# KCFA

### Installation and Wiring for SV-X2/X6 Series Servo Motor (180-flange)

Hardware Instruction

Manual Number	MQ400P059A01EN
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#### http://www.hcfa.com.cn

Thank you for purchasing this product. This manual mainly describes the safety use, installation and wiring for SV- X2/ X6 series servo motor (180-flange). For more details, please refer to < SV- X2/ X6 Series Servo Motor User Manual>.

Confirm the following items when unpacking:

Number		Name Quantity				
1	Servo motor		1			
		Flat key	1			
2	Accessories	Extension cable for 4PIN connector	1			
Z	Accessories	Extension cable for 10PIN connector	1			
		Extension cable for 2PIN connector (for servo motor with brake)	1			
3		Installation and Wiring for SV-X2/X6 Series Servo Motor Hardware Instructior				
4	Certificate o	f Quality	1			

 $\bigcirc$  Check if there are some damage to the products during transportation.  $\bigcirc$  Any questions, please contact the HCFA Corporation.

#### Safety precautions(Read carefully before use)

Please pay attention to the following safety precautions anywhere and any time during acceptance inspection, installation, wiring, operation and maintenance. In this manual, the safety precautions are ranked as "DANGER" and "CAUTION"

DANGER Indicates that incorrect handling may result in death or severe injury.

 CAUTION
 Indicates that incorrect handling may result in medium or slight personal injury or physical damage.

Nindicates "Prohibitions" (Indicates what must not be done.)

Indicates "Forced".(Indicates what must be done.)

DANGER					
	Installing and wiring				
	Do not connect the motor to the commercial power.	To prevent fire or malfunction			
$\bigcirc$	Do not place the combustibles around the servo motor and drive.	To prevent fire.			
	Be sure to protect the drives through the case, and leave specified clearances between the case or other equipment and the drive.	To prevent electric shock, fire or malfunction.			
	Install it at the place free from excessive dust and dirt, water and oil mist	To prevent electric shock, fire , malfunction or damage			
-	Install the equipment to incombustibles, such as metal.	To prevent fire.			
	Any person who is involved in wiring and inspection should be fully competent to do the work.	To prevent electric shock.			
	FG terminal of motor and drive must be grounded.	To prevent electric shock.			
	Perform the wiring correctly after cut off the breaker.	To prevent electric shock, injury, malfunction or damage			
	Have the insulation processing when connecting cables.	To prevent electric shock, fire or malfunction.			
	Operation and running	-			
	During operation, never touch the internal parts of the drive.	To prevent burns or electric shock.			
	The cables should not be damaged, stressed loaded, or pinched.	To prevent electric shock, malfunction or damage.			
$\bigcirc$	During operation, never touch the rotating parts of the servo motor.	To prevent injury.			
$\bigcirc$	Do not install the equipment under the conditions with water, corrosive and flammable gas.	To prevent fire.			
	Do not use it at the location with great vibration and shock.	To prevent electric shock, injury or fire.			
	Do not use the servo motor with its cable soaked in oil or water.	To prevent electric shock, malfunction or damage			

	Operate the switches and wiring with dry hand.	To prevent electric shock, injury or fire.
$\bigcirc$	Do not touch the keyway directly when using the motor with shaft-end keyway	To prevent injury.
$\bigcirc$	Do not touch the motor and drive heat sink, as they are very hot.	To prevent burns or parts damaged.
	Do not drive the motor by external drive.	To prevent fire.
	Other safety instructions	
	Confirm the equipment's safety after the earthquake happens.	To prevent electric shock, injury or fire.
0	Installing and setting correctly to prevent the fire and personal injury when earthquake happens.	To prevent injury, electric shock, fire, malfunction or damage.
	Provide an external emergency stop circuit to ensure that operation can be stopped and power switched off immediately.	To prevent injury, electric shock, fire, malfunction or damage.
	About maintenance and inspecti	on
0	As there's dangerous and high-voltage parts inside the drive, before wiring or inspection, turn off the power and wait for 5 minutes or more. Moreover, do not disassemble the drive.	To prevent electric shock.

Installing and wiring		▲ CAUTION	
Please follow the specified combination of the motor and drive.         To prevent fire or malfunction.           Do not buch the terminals of connector directly.         To prevent electric shock or malfunction.           To prevent electric shock or fire.         To prevent electric shock or fire.           The the motor and have the test run away from the motor can be securely mounted to mechanical system.         To prevent electric shock or fire.           To prevent electric shock or fire.         To prevent injury or malfunction.           Install the equipment correctly in accordance with its weight and rated output.         To prevent injury or malfunction.           Do not tolm or state output.         To prevent electric shock, injury, fault or damage.           The parameter settings must not be changed excessively. Operation and running         To prevent injury.           When power is restored after an instantaneous power failure, keep away from the anchine because the machine so that it is secured against hazard if restarted.         To prevent injury.           When power is restored after an instantaneous power failure, seep away from the direct sunlight.         To prevent injury or malfunction.           Do not install or operate a faulty servo motor or drive.         To prevent injury or malfunction.           The electromagnetic brake on the servo motor is designed to hold the servo motor is not aff. To ensure safely, install a stopper on the machine is de.         To prevent injury.           Audden restart is made if an alarm is reset with the run signa			
Do not touch the terminals of connector directly.         To prevent electric shock or mafunction.           To not block intake and prevent the foreign matters from entering into the motor and drive.         To prevent electric shock or free from entering into the motor and have the test run way from the motor can be securely mounted to mechanical system.         To prevent electric shock or free direction.           The service notor must be installed in the specified direction.         To prevent injury or malfunction.           Install the equipment correctly in accordance with its service not on service equipment. Do not put heavy objects on equipment.         To prevent injury or malfunction.           Operation and running         To prevent injury.         To prevent injury.           When power is restored after an instantaneous power failure, keep away from the machine because the machine may be restarted suddenly (design the machine may be restarted suddenly (design the machine so that it is secured against hazard if         To prevent injury.           Weep ta way from the direct sunlight         To prevent injury or malfunction.         To prevent injury or malfunction.           Do not turb dror grate a faulty servo motor or drive.         To prevent injury or malfunction.         To prevent injury.           Check the power specification.         To prevent injury.         To prevent injury.         To prevent injury.           Check the power specification.         To prevent injury.         To prevent injury.         To prevent injury.           Do not insta		Please follow the specified combination of the motor	To prevent fire or malfunction.
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<ul> <li>mechanical system. After confirming the operation, the motor can be securely mounted to mechanical system.</li> <li>The servo motor must be installed in the specified direction.</li> <li>Install the equipment correctly in accordance with its weight and rated uptut.</li> <li>Operation and running</li> <li>Do not climb or stand on serve equipment. Do not put injury, fault or damage.</li> <li>The parameter settings must not be changed excessively. Operation will be instable.</li> <li>When power is restored after an instantaneous power failure, keep away from the machine because the machine so that it is secured against hazard if ro prevent injury.</li> <li>Keep it away from the direct sunlight.</li> <li>To prevent malfunction.</li> <li>The electromagnetic brake on the servo motor is designed to off or shaft.</li> <li>Do not install or operate a faulty servo motor or drive.</li> <li>The electromagnetic brake on the servo motor or drive.</li> <li>Check the power specification.</li> <li>To prevent injury.</li> <li>The electromagnetic brake may not hold the servo motor shaft.</li> <li>To prevent injury.</li> <li>The electromagnetic brake may not hold the servo motor shaft.</li> <li>To prevent injury.</li> <li>The electromagnetic brake may not hold the servo motor motor shaft.</li> <li>To prevent injury.</li> <li>The nect relay for emergency stop and for brake in series.</li> <li>Transportation and storage</li> <li>Do not subject the equipment to the place with rain, waterdrop, poisonous gases or liquids.</li> <li>To prevent malfunction.</li> <li>To prevent malfunction.</li> <li>To prevent malfunction.</li> <li>To studen the relay for emergency stop and for brake in series.</li> <li>Transportation and storage</li> <li>Do not subject the equipment to the place with rain, waterdrop, poisonous gases or liquids.</li> <li>To prevent malfunction.</li> <li>To prevent malfunction.</li> <li>Do</li></ul>			To prevent electric shock or fire.
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#### About maintenance and inspection

<Warranty period> The term of warranty for the product is 18 months from the date of manufacture. It's exceptional to brake motors as they are warranted when acceleration / deceleration times is not beyond the specified service life.

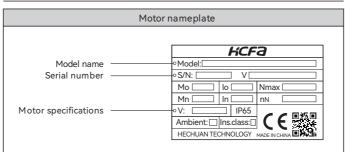
#### < Warranty coverage >

< Warranty coverage > This warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are stated in the instruction manual and user manual for the Product. However, even during warranty period, the repair cost will be charged on customer in the following cases. 1) A failure caused by improper storing or handling, repair and modification. 2) A failure caused by the parts which have dropped down or damaged during transportation 3) A failure caused when the products have been used beyond the product specification (4) A failure caused when the products have been used beyond the product specification

3) A failure caused when the products have been used beyond the product specification (4) A failure caused by external factors such as inevitable accidents, including but not limited to fire, earthquake, lightning stroke, windstorm disaster, flood, salt damage, abnormal fluctuation of voltage and other natural disaster. 5) A failure caused by the intrusion of water, oil, metal and other foreign matters. The warranty coverage is only for the product itself. We assume no responsibilities for any losses of opportunity and/or profit incurred by you due to a failure of the product

## 1. Product introduction and model selection

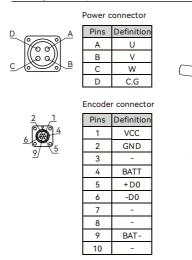
#### Introduction for motor nameplate

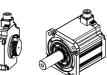


#### Model name identification

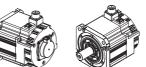
SV->	<2	MM	40	0A	-	N	4		L	<u>N * *</u>
X2/X6 Series				/mbol	specificat Voltag	е	Sym			
I	nertia	specifica	itions				C 280 ~ 3 C 200 ~ 2			
Symbol		Specifica	ations			V	AC200~2	.301		Absolute 17bit
MA	Low in	ertia						_		
MM	Middle	e inertia				<u> </u>	ake speci	fica	tions	Customized version
MH	High i	nertia				Symb	ol E	Brak	e	Customized version
MG	- ×	peed and	d hiah-ta	orque		N No brake				
MQ	Flat ty		, mgn u			B 24V brake				
	T luc y	pe				Х	7V bra	ke(u	Itrathin)	
									Sha	aft-end specifications
		Pow	ver spec	cificatio	ns				Symbol	Shaft-end/oil seal
Sym	Ibol	200A	300A	40	0A	500/	A 750A		L	Lead-wire/with oil seal
Specific	ations	2KW	3KW	4K	W 5KW 7.5KV		V	К	Lead-wire/no oil seal	
Sym	bol	290	A	44	0A	DA 550A			С	Connector/with oil seal
Specific	ations	2.9K	w	4.4	<w< td=""><td></td><td>5.5KW</td><td></td><td>D</td><td>Connector/no oil seal</td></w<>		5.5KW		D	Connector/no oil seal

#### Wiring description for servo motor





No brake



With brake

## Combination of the drive and the motor

Capacity	Servo motor SV-X6		Servo drive	Motor flange (mm)
2kW	High inertia	MH200A	SV-X6FA3001T-A	
3kW	Middle inertia	MM300A	5V-X0FA30011-A	
4kW	Middle inertia	MM400A	SV-X6FA5001T-A	
5kW	Middle inertia	MM500A	5V-X6FA50011-A	□180
7.5kW	Middle inertia	MM750A	SV-X6FA7502T-A	
2.9kW	Low-speed & high-torque	MG290A	SV-X6FA3001T-A	
4.4kW	Low-speed & high-torque	MG440A	SV-X6FA5001T-A	]
5.5kW	Low-speed & high-torque	MG550A	SV-X6FA7502T-A	

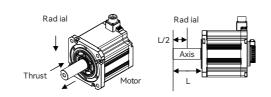
## 2. Product specifications

#### Motor specifications

	lte	ems	Unit			Specific	cations	
	Vo	oltage	V			AC380V		
Model name (SV-X2/X6 ****)			_	MH200A High inertia	MM300A Middle inertia	MM400A Middle inertia	MM500A Middle inertia	MM750A Middle inertia
F	lange ins	tallation size	mm		□180			
Ma	~	Vithout brake	kg	12.7	14.3	16.5	19.4	25
	Mass Without brake			17.4	19	21.2	28.5	29.7
	Rated o	output	W	2	3	4	5	7.5
	Rated to		N∙m	9.55	14.3	19.1	23.9	47.8
	Max. ins torque	stantaneous	N∙m	28.6	42.9	57.3	71.6	119
	Rated c	urrent	Arms	5.8	8.7	11.5	13.5	21.8
	Max. ins current	stantaneous	Arms	19	30	38	45	75
	Rated s	peed	r /min	2000	2000	2000	2000	1500
	Max. sp	eed	r /min		30	00		2500
su		constant	N ∙ m/Arms	1.83	1.8	1.82	2.04	2.5
Common specifications	voltage	nductive constant	mV/(r/min)	63.9	62.9	63.5	71.3	87.2
pecifi	Rated power	Without brake	kW/s	29	47	66.7	85.6	230.1
s uor	change rate	With brake		20.4	32.3	53.6	70.7	200.1
Comn	Mechanical time	Without brake	ms	1.58	1.33	1.24	1.07	0.84
	constant	With brake		2.38	1.8	1.59	1.3	0.97
	Electrical	time constant	ms	17.18	18.17	18.43	20.53	19.22
	Motor rotor	Without brake	×10⁻⁴kqm²	31.4	43.5	54.7	66.7	99.3
	Inertia	With brake		44.6	63.2	68	80.8	114.2
	Permissible	Radial load	N		1	470		2058
	load	Axial load				490		980
	Encoder					munication (I		
	Usage			H	lolding(Note:	not for brak	ing)	
su	Powers		-	SELV por		ed insulation	<u> </u>	s voltage.
atio	Rated v	5	V		[	DC24V±105	%	
cific	Rated c	urrent	A			A		
s spe	Power suppry						ore	
rake	Absorpt		ms			S		
<u>۵</u>	Release		ms			S		
	Release	e voltage	V		DC	0.5V or mo	ore	

Items			Unit		Specificatio	ons	
	V	oltage	V		AC380V		
Model name (SV-X2/X6□□□□-****)		_	MG290A High inertia	MG440A High inertia	MG550A High inertia		
F	lange ins	stallation size	mm		□180		
Ма		Without brake	kg	16	19.4	23.9	
I*Id	155	With brake	ĸġ	20.7	24.1	28.5	
	Rated	output	W	2.9	4.4	5.5	
	Rated t		N∙m	18.6	28	35	
	Max. in torque	stantaneous	N∙m	45.1	71.1	87.6	
	Rated	current	Arms	10	15.7	19.5	
	Max. in current	stantaneous	Arms	33.5	52	66	
	Rated	speed	r /min		1500		
	Max. s	beed	r /min		3000		
JS		constant	N ∙ m/Arms	2.01	2.13	1.98	
catio		inductive constant	mV/(r/min)	70.2	74.2	69.6	
Common specifications	Rated power	Without brake	kW/s	73.3	114.3	134	
s uou	change rate	with brake		55.5	93.7	115	
Comm	Mechanica time	Without brake	ms	1.28	1.16	1.04	
0	constant	With brake		1.7	1.41	1.22	
	Electrica	time constant	ms	195	18.3	20.1	
	Motor rotor	Without brake	× 10 <sup>-4</sup> kg m <sup>2</sup>	47.2	68.6	91.4	
	Inertia	With brake	. To kym	62.3	83.7	106.5	
	Permissible	Radial load	N	1470	1470	1764	
	load	Axial load		490	490	588	
	Encode	r			communication (EIA4	22)	
	Usage		ļ,	ţ	not for braking)		
ons	Power		-	SELV power, rein	forced insulation for d	langerous voltage.	
cati	Rated voltage		V		DC24V±10%		
ecifi	Rated		A		A		
s p(		riction torque	N∙m		74Nm or more		
<b>Brake specifications</b>	<u> </u>	tion time	ms		S		
B	Releas		ms		S		
	I Keleas	Release voltage V DC0.5V or more					

Output shaft permissible load



Permissible load	Unit	2KW	3KW	4KW	5KW	7.5KW	2.9KW	4.4KW	5.5KW
Permissible radial load	N	1470			2058	14	70	1764	
Permissible axial load	N		49	70		980	49	90	588

Note: % indicates the highest speed for X2 series motor.

# Ambient conditions and safety precautions for servo motor

	Rated time	Continuous
	11000 01110	Conunuous
	Ambient temperature for use	0~40°C(Without condensation)
	Ambient humidity for use	20~85% R H(Without condensation)
	Ambient temperature for storage	-20~65 $^{\circ}$ C(Highest temperature guaranteed: 80 degrees, 72hours)
ions	Ambient humidity for storage	20~85% RH (Without condensation)
Ambient conditions	Atmosphere for use/storage	Indoors(Not subject to rainwater or direct sunlight); free from corrosive gas, flammable gas, flammables, grinding fluid, oil mist, or dust
Ibie	Insulation class	Class B
Am	Insulation resistance	1000 VDC megger $5M\Omega$ or more
	Dielectric strength	1500 VAC for 1 minute
	Altitude	1000m or less above sea level
	Vibration class	V 15(JEC2121)
	Vibration resistance	49 m/s² (5G)
	Impact resistance	98 m/s² (10G)
	Protective class	IP65
		Grounding is mandatory. Class I applicable.
		Over voltage category II applicable
Poi	nts to note	Pollution degree 2 applicable
		Brake cables have polarity. Red: connected with +24V. Black: connected with GND

