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SPECIFICATION FOR DC BRUSHLESS MOTOR

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REV					
	APPROVED	H.SAGARA	2022-12-2	MODEL	11W704UD20
	DESIGNED	T.IWAO	2022-12-2		
APPROVED		H.SAGARA	2022-10-24	DRAWING No.	3PSPC22X002A
CHECKED		GX.ZHANG	2022-10-24		
DESIGNED		T.IWAO	2022-10-24	DC BRUSHLESS MOTOR	Sheet 1 of 13
DRAWN		L.LUO	2022-10-24		

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1.適用 Scope

本仕様書は、掃除機用 DC ﾌﾞﾗｼﾚｽﾓｰﾀﾌﾞﾛﾜﾕﾆｯﾄについて規定する。
This document specifies DC Brushless motor Blower Unit for vacuum cleaner.

2.製造元 Manufacturer

No	項目 ITEMS	規格 SPECIFICATION
1	製造工場 Manufacturing factory	日本電産（浙江）有限公司 Nidec（Zhejiang）Corporation
2	製造国（原産地） Country of manufacture	中華人民共和国 People's Republic of China
3	住所 Street address	The Cross of Huanbei Second Road N.and Pinghu Dadao Highway E., Pinghu Economic Development Zone, Pinghu City, Zhejiang Prov., 314200 The People's Republic of China

3.仕様 Specification

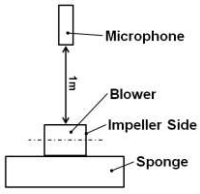
No	項目 ITEMS	規格 SPECIFICATION	備考 NOTE
1	相数・極数 Phases・Poles	3 相・2 極 3Phases・2Poles	
2	制御方式 Control method	3 相、PWM duty 方式 3Phase,PWM drive	
3	定格電圧 Rated voltage	DC 21.6【V】	
4	最低動作電圧 Minimum operation voltage	DC 14【V】	
5	最大動作電圧 Maximum operation voltage	DC 27【V】	
6	ﾓｰﾀ絶縁階級 Motor insulation class	B 種相当 (銅線ーインシュレータ間) Class B (Between winding and insulator)	
7	回転方向 Direction of rotation	CCW Main direction CCW	ｲﾝﾍﾟﾗより見て When viewed from the impeller
8	軸受ﾀｲﾌﾟ Bearing type	玉軸受 Ball bearing	
9	ﾕﾆｯﾄ質量 Unit assembly weight	240【g】Max	

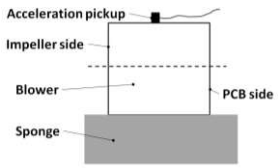
4.特性 Characteristics

4-1.電気特性 Electrical characteristics

No	項目 ITEMS	規格 SPECIFICATION	備考 NOTE
1	絶縁耐力 Dielectric strength	AC600【V】、1【sec】にて 漏洩電流 5.0【mA】以下 Leakage current 5 [mA] Max. at AC600 [V] and 1 [sec]	ﾓｰﾀｺｲﾙ部とﾓｰﾀｹｰｽ部間で測定 Measure between the motor coil and the motor case 周波数 50【Hz】or 60【Hz】 Frequency 50 [Hz] or 60 [Hz] 駆動回路は除く Except for the drive circuit
2	絶縁抵抗 Insulation resistance	DC500【V】、50【MΩ】以上 500 [VDC],50 [MΩ]Min	ﾓｰﾀｺｲﾙ部とﾓｰﾀｹｰｽ部間で測定 Measured between the motor coil and the motor case
3	コンデンサ漏れ電流 Capacitor leak current	EN OFF 4【s】後 8.0【mA】以下 EN OFF after 4seconds, 8.0[mA] less 2 分後の漏れ電流安定時 約 20【μA】相当 (20[μA]コンデンサ実力値) It is supposed that the leak current after 2minutes is about 20[μA](capacitor actual value).	

4-2.機械特性 Mechanical characteristics

No	項目 ITEMS	規格 SPECIFICATION	備考 NOTE
1	騒音 Noise	90【dB(A)】MAX	DC21.6【V】、Duty100%、ﾌﾘｰｴｱｰ 出力軸水平、ｽﾎﾟﾝｼﾞ上 ﾏｲｸとの距離はﾓｰﾀ上方から 1【m】 21.6 [VDC], Duty100%, Free air, Output shaft horizontal, On the sponge, and microphone distance 1 [m] from motor top surface 図 1 参照 As shown in Fig1  図 1 騒音測定 Fig1. Noise measurement

2	異常音 Abnormal noise	電源電圧範囲 DC 14【V】～ DC 27【V】 吸込み口開放から、密閉付近までにおいて異常音が無きこと ｼﾞｬｲﾛ音が発生しないこと Abnormal sound shall not generate at the condition of inlet open to nearly sealed, and at the range of (14[VDC] ～ 27[VDC]). The gyro noise should not be generated. 起動時、停止時に異常音が無きこと Abnormal sound shall not generate at start-up and stop. (問題が生じた場合は、別途協議の上、限度見本管理とする) If problems occur, it shall be determined separately and managed by boundary sample.	
3	振動 1 次成分 (Vibration at 1st frequency of rotaion)	50【m/s^2】Max	DC 21.6【V】、Duty100% 、ﾌﾘｰｴｱｰ、ﾓｰﾀｹｰｽ外径部、ｽﾎﾟﾝｼﾞ上で測定。 21.6 [VDC], Duty100%, Free air, Outside of the motor case, Measured on the sponge. 図 2 参照 As shown in Fig2  図 2 振動測定 Fig2. Vibration measurement
4	PQ 特性 PQ characteristics 入力 150W Duty97%	入力 150±7%【W】 Input power Orifice：13【mm】 出力 66【W】Min Suction power Orifice：13【mm】	DC21.6【V】、Orifice13【mm】 21.6[VDC], Orifice13[mm] IEC 規格 IEC standard 温度：25±5【℃】、気圧：1013±40【hPa】 Temperature : 25±5 [℃], Atmospheric pressure : 1013±40 [hPa] 湿度：10【%】 ～85【%】 Humidity : 10 [%] ~ 85 [%]

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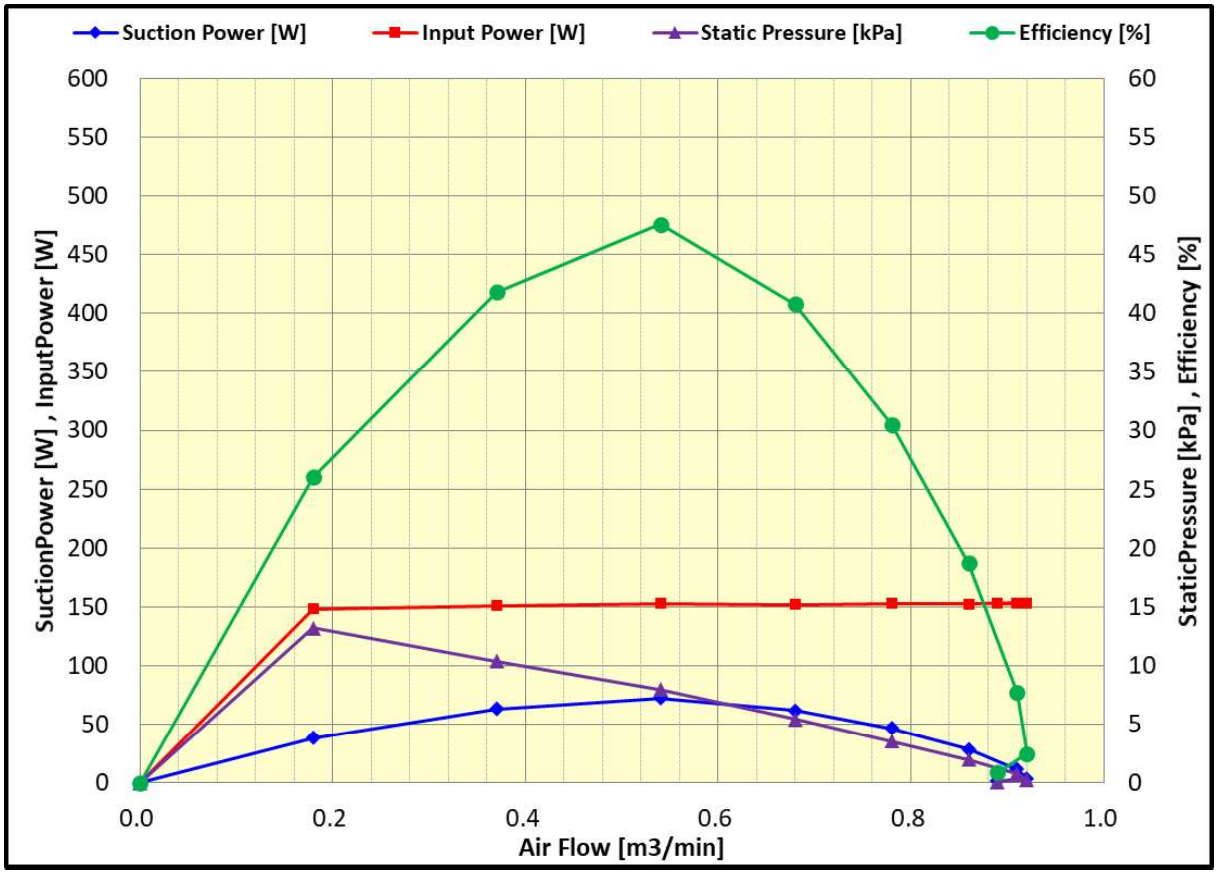
4-3.入力 150W PQ 曲線　Input Power 150W PQ Charactaristic Curve

Orifice Size [mm]	Air Flow [m3/min]	Static Pressure [kPa]	Suction Power [W]	Voltage [V]	Current [A]	Input Power [W]	Efficiency [%]	Speed [min^{-1}]
50.0	0.92	0.10	1.6	21.6	7.04	154.0	1.0	58228
40.0	0.94	0.26	4.1	21.6	7.00	153.8	2.7	58342
30.0	0.93	0.80	12.4	21.6	6.96	152.0	8.1	57900
23.0	0.87	2.05	29.8	21.6	6.95	151.9	19.6	58203
19.0	0.79	3.67	48.5	21.6	6.97	152.8	31.7	57918
16.0	0.69	5.51	63.1	21.6	6.95	151.7	41.6	58357
13.0	0.55	8.12	74.3	21.6	6.97	153.6	48.4	60177
10.0	0.37	10.80	66.9	21.6	6.95	152.2	43.9	64496
6.5	0.18	14.00	42.1	21.6	7.02	153.6	27.4	76505
0.0	0.00	0.00	0.0	21.6	0.00	0.0	0.0	0



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5.環境条件 Ambient condition

No	項目 ITEMS	規格 SPECIFICATION	備考 NOTE
1	動作条件 Operating condition	乾球温度：0【℃】 ～ +40【℃】 相対湿度：10【%】 ～93【%】 Dry bulb temp:0 [℃] ~ +40 [℃] Relative humidity:10 [%] ~ 93 [%]	結露無きこと No condensation
2	保存条件 Storage condition	乾球温度：-20【℃】 ～ +70【℃】 相対湿度：10【%】 ～ 93【%】 Dry bulb temp:-20 [℃] ~ +70 [℃] Relative humidity:10 [%] ~ 93 [%]	結露無きこと No condensation
3	保存期間 Storage period	6 ヶ月以内とする Within 6 months	結露無きこと No condensation

6.温度条件 Temperature condition

実機搭載、最大動作温度条件にて、下記の最大温度定格を遵守頂く様お願い致します。
At the condition of vacuum cleaner and max operation temperature, please keep the motor temperature under following max temperature rating.

No	項目 ITEMS	規格 SPECIFICATION	備考 NOTE
1	ｺｲﾙ表面最大許容温度 Maximum permissive coil surface temperature	135【℃】MAX	40【℃】環境、掃除機本体組み込み、吸気密閉 or 保護装置動作直前(または、その負荷に相当するｵﾘﾌｨｽをﾓｰﾀ単体に取り付け) 40 [℃]environment, Assembled inside vacuum cleaner, inlet sealed or just before operation of protection device. (Or, mount an orifice, which correspond to that loading, on the motor alone.)
2	FET 表面最大許容温度 Maximum permissive FET surface temperature	120【℃】MAX	

7.回路保護機能 Circuit protection function

制御仕様書 Control specification：ｼｽﾃﾑ制御仕様書 3PTMP22X002 に準ずる
This complies with the system control specification 3PTMP22X002.

8.ｲﾝﾀｰﾌｪｰｽ Interface

8-1.ｺﾈｸﾀ Connector：HA1251-4A-S(華虹)

PIN NO.	I/O	SIGNAL	SPECIFICATION	NOTE
1	IN	EN	入力電圧範囲：DC0【V】~DC 5.5【V】 Input voltage range：0【V】~ 5.5【V】 VIH：4.0【V】Min. VIL：0.5【V】Max.	-
2	IN	PWM	PWM duty による電力指令信号 Power command signal by PWM duty 入力波形：矩形波 Input wave form : Square wave Duty 範囲：0【%】~ 100【%】 Duty range: 0[%] ~ 100[%] 入力電圧範囲：DC 0【V】~DC 5.5【V】 Input voltage range : 0[VDC] ~ 5.5[DCV] 入力周波数：0.5 ~ 1.5 K【Hz】 Input frequency : 0.5 ~ 1.5 K[Hz] VIH：4.0[VDC]Min. VIL：0.5[VDC]Max.	-
3	OUT	FG	VOH：5.5[VDC]max、4.0[VDC]min. VOL：0.5[VDC]max	FG[Hz] =Speed[rpm]/60
4	-	GND	Signal GND	-

8-2.端子 Terminal：None Rev.A

Wire color	I/O	SIGNAL	SPECIFICATION	NOTE
Red	IN	VM	バッテリ電圧供給 Battery voltage supply	-

8-3.端子 Terminal：None Rev.A

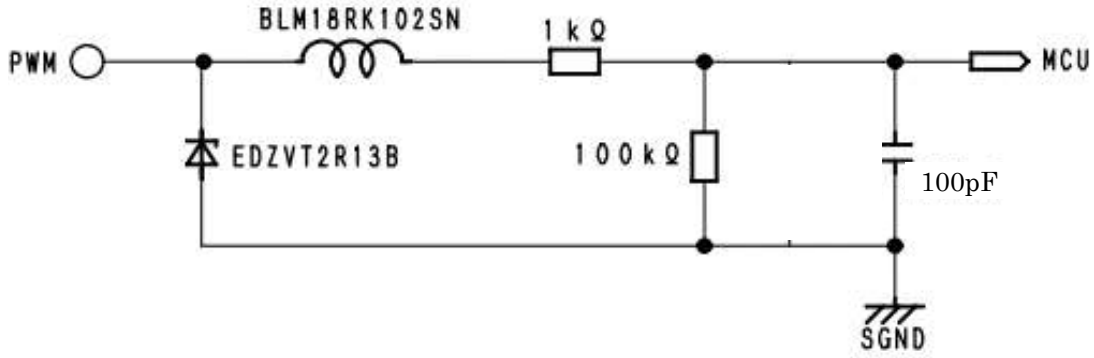
Wire color	I/O	SIGNAL	SPECIFICATION	NOTE
Black	IN	GND	Power GND	-

注)
バッテリ接続時の急峻な VBAT 印加および間違った通電順序は
モータの特性劣化や故障の原因となりますので、以下の点に注意してご使用ください。
・モータへの VBAT 印加時、突入電流が 10A 以下になるように検討および調整ください。
突入電流が 10A を超える場合は、弊社までご連絡をお願いいたします。
・モータ起動時は VBAT、各入力信号、駆動信号の順に印加してください。
モータ停止時は、駆動信号遮断の 5 秒後を目安として各入力信号、VBAT の順に遮断してください。

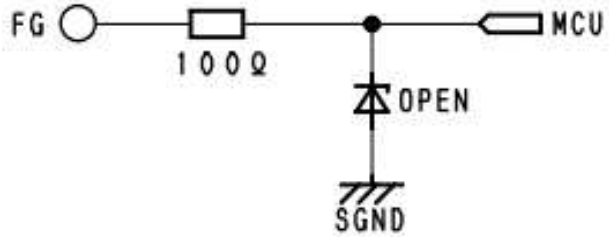
caution)
When the battery is connected, applying a steep VBAT and/or the incorrect energization sequence may cause deterioration of motor characteristics or failure.
Therefore, please note the following points when using.
・When applying VBAT to the motor, consider and adjust VBAT so that the inrush current is 10A or less.
If the inrush current exceeds 10A, please contact us.
・When starting the motor, please apply VBAT, each input signal, and the drive signal in this order.
When stopping the motor, please turn off the drive signal firstly.
And after 5 seconds turn off each input signal and VBAT in this order.

8-4.等価回路図 Equivalent circuit diagram

8-4-1.PWM



8-4-2.FG



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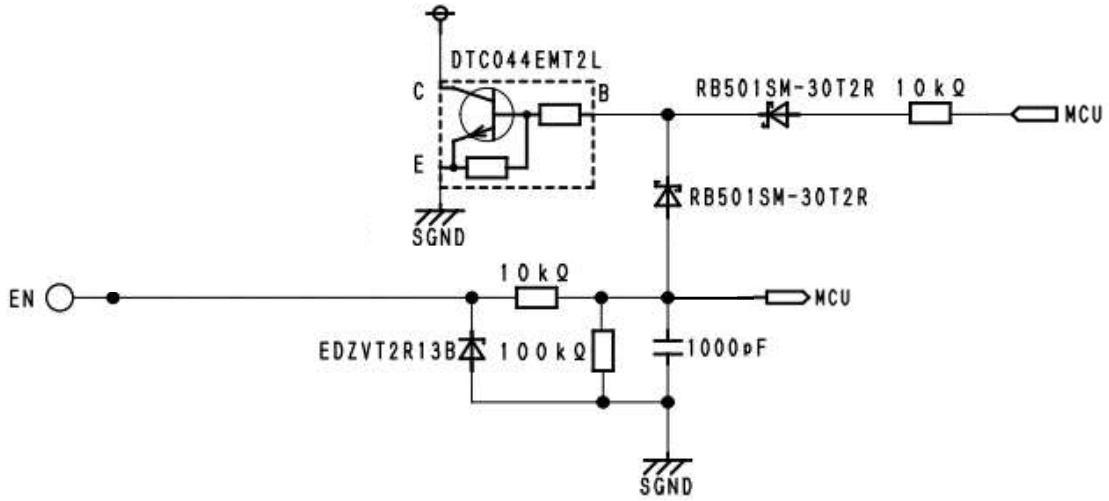
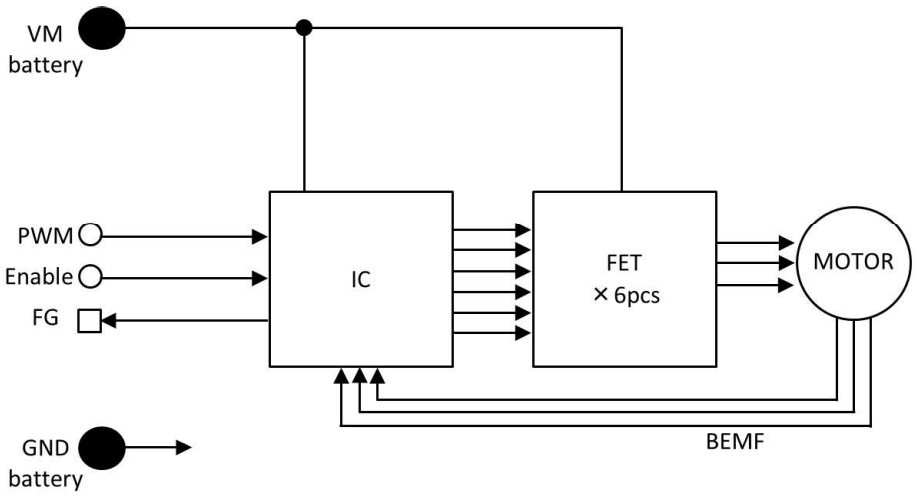
8-4-3.EN



8-4-4　回路ﾌﾞﾛｯｸ図 Circuit block diagram



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9.寿命試験 Life test

No	項目 ITEMS	条件 CONDITION	判定基準 CRITERION
1	連続運転 Continuous operating test	ﾓｰﾀ単体ｵﾘﾌｨｽ径：13【mm】、Duty100% motor alone orifice diameter : 13[mm], Duty100% 定格電圧：DC21.6【V】 Rated voltage : 21.6[VDC] 環境温度：常温 Environmental temperature: At normal temperature ﾓｰﾀ姿勢：出力軸水平 Motor posture : Output shaft horizontal	300【h】時点で特性変動 10%未満、異常振動無きこと After 300 [h] characteristic deviation shall be less than 10% and there shall be no abnormal vibration. 300【h】時点で各部に異常無きこと，ﾗｲﾌｴﾝﾄﾞで発煙発火無きこと After 300 [h] there is no abnormal. After life test, there shall be no smoke or fire in any part.
2	断続運転 1 Intermittent operating test	ﾓｰﾀ単体ｵﾘﾌｨｽ径：13【mm】、Duty100% motor alone orifice diameter : 13[mm] Duty100% 定格電圧：DC21.6【V】 Rated voltage : 21.6 [VDC] 環境温度：常温 Environmental temperature : At normal temperature on 時間：14.5【分】 off 時間：0.5【分】 on time : 14.5 [min] off time : 0.5 [min] ﾓｰﾀ姿勢：出力軸水平 Motor posture : Output shaft horizontal	800【h】以上(合計)異常なく運転すること Shall operate for more than 800 [h](total) without abnormal. ｲﾝﾍﾟﾗ,ﾏｸﾞﾈｯﾄの破壊無きこと No destruction of impeller or magnet shall be accepted.
3	断続運転 2 Intermittent operating test	ﾓｰﾀ単体ｵﾘﾌｨｽ径：6.5【mm】、Duty100% motor alone orifice diameter : 13[mm] Duty100% 定格電圧：DC21.6【V】 Rated voltage : 21.6 [VDC] 環境温度：常温 Environmental temperature : At normal temperature on 時間：6【秒】 off 時間：4【秒】 on time : 6 [sec] off time : 4 [sec] ﾓｰﾀ姿勢：出力軸水平 Motor posture : Output shaft horizontal	回転数 75000rpm～77000rpm で 30000【cycle】以上(合計)異常なく運転すること Shall operate for more than 30000 [cycle](total) At rotation speeds of 75000 rpm to 76000 rpm without abnormal. ｲﾝﾍﾟﾗ,ﾏｸﾞﾈｯﾄの破壊無きこと No destruction of impeller or magnet shall be accepted.

10.付属図面 Accompanying drawing

10-1.外形図：図面 K9810135***参照
Outline drawing：Refer to drawing No. K9810135***

10-2.材料構造図：図面 K9810136***参照
Material drawing：Refer to drawing No. K9810136***

10-3.梱包仕様：図面 K9810137***参照
Packing specification：Refer to drawing No. K9810137***

11.使用上の注意とお願い Usage notification

11-1.ﾓｰﾀを落下させたり、強くぶつけたりした場合は、例え動作に異常無くとも保証外と致します。
In case a motor is dropped or subjected to big impact, that motor is considered out of warranty even if its operation is normal.

11-2.本製品は完成機器に組み込まれる事を前提としており、本製品は PL(製造物責任)法に基づく警告表示は行っておりません。警告表示が必要な場合はご連絡お願い致します。
The motor is considered to be assembled in final product. The motor does not have warning mark according to PL (Product Liability) law.
Please notify in case the warning mark is required.

11-3.金属片、金属粉、水蒸気、水滴、また、ｼｮｰﾄの懸念がある大量の埃、粉塵等がﾓｰﾀ内部、基板上へ侵入するような環境での使用は保証外と致します。
In case the motor is used under an environment that metal particle, metal dust, vapor, water drop or excess amount of dust which has risk of short circuit could enter into motor or PCB, it is considered out of warranty.

11-4. 回路動作中、停止中ともに電源および信号線（インターフェース）の活線挿抜は禁止です。
本製品へのｺﾈｸﾀ接続、取り外しは、必ず電源を OFF にし、回転が停止した後に実施下さい。通電状態や回転状態で行うと、駆動回路が破壊し、ﾓｰﾀが回転不能となる可能性があります。
The power supply and signal lines (interface) must not be connected or disconnected while the circuit is operating or stopped.
Plugging in and out of connector to the motor shall be conducted after power off and rotation stop.
In case it is conducted during operation or rotation, there may be a risk of driver circuit damage or non-operation of motor.

11-5.ﾉｲｽﾞ、ｻｰｼﾞ、瞬時停電、静電気による誤動作、回路破壊及び端子雑音による外部への影響については、貴社完成機器でご確認下さい。ﾘｰﾄﾞ線の長い機種についてはﾉｲｽﾞの影響等の確認を十分にご検討下さい。
Operation error due to noise, surge, or instant power outage, or influence to external due to circuit damage or conducted emission shall be evaluated in your final product. For model with long lead wire, influence of noise and others shall be well-considered.

11-6.ﾓｰﾀを外力で高速回転させると、発電現象により破壊する恐れがあります。外力高速回転が起こらない機構を取る様、ご配慮願います。
If the motor is rotated by external force, there is a risk of damage due to electric generation phenomenon.
Please consider a mechanism that high rotation by external force does not occur.

11-7.腐食性ｶﾞｽ(H2S、SO2、NO2、Cl2 等)はもとより、有害なｶﾞｽ雰囲気中、及び有害なｶﾞｽを発生する物質(特に有機ｼﾘｺﾝ系、ｼｱﾝ系、ﾎﾙﾏﾘﾝ系、ﾌｪﾉｰﾙ系物質)が存在する場所でのご使用は避ける様にして下さい。
なお、完成機器内においても上記物質が存在する場合は、事前に十分ご確認下さい。錆が発生したり、寿命が短くなる可能性があります。
Please do not use the motor under environment of hazardous gas or where substance which generates hazardous gas exist, including but not limited to corrosive gas (ex: H_2S、SO_2、NO_2、Cl_2)

11-8.保管につきましては上記腐食性ｶﾞｽ、有害なｶﾞｽ雰囲気中および保存環境条件を越える範囲は避けて下さい。
Please do not storage the motor under environment of above corrosive gas or hazardous gas, or environment beyond storage condition.

11-9.本仕様書の記載範囲を超えてのご使用につきましては保証外と致します。実機の仕様変更等で記載範囲を超えて使用する場合は、別途ご確認お願い致します。
Usage beyond the range specified in the specification is considered out of warranty. Please notify separately in case the motor is used beyond the described range due to specification change of the final product, or others

11-10.本仕様書に記載されていない項目で取り決めの必要がある項目は事前にご連絡下さい。ご連絡の無い場合は、貴社完成機器にｾｯﾄして発生する不具合は無いものとして弊社の標準に準拠して納入させて頂きます。
Please notify in advance in case there is an item which needs to be agreed other than those described in the specifications. No notification is considered that there is no failure which occurs when the motor is assembled in your final product and the motor will be delivered according to Nidec standards.

11-11.ﾓｰﾀ単体で性能を満たしても、実機の影響で特性が変動する場合がありますので、実機とのﾏｯﾁﾝｸﾞ最終判断は貴社にてお願い致します。
Even if the motor itself satisfies the performance, the characteristics may vary due to influence of final product. Final judgment of matching with the final product is requested to be made by your company.

11-12.本製品及びその部品の一部は、軍事用への転用を禁止致します。
Whole or partial of the product is prohibited to be used for military affairs

11-13.規定された用途以外のいかなる使用においても保証外と致します。
Any use for other than prescribed purposes is also out of the warranty range

11-14.不具合発生時は、本仕様書記載事項に基づき双方協議の上解決するものと致します。
In case of failure, it shall be solved by discussion of both parties according to description of the specification.

11-15.本仕様書に記載されていない事項にて疑義が生じた場合、両者が良心的に協議し解決するものと致します。
Any question which is not described in the specification shall be solved by conscience discussion of both parties.

11-16.本仕様書の第三者への開示は禁止致します。
Please do not disclose this specification to third party.

11-17.動作時はﾌｧﾝｶﾊﾞｰ内周部を強く押さない様お願い致します。ｲﾝﾍﾟﾗとﾌｧﾝｶﾊﾞｰが接触し、ｲﾝﾍﾟﾗﾛｯｸに至る可能性があります。
During operation, please do not press fan cover strongly. Otherwise, it may cause the impeller lock.

11-18. 本ﾓｰﾀはﾋｭｰｽﾞによる回路保護はございません。最大動作電圧を超える電圧印加および逆接続・誤接続による電圧印加ないようにご注意ください。
This motor doesn't have circuit protection by FUSE. Please be careful not to apply a voltage exceeding the maximum operation voltage or apply a voltage due to reverse or incorrect connection.

11-19.本仕様書は中文および英文で作成され、双方とも等しく有効です。双方に相違がある場合には中文が優先されるものと致します。
The specification is described by Japanese and English. Both are equivalently effective. In case there is conflict between the two languages, Japanese take precedence.

Nidec

SPECIFICATION FOR DC BRUSHLESS MOTOR

12.責任区分 Responsibility

納入品の仕様・材料・製造場所・製造工程及び、管理ｼｽﾃﾑ等の変更を行う場合、品質信頼性に影響の無い事を確認し、信頼性試験ﾃﾞｰﾀを掲示の上、深圳市启为机器人技术有限公司まで、事前に文書で申し入れるものとする。

When changing the specification, the material, the manufacturing place, the manufacturing process and the management system of this product and so on, confirm there is no influence in the quality reliability. After presenting the reliability test data, at meantime we will provide the documents to 深圳市启为机器人技术有限公司.

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13.変更履歴 Change history

Date	Rev.	Sheet	Before	After	Design	Approved
12/2	A	7	-	None	T.Iwao	H.Sagara

Confidential

Specification No. : **3PTMP22X002**

Date of issue (year / month / day)
Preliminary version release 2022/10/24

APPROVED	CHECKED	PREPARED
K.Harada	N.Nakamachi	GX.Zhang

Development Division 2 Design Engineering Department 2
Small Precision Motor & Solutions Business Unit

System Control Specification

Project	11W704UD20
Target	深圳市启为机器人技术有限公司

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1 Introduction

1.1 SCOPE

This document defines the functional software motor control specifications for the blower motor of 11W704UD20.

2 System Overview

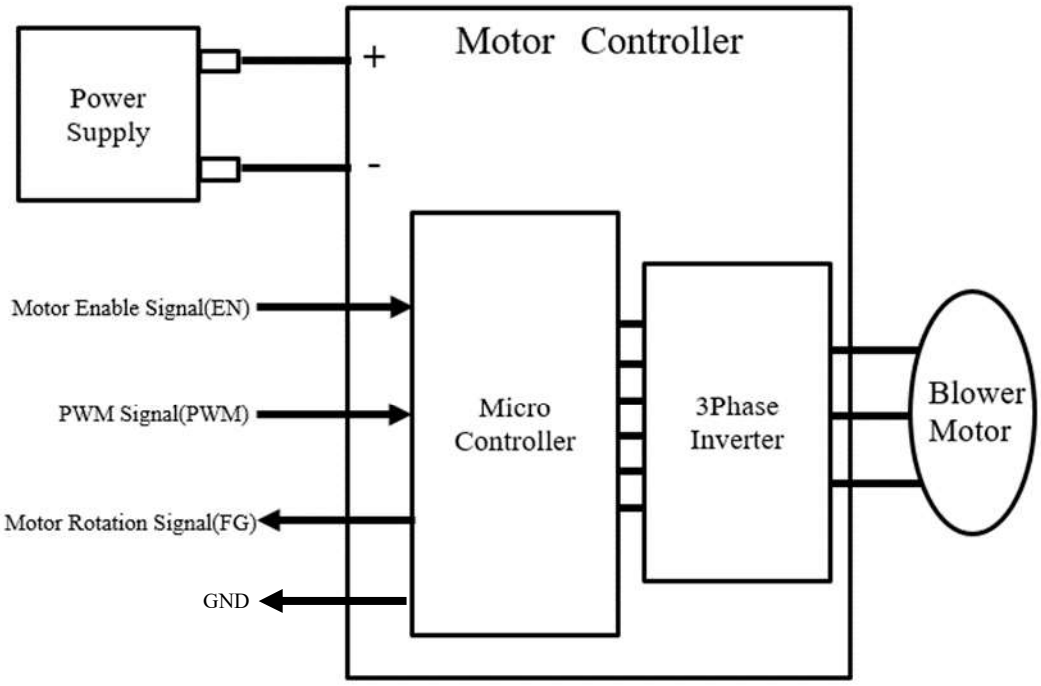


Fig. 2-1 System Diagram

3 Control specifications

3.1 Motor Start / Stop

【ODSS.STSP10V0】

The motor shall be started when the Motor Enable Signal is input 5[V] AND the PWM Signal on duty is >= typ.6 [%].

【ODSS.STSP20V0】

The motor shall be stopped when the Motor Enable Signal is input 0[V] OR the PWM Signal on duty is <= typ.4 [%].

3.2 Motor speed limit control

【ODSS.MOTSPDLIM10V0】

The motor speed is controlled up to typ.100,000[min^{-1}].

3.3 Motor input power control

【ODSS.MOTCTRL10V0】

The motor input power changes with the PWM Signal duty ratio.

Refer below figure:

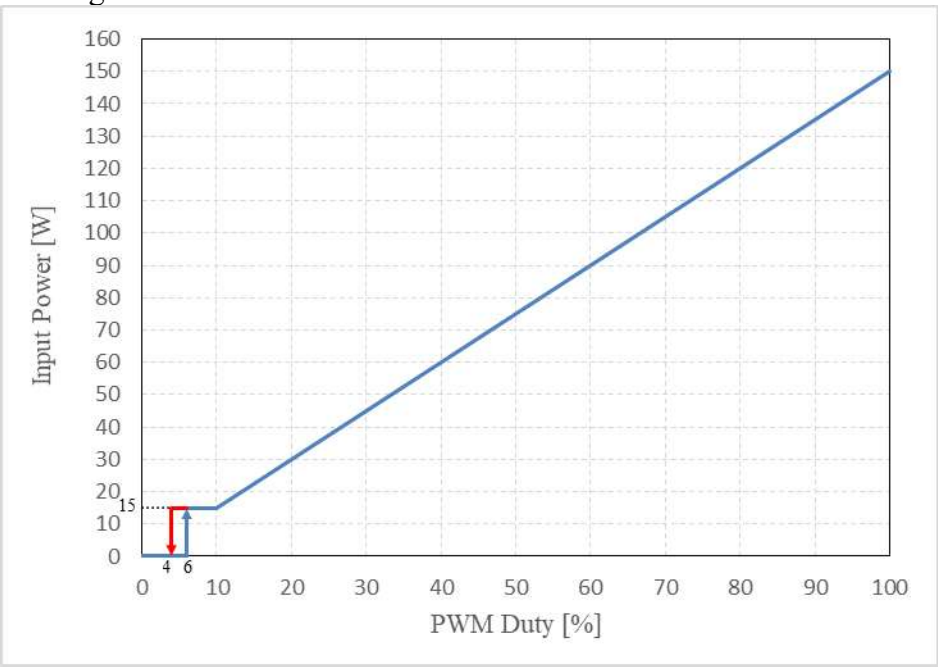


Fig. 3-1 Motor Input Power vs PWM Signal

Since PWM Duty 3-7% is within the hysteresis range, please do not set PWM Duty within this range. The PWM signal threshold for motor stop to drive is 6% (nominal value).

3.4 Output Motor rotation signal (FG)

【ODSS.FG10V0】

The motor rotation signal (FG) shall be output as square-wave while motor is working.

The motor speed can be calculated by below formula.

$$\text{Motor Speed [min}^{-1}\text{]} = \text{Motor rotation signal [Hz]} \times 60$$

3.5 Fail Safe

3.5.1 Motor Start up

- Detection Interval 【ODSS.START10V0】

  The Motor Start up fault condition shall be monitored in the motor start up.

- Detection Condition 【ODSS.START20V0】

  The Motor Start up fault condition shall be detected if the motor start up is failed continuously for 3 times.

- Detection Action 【ODSS.START30V0】

  When the Motor Start up fault condition is detected, the motor controller shall immediately stop attempting to drive the motor.

- Recovery Condition 【ODSS.START40V0】

  Recovery from the Motor Start up fault condition shall be made only after a system reset.

3.5.2 Over Temperature

- Detection Interval 【ODSS.OVERTMP10V0】

  The Over Temperature fault condition shall be monitored all the time.

- Detection Condition 【ODSS.OVERTMP20V0】

  The Over Temperature fault condition shall be detected if the detected temperature of thermistor is > typ.105 [deg C].

- Detection Action 【ODSS.OVERTMP30V0】

  When the Over Temperature fault condition is detected, the motor controller shall gradually stop attempting to drive the motor.

- Recovery Condition 【ODSS.OVERTMP40V0】

  Recovery from the Over Temperature fault condition shall be made only after a system reset.

3.5.3 High Battery Voltage

- Detection Interval 【ODSS.H_VOL10V0】

  The High Battery Voltage fault condition shall be monitored all the time.

- Detection Condition 【ODSS.H_VOL20V0】

  The High Battery Voltage fault condition shall be detected if the battery voltage is >= typ.29 [V].

- Detection Action 【ODSS.H_VOL30V0】

  When the High Battery Voltage fault condition is detected, the motor controller shall gradually stop attempting to drive the motor.

- Recovery Condition 【ODSS.H_VOL40V0】

  Recovery from the High Battery Voltage fault condition shall be made if the battery voltage is <= typ.28 [V].

3.5.4 Low Battery Voltage

- Detection Interval 【ODSS.L_VOL10V0】

  The Low Battery Voltage fault condition shall be monitored all the time.

- Detection Condition 【ODSS.L_VOL20V0】。

  The Low Battery Voltage fault condition shall be detected if the battery voltage is <= typ.12 [V].

- Detection Action 【ODSS.L_VOL30V0】

  When the Low Battery Voltage fault condition is detected, the motor controller shall immediately stop attempting to drive the motor.

- Recovery Condition 【ODSS.L_VOL40V0】

  Recovery from the Low Battery Voltage fault condition shall be made if the battery voltage is >= typ.13 [V].

3.5.5 Over Motor Speed

- Detection Interval 【ODSS.OVERSPD10V0】

  The Over Motor Speed fault condition shall be monitored when the motor works.

- Detection Condition 【ODSS.OVERSPD20V0】

  The Over Motor Speed fault condition shall be detected if the detected.
  When the voltage is 21.6V, motor speed is >= typ.79000 [min-1] at 150W continuously for 4 [s].

- Detection Action 【ODSS.OVERSPD30V0】

  When the Over Motor Speed fault condition is detected, the motor controller shall gradually stop attempting to drive the motor.

- Recovery Condition 【ODSS.OVERSPD40V0】

  Recovery from the Over Motor Speed fault condition shall be made only after a system reset.

3.6 Failsafe Information Output

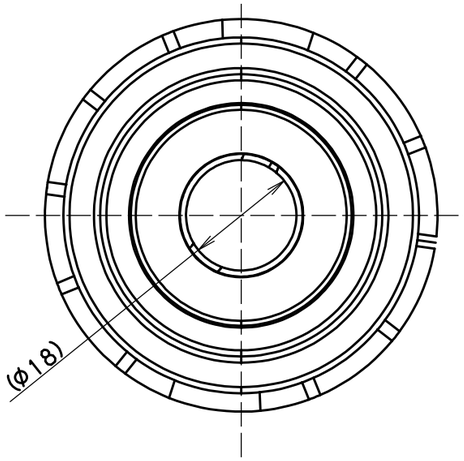
【ODSS.DIAGFIO10V0】

Fault(Fail Safe)	Motor rotation signal (FG signal)
Motor Start up	Low
Over Temperature	High
High Battery Voltage	Low
Low Battery Voltage	Low
Over Motor Speed	Low
Normal Stop	Low

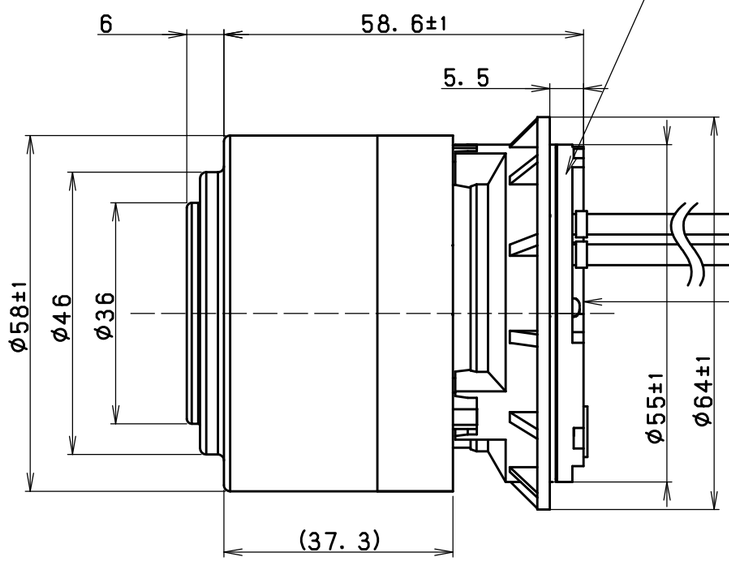
4 HISTORY

Ver	month/day/year	Change description	APPROVED	CHECKED	PREPARED
0	10/24/2022	Preliminary version release	K.Harada	N.Nakamachi	GX.Zhang

Direction of rotation
CCW



Rubber attachment
Silicon



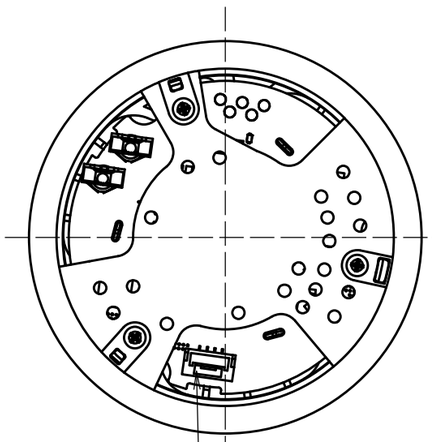
Lead Wire(Black)
UL3239 AWG16

2x10±3

1_ リード線仕様を変更

2x245±10

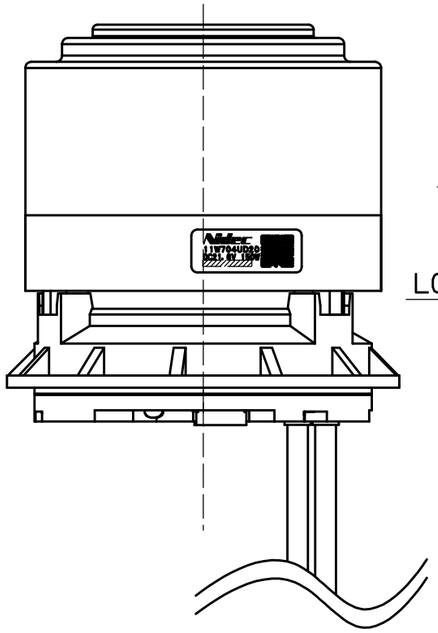
Lead Wire(Red)
UL3239 AWG16



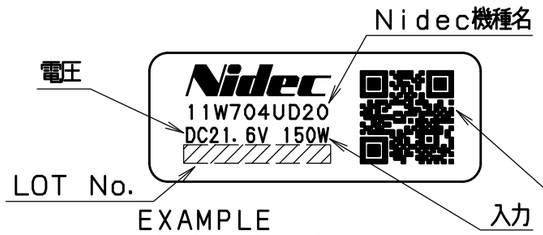
CONNECTOR HOUSING
華虹：HA1251-4A-S

PIN ASSIGNMENT

No.	SIGNAL
#1	Enable
#2	PWM
#3	FG
#4	GND



銘板貼り付け位置
Name Plate



EXAMPLE
2 3 09 GA J 0001

SERIAL NO.
SHIFT & LOCATION NO.
LINE NO.
DAY:01~31
MONTH:1~9 (OCT:X, NOV:Y, DEC:Z)
YEAR:THE LAST DIGIT DF 2022.

Name Plate

Detail B
(SC=3/1)

LEAD WIRE ASSIGNMENT

COLOER	SIGNAL
Red	Vm
Black	GND

NOTE
1. 特性に影響する傷、へこみなど無きこと。
There are no scratches, dents etc that affect the characteristics.
2. 外観に関して疑義が生じた場合は別途限度見本にて取り交わすこととする。
If there is any doubt about the appearance,
they will be exchanged separately with the limit sample.

REV			
ISSUE	1	Fig.	1
ECO No.			
APPROVED	H. SAGARA		2022-12-05
DESIGNED	T. IWAO		2022-12-02
APPROVED	H. SAGARA		2022-10-25
CHECKED	HUA JIACHAO		2022-10-25
DESIGNED	T. IWAO		2022-10-24
DRAWN	L. LUO		2022-10-23

TOLERANCE
UNLESS OTHERWISE SPECIFIED
LINEAR
~ALL:±1.0
~ :±
~ :±
ANGULAR :±1°
CORNER
OUTSIDE:C
INSIDE :R

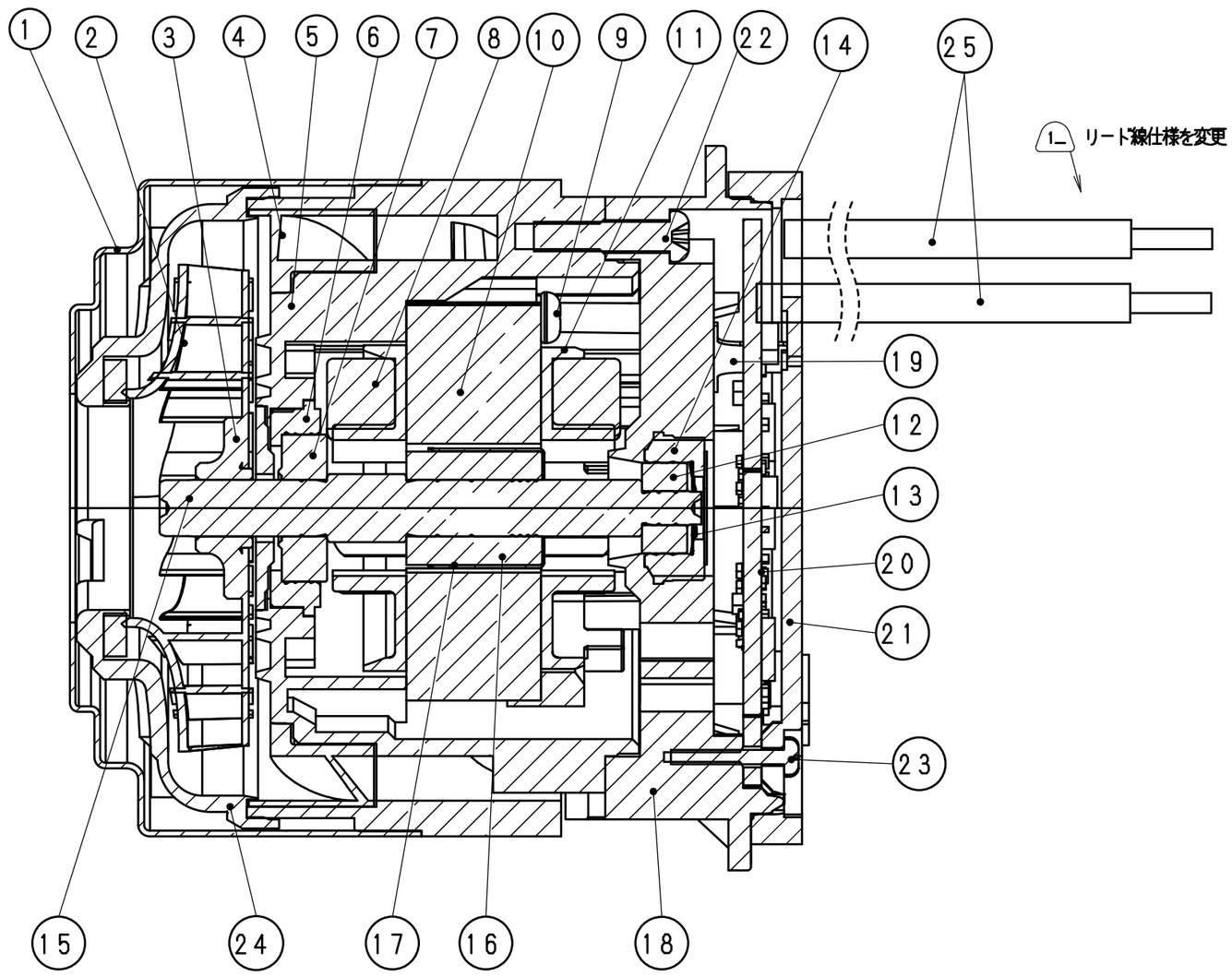
No.	PART No.	PART NAME	NOTE	Q'ty	UNIT	MARKS/MTL

TREAT.
FINISH
UNIT mm
SCALE 1:1
A3

MTL.	
MODEL	11W704UD20
PARTS	ブロア Blower
DWG.	外形図 Out-line Drawing
DWG. No.	K98101351O

1 OF 1 SHEETS

No	Part Name	Material, Type	UL Grade	File No
1	Fan Cover	SPCC t=0.5		
2	Impeller	Aluminum Alloy		
3	ImpellerBush	Sintered Alloy		
4	Diffuser	PPS-GM12 S22G	94V-0	
5	FrontHousing	PPS-GM12 S22G	94V-0	
6	BearingBush	A6061-T6		
7	Bearing	695Ballbearing		
8	CopperWire	0.7-AIW		
9	Screw	SWCH M2.6		
10	StatorCore	35A		
11	Insulator	PBT GF30%	94V-0	
12	Bearing	693Ballbearing		
13	Wave Washer	SUS304		
14	BearingBush	A6061-T6		
15	Shaft	SUS420J2		
16	Magnet	NdFeB SinteredMg		
17	RotorCover	SUS316L H1/2		
18	RearHousing	PPS-GM12 S22G	94V-0	
19	Terminal	Brass		
20	PCB	FR-4 t=1.6		
21	PCB Cover	PPS-GM12 S22G	94V-0	
22	Screw	SWCH M2.6		
23	Screw	SWCH M2		
24	Wind Cover	PPS-GM12 S22G	94V-0	
25	Lead wire	UL3239 AWG 16	VW-1	



REV			
	ISSUE	1	Fig. 1
	ECO No.		
	APPROVED	H. SAGARA	2022-12-05
	DESIGNED	T. IWAO	2022-12-02
APPROVED		H. SAGARA	2022-10-25
CHECKED		HUA JIACHAO	2022-10-25
DESIGNED		T. IWAO	2022-10-24
DRAWN		L. LUO	2022-10-23

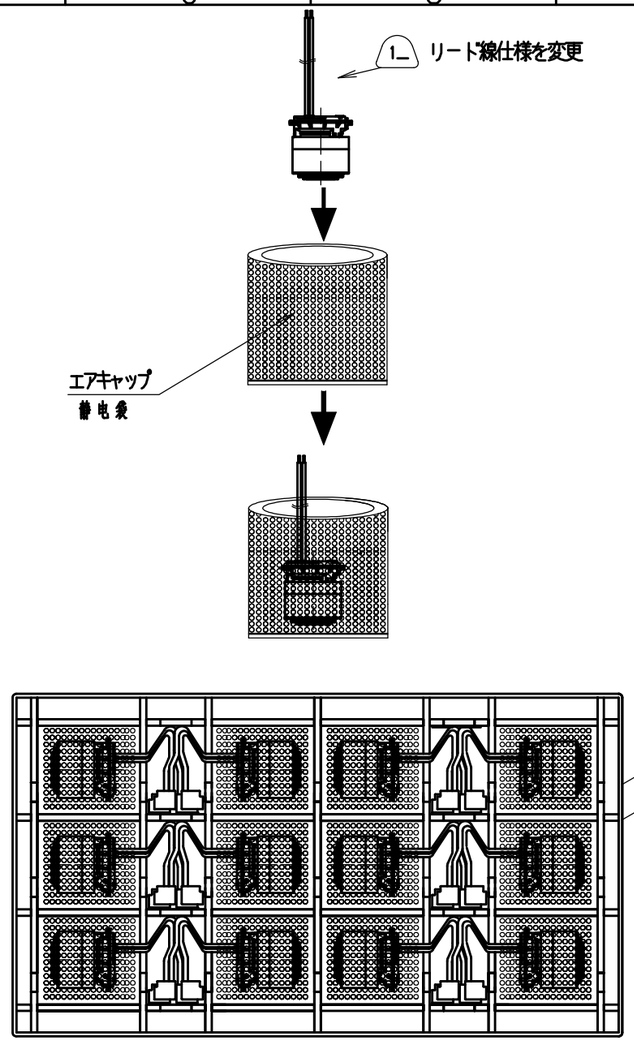
No.	PART No.	PART NAME	NOTE	Q'ty

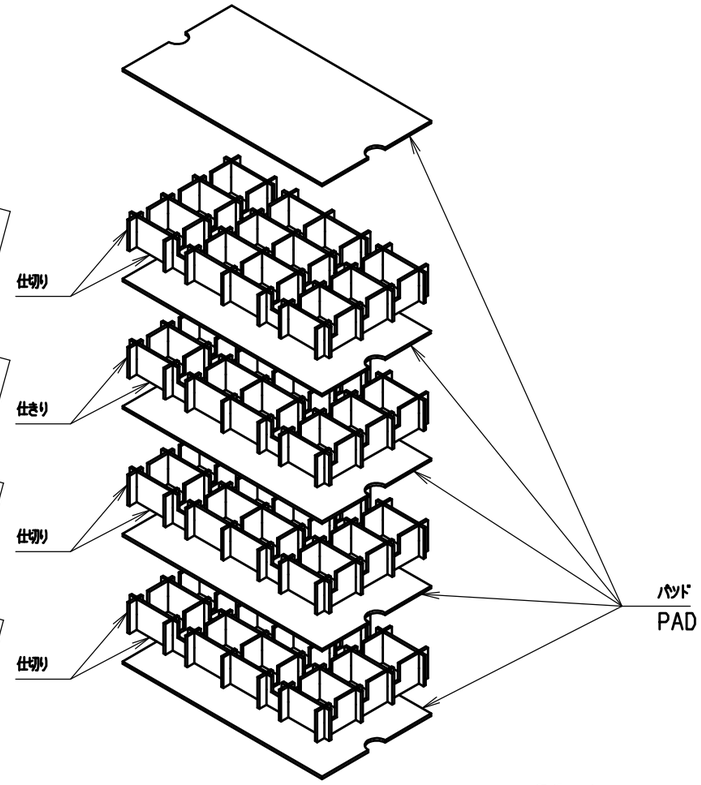
TOLERANCE
UNLESS OTHERWISE SPECIFIED
LINEAR
~ :±
~ :±
~ :±
ANGULAR :±
CORNER
OUTSIDE:C
INSIDE :R

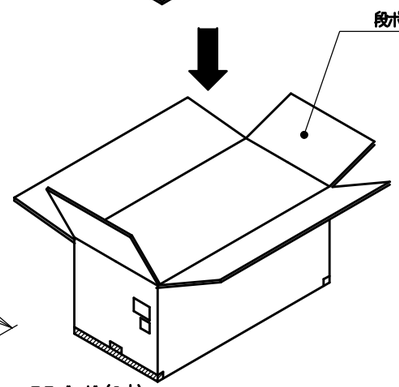
TREAT.
FINISH
UNIT mm
SCALE 1/1
A3

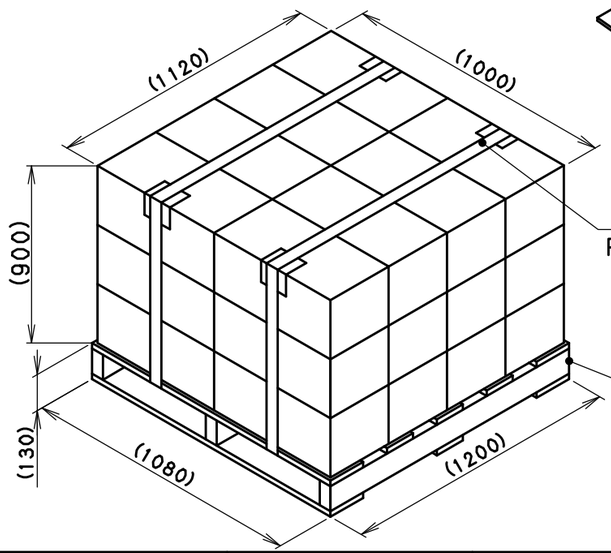
UNIT	MARKS/MTL
MTL.	
MODEL	11W704UD20
PARTS	ブロア Blower
DWG.	材料構造図 Material Drawing
DWG. No.	K98101361 0

1 OF 1 SHEETS









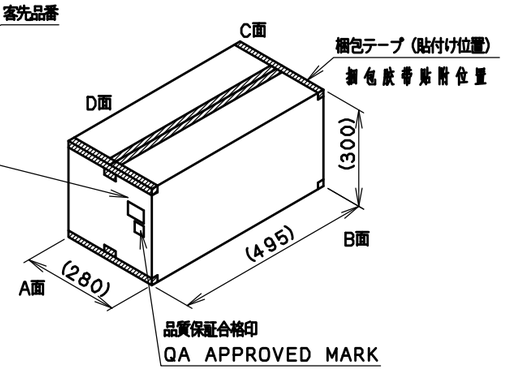
シール色　：指定無し
文字色　：黒

機種名

客先品番

年. 月. 日	数量	備考
総計		

確認	作成



<注記>

1. 一箱で最大４８ケとする。
   1トレイ ： 12ケ
2. 総重量（４８ケ梱包時） ： 約12．5KG
3. 梱包用テープを”H型”にしてふたに貼り付け、箱を閉じること。（上面、下面共）
4. C面印刷はA面と同様とする。但し、片側に梱包シールを貼付すること。
5. D面印刷はB面と同様とする。
6. パック用袋は帯電防止処理が施されていること。
7. 右記事項に注意して梱包を行うこと。　・シャフトに力をかけない。
8. 梱包仕様

8．1 荷姿	左図示による
8．2 梱包箱へ表示事項	機種名、収納数、納入者名を表示する。
8．3 収納台数	1152台 Max.
8．4 単体質量	約250g
8．5 全体質量約	300kg Max.
8．6 梱包寸法長さ	(L) 1200x幅 (W) 1080x全高 (H) 1030 [mm]
8．7 梱包容積	1．4 [m^3]
8．8 積段数	運搬時、保管時とも3段積みまでとする。

Lead wire Lower side Routing

REV			
ISSUE	1	Fig.	1
ECO No.			
APPROVED	H. SAGARA		2022-12-05
DESIGNED	T. IWAO		2022-12-02
APPROVED	H. SAGARA		2022-10-25
CHECKED	HUA JIACHAO		2022-10-25
DESIGNED	T. IWAO		2022-10-24
DRAWN	L. LUO		2022-10-23

No.	PART No.	PART NAME	NOTE	Q'ty	UNIT	MARKS/MTL

TOLERANCE
UNLESS OTHERWISE SPECIFIED
LINEAR
～ :±
～ :±
～ :±
ANGULAR :±
CORNER
OUTSIDE:C
INSIDE :R

TREAT.
FINISH

MTL.	
MODEL	11W704UD20
PARTS	ブロア Blower
DWG.	梱包仕様書 Package Specification

UNIT mm　SCALE N　A3

DWG. No. K98101371 0

1 OF 1 SHEETS

单击下面可查看定价，库存，交付和生命周期等信息

>>Nidec(尼得科)