



Operation Manual Book

X SERIES

In order to use the product safely, please read the instruction manual. In addition, please keep the instruction manual properly.

ENGLISH

Summary

Thank you for purchasing a permanent magnet synchronous motor (PMSM) industrial HVLS giant fan (X Series). This operation manual explains how to use the product correctly. Please read this instruction carefully before use (**installation, wiring, operation, maintenance, inspection, etc**). In addition, please use the product after understanding the safety precautions of the product.

1. SAFETY ISSUES

General notes:

In order to explain the process of product installation, please operate the product according to the instructions.

❖ **Danger**

Please read the manual carefully before installation.

❖ **To prevent electric shock**

- Non-professionals are not allowed to repair, inspect or replace parts.
- Do not conduct wiring operation within 1 minute after the power is turned on or off, otherwise there will be electric shock danger (the capacitor will also participate in the power supply within a short time after the power is turned off).
- When charging or moving the power supply, turn off the power supply first and wait for all the indicator lights to go out for 1 minute before starting the operation.

❖ **Warning**

The controller of this product is matched according to the model. It is strictly forbidden to use the controller without matching, which may cause damage to the motor or controller. Before running the product, please confirm whether the power the power supply is connected according to the label, and whether there are obstacles within the operation range of the product that affect the operation of the product. After running, check whether the rotation direction of the product is correct (**clockwise rotation seen from below**). The product shall not be operated in the bad environment of freezing, corrosion, explosion and dust exceeding the standard seriously.

❖ **Ceiling Fan Installation**

The installation and maintenance of products must be carried out by professional training or experienced electrician with electrician certificate.

2. PRODUCT INTRODUCTION

Permanent magnet synchronous motor (PMSM) industrial HVLS giant fan (**X Series**) is specially developed for energy saving and improving the comfort of working environment. It is driven by a self-designed permanent magnet motor with small size, light weight, high efficiency and energy saving, low noise, frequency control, compact structure, beautiful appearance and other characteristics. Widely used in industrial plants, logistics storage, waiting rooms, exhibition halls, gymnasiums, supermarkets and other large space places, as a new type of ceiling fan for space ventilation and personnel cooling. It can push a large amount of airflow to the ground, forming a certain height of airflow layer movement on the ground, thus contributing to the overall air circulation, which is similar to the nature's breeze system, enjoying the intimate experience of natural wind.

ATTENTION. Please note all safety information in this instruction manual. Failure to follow the instruction may result in death or serious injury. The company will not be responsible for any damage caused by the customer's failure to comply with the contents in this instruction manual.

3. OPERATING LIMITS & SPECIFICATIONS

Operating limits

- The company shall not be liable for damage caused by improper use or use of products beyond the prescribed scope.
- This product and accessories are selected and designed according to the parameters provided by users. If the parameters are changed, please inform us to confirm the feasibility.
- The product is not allowed to operate in unstable areas such as high frequency vibration areas. Please make sure that the installation location is stable.
- The product shall not be operated in harsh conditions such as freezing, corrosion, explosion and excessive concentration of dust and gas.

Specifications and model

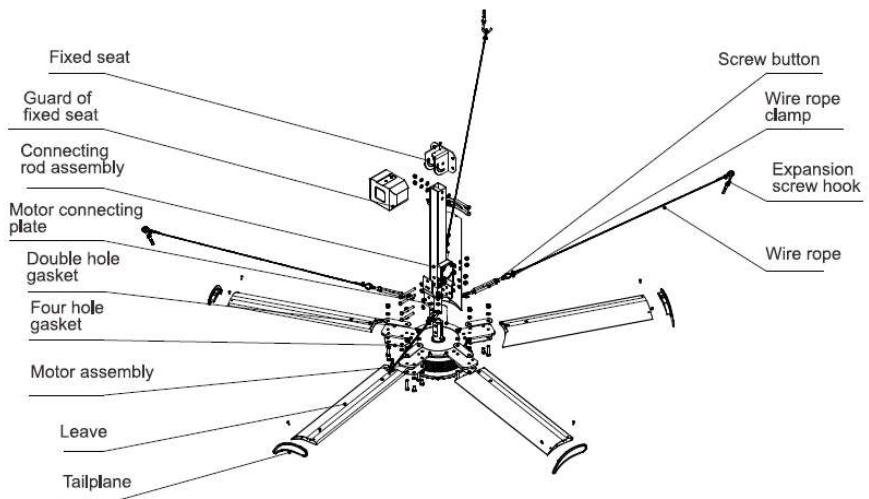
Permanent magnet synchronous motor (PMSM) HVLS industrial giant fan specification model parameter in table below:

Table 1: Permanent Magnet Synchronous Motor (PMSM) Fan Technical Parameters

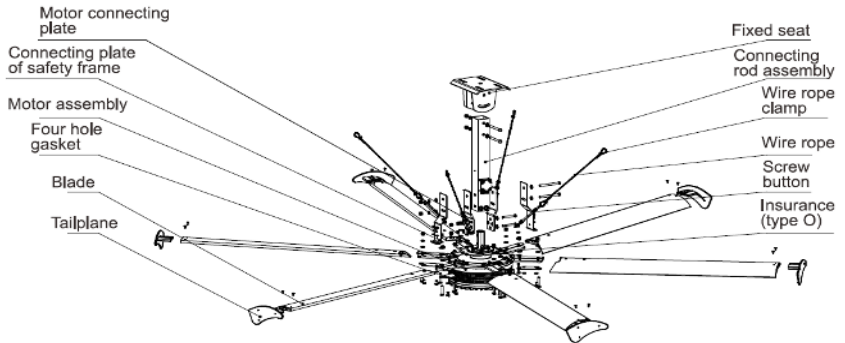
Model	Voltage (v)	Power (watt)	Max Speed (rpm)	No of blade	Air Volume (CMM)	Max Coverage (m ²)	Weight (kg)
X24	220-240	1100	55	6	15500	1700	111
X22		1100	60	6	14000	1600	107
X20		1000	65	6	11500	1000	103
X18		1000	70	6	11000	900	100
X16		750	80	5	10000	500	49
X14		750	90	5	7000	450	46
X12		370	100	5	5000	380	38
X10		370	120	5	4000	250	35
X8		370	130	5	3000	200	32

4. PARTS & INSTALLATION PROCESS

- ✓ Components PMSM X Series (X8 - X16)



✓ Components PMSM X Series (X18 - X24)



5. Controller & Wiring

- ✓ Install the controller at the right position.

ATTENTION. The motor connected to the controller phase sequence must not be wrong. Otherwise the motor reverse will affect the product effect.

Part:

Permanent magnet motor controller	1
Rubber sheathed cable	1

i. Terminal box connection

As shown in the figure, the controller lead-out line and motor lead-out line identification are fixed on the terminal post, and no short circuit is allowed. The ground wire is fixed on the fixing screw or the terminal box base and the cover of the junction box shall be locked.



Figure 1 : terminal box connection

ii. Controller wiring

As shown in the figure, the top red frame is connected with the commercial power (**three-phase in the left figure and single phase in the right figure**), the middle red frame is connected with the motor (connected with the junction box), and the right red frame is connected with the ground wire (connected with the junction box).



Figure 2: Controller wiring

WARNING. It is forbidden to connect the commercial power directly to the ceiling fan, and confirm whether the power supply voltage matches the controller voltage.

✓ Wiring Diagram

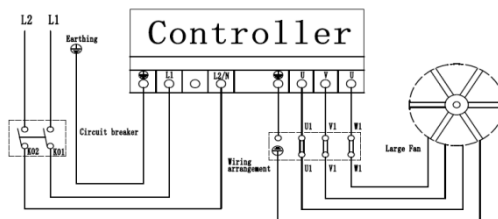


Figure 3 : Single phase input wiring diagram

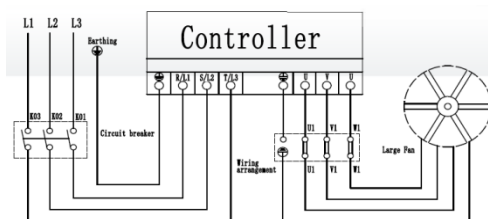


Figure 4 : Three phase input wiring diagram

6. OPERATION & TROUBLESHOOTING

The controller interface is shown in the figure:



Figure 5 : Controller interface

Power on – operation
 Power off – stop / reset
 Speed up – \wedge press speed +5
 Slow down – \vee press speed -5

Table 2 : Fault diagnosis and countermeasures

Fault Code	Description	Causes	Troubleshooting Method
OC	Overcurrent protection	<ul style="list-style-type: none"> Output short circuit test Motor locked or overloaded 	<ul style="list-style-type: none"> Check whether the motor cable is damaged. Switch off the MCB. After 5 minutes, switch on the MCB.
OE	DC overvoltage protection	<ul style="list-style-type: none"> Power supply too high Too much deceleration inertia 	<ul style="list-style-type: none"> Check whether the rated voltage is input Increase deceleration time
PF1	Input open phases protection	<ul style="list-style-type: none"> Phase loss of input power supply 	<ul style="list-style-type: none"> Check whether the power input is normal
OL	Inverter overload protection	<ul style="list-style-type: none"> Overload 	<ul style="list-style-type: none"> Reduce the load Increase the capacity of frequency converter
LU	Under voltage protection	<ul style="list-style-type: none"> Low input voltage 	<ul style="list-style-type: none"> Check whether the power input is normal

OH	Overheat protection of frequency converter	<ul style="list-style-type: none"> ▪ The heat sink is too dirty ▪ The fan is broken ▪ The ambient temperature is too high 	<ul style="list-style-type: none"> ▪ Clean the inlet and radiator ▪ Replace the fan ▪ Improve ventilation
Err2	Parameter measurement error	<ul style="list-style-type: none"> ▪ Motor not connected during parameter measurement 	<ul style="list-style-type: none"> ▪ Please connect the motor correctly
Err3(4)	Current fault before operation	<ul style="list-style-type: none"> ▪ There is current alarm signal before operation 	<ul style="list-style-type: none"> ▪ Check whether the cable connection is reliable ▪ Request manufacturer's service
PFO	Output phase loss	<ul style="list-style-type: none"> ▪ The motor line is disconnected ▪ The motor is broken ▪ Inverter fault 	<ul style="list-style-type: none"> ▪ Check the motor connection wire carefully ▪ Replace the motor ▪ Seek support from manufacturers
GP	Grounding protection	<ul style="list-style-type: none"> ▪ The motor cable is damaged and short circuited to the ground ▪ Motor insulation damage, short circuit to ground ▪ Inverter fault 	<ul style="list-style-type: none"> ▪ Replace the cable ▪ Repair the motor ▪ Seek support from manufacturer
PCE	PMSM adjustment fault	<ul style="list-style-type: none"> ▪ The acceleration time is too short ▪ Overload ▪ Motor locked rotor 	<ul style="list-style-type: none"> ▪ Extend acceleration time ▪ Check whether the motor is overloaded
ALM Light	Out-of-order	<ul style="list-style-type: none"> ▪ Report failure 	<ul style="list-style-type: none"> ▪ STOP/RESET
Key Failure	This instruction is invalid	<ul style="list-style-type: none"> ▪ Loose cable ▪ Inverter fault 	<ul style="list-style-type: none"> ▪ Secure the cable ▪ Turn off the power and turn on again after 1 minutes ▪ Contact the manufacturer

Regular inspection and maintenance

Electronic equipment and other components cannot be used permanently even though in normal working conditions. If the service limit is exceeded, there will be a change in characteristics or malfunction. To prevent this type of failure, periodic inspections are required. It is recommended to check the machine every 6-12 month after installation

Table 3: Regular inspection and maintenance schedule

No	Check the object	Check the content	Solutions
1.	Overall	<ul style="list-style-type: none"> Dirt, dust Parts are damaged/deformed Parts that are discoloured due to time 	<ul style="list-style-type: none"> Replace damaged parts Contact our after-sales service Remove dust/dirt with dry towel.
2.	Motor	If there is abnormal vibration or sound when the product is running	<ul style="list-style-type: none"> Turn off the fan, contact and consult our after-sales service Inspect parts and fastening connections and tighten all screws
3.	Controller system	<ul style="list-style-type: none"> Confirm whether the cooling fan is stained with dust/dirt. Check the wires and internal connecting wires are discoloured, damaged or detached Check the wire cladding is damaged, cracked, or discoloured Check the connecting terminal is worn, damaged or loose Check the capacitance expansion, discoloration, cracking 	<ul style="list-style-type: none"> Clean/replace the cooling fan Repair/replace damaged wires and connectors Contact the company after sale if unable to replace or repair.
4.	LED Operator	<ul style="list-style-type: none"> Check the operating parts operate correctly Check the operating part dirty 	<ul style="list-style-type: none"> If LED or operation keys are defective, please contact our after-sales service. Remove dust/dirt with dry towel. Do no wipe with water.

ATTENTION:

- In order to prevent electric shock, the installation and wiring must be carried out by professional personnel according to the product manual.
- Before using this product, check whether the surrounding space of the ceiling fan meets the requirements. For the first use, confirm whether the power supply meets the requirements, whether the wiring is correct and firm, and turn on the power supply only after confirming the safety.
- The system is equipped with overvoltage, under voltage, voltage loss regulation, phase loss, overload, collision, overheating, lightning protection, etc.
- When the ceiling fan is out of use for a long time, in order to extend the service life of the product, please run it for 10 minutes every other month

BAHASA MELAYU

Ringkasan

Terima kasih kerana membeli kipas gergasi HVLS industri motor PMSM (X Series). Manual operasi ini menerangkan cara menggunakan produk dengan betul. Sila baca arahan ini dengan teliti sebelum digunakan (**pemasangan, pendawaian, operasi, penyelenggaraan, pemeriksaan, dll**). Di samping itu, sila gunakan produk setelah memahami langkah keselamatan produk.

1. Amaran keselamatan

Nota umum:

Amaran:

Sila kendalikan produk mengikut arahan untuk proses pemasangan produk.

❖ **Bahaya**

Sila baca dan fahami buku manual ini secara keseluruhan sebelum membuat pemasangan.

❖ **Untuk mengelakkan kejutan elektrik**

- Bukan profesional tidak boleh melakukan pembaikan/pemeriksaan/penggantian alat ganti.
- Jangan melakukan operasi pendawaian dalam masa satu minit setelah kuasa dihidupkan atau dimatikan. Jika tidak, akan ada bahaya kejutan elektrik (kapasitor juga akan bertindak balas dalam bekalan kuasa dalam masa yang singkat setelah kuasa dimatikan.)
- Matikan bekalan kuasa terlebih dahulu sebelum mengecas atau mengalihkan bekalan kuasa. Kemudian, tunggu semua lampu penunjuk padam selama satu minit sebelum memulakan operasi.

❖ **Amaran**

Alat kawalan produk ini dipadankan mengikut model. Dilarang keras menggunakan alat kawalan tanpa sepadan kerana boleh menyebabkan kerosakan pada motor atau alat kawalan. Sebelum menjalankan produk, sila pastikan sama ada bekalan kuasa disambungkan mengikut label, dan jika terdapat halangan dalam jangkauan operasi produk yang mempengaruhi operasi produk. Setelah kipas berfungsi, periksa sama ada arah putaran produk betul (**putaran mengikut arah jam dilihat dari bawah**).

Produk tidak boleh dikendalikan dalam keadaan sejuk beku, kakisan, letupan dan debu yang melebihi standard secara serius.

❖ **Pemasangan kipas**

Pemasangan dan penyelenggaraan produk mesti dilakukan dengan latihan profesional atau juruelektrik berpengalaman dengan sijil juruelektrik.

2. PENGENALAN PRODDUK

Kipas gergasi industri HVLS (X Series) industri motor sinkron magnet kekal (PMSM) dibuat khas untuk penjimatan tenaga dan meningkatkan keselesaan persekitaran kerja. Ia didorong oleh motor magnet kekal yang direka sendiri dengan ukuran kecil, ringan, kecekapan tinggi, penjimatan tenaga, kebisingan rendah, kawalan frekuensi, struktur padat, rekabentuk yang cantik dan lain lain. Digunakan secara meluas di kilang industri, penyimpanan logistik, ruang menunggu, ruang pameran, gimnasium, pasar raya dan tempat-tempat besar yang lain, sebagai jenis kipas siling baru untuk pengudaraan ruang dan penyejukan untuk semua kakitangan. Ia dapat mendorong sejumlah besar aliran udara ke tanah, membentuk pergerakan lapisan aliran udara ketinggian tertentu di tanah, sehingga menyumbang kepada peredaran udara secara keseluruhan, yang serupa dengan sistem angin alam.

Amaran. Tahap keselamatan diukur semasa kipas gergasi HVLS industri dilakukan. Sebelum menghidupkan kuasa kipas gergasi HVLS industri, pastikan bahawa tidak ada orang yang menyentuh, dan tidak ada objek lain di kawasan yang berkaitan di dalam dan di bawah kipas gergasi HVLS industri.

3. HAD OPERASI & SPESIFIKASI

Had Operasi

- Syarikat tidak akan bertanggungjawab ke atas kerosakan disebabkan oleh penggunaan produk yang tidak betul dan di luar skop yang ditetapkan.

- Produk dan aksesori ini dipilih dan dirancang mengikut parameter yang disediakan oleh pengguna. Sekiranya parameter diubah, sila maklumkan kepada kami untuk mengesahkan sebarang kemungkinan.
- Produk tidak dibenarkan beroperasi di kawasan yang tidak stabil seperti kawasan getaran frekuensi tinggi. Pastikan lokasi pemasangan stabil.
- Produk tidak boleh dikendalikan dalam keadaan seperti pembekuan, kakisian, letupan dan kepekatan habuk dan gas yang berlebihan.

Spesifikasi dan model

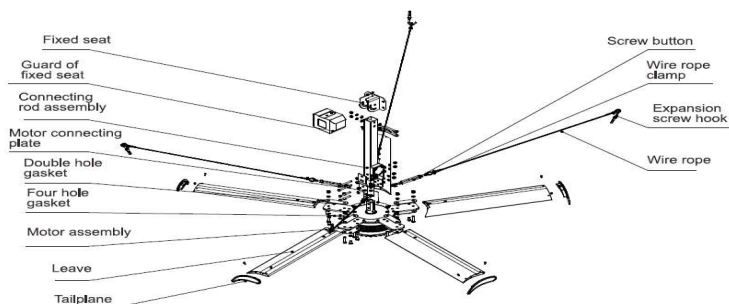
Jadual 1 di bawah menunjukkan Lembaran data teknikal kipas PMSM (X Series)

Jadual 1: Lembaran Data Teknikal Kipas PMSM (X Series)

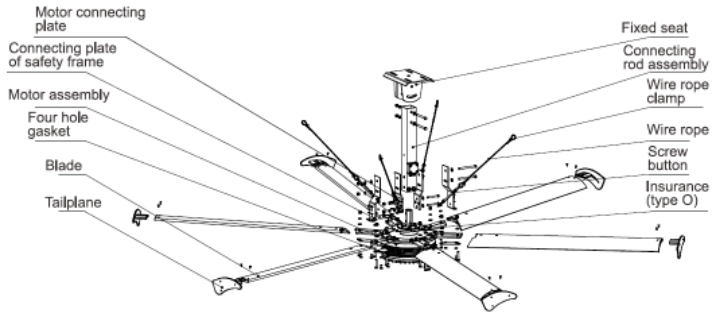
Model	Voltage (v)	Power (watt)	Max Speed (rpm)	No of blade	Air Volume (CMM)	Max Coverage (m ²)	Weight (kg)
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X20		1000	65	6	11500	1000	103
X18		1000	70	6	11000	900	100
X16		750	80	5	10000	500	49
X14		750	90	5	7000	450	46
X12		370	100	5	5000	380	38
X10		370	120	5	4000	250	35
X8		370	130	5	3000	200	32

4. BAHAGIAN & PEMASANGAN

- ✓ Komponen PMSM X Series (X8-X16)



- ✓ Komponen PMSM X Series (X18-X24)



5. ALAT KAWALAN & PENDAWAIAN

- ✓ Pasang alat kawalan pada kedudukan yang betul.

PERHATIAN. Motor yang disambungkan ke urutan fasa alat kawalan tidak boleh salah, jika tidak, motor mundur dan boleh mempengaruhi kesan produk.

Bahagian:

Alat kawalan motor mmagnet kekal	1
Kabel berselubung getah	1

i. Sambungan kotak terminal

Seperti yang ditunjukkan dalam rajah 1, garis pengawal saluran keluar dan pengenalan saluran keluar motor dipasang pada tiang terminal, dan litar pintas tidak akan berlaku. Kawat tanah dipasang pada skru pemasangan atau pangkalan kotak terminal dan penutup kotak persimpangan harus dikunci.



Rajah 1 : Sambungan kotak terminal

ii. Pendawaian alat kawalan

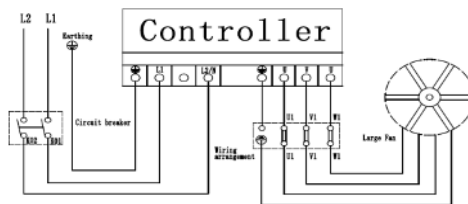
Seperti yang ditunjukkan dalam rajah 2, bingkai merah atas dihubungkan dengan daya komersial (**tiga fasa di angka kiri dan fasa tunggal di angka kanan**), bingkai merah tengah dihubungkan dengan motor (dihubungkan dengan kotak persimpangan), dan bingkai merah kanan dihubungkan dengan wayar tanah (dihubungkan dengan kotak persimpangan).



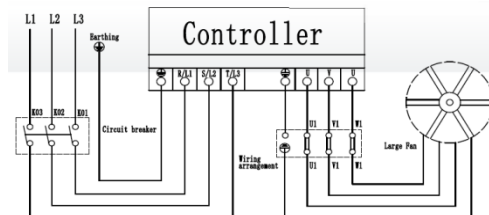
Rajah 2 : Pendawaian alat kawalan

AMARAN. Dilarang menyambungkan kuasa komersial secara langsung ke kipas siling, dan mengesahkan sama ada voltan bekalan kuasa sepadan dengan voltan pengawal.

✓ Rajah Pendawaian



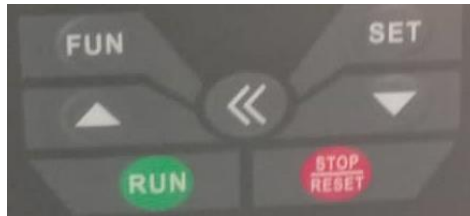
Rajah 3 : Pendawaian input fasa tunggal



Rajah 4 : Pendawaian input tiga fasa

6. Operasi & Penyelesaian Masalah

Alat kawalan (*controller*) ditunjukkan dalam rajah 5:



Rajah 5 : Alat kawalan (*controller*)

Hidupkan - operasi

Matikan - hentikan / tetapkan semula

Kelajuan - kelajuan tekan \wedge +5

Perlahan - tekan kelajuan \vee -5

Jadual 2 : Diagnosis kesalahan dan penanggulangan

Fault Code	Description	Causes	Troubleshooting Method
OC	Perlindungan lebih arus	<ul style="list-style-type: none"> Uji litar pintas output Motor terkunci atau <i>overload</i> 	<ul style="list-style-type: none"> Periksa sama ada kabel motor rosak. Matikan MCB. Selepas 5 minit, hidupkan semula MCB
OE	Perlindungan voltan DC berlebihan	<ul style="list-style-type: none"> Bekalan kuasa terlalu tinggi Inersia perlambatan yang terlalu banyak 	<ul style="list-style-type: none"> Periksa sama ada voltan undian adalah input Meningkatkan masa perlambatan
PF1	Input perlindungan fasa terbuka	<ul style="list-style-type: none"> Fasa kehilangan bekalan kuasa input 	<ul style="list-style-type: none"> Periksa sama ada input daya normal
OL	<i>Inverter overload protection</i>	<ul style="list-style-type: none"> Beban berlebihan 	<ul style="list-style-type: none"> Kurangkan bebanan Meningkatkan kapasiti penukar frekuensi
LU	<i>Under voltage protection</i>	<ul style="list-style-type: none"> Voltan input rendah 	<ul style="list-style-type: none"> Periksa sama ada kuasa input normal

OH	<i>Overheat protection of frequency converter</i>	<ul style="list-style-type: none"> ▪ <i>Heat sink</i> terlalu kotor ▪ Kipas rosak ▪ Suhu persekitaran terlalu tinggi 	<ul style="list-style-type: none"> ▪ Bersihkan saluran masuk dan radiator ▪ Tukar kipas ▪ Meningkatkan pengudaraan
Err2	Kesalahan mengukur parameter	<ul style="list-style-type: none"> ▪ Motor tidak disambungkan semasa pengukuran parameter 	<ul style="list-style-type: none"> ▪ Sila sambungkan motor dengan betul
Err3(4)	Arus kesalahan sebelum operasi	<ul style="list-style-type: none"> ▪ Terdapat isyarat arus penggera sebelum operasi 	<ul style="list-style-type: none"> ▪ Periksa sambungan kabel ▪ Minta perkhidmatan pengeluar
PFO	Kehilangan kuasa output	<ul style="list-style-type: none"> ▪ Talian motor terputus ▪ Motor rosak ▪ Kesalahan <i>Inverter</i> 	<ul style="list-style-type: none"> ▪ Periksa wayar sambungan motor dengan teliti ▪ Ganti motor ▪ Dapatkan sokongan dari pengeluar
GP	<i>Grounding protection</i>	<ul style="list-style-type: none"> ▪ Kabel motor rosak dan litar pintas ke tanah ▪ Kerosakan penebat motor ▪ Kesalahan <i>Inverter</i> 	<ul style="list-style-type: none"> ▪ Gantikan kabel ▪ Gantikan motor ▪ Dapatkan sokongan dari pengeluar
PCE	PMSM kesalahan penyesuaian	<ul style="list-style-type: none"> ▪ Masa pecutan terlalu pendek ▪ <i>Overload</i> ▪ Pemutar motor terkunci 	<ul style="list-style-type: none"> ▪ Memanjangkan masa pecutan ▪ Periksa motor kemungkinan <i>overload</i>
ALM Light	<i>Out-of-order</i>	<ul style="list-style-type: none"> ▪ Laporkan kerosakan 	<ul style="list-style-type: none"> ▪ STOP/RESET
Key Failure	Arahan ini tidak sah	<ul style="list-style-type: none"> ▪ Kabel longgar ▪ Kesalahan <i>Inverter</i> 	<ul style="list-style-type: none"> ▪ Pasangan kabel semula dengan teliti ▪ Tutup kuasa dan buka semula selepas satu minit ▪ Hubungi pengeluar

Pemeriksaan dan penyelenggaraan berkala

Peralatan elektronik dan komponen lain tidak dapat digunakan secara kekal walaupun dalam keadaan kerja biasa. Sekiranya had perkhidmatan terlampaui, akan berlaku perubahan pada ciri atau kerosakan. Untuk mengelakkan kegagalan jenis ini, diperlukan pemeriksaan berkala. Sebaiknya periksa mesin setiap 6-12 bulan selepas pemasangan

Jadual 3: Jadual pemeriksaan dan penyelenggaraan berkala

No	Pemeriksaan objek	Periksa kandungan	Penyelesaian
1.	Keseluruhan	<ul style="list-style-type: none"> Kotoran, habuk. Bahagian rosak / cacat. Bahagian yang berubah warna kerana masa. 	<ul style="list-style-type: none"> Ganti bahagian yang rosak. Hubungi perkhidmatan selepas jualan kami. Buang habuk / kotoran dengan tuala kering.
2.	Motor	Sekiranya terdapat getaran atau bunyi yang tidak normal semasa produk sedang berjalan.	<ul style="list-style-type: none"> Matikan kipas, hubungi dan dapatkan khidmat selepas penjualan. Periksa bahagian dan sambungan pengikat dan ketatkan semua skru.
3.	Sistem Kawalan	<ul style="list-style-type: none"> Pastikan sama ada kipas diwarnai dengan habuk / kotoran. Periksa wayar dan wayar penyambung dalaman jika berubah warna, rosak atau terputus. Periksa pelindung wayar rosak, retak, atau berubah warna. Periksa terminal penyambung usang, rosak atau longgar. Periksa pengembangan kapasitans, perubahan warna, retak. 	<ul style="list-style-type: none"> Bersihkan / ganti kipas penyejuk. Mbaiki / mengganti wayar dan penyambung yang rosak. Hubungi syarikat selepas jualan jika tidak dapat mengganti atau membaiki.
4.	Operator LED	<ul style="list-style-type: none"> Periksa bahagian operasi 	<ul style="list-style-type: none"> Sekiranya LED atau kunci

		<ul style="list-style-type: none"> beroperasi dengan betul. Periksa bahagian operasi yang kotor. 	<p>operasi rosak, sila hubungi perkhidmatan selepas jualan kami.</p> <ul style="list-style-type: none"> Buang habuk / kotoran dengan tuala kering. Jangan lap dengan air.
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PERHATIAN:

- Untuk mengelakkan kejutan elektrik, pemasangan dan pendawaian mesti dilakukan oleh kakitangan profesional mengikut manual produk.
- Sebelum menggunakan produk ini, periksa sama ada ruang kipas siling di sekitarnya memenuhi syarat. Untuk kegunaan pertama, sahkan sama ada bekalan kuasa memenuhi syarat, sama ada pendawaian betul dan tegas, dan hidupkan bekalan kuasa hanya setelah mengesahkan keselamatan.
- Sistem ini dilengkapi dengan tegangan berlebihan, di bawah voltan, peraturan kehilangan voltan, kehilangan fasa, beban berlebihan, perlanggaran, pemanasan berlebihan, perlindungan kilat, dll.
- Apabila kipas siling sudah lama tidak digunakan, untuk memanjangkan hayat produk, sila gunakan selama 10 minit setiap bulan.

Disediakan oleh:

Disemak oleh:

.....

.....

(Nur Wajihah)

(Muhammad Abid Adnan)

R&D Executive

Sales Manager

Disahkan oleh:

.....

(Zulkufli B Zakaria)

Ketua pengarah urusan



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