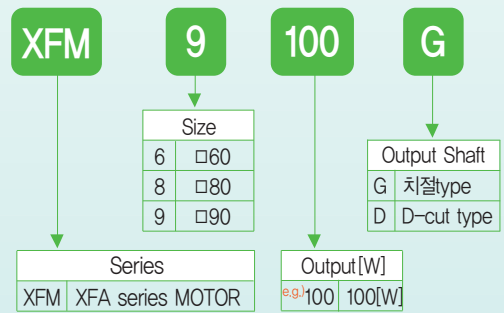
## DRIVER+MOTOR+GEAR HEAD



## MOTOR+DRIVER



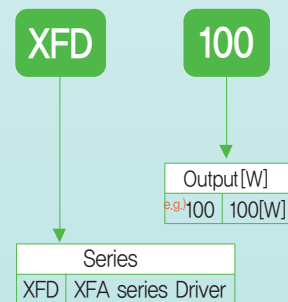
## MOTOR



## GEAR HEAD



## DRIVER



## SPECIFICATIONS

Title	Combi type	XFA630-□	XFA850-□	XFA9100-□
	Gear type	XFM630G	XFM850G	XFM9100G
	D-Cut type	XFM630D	XFM850D	XFM9100D
Rated Output (continuous) W		30	50	100
Power Input	Voltage V	DC24V		
	Rated Input Current A	2.1	3.1	6.2
	Maximum Input Current A	3.7	5.4	9.8
Rated Torque N·m(kgf·cm) (lb·in)		0.12(1.2) (1.06)	0.2(2.0) (1.77)	0.4(4.0) (3.54)
Starting Torque N·m(kgf·cm) (lb·in)		0.15(1.5) (1.33)	0.24(2.4) (2.12)	0.5(5.0) (4.43)
Motor Permissible Load Inertia J kg·m <sup>2</sup> (oz·in <sup>2</sup> )		1.8×10 <sup>-4</sup> (9.84)	3.3×10 <sup>-4</sup> (18.04)	5.6×10 <sup>-4</sup> (30.62)
Rated Speed r/min		2,500		
Speed Control Range r/min		200~3,000 (Speed Ratio 1:15)		
Speed Regulation	Load	Less than ±0.5% (0 ~ rated torque, Rated Speed, rated voltage, normal temperature)		
	Voltage	Less than ±0.5% (supply voltage ±10%, Rated Speed, no load, normal temperature)		
	Temperature	Less than ±0.5% (0~+50°C, Rated Speed, no load, rated voltage)		

※ Start-up torque should be applied for within 5sec at 2,000r/min or lower rpm.

※ □ of item name represents the reduction ratio.

## COMMONALITIES

Category	Specifications
SLOW RUN / SLOW STOP	0.5 to 10 seconds (Applicable for both Slow Run and Slow Stop, Setting without load)
Speed Control Method	1. Built-in Potentiometer 2. External Potentiometer (20K $\Omega$ 1/4W) 3. External DC Voltage(0~5 Volt)
Input Signal	C-MOS negative logic inputting method.
Output Signal	Opencollector output, external use conditions: Less than 26.4V 10mA, common for Speed Out and Alarm Out.
Protection Functions	<p>When below-shown protection function works, an alarm signal of the driver is generated and the motor is automatically stopped.</p> <ul style="list-style-type: none"> <li>● Protection for machine overload : When an overload that exceeds the motor's rate torque has been continued for more than 5 seconds</li> <li>● Protection for overvoltage : When the voltage permitted for the control unit has exceed specified voltage</li> <li>● Protection guard for image formation : When malfunction occurs in the motor feedback signals due to cables disconnection and connector disconnection.</li> <li>● Low-voltage protection function : Case that the voltage applied to the driver is lower than DC24V by about 25%</li> <li>● Protection for over speeding : When the speed of the motor exceed 3500r/min</li> <li>● Over-voltage protection function : Case that the voltage applied to the driver is higher than DC24V by 15% or more</li> </ul>
Maximum extension distance	When using an extension cable is used between the motor and driver
Rating	Continuous

## GENERAL SPECIFICATIONS

Item	Motor	Control Unit
Dielectric Strength	If applying 60Hz 500V between the coil and the case for 1 minute after continuous operating under normal temperature and humidity conditions, any fault is not occurred.	No problem is found when 50/60Hz 500V is applied between power input and radiator plate after continuous operation at normal temperature and normal humidity.
Insulation Resistance	After continuous operating under normal temperature and humidity conditions, if measured the resistance value between the coil and the case using DC500V Mega Tester, should be over 100M $\Omega$ .	If the resistance value between protection ground terminal and power input is measured using DC500V Mega Tester, should be over 100M $\Omega$ .
Ambient Temperature	0°C to +40°C(+32°F to +104°F) (nonfreezing)	0°C to +50°C(+32°F to +122°F) (nonfreezing)
Ambient Humidity	Less than 85% (non condensing)	
Atmosphere	No corrosive gas or dust.	
Insulation grade	Class B (130°C)	
Degree of Protection	IP65 (excluding the output shaft side)	IP00

**Caution** Use it, ensuring that surface temperature of motor does not exceed over 90°C.

## PERMISSIBLE TORQUE – GEARED MOTOR

N·m/kgf·cm)(lb·in)

MODEL	REDUCTION RATIO		5	10	15	20	30	50	100	200
	MOTOR SPEED	200~2500r/min	40~500	20~250	13.4~167	10~125	6.6~83	4~50	2~25	1~12.5
		3000r/min	600	300	200	150	100	60	30	15
XFM630-□	200~2500r/min $\lambda$	0.54 5.51(4.78)	1.1 11.22(9.74)	1.6 16.32(14.16)	2.2 22.43(19.47)	3.1 31.61(27.44)	5.2 53.0(46.02)	6 61.18(53.10)	6 61.18(53.10)	
	3000r/min $\lambda$	0.27 2.75(2.39)	0.54 5.51(4.78)	0.81 8.26(7.17)	1.1 11.22(9.74)	1.5 15.30(13.28)	2.6 26.51(23.01)	5.2 53.03(46.02)	6 61.18(53.10)	
XFM850-□	200~2500r/min $\lambda$	0.9 9.18(7.97)	1.8 18.35(15.93)	2.7 27.53(23.90)	3.6 36.71(31.86)	5.2 53.03(46.02)	8.6 87.7(76.12)	16 163.15(141.61)	16 163.15(141.61)	
	3000r/min $\lambda$	0.45 4.59(3.98)	0.9 9.18(7.97)	1.4 1.43(12.39)	1.8 1.84(15.93)	2.6 26.51(23.01)	4.3 43.85(38.06)	8.6 87.7(76.12)	16 163.15(141.61)	
XFM9100-□	200~2500r/min $\lambda$	1.8 18.35(15.93)	3.6 36.71(31.86)	5.4 55.06(47.79)	7.2 73.42(63.73)	10.3 105.03(91.16)	17.2 175.39(152.23)	30 305.91(265.52)	30 305.91(265.52)	
	3000r/min $\lambda$	0.9 9.18(7.97)	1.8 18.35(15.93)	2.7 27.53(23.90)	3.6 36.71(31.86)	5.2 53.03(46.02)	8.6 87.7(76.12)	17.2 175.39(152.23)	30 305.91(265.52)	

※ □ of item name represents the reduction ratio.

※ Rotation direction is the same direction of additional motor marked in the □, others is reverse direction.



## PERMISSIBLE LOAD INERTIA ( J )—GEARED MOTOR

(oz · in<sup>2</sup>) $J \times 10^{-4}$  kgf-m<sup>2</sup>(GD<sup>2</sup> kgf-cm<sup>2</sup>)

Model	Gear Ratio	5	10	15	20	30	50	100	200
XFA630-□K		(8.47)	(33.90)	(76.54)	(135.59)	(305.08)	(847.46)	(847.46)	(847.46)
		1.55	6.2	14	24.8	55.8	155	155	155
		(6.2)	(24.8)	(56.0)	(99.2)	(223.2)	(620.0)	(620.0)	(620.0)
XFA850-□K		(30.07)	(120.28)	(270.64)	(481.14)	(1082.6)	(3007.1)	(3007.1)	(3007.1)
		5.5	22	49.5	88	198	550	550	550
		(22.5)	(88.0)	(198.0)	(352.0)	(792.0)	(2200)	(2200)	(2200)
XFA9100-□K		(136.69)	(546.75)	(1230.18)	(2187)	(4920.7)	(13669)	(13669)	(13669)
		25	100	225	400	900	2500	2500	2500
		(100.0)	(400.0)	(900.0)	(1600)	(3600)	(10000)	(10000)	(10000)

※ □ of item name represents the reduction ratio.

## PERMISSIBLE OVERHANG LOAD AND PERMISSIBLE THRUST LOAD

Model		Gear Ratio	Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
Geared Motor	XFA630-□K	5	100	10(22.05)	150	15(33.07)	40	4(8.82)
		10~20	150	15(33.07)	200	20(44.09)		
		30~200	200	20(44.09)	300	30(66.14)		
	XFA850-□K	5	200	20(44.09)	250	25(55.12)	100	10(22.05)
		10~20	300	30(66.14)	350	35(77.16)		
		30~200	450	45(99.21)	550	55(121.25)		
	XFA9100-□K	5	300	30(66.14)	400	40(88.18)	150	15(33.07)
		10~20	400	40(88.18)	500	50(110.23)		
		30~200	500	50(110.23)	650	65(143.30)		
Motor	XFM630D		70	7(15.43)	100	10(22.05)	● Do not engage the thrust load. If unavoidable, engage below 50% of motor weight.	
	XFM850D		120	12(26.46)	140	14(30.86)		
	XFM9100D		160	16(35.27)	170	17(37.48)		

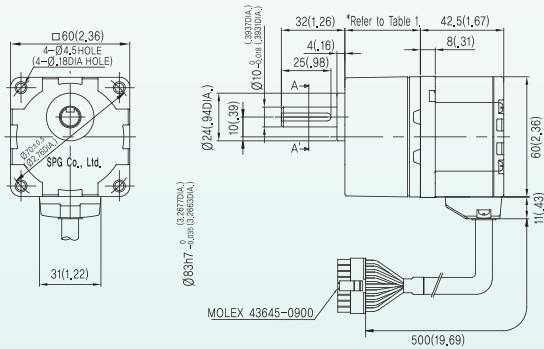
※ □ of item name represents the reduction ratio.

## GEARED MOTOR

## ■ Model : XFA630-□K

[Unit : mm(inch)]

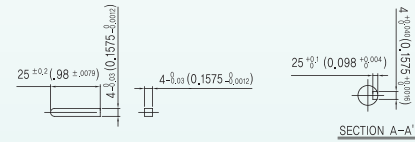
- Motor : XFM630G
- Gear Head : XTG65K~XTG6200K
- Control Unit : XFD30



- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set.

## ■ Key(accessories)

## ■ Key Groove



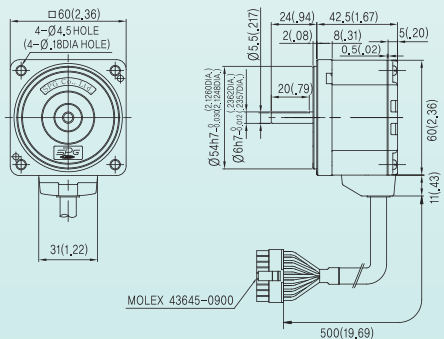
※ Table 1

Gear Ratio	Size(mm)(in)
XTG65K~XTG620K	34(1.34)
XTG630K~ XTG6100K	38(1.50)
XTG6200K	43(1.69)

## MOTOR

## ■ Model : XFM630D

[Unit : mm(inch)]



※ Table 2-Weight

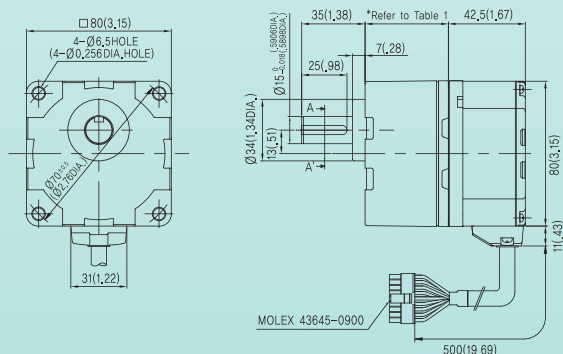
Part		Weight(kg)/(lbs)
Motor		0.48(1.06)
Gear Head	XTG65K~XTG620K	0.28(0.62)
	XTG630K~ XTG6100K	0.33(0.73)
	XTG6200K	0.37(0.82)

## GEARED MOTOR

## ■ Model : XFA850-□K

[Unit : mm(inch)]

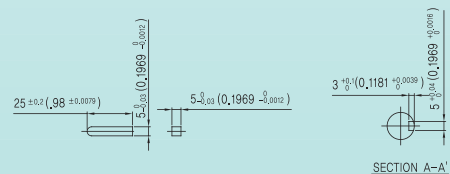
- Motor : XFM850G
- Gear Head : XTG85K~XTG8200K
- Control Unit : XFD50



- ※ □ indicates deceleration ratio.
- ※ Gear head motor is enclosed with a bolt set.

## ■ Key(accessories)

## ■ Key Groove



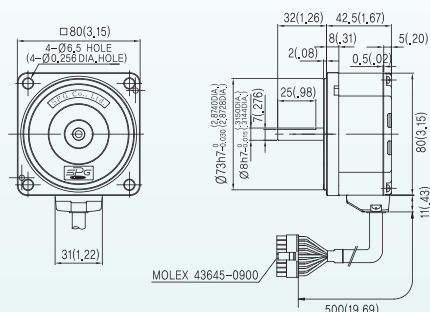
※ Table 1

Gear Ratio	Size(mm)(in)
XTG85K~XTG820K	41(1.61)
XTG830K~ XTG8100K	46(1.81)
XTG8200K	51(2.01)

## MOTOR

## ■ Model : XFM850D

[Unit : mm(inch)]



※ Table 2-Weight

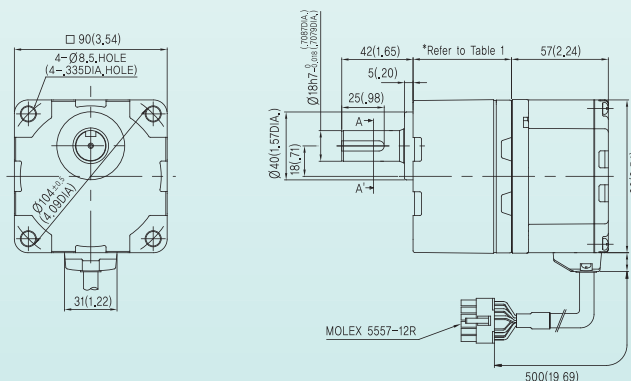
Part		Weight(kg)(lbs)
Motor		0.75(1.65)
Gear Head	XTG85K~XTG820K	0.61(1.34)
	XTG830K~ XTG8100K	0.72(1.59)
	XTG8200K	0.80(1.76)

## GEARED MOTOR

## ■ Model : XFA9100-□K

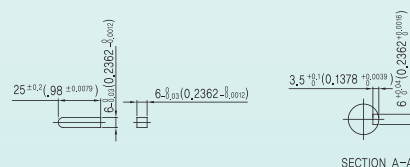
[Unit : mm(inch)]

- Motor : XFM9100G
- Gear Head : XTG95K~XTG9200K
- Control Unit : XFD100



## ■ Key(accessories)

## ■ Key Groove



※ Table 1

Gear Ratio	Size(mm)(in)
XTG95K~XTG920K	45(1.77)
XTG930K~ XTG9100K	58(2.28)
XTG9200K	64(2.52)

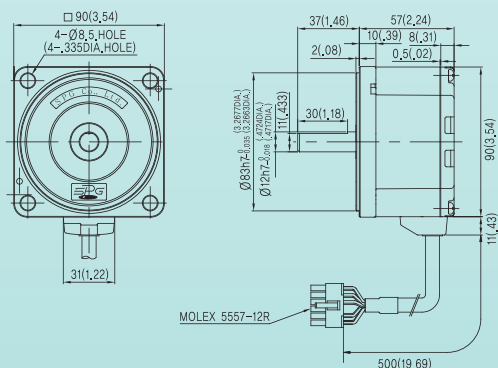
※ □ indicates deceleration ratio.

※ Gear head motor is enclosed with a bolt set.

## MOTOR

## ■ Model : XFM9100D

[Unit : mm(inch)]



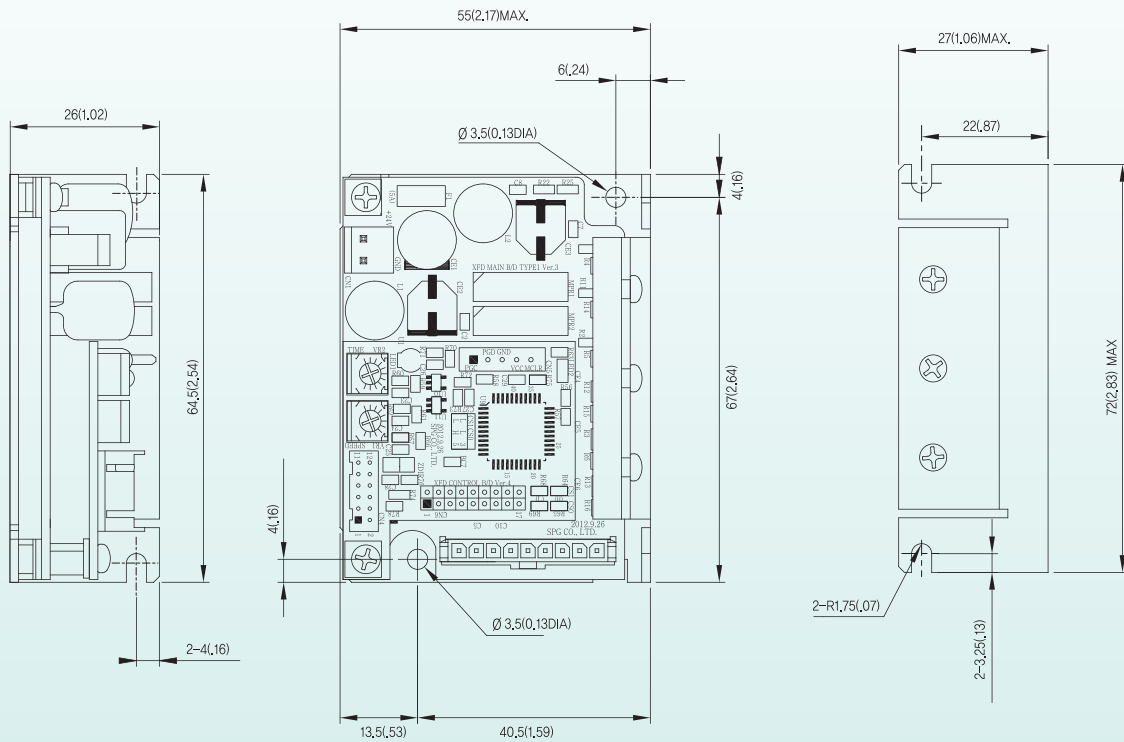
※ Table 2-Weight

Part		Weight(kg)(lbs)
Motor		1.34(2.95)
Gear Head	XTG95K~XTG920K	0.85(1.87)
	XTG930K~ XTG9100K	1.15(2.54)
	XTG9200K	1.30(2.87)

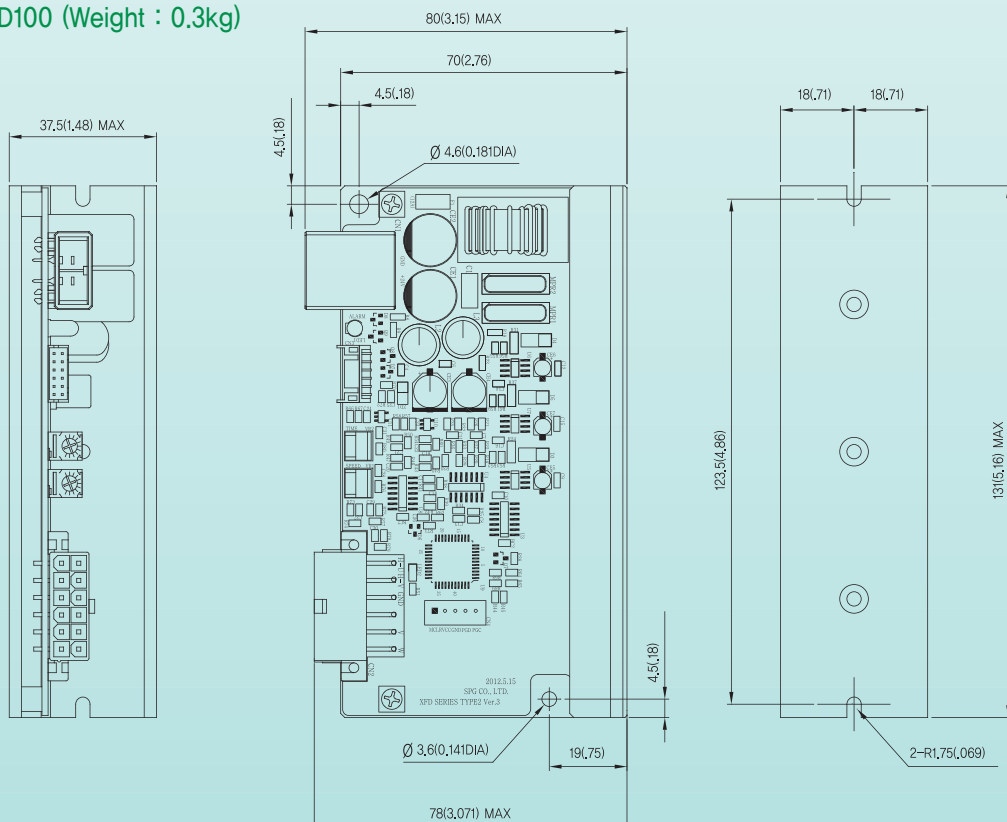
DRIVER

■ Model : XFD30, XFD50 (Weight : 0.1kg)

[Unit : mm(inch)]

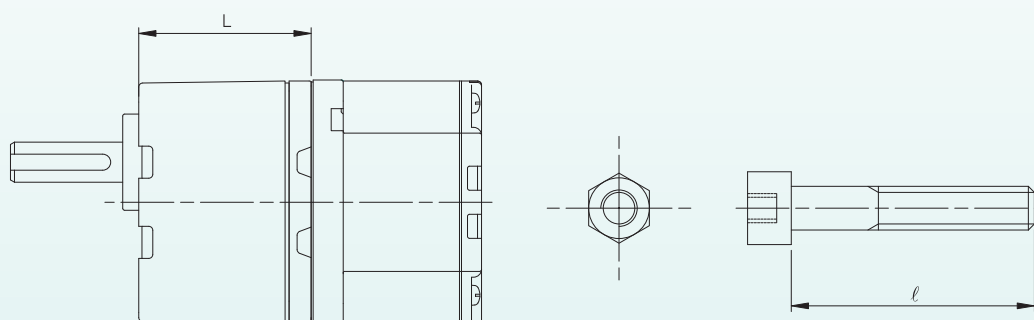


■ Model : XFD100 (Weight : 0.3kg)



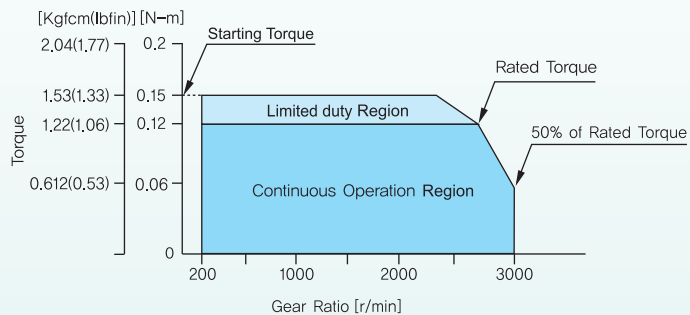
## CONTROL UNIT

- Assembled bolt is attached to gear head or geared motor.



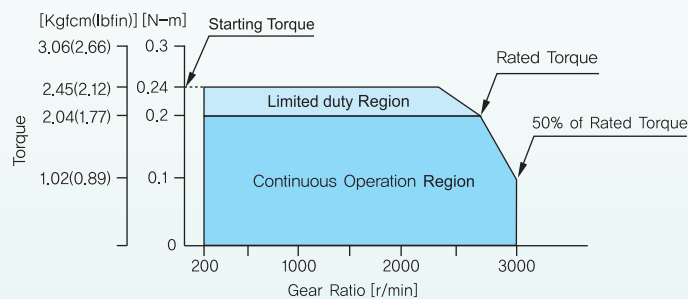
Model	Accessory Bolts (Flat W/S, Spring W/S, hexagonal nut×4)		
	L(mm)(in)	ℓ (mm)(in)	Bolt Names
Gear Head			
XTG65K~XTG620K	34(1.34)	50(1.97)	M4 P0.7
XTG630K~ XTG6100K	38(1.50)	55(2.17)	
XTG6200K	43(1.69)	60(2.36)	
XTG85K~XTG820K	41(1.61)	65(2.56)	M6 P1.0
XTG830K~XTG8100K	46(1.81)	70(2.76)	
XTG8200K	51(2.01)	75(2.95)	
XTG95K~XTG920K	45(1.77)	75(2.95)	M8 P1.25
XTG930K~XTG9100K	58(2.29)	90(3.54)	
XTG9200K	64(2.52)	95(3.74)	

XFU630G/XFU630D



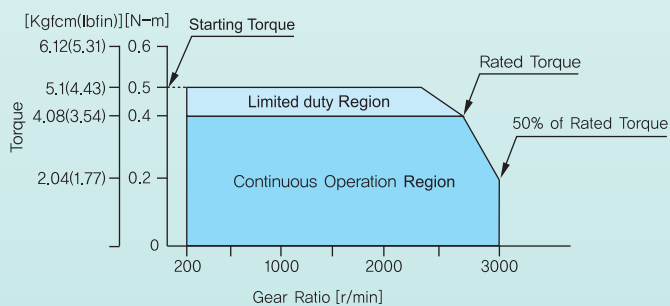
※ This is the case that the cable is not extended at DC24V.

XFU850G/XFU850D



※ This is the case that the cable is not extended at DC24V.

XFU9100G/XFU9100D



※ This is the case that the cable is not extended at DC24V.

## NAME AND FUNCTION OF EACH PART

## ■ DRIVER NAME : XFD30, XFD50

Acceleration  
Deceleration time controller

The acceleration time after start of the motor and the deceleration for stop of the motor can be set. At shipment, such time is set as the shortest time.

## Power connector (CN1)

Power cable is connected.

## Internal speed controller

The operation speed of the motor can be set. At shipment, it is set as 0 r/min.

## Radiation plate

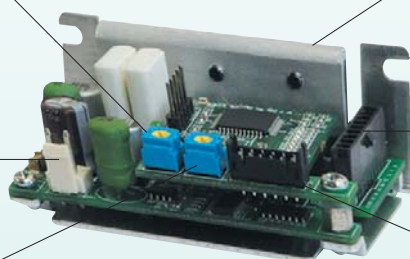
## Grooves for installation (two)

## Motor connector (CN2)

Motor cable is connected.

## In/Out signal connector (CN4)

In/Out cables are connected with external controllers such as programmable controller.



## ■ DRIVER NAME : XFD100

## Power connector (CN1)

Power cable is connected.

## In/Out signal connector (CN3)

In/Out cables are connected with external controllers such as programmable controller.

Acceleration  
Deceleration time controller

The acceleration time after start of the motor and the deceleration for stop of the motor can be set. At shipment, such time is set as the shortest time.

## Radiation plate

## Grooves for installation (two)

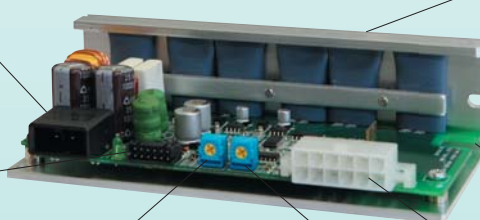
## Grooves for installation (two)

## Motor connector (CN2)

Motor cable is connected.

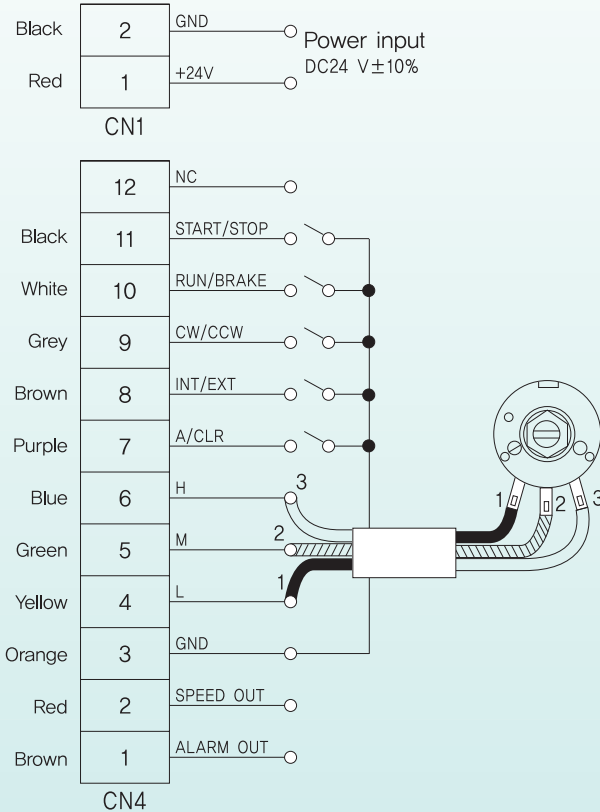
## Internal speed controller

The operation speed of the motor can be set. At shipment, it is set as 0 r/min.



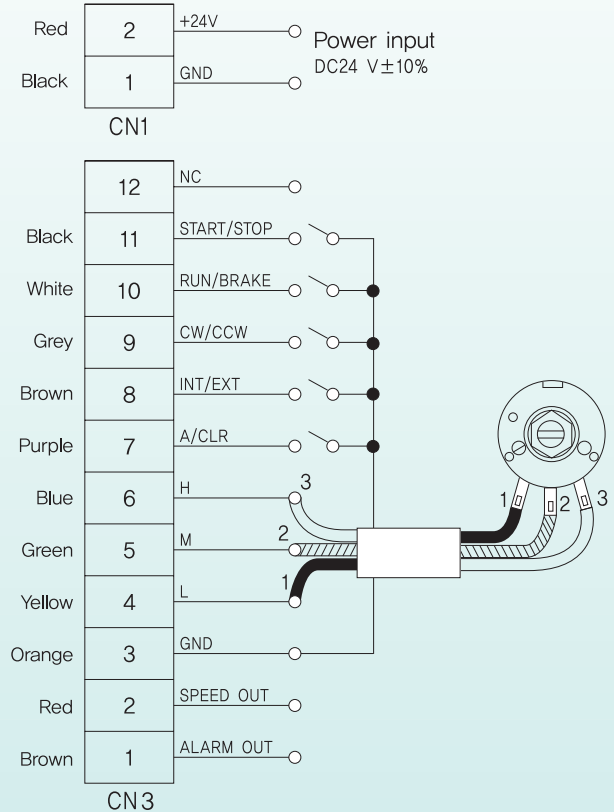
## INTERFACE DIAGRAM

## ■ DRIVER NAME : XFD30, XFD50



\* For setting the speed at the outside, a speed controller (optional) or DC power should be connected.

## ■ DRIVER NAME : XFD100

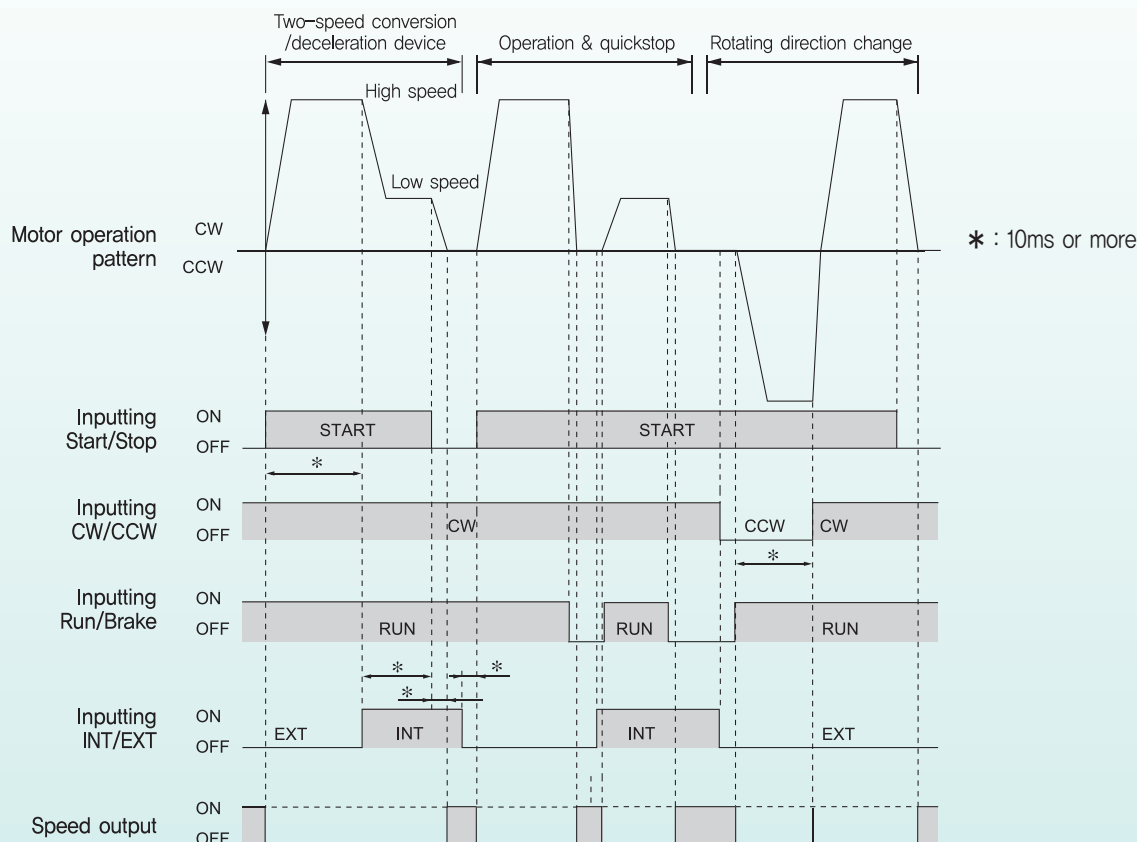


\* For setting the speed at the outside, a speed controller (optional) or DC power should be connected.

## Note

- Input/Output signal cables should be extended within 2m and should be done as short as possible in order to suppress the influence of noise.
- Input/Output signal cables shall be arranged apart from induction load such as electronic relay by 200mm at least and power cable and motor cable should be arranged cross rather than parallel.
- The connectors of input/output signal cables and the cables which are at the opposite side and are not used should be insulated, should be connected with external controllers to meet the purpose of signals, or should be connected with signal GND.

## OPERATION



### Inputting Start/Stop

At On position (L Level), Start is selected and the motor is operated.

At Off position (H Level), Stop is selected and the motor stops (Quickstop function is not available).

### Inputting Run/Brake

At On position (L Level), Run is selected and the motor is operated.

At Off position (H Level), Brake is selected and the motor is quickly stopped.

### Setting Acceleration/Deceleration time

Acceleration time and deceleration time is set as the same. The controller should be adjusted using an insulated driver. Clockwise rotation increases the time. The time may be set within 0.5–10sec of range. At shipment, the time is set as the shortest time.

Acceleration time means the time to be taken by the motor to reach rated rotation speed from stopped state.

Deceleration time means the time to be taken by the motor to stop from rated rotation speed.

Actual acceleration/deceleration time is influenced by the customer's condition of use, inertia of load, and torque of load, etc.

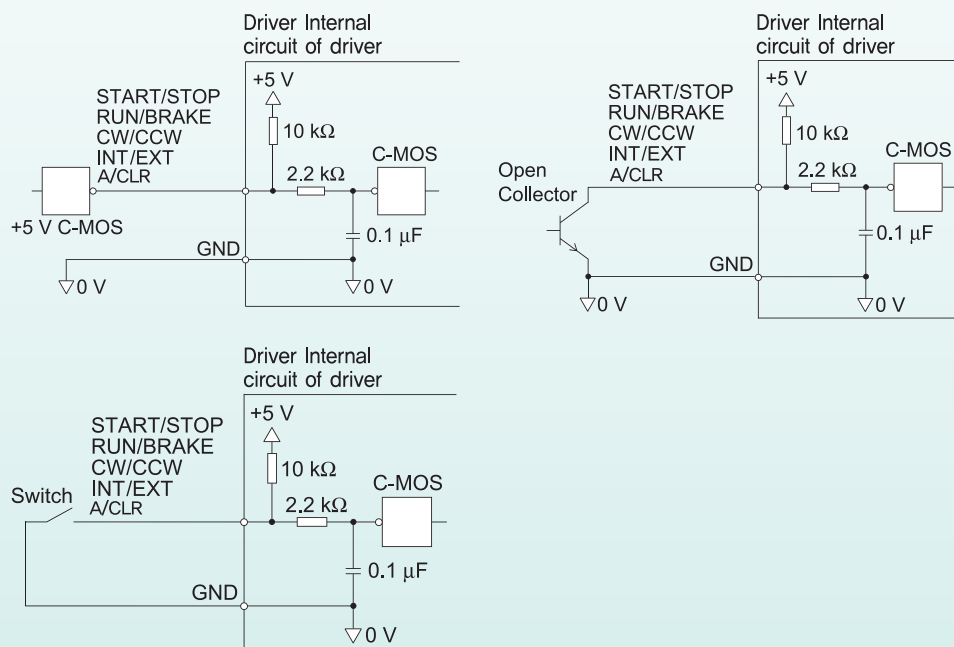
### Note

- If both Start/Stop and Run/Brake are at Off positions (H Level), Brake has precedence.
- Do not input (i.e. On/Off change) Start/Stop, Run/Brake, and CW/CCW or INT/EXT at the same time. Each input operation requires at least 10msec of interval.
- Operation is done at the acceleration/deceleration time which is set using a controller.

## SIGNAL INPUT CIRCUIT

- The signals of the driver is inputted as C-MOS input. The status of the signals is [ON : 0~0.5 V(L Level)] or [OFF : 4~5 V(H Level)].

### (1) Input circuit



### Inputting Start/Stop & Inputting Run/Brake

For operation and quickstop (or stop) of the motor, these two kinds of signals are used.

	Inputting signals		
Inputting Start/Stop	ON(L Level)	ON(L Level)	OFF(H Level)
Inputting Run/Brake	ON(L Level)	OFF(H Level)	ON(L Level)
Status of motor	Operation*1	Quickstop	Stop*2

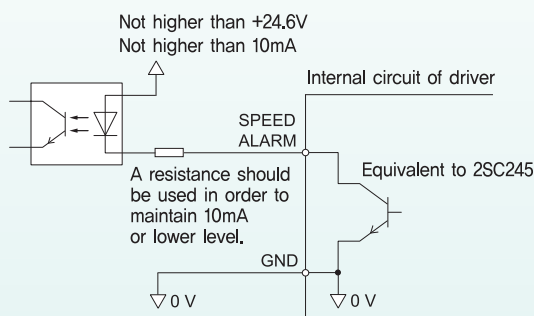
\*1 The motor is rotated at the speed which is set by selecting internal speed controller, external speed controller, or external DC power.

The motor is accelerated at the time which is set using Slow Run/Slow Stop time controller.

\*2 The motor is decelerated at the time which is set using Slow Run/Slow Stop time controller.

## SIGNAL GENERATION CIRCUIT

- The signals of the driver are the signals of Transistor Open Collector. The state of the signal is [On: current on] or [Off: current off] of the internal transistor rather than the voltage level of the signal.



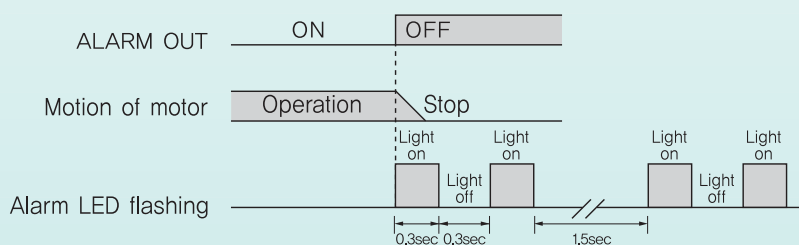
### ■ ALARM OUT

In the case shown below, driver protection function is actuated, Alarm Out is turned off (H Level), and the motor stops. In this case, LED flashes or lights; check the content of protection function.

※ LED is momentarily lighted when power is applied; this is not abnormal phenomenon.

- The number of LED flashing indicates the content of actuated protection function.

※ Case that protection function against overload is actuated.



Protection function	ALARM LED flashing number	Cause
Protection against overload	Two times	The load exceeding the rating load of the motor is applied for 5sec or longer.
Protection against open phase	Three times	Abnormal motor feedback signal is generated due to disconnection of motor cable or poor contact of connector.
Protection against over-voltage	Four times	The voltage applied to the driver is higher than DC24V by 15% or more
Protection against low-voltage	Five times	The voltage applied to the driver is lower than DC24V by 25% or more
Protection against over-speed	Six times	The motor speed exceeded 3,500r/min.

Alarm Out is at On position (L Level) if the driver is normal and is at Off position (H Level) in case of Alarm. When Alarm Out is at Off position (H Level) and when the motor stops, remove the cause of actuation of the protection function referring to the flashing cycle of LED. When safety is secured by removing the cause, reset the Alarm.

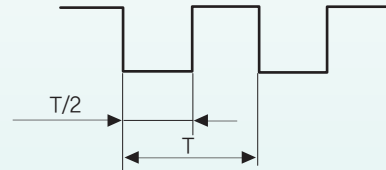
### Note

- If Alarm Out is at Off position (H Level), put Start/Stop and Run/Brake at Off positions (H Level).

### ■ SPEED OUT

12/15 pulse signal is generated per revolution of motor shaft synchronized with motor operation.  
The rotating speed of the motor may be calculated by measuring output frequency of Speed Out.

$$\text{Output frequency of Speed Out [Hz]} = \frac{1}{T}$$



### ■ If 30W,

$$\text{Motor rotating speed [r/min]} = \frac{\text{Output frequency of Speed Out [Hz]}}{12} \times 60$$

### ■ If 50W/100W,

$$\text{Motor rotating speed [r/min]} = \frac{\text{Output frequency of Speed Out [Hz]}}{15} \times 60$$

For displaying the rotating speed of motor shaft or decelerator shaft  
Use a digital speed indicator [SID250] (after purchasing).

### Note

- The input/output signal cables should be extended within 2m.
- The input/output signal cables should be arranged with separation from power cable and motor cable.

## HOW TO SET THE SPEED

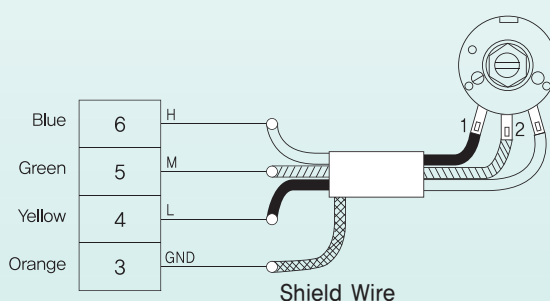
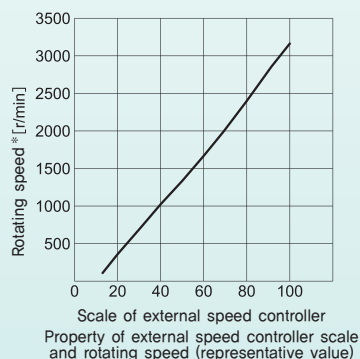
The rotating speed of the motor may be set using the attached external speed controller or external DC power as well as internal speed controller. The speed setting range is 200–3000 r/min. The rotating speed may be set in two kinds by combining internal speed controller with external speed controller or by combining internal speed controller with external DC power. (Where, rated rotation speed is 2,500r/min.)

### ■ When using the internal speed controller

Adjust the speed using a minute driver. Clockwise rotation elevates the speed.  
(At shipment, it is set as 0 r/min.)

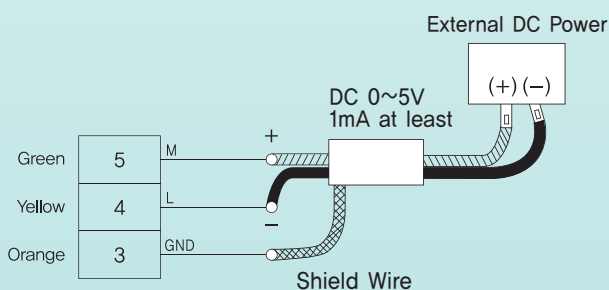
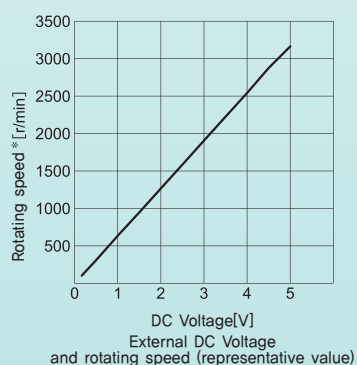
### ■ When using an external speed controller

By connecting an external speed controller with the driver terminal rack, the speed may be changed within the range of 200–3000r/min. Anticlockwise rotation of speed controller stops it.



### ■ When using external DC power

The motor speed may be changed in the range of 200–3,000r/min using 0–5V of external DC power.  
At 0V of DC power, the motor stops (Prepare the power having at least 1mA of current capacity).



### Note

- 5V or lower external DC power should be used. If not, the driver may be damaged.
- External DC power should be connected in consideration of the polarities. If not, the driver may be damaged.
- If external DC power is connected using shield cables, connect it near the connector of input/output cables and connect the shield cable using Pin No.3 GND.

## PARALLEL OPERATION

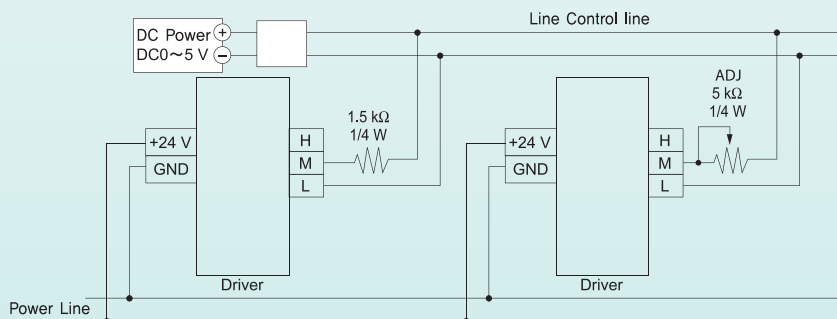
When two or more motors are operated at the same speed, external DC power or external speed controller may be used.

### ■ When using an external speed controller

- 1) Parallel operation means that a plurality of motors are operated at the same rotation speed using an external speed controller. As shown in the figure below, the speed is set at VRx using common power line and speed control line.
- 2) The resistance of the external speed controller may be obtained as follows.

When N sets of drivers are used, resistance VRx  $VRx=20/N$  [K $\Omega$ ], N/4 [W]  
 Ex) If two sets of drivers are used, 10K $\Omega$ , 1/2W.

- 3) For other input/output signals, connection should be done for each driver.
- 4) The difference in the speeds of the motors may be adjusted by connecting the Terminal M of Driver #1 with 1.5K $\Omega$  and 1/4W of resistance and by connecting the terminals of M's of other drivers with 5K $\Omega$  and 1/4W of variable register (ADJ).
- 5) Parallel operation using an external speed controller should be limited within 5 sets.

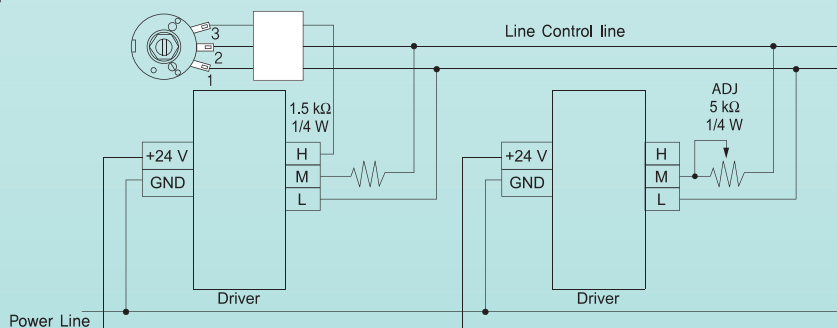


### ■ When using external DC power

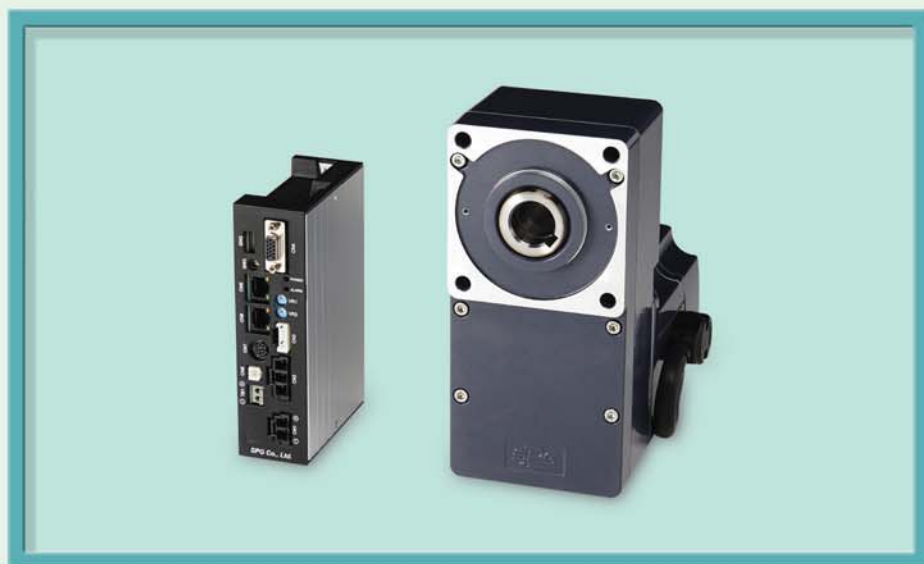
- 1) DC power should have the DC capacity shown below, at least.

When N sets of drivers are used, DC capacity  $I=1 \times N$  [mA]  
 Ex) If two sets of drivers are used, 2mA, at least.

- 2) For other input/output signals, connection should be done for each driver.
- 3) The difference in the speeds of the motors may be adjusted by connecting the Terminal M of Driver #1 with 1.5K $\Omega$  and 1/4W of resistance and by connecting the terminals of M's of other drivers with 5K $\Omega$  and 1/4W of variable register (ADJ).



# MEMO



XWA series

5

XBA series

25

XQA series

49

XFA series

81

## XVA series

81

OPTION

99

## OVERVIEW

Line up high output 200W/400W to Brushless Motor of DC power input.

Exclusive Gearhead is a simple installation Combination Type that has already combined with Motor.



## FEATURE

### ■ DC power input HIGH POWER

Various composition with DC24V 200W, DC48V 400W Line up. It can be used for equipment applying Battery effectively.

### ■ EXCELLENT STABILITY FOR SPEED

Implement excellent speed stability with less speed fluctuation. Speed change due to change of the load is very small.

### ■ WIDE SPEED CONTROL RANGE, CONSTANT TORQUE

Speed can be widely controlled from 200r/min to 3000r/min.

### ■ VARIABLE CONTROL FUNCTION

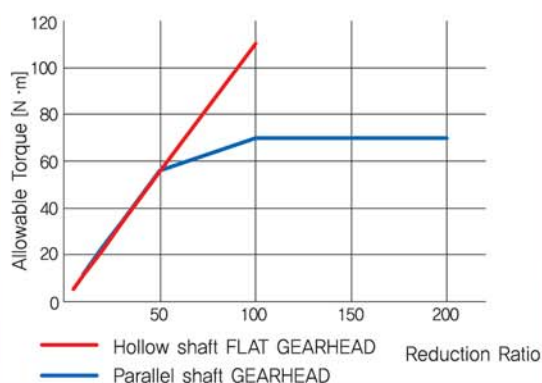
Speed setting of multistep, instantaneous stop as well as slow start, slow down function that shows great power in a sensitive transportation can be performed and respond to variable usage methods.

Other features are as follows.

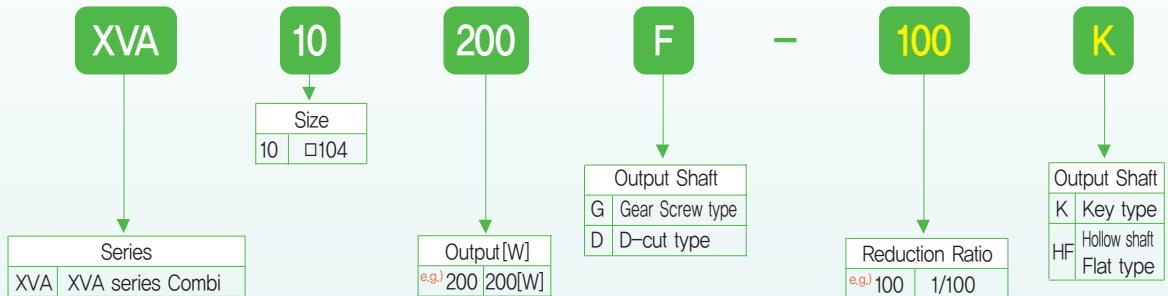
- Warning output function for the case of lower input voltage like Battery
- Electron Brake control function based on Driver
- Control function through Communication (RS-485 Modbus)
- Segmentalized protection function for maintenance efficiency

### ■ Hollow shaft FLAT GEARHEAD TYPE

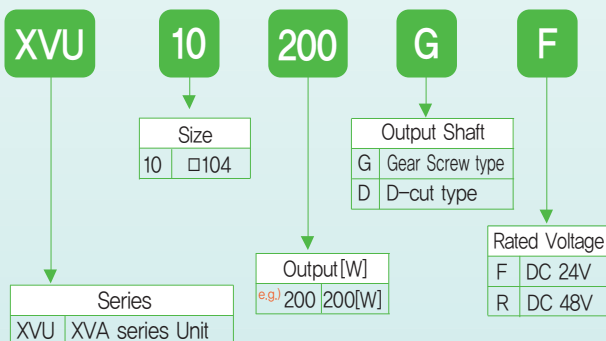
Installation size □104 mm Flat Type that can use space of equipment more effectively and on hollow shaft Flat Gearhead, as allowable Torque is not saturated that Torque of the Motor can be utilized maximally.



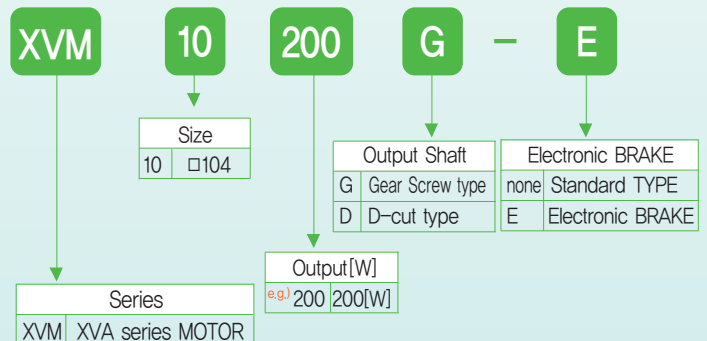
## CONTROL UNIT+MOTOR+GEAR HEAD



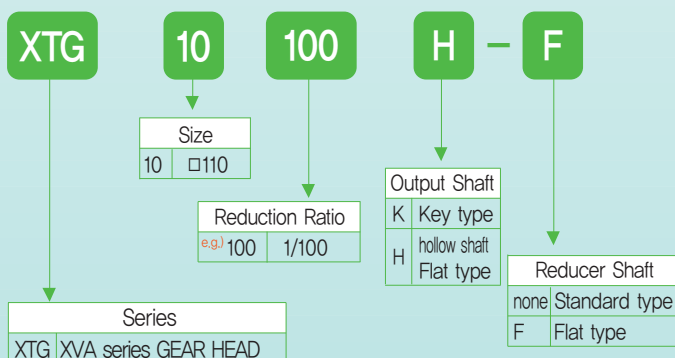
## MOTOR+CONTROL UNIT



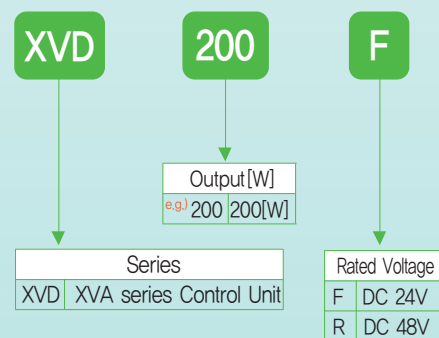
## MOTOR



## GEAR HEAD



## CONTROL UNIT



## SPECIFICATION

## ■ Parallel shaft TYPE

Title	Combi type	XVA10200F – □K	XVA10400R – □K
	Gear type	XVM10200G	XVM10400G
	D-Cut type	XVM10200D	XVM10400D
Rated Output (continuous) W		200	400
Power Input	Voltage V	DC24	DC48
	Rated Input Current A	13	11
	Maximum Input Current A	25	18
Rated Torque	N·m(kgf·cm) (lb·in)	0.65(6.5) (5.64)	1.3(13) (11.28)
Starting Torque	N·m(kgf·cm) (lb·in)	1.15(11.5) (9.98)	1.8(18) (15.62)
Motor Permissible Load Inertia	J kg·m <sup>2</sup> (oz·in <sup>2</sup> )	8.75×10 <sup>-4</sup> (47.8)	15×10 <sup>-4</sup> (82.0)
Rated Speed r/min		3,000	
Speed Control Range r/min		100~4,000	
Speed Regulation	Load	Less than ±0.5% (0 ~ rated torque, at rated speed)	
	Voltage	Less than ±0.5% (supply voltage ±10%, at rated speed with no load)	
	Temperature	Less than ±0.5% (0 to +40°C (+32 to +104°F), at rated speed with no load)	

※ For permissible load inertia in the geared motor, refer to 87 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## SPECIFICATION

## ■ Electronic Brake TYPE

Title	Combi type	XVA10200FE - □K	XVA10400RE - □K
	Gear type	XVM10200G-E	XVM10400G-E
	D-Cut type	XVM10200D-E	XVM10400D-E
Rated Output (continuous) W		200	400
Power Input	Voltage V	DC24	DC48
	Rated Input Current A	13	11
	Maximum Input Current A	25	18
Rated Torque	N·m(kgf·cm) (lb·in)	0.65(6.5) (5.64)	1.3(13) (11.28)
Starting Torque	N·m(kgf·cm) (lb·in)	1.15(11.5) (9.98)	1.8(18) (15.62)
Motor Permissible Load Inertia	J kg·m <sup>2</sup> (oz·in <sup>2</sup> )	8.75×10 <sup>-4</sup> (47.8)	15×10 <sup>-4</sup> (82.0)
Rated Speed	r/min	3,000	
Speed Control Range	r/min	100~4,000	
Speed Regulation	Load	Less than ±0.5% (0 ~ rated torque, at rated speed)	
	Voltage	Less than ±0.5% (supply voltage ±10%, at rated speed with no load)	
	Temperature	Less than ±0.5% (0 to +40°C (+32 to +104°F), at rated speed with no load)	
Electronic Brake		Demagnetized operation type, automatic control using Driver	

※ For permissible load inertia in the geared motor, refer to 87 page.

※ Enter the ratio in the box(□) model number.

※ The values for each item is for the motor only.

## COMMONALITIES

Category	Specifications
Slow Run / Slow Stop	0.2 to 15 seconds (Applicable for both Slow Run and Slow Stop)
Speed Control Method	1. Built-in Potentiometer 2. External Potentiometer (20K $\Omega$ 1/4W) 3. External DC Voltage(0~5 Volt / 0~10 Volt)
Input Signal	Photocoupler input method, input resistance: 3.2K $\Omega$ , operates at DC 15V $\pm$ 10% External conditions of use : DC24V 15% over electric current 100mA
Output Signal	Opencollector output, Working conditions outside : DC30V below(200W)), DC53V below (400W)
Protection Functions	overload, Sensor fault, early on Sensor fault, Overvoltage, Undervoltage, Overspeed, Overcurrent, EEPROM fault, Overheating of the main circuit, External stop, early on driving ban, Communication Switch setting fault, main circuit output fault
Motor Insulation Class	Class B (130 $^{\circ}$ C)
Rating	Continuous

## GENERAL SPECIFICATIONS

Item	Motor	Control Unit
Dielectric Strength	If applying 60Hz 1,500V between the coil and the case for 1 minute after continuous operating under normal temperature and humidity conditions, any fault is not occurred.	Sufficient to withstand 3.0kV at 50Hz applied between power supply terminal (I/O terminal) and I/O terminals for 1 minute, and 1.5kV at 50Hz applied between protective earth terminal and power supply terminals.
Insulation Resistance	After continuous operating under normal temperature and humidity conditions, if measured the resistance value between the coil and the case using DC500V Mega Tester, should be over 100M $\Omega$ .	If the resistance value between protection ground terminal and power input is measured using DC500V Mega Tester, should be over 100M $\Omega$ .
Ambient Temperature	0 $^{\circ}$ C to +40 $^{\circ}$ C(+32 $^{\circ}$ F to +104 $^{\circ}$ F) (nonfreezing)	0 $^{\circ}$ C to +50 $^{\circ}$ C(+32 $^{\circ}$ F to +122 $^{\circ}$ F) (nonfreezing)
Ambient Humidity	Less than 85% (non condensing)	
Atmosphere	No corrosive gas or dust.	
Degree of Protection	IP40	IP20

Caution) Use it, ensuring that surface temperature of motor does not exceed over 90 $^{\circ}$ C.

## PERMISSIBLE TORQUE – GEARED MOTOR

## ■ Parallel shaft TYPE

N · m / [kgf·cm](lb · in)

Item	Speed Control Range [r/min]	20~800	10~400	6.7~267	5~200	3.3~1.33	2~80	1~40	0.5~20
	Gear Ratio	5	10	15	20	30	50	100	200
XVA10200F( )-□K	In the case of 100~3000r/min	2.9 29(25.67)	5.9 59(52.22)	8.8 88(77.89)	11.7 117(103.55)	16.8 168(148.69)	38.0 280(247.82)	52.7 527(466.43)	70 700(619.55)
	In the case of 4000r/min	2.0 20(17.36)	4.1 41(35.59)	6.1 61(52.95)	8.1 81(70.31)	11.6 116(100.69)	19.4 194(168.39)	36.5 365(316.82)	63 630(546.84)
	In the case of 100~3000r/min	5.9 59(52.22)	11.7 117(103.55)	17.6 176(155.77)	23.4 237(207.11)	33.5 335(296.50)	55.9 559(494.76)	70 700(619.55)	70 700(619.55)
XVA10400R( )-□K	In the case of 4000r/min	4.3 43(37.32)	8.6 86(74.65)	12.8 128(111.10)	17.1 171(148.43)	24.5 245(212.66)	40.9 409(355.01)	63 630(546.84)	63 630(546.84)

※ The "( ) "among model name means electromagnetic BRAKE.

※ □ of item name represents the reduction ratio.

※ Rotation direction is the same direction of additional motor marked in the □, others is reverse direction.

## ■ Hollow shaft FLAT TYPE

N · m / [kgf·cm](lb · in)

Item	Speed Control Range [r/min]	20~800	10~400	6.7~267	5~200	3.3~1.33	2~80	1~40
	Gear Ratio	5	10	15	20	30	50	100
XVA10200F( )-□HF	In the case of 100~3000r/min	—	5.5 55(47.74)	8.3 83(72.04)	11.1 111(96.35)	16.6 166(144.09)	27.6 276(239.57)	55.3 553(480.00)
	In the case of 4000r/min	—	3.8 38(32.98)	5.7 57(49.48)	7.7 77(66.84)	11.5 115(99.82)	19.1 191(165.79)	38.3 383(332.44)
	In the case of 100~3000r/min	5.5 55(47.74)	11.1 111(96.35)	16.6 166(144.09)	22.1 221(191.83)	33.2 332(288.18)	55.3 553(480.00)	110 1100(954.8)
XVA10400R( )-□HF	In the case of 4000r/min	4.0 40(34.72)	8.1 81(70.31)	12.1 121(105.03)	16.2 162(140.62)	24.2 242(210.06)	40.4 404(350.67)	80.8 808(701.34)

※ The "( )" among model name means electromagnetic BRAKE.

※ □ of item name represents the reduction ratio.

※ The colored parts are the right rotation direction of motor, and others are reverse rotation direction.

### PERMISSIBLE LOAD INERTIA ( J )-GEARED MOTOR

#### Parallel shaft TYPE

$J \times 10^{-4} (\text{oz} \cdot \text{in}^2)$   
 $J \times 10^{-4} \text{ kgf} \cdot \text{m}^2 (\text{GD}^2 \text{ kgf} \cdot \text{cm}^2)$

Model	Gear Ratio	5	10	15	20	30	50	100	200
XVA10200F( )-□K		(205) 37.5	(820.1) 150	(1848) 338	(3280) 600	(7381) 1350	(20503) 3750	(20503) 3750	(20503) 3750
XVA10400R( )-□K		(150)	(600)	(1352)	(2400)	(5400)	(15000)	(15000)	(15000)

※ ( ) indicates voltage specification.

※ □ indicates deceleration ratio.

※ figure in the ( ) is allowable inertia Moment for the case of Quick stop or Quick start.

#### Hollow shaft FLAT TYPE

$J \times 10^{-4} (\text{oz} \cdot \text{in}^2)$   
 $J \times 10^{-4} \text{ kgf} \cdot \text{m}^2 (\text{GD}^2 \text{ kgf} \cdot \text{cm}^2)$

Model	Gear Ratio	5	10	15	20	30	50	100
XVA10200F( )-□K		(205) 37.5	(820.1) 150	(1848) 338	(3280) 600	(7381) 1350	(20503) 3750	(20503) 3750
XVA10400R( )-□K		(150)	(600)	(1352)	(2400)	(5400)	(15000)	(15000)

※ ( ) indicates voltage specification.

※ □ indicates deceleration ratio.

※ figure in the ( ) is allowable inertia Moment for the case of Quick stop or Quick start.

### PERMISSIBLE OVERHANG LOAD AND PERMISSIBLE THRUST LOAD

#### Parallel shaft TYPE

Model	Deceleration Ratio		Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
XVA10200F( )-□K XVA10400R( )-□K	5~20	In the case of 100~3000r/min	550	55(121.25)	800	80(176.37)	200	20(44.09)
		In the case of 4000r/min	500	50(110.23)	700	70(154.32)		
	30~50	In the case of 100~3000r/min	1000	100(220.46)	1250	125(275.58)	300	30(66.14)
		In the case of 4000r/min	900	90(198.42)	1100	110(242.51)		
	100~200	In the case of 100~3000r/min	1400	140(308.65)	1700	170(374.79)	400	40(88.18)
		In the case of 4000r/min	1200	120(264.55)	1400	140(308.65)		

#### Hollow shaft FLAT TYPE

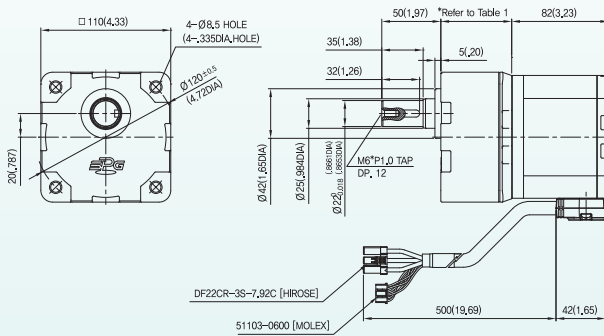
Model	Deceleration Ratio		Permissible Overhang Load				Permissible Thrust Load	
			10mm(0.3937in) from end of the output shaft.		20mm(0.7874in) from end of the output shaft.			
			N	kgf(lbs)	N	kgf(lbs)	N	kgf(lbs)
XVA10200F( )-□HF XVA10400R( )-□HF	5~10	In the case of 100~3000r/min	1230	123(271.17)	1070	107(235.89)	800	80(176.37)
		In the case of 4000r/min	1130	113(249.12)	990	99(218.26)		
	15~20	In the case of 100~3000r/min	1680	168(370.38)	1470	147(324.08)		
		In the case of 4000r/min	1550	155(341.72)	1360	136(299.83)		
	30~100	In the case of 100~3000r/min	2040	204(449.74)	1780	178(392.42)		
		In the case of 4000r/min	1900	190(418.88)	1660	166(365.97)		

## ► Standard TYPE

## GEARED MOTOR (Parallel shaft)

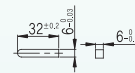
■ Model : XVA10200-□K / XVA10400-□K

- Motor : XVM10200G / XVM10400G
- Gear Head : XTG105K~XTG10200K

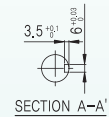


※ □ indicates deceleration ratio.

- Key(accessories)



- Key Groove



✖ Table 1

Gear Ratio	Size:mm(inch)
XTG105K~XTG1020K	60(2.36)
XTG1030K~ XTG1050K	72(2.83)
XTG10100K~XTG10200K	86(3.39)

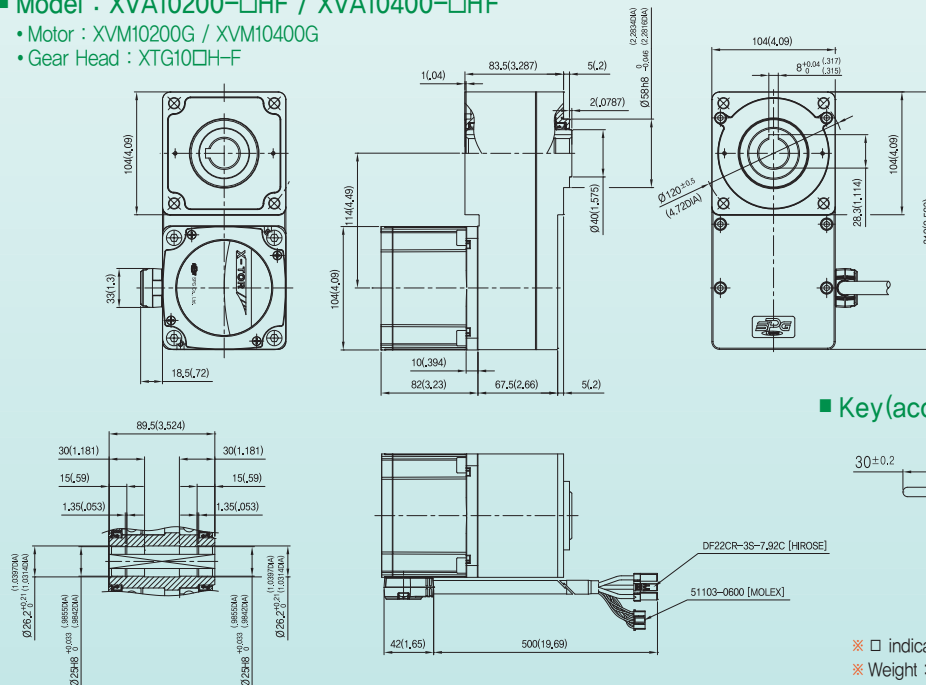
✖ Table 2-Weight

Part		Weight:kg.(lbs)
Motor		2.4(5.29)
Gear Head	XTG105K~XTG1020K	3.0(6.61)
	XTG1030K~ XTG1050K	
	XTG10100K~XTG10200K	

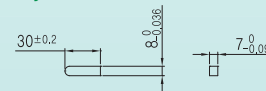
## GEARED MOTOR (Hollow shaft FLAT TYPE)

■ Model : XVA10200-□HF / XVA10400-□HF

- Motor : XVM10200G / XVM10400G
- Gear Head : XTG10□H-F



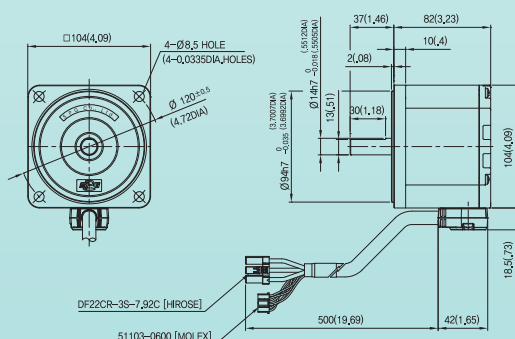
- Key(accessories)



- ※ □ indicates deceleration ratio.
- ※ Weight : 7.21kg (Gear Head is included)

**MOTOR**

■ Model : XVM10200D / XVM10400D



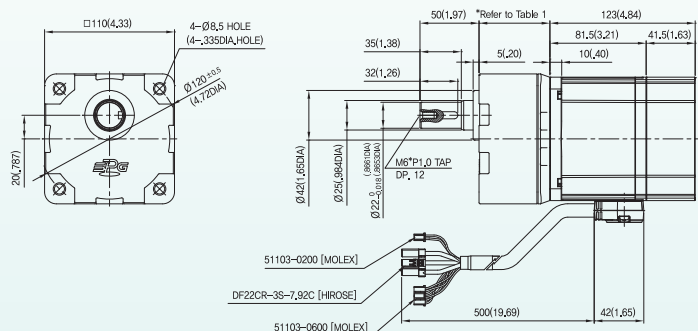
► Electronic BRAKE TYPE

## GEARED MOTOR (Parallel shaft)

- Model : XVA10200-□K / XVA10400-□K

- Motor : XVM10200G-E / XVM10400G-E
- Gear Head : XTG105K~XTG10200K

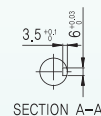
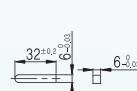
[Unit : mm(inch)]



※ □ indicates deceleration ratio.

- Key(accessories)

- Key Groove



✖ Table 1

Gear Ratio	Size:mm(inch)
XTG105K~XTG1020K	60(2.36)
XTG1030K~ XTG1050K	72(2.83)
XTG10100K~XTG10200K	86(3.39)

✖ Table 2-Weight

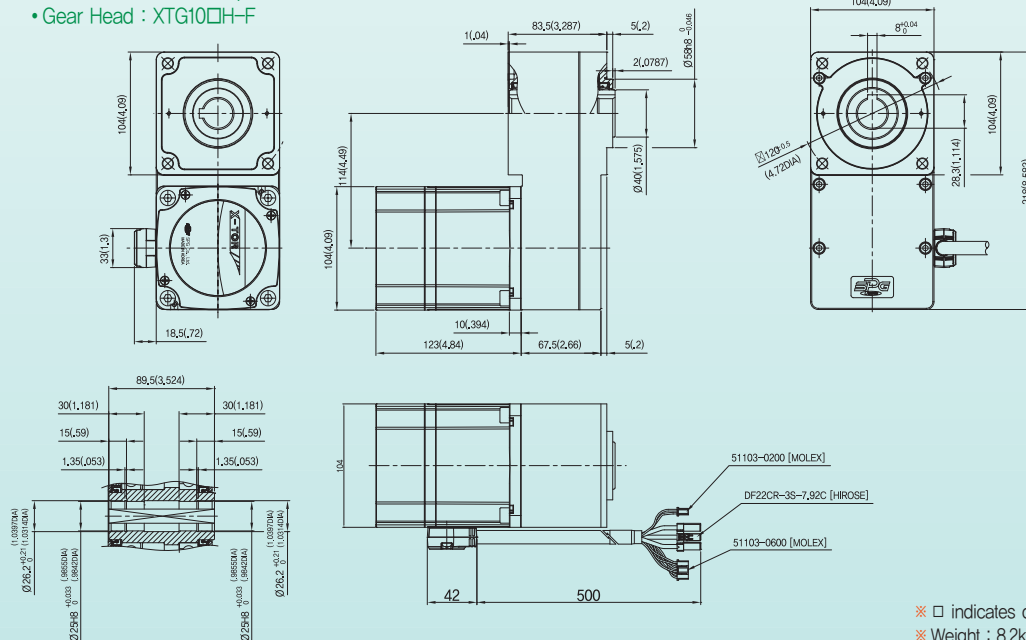
Part		Weight:kg.(lbs)
Motor		3.4(7.50)
Gear Head	XTG105K~XTG1020K	3.0(6.61)
	XTG1030K~ XTG1050K	
	XTG10100K~XTG10200K	

## GEARED MOTOR (Hollow shaft FLAT TYPE)

- Model : XVA10200E-□HF / XVA10400E-□HF

- Motor : XVM10200G-E / XVM10400G-E
- Gear Head : XTG10□H-F

[Unit : mm(inch)]



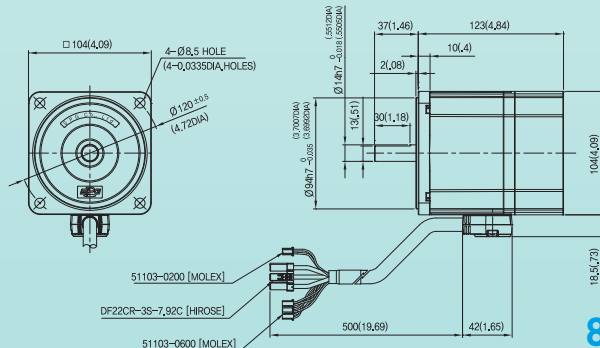
- Key(accessories)

- ※ □ indicates deceleration ratio.
- ※ Weight : 8.2kg (Gear Head is included)

## MOTOR

- Model : XVM10200D-E / XVM10400D-E

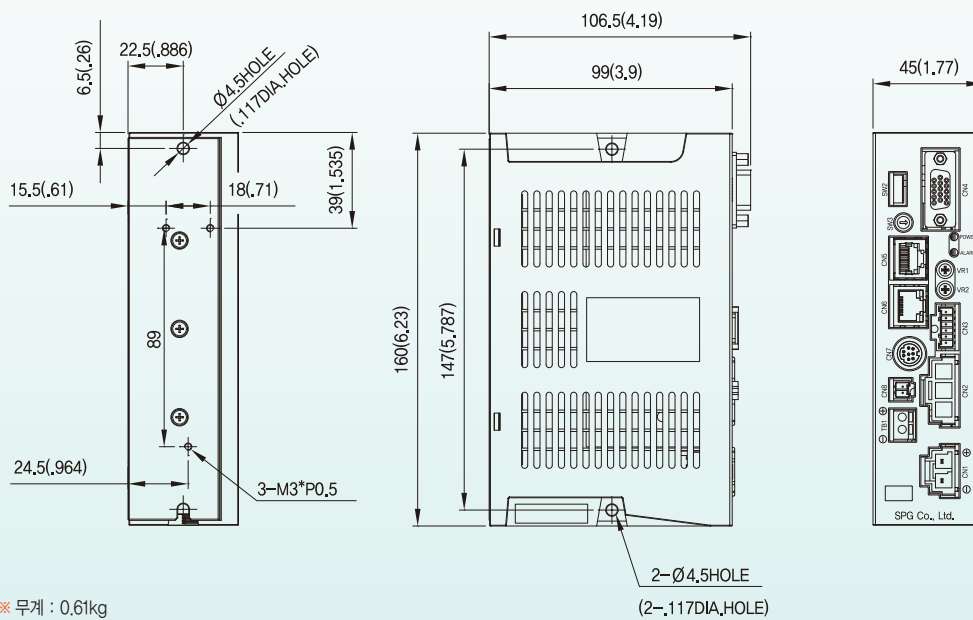
[Unit : mm(inch)]



## CONTROL UNIT

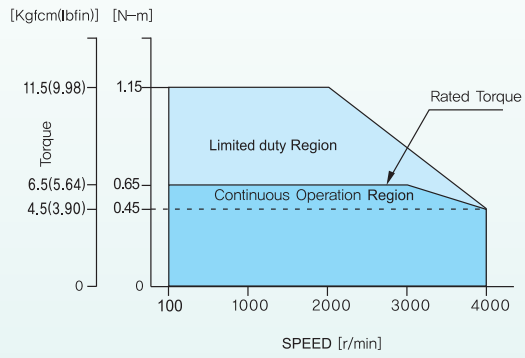
■ Model : XVD200F/XVD400R

[Unit : mm(inch)]

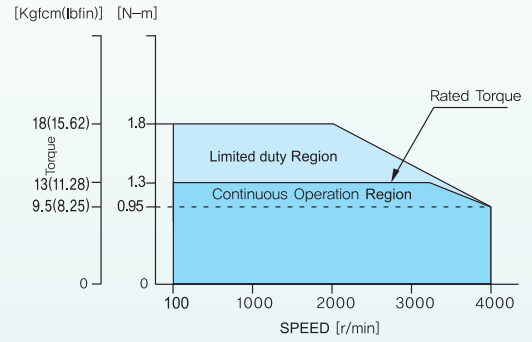


※ 무게 : 0.61kg

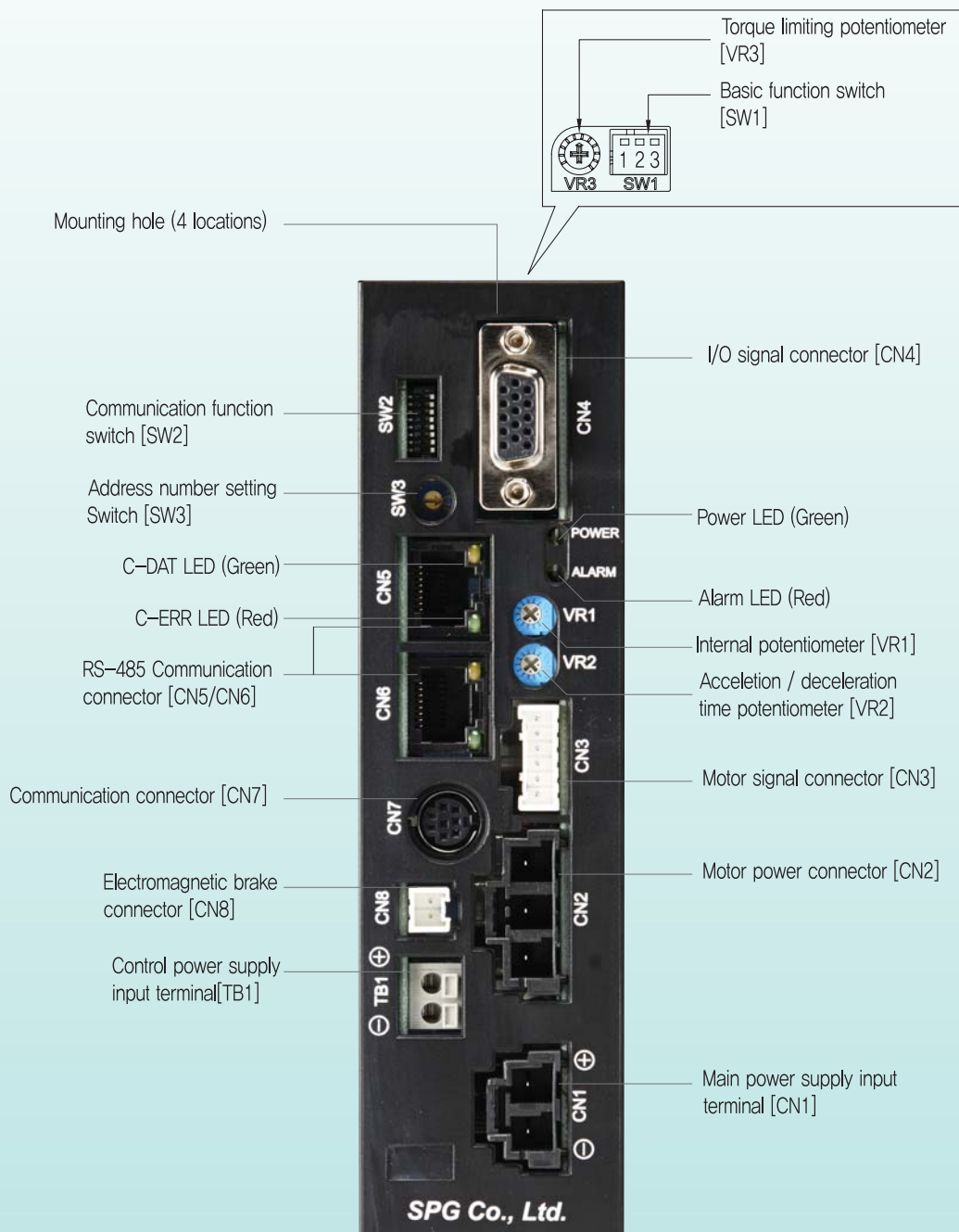
XVU10200GF/XVU10200DF



XVU10400GR/XVU10400DR



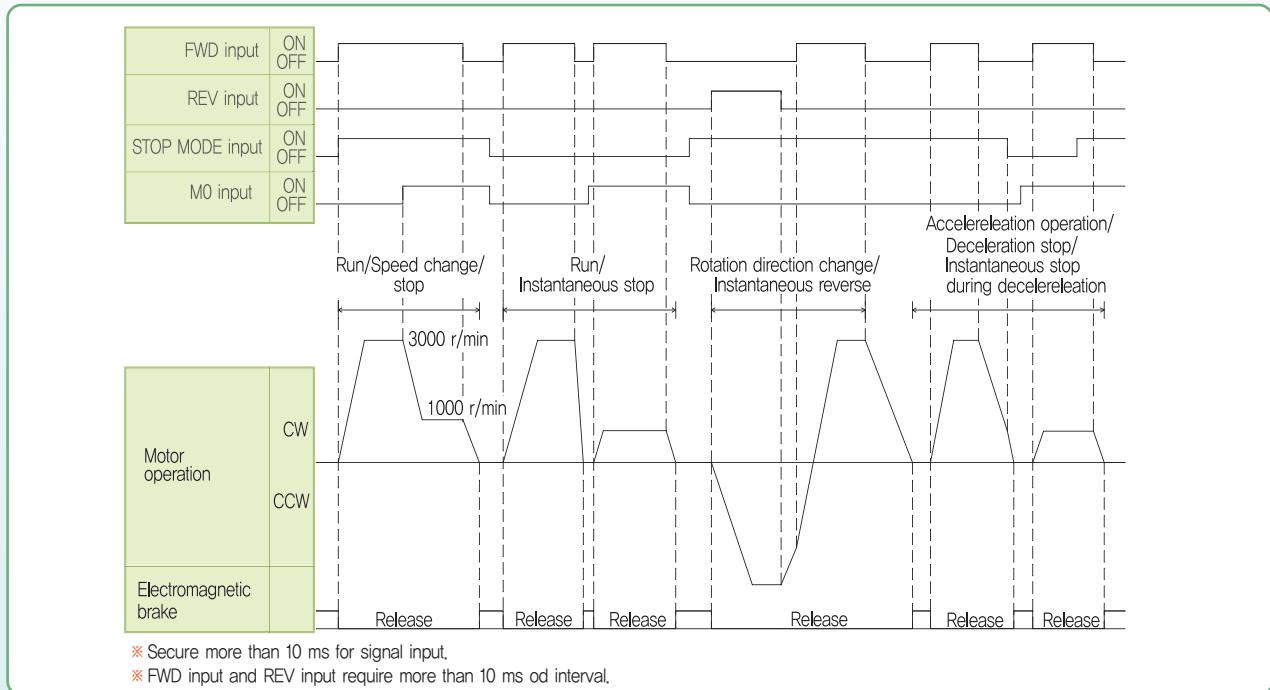
NAME AND FUNCTION FOR DRIVER'S EACH PART





## TIMING CHART

Example of the case Timing chart in operation



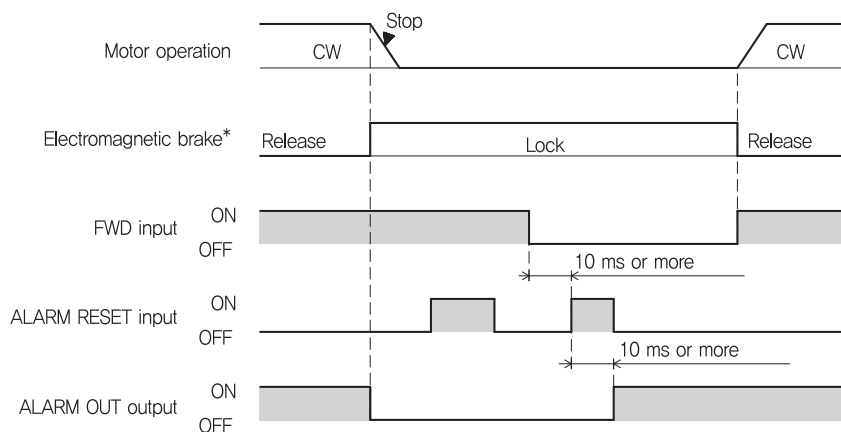
## ALARM LIST

Alarm led blink times	Alarm Type	Cause	Measure
2	Overload	<ul style="list-style-type: none"> <li>When Motor excess of the rated load is sustained for more than 5 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>Reduce the load</li> <li>Re-examine Accelerate/decelerate speed etc. operating status.</li> </ul>
3	Sensor error	<ul style="list-style-type: none"> <li>Motor cable's short cable or because of Connector's poor connection, occurred abnormality of feedback signal.</li> </ul>	<ul style="list-style-type: none"> <li>Please confirm between Motor and Driver connection status</li> </ul>
4	Overvoltage	<ul style="list-style-type: none"> <li>When exceeded Driver's rated voltage  <b>XVD200F</b> : Approximately 40VDC  <b>XVD400R</b> : Approximately 72VDC</li> <li>When rapid acceleration or rapid deceleration of a load with large inertia was operated.</li> </ul>	<ul style="list-style-type: none"> <li>Please confirm the main power supply voltage.</li> <li>When alarm occurs during normal operation, reduce the load or make the acceleration and deceleration time longer.</li> </ul>
5	Undervoltage	<ul style="list-style-type: none"> <li>If the Driver's rated voltage is deficient.  <b>XVD200F</b> : Approximately 10VDC  <b>XVD400R</b> : Approximately 20VDC</li> </ul>	<ul style="list-style-type: none"> <li>Please confirm the main power supply voltage.</li> <li>Please confirm the power supply Cable.</li> </ul>
6	Overspeed	<ul style="list-style-type: none"> <li>When Motor's speed exceeded approximately 4800r/min</li> </ul>	<ul style="list-style-type: none"> <li>Reduce a load.</li> <li>Re-examine Accelerate/decelerate speed etc. operating status.</li> </ul>
7	Overcurrent	<ul style="list-style-type: none"> <li>such as ground excessive current flows into the inner case Driver</li> </ul>	<ul style="list-style-type: none"> <li>Please confirm whether wire is damaged or not between Driver and Motor.</li> </ul>
8	EEPROM error	<ul style="list-style-type: none"> <li>When saving data is damaged.</li> <li>When not be able to find data record and call out</li> </ul>	<ul style="list-style-type: none"> <li>Please re-input power.</li> <li>Even though re-input power, but won't be able to revert, please call store or our company.</li> </ul>
9	Main circuit overheat	<ul style="list-style-type: none"> <li>Driver's internal temperature exceeded standard temperature</li> </ul>	<ul style="list-style-type: none"> <li>Please re-examine the ventilate condition inside of the device.</li> </ul>
12	Communication Switch setting error	<ul style="list-style-type: none"> <li>When SW2-No.4 is turned to [ON]</li> </ul>	<ul style="list-style-type: none"> <li>Turn SW2-No.4 to [OFF] and please re-input power.</li> </ul>
14	Main circuit output error	<ul style="list-style-type: none"> <li>When Motor power line's short cable and not connected</li> </ul>	<ul style="list-style-type: none"> <li>Please confirm Driver and Motor's status of connection</li> </ul>

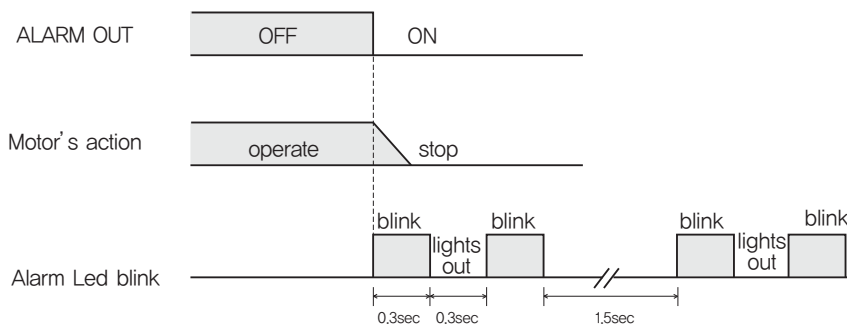
### ■ Alarm Out output

When Driver's protect function is operated, Alarm out output will be [OFF], Alarm LED will go on and off. (Normally closed)

If it is a Normal TYPE, Motor will automatically stop, if it is an electromagnetic Brake attached Motor, will instantaneously stop. (electromagnetic Brake will be put on the brake)



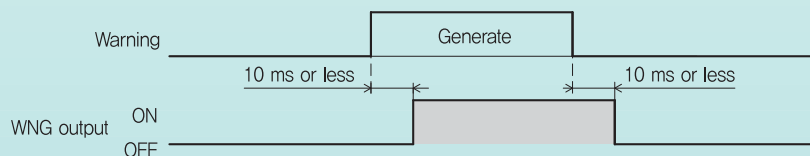
- According to number of Alarm Led's blinking times, will be able to confirm the contents of protect function.



### ■ WNG output

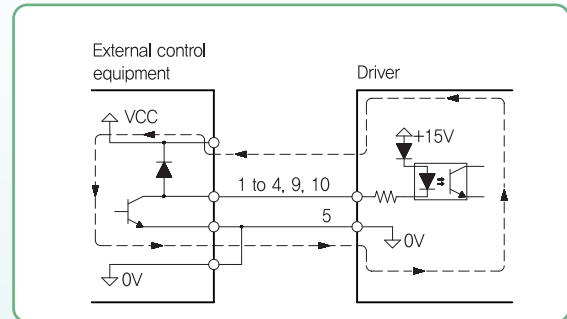
WNG output outputs when Warning is occurred. But, Motor and Driver's action will be maintained.

When Warning's cause was removed, WNG output will be [OFF] automatically.



Warning Type	Cause	Measure
Main circuit overheated Warning	• When Driver's internal temperature is exceeded overheated warning lever.	• Please re-examine the ventilate condition inside of the device.
Lack of voltage Warning	• When main input power voltage which is put into Driver, is turned down till approximately under 10% of rated voltage.	• Please confirm the main power supply voltage. • Please confirm power supply cable's status of connection
Overload Warning	• When Motor's load Torque is exceeded overload warning level.	• Please reduce a load • Please change status of action including acceleration and deceleration time.

- When using external control device which is equipped with Clamp Diode, even though external control device power is off, Driver power is on, there might be a chance electric current flows into Driver and rotates. Besides, because of different power capacity, put ON and then turn to OFF at the same time, temporarily Motor will rotate. Power must be ON from the external control device and then be OFF from Driver.

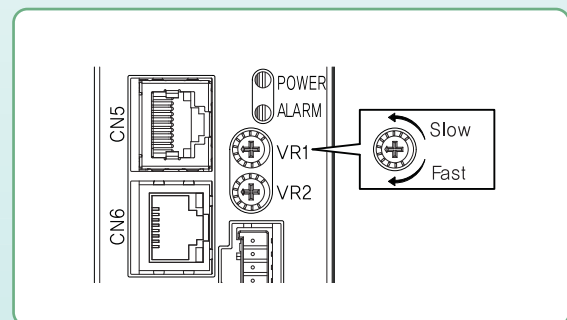


## OPERATION

The speed of the motor can be controlled by the internal speed controller within the driver. It can also be controlled through the attached external speed controller or by the current voltage of the direct current setter. Speed selection ranges are 100–4000r/min. The speed selection can be controlled in two ways by using the internal speed controller/external speed controller and the internal speed controller/external direct current voltage.

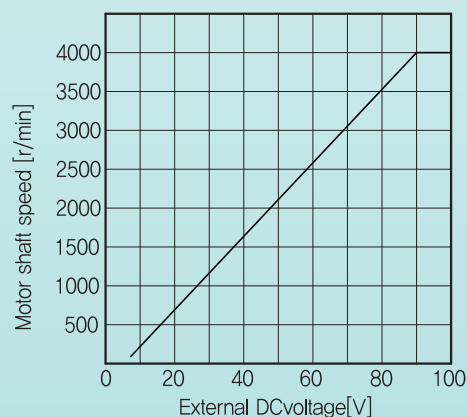
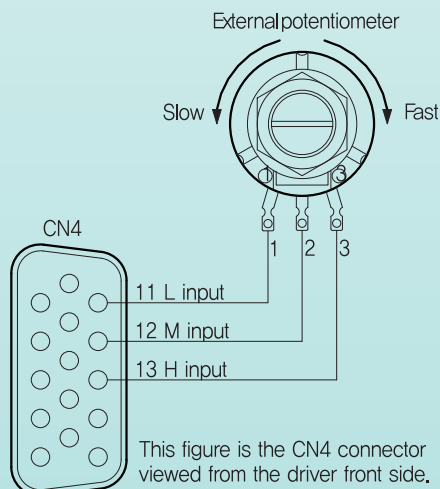
### ■ Speed setting by an internal potentiometer.

Use the insulated small size driver to screw internal potentiometer device and wind it clockwise to operate the motor faster. (Factory Setting: 0r/min)



### ■ Speed setting by an external potentiometer.(optional item)

Connect the External potentiometer to I/O signal terminal(CN4)  
When EXT input is [ON], be able to use external potentiometer.  
wind it clockwise to operate the motor faster..



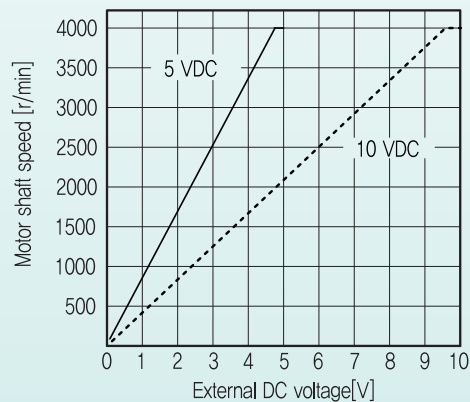
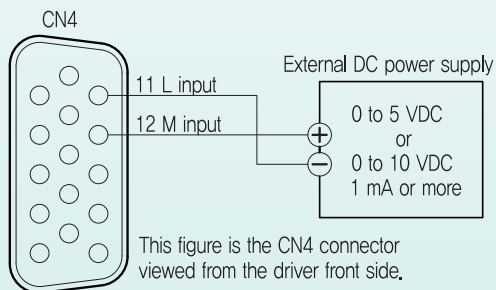
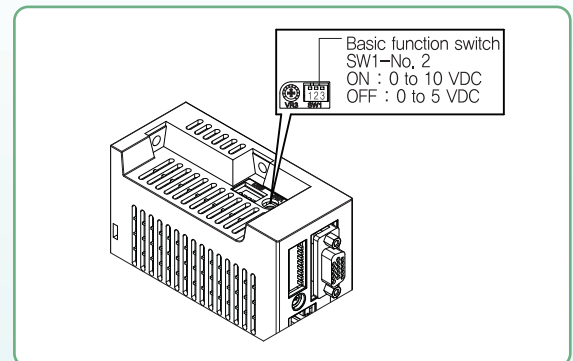
- Please turn SW1-No.2 to [OFF] when using external potentiometer

### ■ Speed setting by an external DC voltage

Set up the Driver's external voltage selection switch to the External DC voltage's value of voltage. Please change to DC5V or DC10V by using SW1-No.2. If Put SW1-No.2 to [OFF], 5VDC will be set up and if put SW1-No.2 to [ON], 10VDC will be set up. (Factory Setting: 5VDC)

Use the DC power (0 ~ 5VDC or 0-10VDC) with the 1st phase and 2nd phase of the intensified insulation for the external DC power.

Between M input terminal and L input terminal's input impedance is approximately 14K $\Omega$  1/4W when SW1-No/2 is [ON] and when is [OFF], approximately 47K $\Omega$ . In Driver internal L input terminal is connected to COM terminal.



- Please confirm whether external DC voltage is under 5VDC or 10VDC and be careful about polarity when using external DC voltage
- If connect polarity oppositely, Driver may be damaged.

# MEMO

## OPTION

21C, for World geared motor



XWA series

5

XBA series

25

XQA series

49

XFA series

61

XVA series

81

## OPTION

99

## MOTOR & GEAR HEAD MOUNTING PLATE

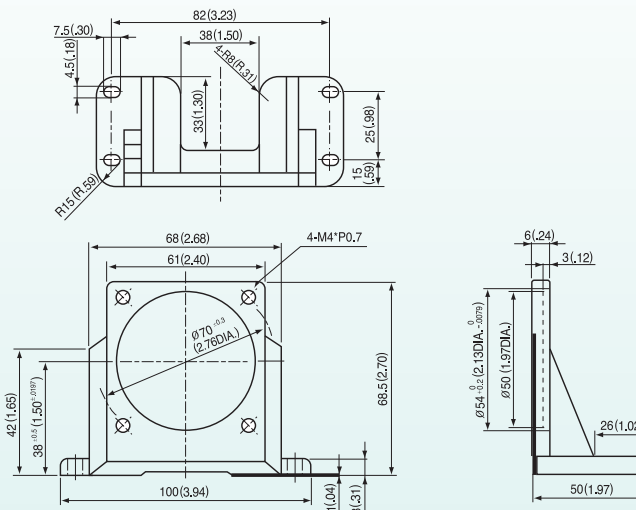
- $\square 60(2.36)$



- Model : SPL-6A  
Weight : 45g(0.10 lb)  
Material : Al

- Dimension

[Unit : mm(inch)]

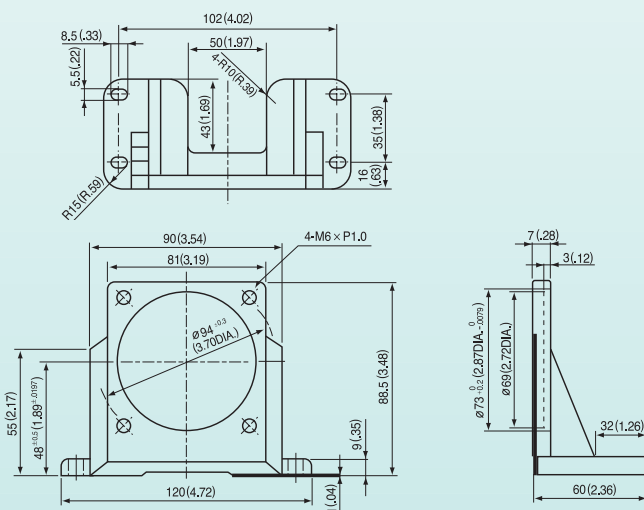


- $80(3.15)$



- Model : SPL-8B  
Weight : 120g(0.26 lb)  
Material : Al

- Dimension

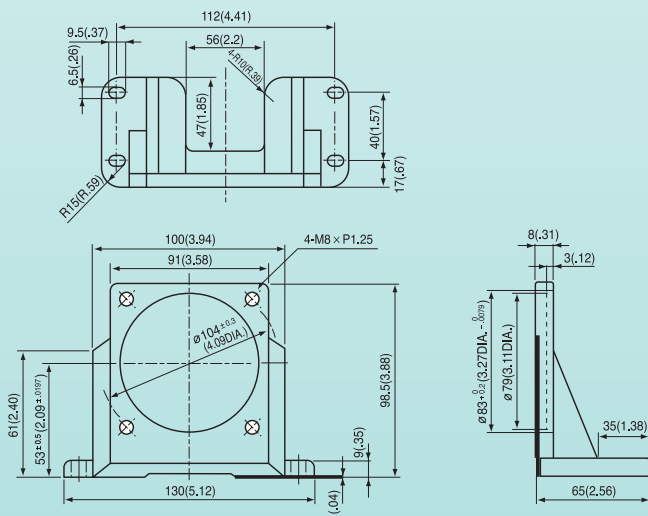


- $90(3.54)$



- **Model** : SPL-9B  
Weight : 140g(0.31 lb)  
Material : Al

- Dimension



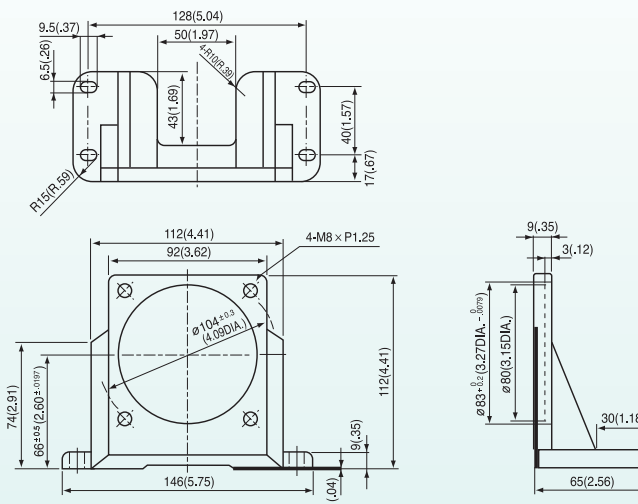
## MOTOR & GEAR HEAD MOUNTING PLATE

### ■ 90(3.54)



### ■ Dimension

[Unit : mm(inch)]



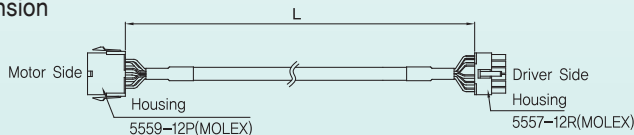
## EXTENSION CABLE

[Unit : mm(in)]



### ■ XB Series / XW Series

### ■ Dimension



### ・10W~150W

### [Extension cable]

Model	L(extension wire)
XEAEW-1	1m(39.37)
XEAEW-2	2m(78.74)
XEAEW-3	3m(118.11)
XEAEW-5	5m(196.85)
XEAEW-10	10m(393.7)

### [Operation for Cable]

Model	L(extension wire)
MXEAEW-1	1m(39.37)
MXEAEW-2	2m(78.74)
MXEAEW-3	3m(118.11)
MXEAEW-5	5m(196.85)
MXEAEW-10	10m(393.7)

### ・200W, 400W

### [Extension cable]

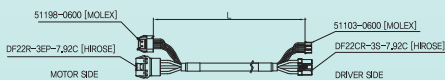
Model	L(extension wire)
XEAEW-1H	1m(39.37)
XEAEW-2H	2m(78.74)
XEAEW-3H	3m(118.11)
XEAEW-5H	5m(196.85)
XEAEW-10H	10m(393.7)

### [Operation for Cable]

Model	L(extension wire)
MXEAEW-1H	1m(39.37)
MXEAEW-2H	2m(78.74)
MXEAEW-3H	3m(118.11)
MXEAEW-5H	5m(196.85)
MXEAEW-10H	10m(393.7)

### ■ XV Series

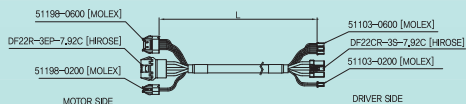
### ■ Dimension (Standard TYPE)



### [Extension cable]

Model	L(extension wire)
XVAEW-1	1m
XVAEW-2	2m
XVAEW-3	3m

### ■ Dimension (Brake Type)

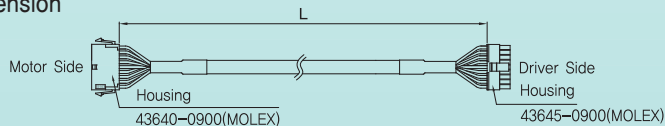


### [Extension cable]

Model	L(extension wire)
XVAEW-1	1m
XVAEW-2	2m
XVAEW-3	3m

### ■ XF Series

### ■ Dimension



### ・30W, 50W

### [Extension cable]

Model	L(extension wire)
XFAEW-0P5F	0.5m(19.69)
XFAEW-1P0F	1m(39.37)
XFAEW-1P5F	1.5m(59.06)

### ・100W

### [Extension cable]

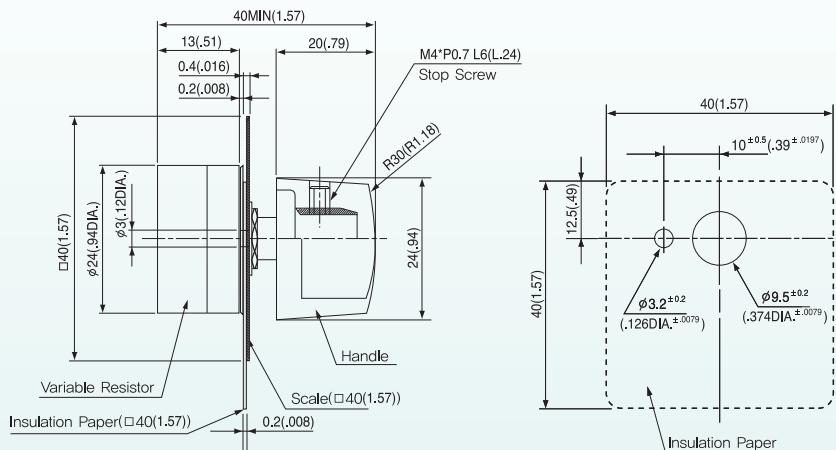
Model	L(extension wire)
XEAEW-0P5H	0.5m(19.69)
XEAEW-1H	1m(39.37)
XEAEW-1P5H	1.5m(59.06)

## EXTERNAL SPEED POTENTIOMETER



- Dimension

[Unit : mm(inch)]



- Model

Model	Characteristics
SVR20KH	20kΩ, 1/4W · B Characteristics

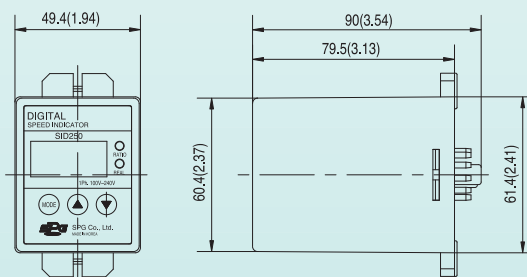
## DIGITAL SPEED INDICATOR

■ PART NAME : SID250

This is free power type of digital displayed speed indicator, that can directly displays rotation speed for the motor and the gearhead output shaft.



■ **Dimension** [Unit : mm(inch), Weight : 200g(0.44lb)]

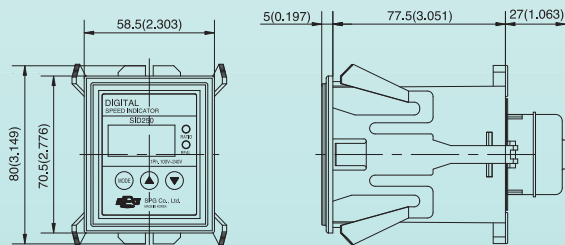


- Accessory

1 adaptor for installing panel and 1 round socket are fitted.

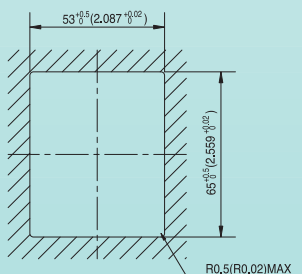
■ If adaptor and round socket is mounted in the body

■ Dimension [Unit : mm(inch)]



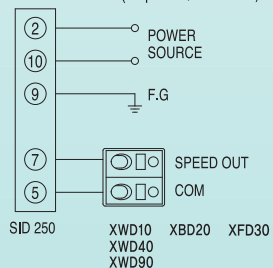
## ■ Installation hole machined dimension

- Dimension [PANEL thick : 1mm~3.2mm]

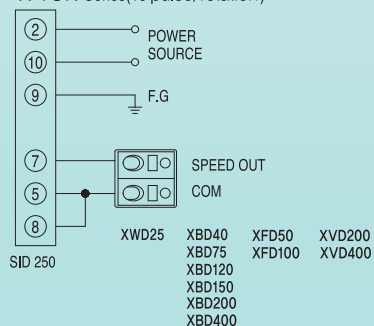


- Interface example

X-TOR Series(12 pulse/rotation)



X-TOR Series(15 pulse/rotation)

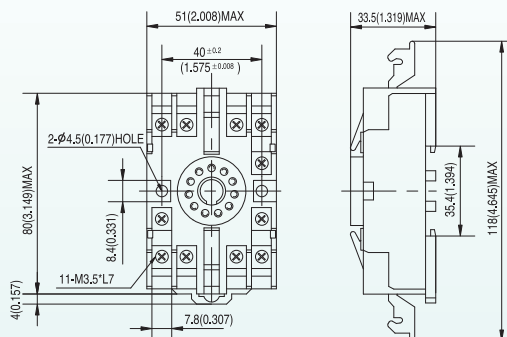


## DIN RAIL MOUNTING SOCKET

■ PART NAME : SB11-H



■ Dimension [Unit : mm(inch), Weight : 75g(0.165lb)]



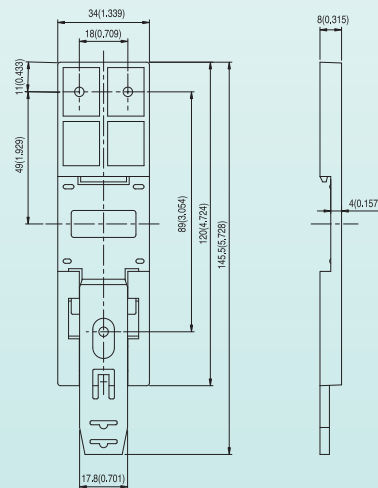
※ Application Model : SID250

## DIN RAIL MOUNTING PLATE

■ PART NAME : SDP-01



■ Dimension [Unit : mm(inch)]



※ Application Model : XLA, XBA Series

# MEMO





### **SPG**

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