東菱集團公司

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高性能矢量變頻器

High Performance Vector Frequency Inverter

東菱傳動科技有限公司 專業製造廠 <<<
Dong Ling M&E Technology Manufacture CO.,LTD.
Professional manufacturing factory

ISO9001 CE

敬業、務實、團結、拚搏

Devoted Career、Pragmatic、United、Efforts

- 企業目標：做精、做強、做大
  Business Objective: Refined, Strong, Large
- 經營理念：質量第一、服務真誠、不斷創新
  Management Philosophy: First Quality, Sincere Service, Unceasing Innovation
- 質量觀：質量是品牌的基石、品牌是企業的生命
  Values: Quality is foundation stone of brand, Brand is life of business
- 營銷理念：以市場為導向、以質量求生存、以信譽求發展
  Marketing Philosophy: Market-Oriented, Living is in quality, Developing is in reputation

DONG LING®
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東菱集團公司
DONG LING GROUP CO.,LTD.

專業製造廠
Professional manufacturing factory

東菱企業簡介 Company Introduction

1988 東菱機電臺灣公司創立
DOLIN was established in Taiwan.

1992 東菱機電產品進入大陸
DOLIN products entered the markets in mainland of China.

1994 廣東東菱機電銷售公司成立
Dongguan DOLIN Sales Division was established in Guangdong, China.

1997 昆山東菱機電銷售公司成
Kunshan DOLIN Sales Division was established in Jiangsu, China.

1999 東莞市東菱機電科技制造有限公司成立 (現今的菱森精密機械制造有限公司)
Dongguan DOLIN M&E Tech. Manufacture Co., Ltd. was established in Guangdong, China.
(Now is LING-SHENG Precision Machinery Manufacturing Co., Ltd.)
東莞市東菱機電研發小組成立
Dongguan DOLIN R&D Team was formed.

2002 昆山市東菱機電科技制造有限公司投產
Kunshan DOLIN M&E Tech. Manufacture Co., Ltd. was established in Jiangsu, China.
東莞市東機電研發部成立
相繼推出直流電動機、齒輪減速電動機、油壓電動機、變頻
專用電動機、其他各類專用電動機 (專用于鐵床、磨床、織帶機等)
Dongguan DOLIN R&D Center was established.
Introduced new product series like AC/DC Electric Motors, Gear Motors, Speed Reducers, Hydraulic Motors, Inverter Series, and various types of motors of different precision machinery, such as Milling Machines, Grinding Machines, Braiding Machines, etc.

2003 通過ISO9001:2000質量管理體系認證
Acquired ISO9001:2000 Quality Management System Certificate.
通過首批強制性產品(CCC)認證
Acquired CCC Certification.

2004 首次推出高精度生產設備系列：分條機，複卷機，分切機，以及薄膜貼合機
Introduced new precision-machinery series: Slitting Machines, Rewinding Machines, Cutting Machines, and Laminating Machines.

2010 越南大東京責任有限公司成立 (現今的越南東菱商業服務有限公司)
DAI DONG KINH Co., Ltd. A Member was established in Vietnam.
(Now is DONG LING Commercial Services Co., Ltd.

至今 Currently 東菱企業更趨壯大穩固，成為擁有超過200員工的中型企業。
我們的產品市場遍佈整個中國大陸、台灣、歐美、中東市場以及東南亞地區。
DOLIN has developed steadily and become a medium-size manufacturer with more than 200 professional employees.
Our market has expanded all over mainland China, Taiwan, European, Middle East market and regions in Southeast Asia.

- 通過ISO9001:2000品質認證
  ISO9001:2000 quality management system certification
- 通過國家強制性產品認證
  "CCC" certification

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高性能矢量變頻器
High Performance Vector Frequency Inverter

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東菱傳動。與世界同步

第一部份：通用型高性能矢量變頻器

Part I: High Performance Vector Frequency Inverter

變頻器型號、規格、技術規範

Model Number, Specification and Technical Standard

9600 3T 00075 G B

變頻器型號系列
9100 系列
9600 系列
Frequency inverter series
9100 series
9600 series

1 電壓等級單相220V
2 電壓等級三相220V
3 電壓等級三相380V
4 電壓等級三相460V
6 電壓等級三相690V

1 1Phase 220V
2 3Phase 220V
3 3Phase 380V
4 3Phase 460V
6 3Phase 690V

變頻器容量範圍：00075-40000
表示方法：000.00KW
例如：00075表示0.75KW
00750表示7.5KW
07500表示75KW
40000表示400KW

Frequency inverter capacity: 00075-40000
Method: 000.00KW
Example: 00075 representing 0.75KW
00750 representing 7.5KW
07500 representing 75KW
40000 representing 400KW

G: 通用型
P: 風機水泵型
H: 中頻機型
Z: 注塑機專用型
K: 空壓機專用型
M: 迷你型
ZS: 工變頻一體櫃

G: General type
P: Blower pump
H: Middle frequency
Z: Injection machine
K: Air compressor
M: Mini type
ZS: Integrated cabinet

內含製動單元
Built-in brake unit

Voltage (V) Power (KW)	Current (A)	Current (A)	Current (A)	Current (A)	Current (A)	Current (A)
電壓(v)	220V (1F)	220V (240V)	380V (415V)	460V (440V)	575V	660V
功率(KW)	電流(A)	電流(A)	電流(A)	電流(A)	電流(A)	電流(A)
0.4	2.5	2.5				
0.75	4	4	2.5	2.5		
1.5	7	7	3.7	3.7		
2.2	10	10	5	5		
4	16	16	8.5	8		
5.5	20	20	13	11		
7.5	30	30	16	15		
11	42	42	25	22	17	15
15	55	55	32	27	22	18
18.5	70	70	38	34	26	22
22	80	80	45	40	33	28
30	110	110	60	55	41	35
37		130	75	65	52	45
45		160	90	80	62	52
55		200	110	100	76	63
75		260	150	130	104	86
83		320	170	147	117	98
110		380	210	180	145	121
132		420	250	216	173	150
160		550	300	259	207	175
187		600	340	300	230	198
200		660	380	328	263	218
220		720	415	358	287	240
250			470	400	325	270
280			520	449	360	330
315			600	516	415	345
375			680	600	450	390
400			750	650	520	430
450			820	720	650	465
500			900	800	700	550
560			1000	900	780	590
630			1100	1000	850	680

9100 系列變頻器技術規範

Technical Standard of 9100 Series Frequency Inverter

項目 Item		規範 Standard
電源 Power	輸入 Input	三相 380v（單相 220V）50/ 60Hz 3P 380V (1P 220V)50/ 60Hz
	允許波動 Allowed Variation	電壓有效☒：380V(220V)±15% Effective voltage: 380V(220V)±15%
		電壓允許：±15%波動；頻率波動：±5% Voltage allowance: ±15% variation; frequency variation: ±5%
控制 Control	控制方式 Control	無感矢量控制，V/ F 控制。 Vector control without sensor, V/F control
	頻率控制範圍 Frequency range	0-650 Hz
	輸出頻率精度 Output frequency accuracy	最大頻率☒的±0.01% ±0.01% of maximum frequency
	頻率設定分辨率 Frequency resolution	鍵盤設定：輸出頻率的±0.01% 。 Keyboard setting: ±0.01% of output frequency
		最高輸出頻率的±0.2% 。 ±0.2% of maximum output frequency
	電壓/頻率特性 Voltage/frequency characteristic	電壓 30%-100%額定電壓，基頻 0.5- 640Hz 分別可調。 30%-100% rating voltage, adjustable base frequency 0.5- 640Hz
	PWM 載波頻率 PWM carrier frequency	0.5-15.00 KHz
	轉矩提升 Torque upgrade	0. 50Hz 時 150%額定轉矩。 150% rating torque at 0.50Hz
	過載能力 Overload ability	150%額定電流 60s, 180%額定電流 10s。 60 seconds at 150% rating current, 10 seconds at 180% rating current
	加減速特性 Acceleration and deceleration	0.1-3600 秒。 0.1-3600 seconds
	調速比 Speed rate	無 PG 知量控制：1: 100 No PG control: 1: 100
	速度控制精度 Speed accuracy	無 PG 知量控制：±0. 5%最高速度 No PG control: ±0. 5% maximum speed
	額定輸出電壓 Rating output voltage	自動電壓調整功能：當電網電壓變化時，能自動保持輸出電壓恆定。Auto voltage adjustable function: When the voltage on the grid network changes, output voltage can automatically remain constant.
	標準功能 Standard function	轉速追踪，暫停減速，PID 控制，自動速度補償，自動調整電壓輸出(AVR)，8 段數運行，功率（轉矩）控制，頻率跳躍，簡易 PLC 自動運行，UP- Down 控制，擺頻運行，兩路信號疊加控制，自動復位，計時器，正反器瞬時停電不停機功能。 RPM trace, deceleration pause, PID control, auto speed compensation, auto voltage regulation (AVR), 8-step run, power (torque) control, frequency leap, simple PLC, UP-Down control, swing run, two-loop signal overlapping, auto reset, timer, flip-flop non-stop.
標準保護功能 Standard protection		過流、過壓、欠壓、過溫、缺相、過載等保護功能。 Over-current, over-voltage, under-voltage, over-temperature, phase reversal and overload.
運行 Run	頻率模擬設定輸入 Frequency simulation input	外部端子 Al1: 0- 10V External terminal Al1: 0- 10V
		外部端子Al2: 4-20mA，面板電位器。External terminal Al2: 4-20mA, panel potentiometer
	模擬輸出 Simulation output	外部端子 AM，0-10V 或 0- 20mA。 External terminal AM, 0-10V or 0- 20mA
	數字信號輸入 Digital signal input	X1- X4 4 組多功能可編程輸入端子 Programming input terminals for X1- X4
	數字信號輸出 Digital signal output	1 組繼電器信號：3A/ 250VAC One set of relay signal: 3A/ 250VAC
		1 輔助信號輸出（開集電級）：24VDC-50mA One auxiliary signal output (open-collector electrode): 24VDC-50mA
顯示 Display	設定 Setting	功能號、數據、輸出電流、功率因素角輸出功率、輸入功率、功率系數、計時器時間。 Function, data, output current, output power for power factor angle, input power, power coefficient, timer time.
	運行 Run	輸出頻率、設定頻率、輸出電流、輸入電壓、電機轉速、正反轉狀態、輸出功率限制、輸出頻率轉速換算 直流母線電壓 輸出電壓 變頻器內部溫度 Output frequency, setting frequency, output current, input voltage, motor RPM, forward/backward turn, output power limit, conversion of output frequency and RPM, linear lead voltage, output voltage, temperature inside frequency inverter.
	故障 Fault	過壓、欠壓、過流、過載、過熱、過壓失速、數據保護受破壞、電壓限幅、當前故障的運行狀況、歷史故障。 Over-voltage, under-voltage, over-current ,over load over-temperature, over-voltage loss, data protection damaged, voltage limit, fault run, history fault.
環境 Environment	安裝場所 Installation location	室內、海拔不大於 1000 米、無塵、無腐蝕性氣體、無日光直射。 Indoor, altitude less than 1000m, dust-free, no corrosive gas, no direct sunlight.
	周圍溫度濕度 Ambient temperature and humidity	- 10~ + 40☒ ， 20%~ 90%RH（不結露） - 10~ + 40☒ , 20%~ 90%RH (no condensation)
	振動 Vibration	20Hz 以下小於 0.5g less 0.5g below 20Hz
	儲存溫度 Storage temperature	-25~+65°C
	安裝方式 Installation	壁掛式 Wall mounted
	防護等級 Protection grade	IP20
	冷卻方式 Cooling	強迫風冷 Air cooling

9600 系列變頻器技術規範
Technical Standard of 9600 Series Frequency Inverter

項目 Item		規範 Standard	
基本功能 Basic function	最高頻率 Maximum frequency	矢量控制：0~ 3200Hz V/F 控制：0~ 3200Hz　Vector control: 0~ 3200Hz V/F control: 0~ 3200Hz	
	載波頻率 Carrier frequency	0.5kHz~16kHz　可根據負載特性，自動調整載波頻率。　0.5kHz~16kHz, auto adjust the carrier frequency according to the load characteristics.	
	輸入頻率分辨率 Input frequency resolution	數字設定：0.01Hz 模擬設定：最高頻率 x0.025%　Digit setting: 0.01Hz, simulation setting: maximum frequency x0.025%	
	控制方式 Control	開環矢量控制(SVC)　開環矢量控制(FVC)　V/ F 控制　Open-loop vector control (SVC), open-loop vector control (FVC), V/F control	
	控制方式 Start torque	G型機：0. 5Hz/150% (SVC) :0Hz/180%　Model G: 0. 5Hz/150% (SVC) :0Hz/180% P 型機：0. 5Hz/ 100%　Model P: 0. 5Hz/ 100%	
	調速範圍 Speed regulation	1: 100 (SVC)	1: 1000 (FVC)
	穩速精度 Steady speed accuracy	±0.5% (SVC)	±0.02% (FVC)
	轉矩控制精度 Torque control accuracy	±5% (FVC)	
	過載能力 Overload ability	G型機：150% 額定電流60s; 180% 額定電流3s。　Model G: 60 seconds for 150% of rating current and 3 seconds 180% of rating current. P 型機：120% 額定電流 60s; 150% 額定電流 3s。 Model P: 60 seconds for 120% of rating current and 3 seconds 150% of rating current,	
	轉矩提升 Torque upgrade	自動轉矩提升；手動轉矩提升 0.1%~ 30.0%. Auto torque upgrade; manual torque upgrade 0.1%~ 30.0%.	
	V/ F 曲線 V/ F curve	三種方式：直線型、多點型、N次方型V/ F曲線　Three methods: Linear, multi-point, N-order V/F curve （1.2 次方、1.4 次方、1. 6 次方、1. 8 次方、2 次方）　(1.2 order, 1.4 order, 1.6 order, 1.8 order and 2 order)	
	V/ F 分離 V/ F separation	二種方式：全分離、半分離。Two methods: full separation and half separation.	
	加減速曲線 Acceleration/deceleration curve	直線或 S 曲線加減速方式。四種加減速時間，加減速時間範圍 0.0~ 6500.0s。 Linear or S curve acceleration and deceleration. Four kinds of acceleration and deceleration time, whose range is 0.0~ 6500.0s.	
	直流制動 DC brake	直流制動頻率：0.00Hz~最大頻率 制動時間：0.0s~36.0s　制動動作電流值：0.0%~ 100.0%。 Linear brake frequency: 0.00Hz~ maximum frequency, brake time: 0.0s~36.0s, brake current: 0.0%~ 100.0%.	
	點動控制 Jog control	點動頻率範圍：0.00Hz~50.00Hz 點動加減速時間 0.0s~6500.0s。 Jog frequency: 0.00Hz~50.00Hz, jog acceleration and deceleration time: 0.0s~6500.0s.	
	簡易 PLC、多段速運行 Simple PLC, multi-step run	通過內置 PLC 或控制端子實現最多 16 段速運行。 16-step run can be implemented by built-in PLC or control terminals.	
	內置 PID Built-in PID	可方便實現過程控制閉環控制系統。 Conveniently implement the process to control the close-loop control system.	
	自動電壓調整(AVR) Auto voltage regulation (AVR)	當電網電壓變化時，能自動保持輸出電壓恆定。When the voltage on the power network changes, it can automatically remain constant.	
	過壓過流失速控制 Over-voltage/over-current control	對運行期間電流電壓自動限制，防止頻繁過流過壓跳閘。 The current and the voltage is automatically limited during the operation to avoid frequent trip.	
	快速限流功能 Quick current limit	最大限度減小過流故障，保護變頻器正常運行。The maximum limit reduces the over-current fault to protect the normal run of the frequency inverter.	
	轉矩限定與控制 Torque limit and control	"挖土機"特性，對運行期間轉矩自動限制，防止頻繁過流跳閘；閉環矢量模式可實現轉矩控制。Based on the "excavator" characteristic, the torque is automatically limited during the operation to avoid frequent trip; the close-loop vector mode can implement the torque control.	

項目 Item		規範 Standard
個性化功能 Customized Function	最高頻率 Maximum frequency	矢量控制：0~ 3200Hz V/F 控制：0~ 3200Hz　Vector control: 0~ 3200Hz V/F control: 0~ 3200Hz
	出色的性能 Outstanding performance	以高性能的電流矢量控制技術實現異步電機控制。 Implement asynchronous motor control with high performance current vector control.
	瞬停不停 Instantaneous non-stop	瞬時停電時通過負載回饋能量補償電壓的降低，維持變頻器短時間內繼續運行。Compensate for voltage drop by the energy fed by the load during instantaneous power failure to keep the frequency inverter running in short time.
	快速限流 Quick current limit	避免變頻器頻繁的出現過故障。 Avoid the frequent faults for the frequency inverter.
	虛擬 IO　Virtual IO	五組虛擬 DIDO 可實現簡易邏輯控制。 Five sets of virtual DIDO can implement simple logic control.
	定時控制 Timing control	定時控制功能：設定時間範圍 0.0Min~6500.0Min。 Timing control: set 0.0 ~ 6500.0 minutes.
	多電機切換 Multi-motor change	二組電機參數，可實現兩個電機切換控制。 Two sets of motor parameter can implement the change between two motors.
	多線程總線支持 Multiple protocols	支持四種現場總線：Modbus、Profibus- DP、CANlink、CANopen。 Four communication protocols: Modbus, Profibus- DP, CANlink, and CANopen.
	電機過熱保護 Over-temperature protection of motor	選配 IO 擴展卡 1，模擬量輸入 AI3 可接受電機溫度傳感器輸入(PT100、PT1000)。 Optional IO expansion card 1, where the simulation input AI3 can accept the input from the motor temperature sensor (PT100, PT1000).
	多編碼器支持 Multiple encoders	支持差分、開路集電級、UVW、旋轉變壓器、正余弦等編碼器。Support the differential, open-collector, UVW, rotary transformer and sinusoidal encoders.
	強大的後台軟體 Powerful backstage software	支持變頻器參數操作及虛擬示波器功能。通過虛擬示波器可實現對變頻器內部狀態的圖形監視。 Support the operation of the inverter parameter and virtual oscilloscope. With the virtual oscilloscope, the status in the frequency inverter can be graphically monitored.
運行 Run	命令源 Command source	操作面板給定、控制端子給定、串行通訊口給定。可通過多種方式切換。Operation panel, control terminal, series communication port, and multiple changes.
	頻率源 Frequency source	十種頻率源：數字給定、模擬電壓給定、模擬電流給定、脈沖給定、串行口給定。可通過多種方式切換。Ten frequency sources: digit, simulation voltage, simulation current, pulse, series port, and multiple changes.
	輔助頻率源 Auxiliary frequency source	十種輔助頻率源。可靈活實現輔助頻率微調、頻率合成。Ten auxiliary frequency sources, which can flexibly fine-tune the auxiliary frequency and make the frequency synthesis.
	輸入端子 Input terminal	標準：Standard: 5個數字輸入端子，其中1個支持最高100kHz的高速脈沖輸入。 Five digital input terminals, where one of them can support 100kHz pulse input. 2個模擬量輸入端子，1個僅支持0~ 10V電壓輸入。 Two simulation input terminals, where only one can support 0~ 10V input. 1個支持0~ 10V電壓輸入或0~ 20mA電流輸入。 One terminal supports 0~ 10V or 0~ 20mA input. 擴展能力： Expansion: 5個數字輸入端子Five digit input terminals 1 個模擬量輸入端子，支持- 10V~10V 電壓輸入，且支持 PT100/ PT1000。 One simulation input terminal supports - 10V~10V input and PT100/ PT1000.
	輸出端子 Output terminal	標準： Standard: 1個高速脈沖輸出端子（可選為開路集電級式），支持0~100kHz的方波信號輸出。 One pulse output terminal (optional for open collector) supports 0~100kHz square signal output. 1個數字輸出端子、1個繼電器輸出端子。 One digit output terminal and one relay output terminal. 1個模擬輸出端子，支持0~20mA電流輸出或0~10V電壓輸出。 One simulation output terminal supports 0~20mA or 0~10V output. 擴展能力： Expansion: 1個數字輸出端子、1個繼電器輸出端子。One digit output terminal and one relay output terminal. 1 個模擬輸出端子，支持 0~20mA 電流輸出或 0~10V 電壓輸出。One simulation output terminal supports 0~20mA or 0~10V output.
顯示與鍵盤操作 Display and Keyboard	LED 顯示　LED display	顯示參數　Display the parameters.
	參數拷貝 Parameter copy	可通過 LCD 操作面板選件實現參數的快速複製 Quickly copy the parameters on the LCD.
	按鍵鎖定和功能選擇 Key lock and function selection	實現按鍵的部份或全部鎖定，定義部份按鍵的作用範圍，以防止誤操作。 Implement the partial or full key lock, and define the partial operations to avoid misuse.
	保護功能 Protection	上電電機短路檢測、輸入輸出缺相保護、過流保護、過壓保護、欠壓保護、過熱保護、過載保護等。Short-circuit detection of motor, protection of phase reversal of input/output, over-current protection, over-voltage protection, phase reversal protection, over-temperature protection, and over-load protection.
環境 Environment	使用場所 Location	室內、不受陽光直曬、無塵埃、腐蝕性氣體、可燃性氣體、油霧、水蒸氣、滴水或鹽份等。 Indoor, without direct sunlight, no dust, corrosive gas, flammable gas, grease, vapor, drop or salt.
	海拔高度 Altitude	低於 1000m　Less than 1000m
	環境溫度 Ambient temperature	-10°C ~ + 40°C（環境溫度在 40°C ~ 50°C，請降額使用）　-10°C ~ + 40°C (ambient temperature at 40°C ~ 50°C , please derate to run)
	濕度 Humidity	小於 95%RH，無水珠凝結。 Less than 95%RH without water condensation.
	振動 Vibration	小於 5.9m/ s2(0.6g) Less than 5.9m/ s2(0.6g)
	存儲溫度 Storage temperature	-20°C ~ +60°C
	IP 等級	IP20

9600 系列出色的性能
Outstanding Performance of 9600 Series

9600系列變頻器
9600 Series Frequency Inverter

9600 系列變頻器的主力機型。基於東菱對於客戶需求的準確了解，對於高品質、高可靠性的一貫追求，9600 系列變頻器將以卓越的性能和強大的功能，為您帶來煥然一新的用戶體驗。

9600 series frequency inverters are the mainstream models. Based on the customer requirement, high quality and reliability, 9600 series frequency inverters with the excellent performance and the powerful function will bring you a new experience.

支持多種電機的矢量控制 Support the vector control for many motors.

◆支持三相交流異步電機的矢量控制 Support the vector control of 3P AC asynchronous motor,
◆支持三相交流同步電機的矢量控制 Support the vector control of 3P AC synchronous motor.
◆支持帶絕對位置反饋的永磁同步電機的矢量控制 Support the vector control of the permanent-magnet synchronous motor with absolute position feeding.

導步電機 synchronous motor
permanent-magnet synchronous motor

永磁同步電機

支持多種編碼器 Support many encoders

差分編碼器 Differential encoder

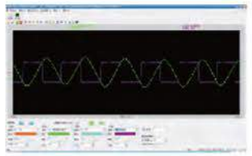
開路集電極編碼器 Open collector encoder

UVW 編碼器 UVW encoder

旋轉變壓器編碼器 Rotary transformer encoder

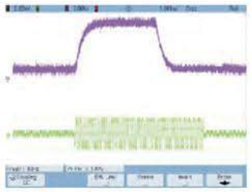
高起動轉矩特性 Characteristics of high start torque

9600 變頻器在 0.5Hz 可提供 150%的啟動轉矩(無傳感器矢量控制) 。在 0Hz 可提供 180%的零速轉矩（有傳感器矢量控制）
9600 series frequency inverter can provide 150% of start torque at 0.5Hz (vector control without sensor) and 180% of zero-speed torque at 0Hz (vector control with sensor).



超群的響應性 Excellent response

無傳感器矢量控制下，轉矩響應< 20ms。 The torque response is < 20ms without the vector control of a sensor.
有傳感器矢量控制下，轉矩響應< 5ms。The torque response is < 5ms with the vector control of a sensor.



全新的無速度傳感器矢量控制性能 Novel vector control without speed sensor

無速度傳感器矢量控制，可以堵轉運動，在 0.5Hz 輸出 150%額定力矩; The vector control without speed sensor can block the motion, and output 150% of the rating torque at 0.5Hz;
無傳感器矢量控制對電機參數的敏感性降低，提高了現場適應性；The vector control without speed sensor can lower the sensitivity of the motor parameters and enhance the site adaption;
可應用於卷繞控制，多電機拖動同一負載下的負荷分配等場合。The winding control can be applied for the situations where many motors drag the same load.

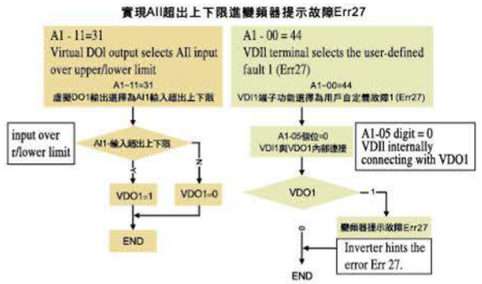
9600 系列強大的功能 Powerful Functions for 9600 Series Frequency Inverter

虛擬 IO 功能 Virtual IO

可設定 5 組虛擬 DIDO，虛擬 DI 端子的狀態可以直接由功能碼給定或綁定對應的虛擬 DO 功能。
Five sets of virtual DIDO can be set. The status of the virtual DI terminal can be directly supplied by the function code or bonded by the corresponding virtual DO.

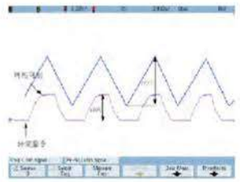
實現 AII 超出上下限進變頻器提示故障 Err27

Implement AII over the upper and lower limits to hint the error Err27.



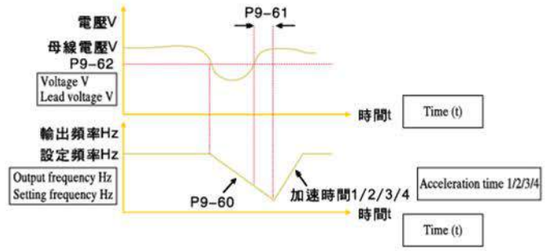
保護機械的轉矩限制 Protection of mechanical torque limit

9600 變頻器可以提供轉矩限制，當轉矩指令超過機械能夠承受的最大轉矩時，變頻器可以將轉矩限制在所設定的最大轉矩以內發揮機械最大效率的前提下更妥善的保護設備安全。
9600 series frequency inverters can limit the torque. When the torque command exceeds the maximum torque that the motor can tolerate, the frequency inverters can limit the torque in the maximum setting torque to make the maximum efficiency and provide the more protection of the equipment.



瞬停不停 Instantaneous non-stop

此功能指在瞬時停電時變頻器不會停機。在瞬間停電或電壓突然降低的情況下，變頻器降低輸出速度，通過負載回饋能量，補償電壓的降低，以維持變頻器短時間內繼續運行。This function means the frequency inverter will not stop when the power instantaneously fails. In the circumstances of instantaneous power failure or sudden voltage drop, the frequency inverter lowers the output speed. With the energy fed by the load and the reduction of compensation voltage, the frequency inverter can continuously run in short time.



靈活實用的模擬量輸入/輸出口 Flexible and practical simulation input/output

每個模擬量輸入(AI1~AI3)， 可分別設置 4 個點的曲線，使用更靈活； Each of simulation input (AI1~AI3) can set a curve with four points individually.
AI1~AI3 可出廠校正或用戶現場校正線性曲線，校正後精度達 20mV； AI1~AI3 can be used to calibrate the linear curve on factory or on site, where the calibrated accuracy is 20mV;
AO 可出廠校正或用戶現場校正線性曲線零漂和增益，校正後精確度達 20mV； AO can be used to calibrate the zero drift and the gain for the linear curve on factory or on site, where the calibrated accuracy is 20mV;
AI1~AI3 均可作為 DI 使用； AI1~AI3 can be used for DI;
AI1 為隔離輸入口， 可作為 PT100,PT1000 或±10V 輸入口。 AI1 has the isolated input, which can be used for PT100, PT1000 or ±10V input.

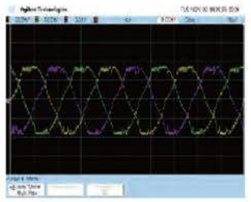
電機過熱保護 Motor over-temperature protection

選用輸入輸出擴展卡，模擬量輸入 AI3 可接受電機溫度傳感器輸入(PT100,PT1000)。當電機溫度超過預警值時，變頻器輸出脈沖信號提示過熱，當電機溫度超過過熱保護值時，變頻器故障輸出給電機妥善的保護。The I/O expansion card can be chosen. The simulation input AI3 can accept the input from the temperature sensor (PT100, PT1000). When the motor temperature exceeds the threshold, the impulse signals from the frequency inverter will hint over-temperature. When the motor temperature exceeds the over-temperature value, the frequency inverter will output the fault to give the protection to the motor.

過熱 over-temperature
熱電偶 thermocouple

快速限流功能 Quick current limit

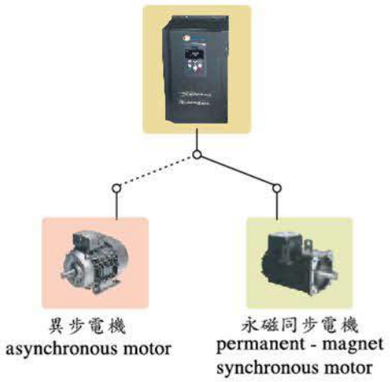
快速限流功能可以避免變頻器頻繁的出現過流報警。當電流超過電流保護點時，快速限流功能可以將電流快速限制在電流保護點以內，從而保護設備的安全，避免由於突加負載或者干擾造成的過電流報警。The quick current limit can prevent the frequency inverter from frequent over-current alarm. When the current exceeds the protection point, the quick current limit can quickly limit the current within the protection point to further protect the equipment and avoid the sudden load or over-current alarm.



多電機切換 Multiple Motor change

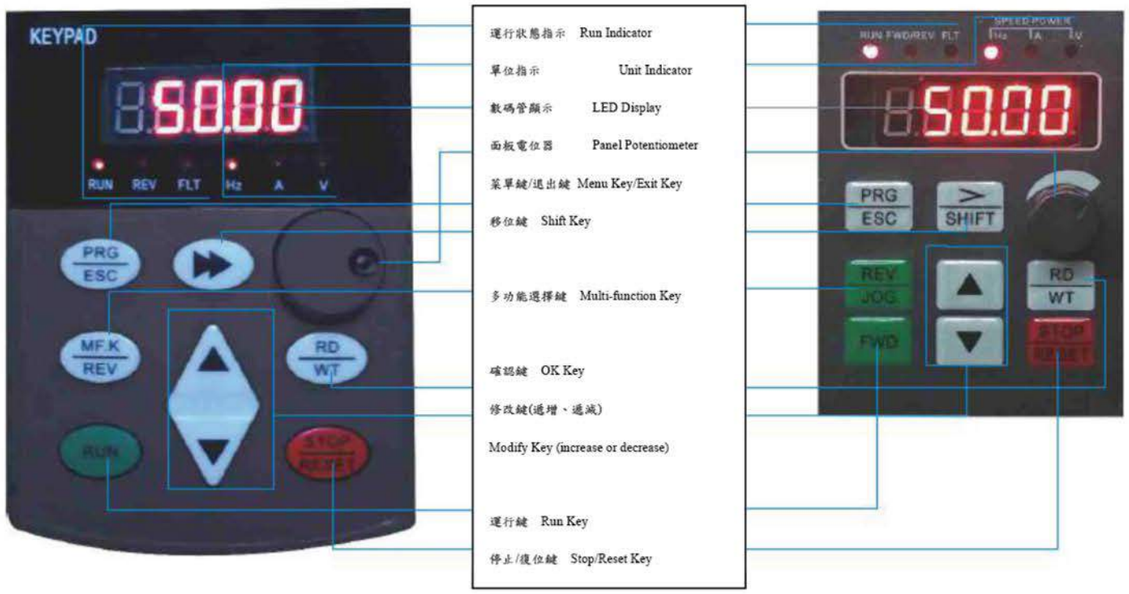
具備 4 組電機參數，可實現 4 個電機切換控制，可實現同步電機，與異步電機的切換。Four sets of motor parameter not only can implement four motor changes, but also achieve the change between the synchronous motor and the asynchronous motor.

異步電機 asynchronous motor
永磁同步電機 permanent-magnet synchronous motor



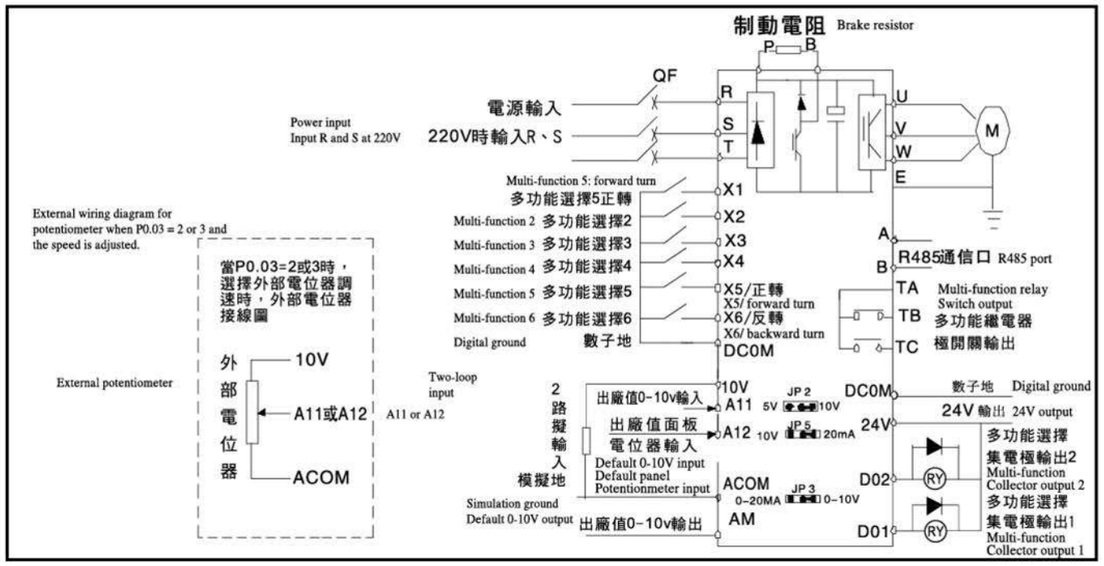
9600 簡易的操作

Simple Operation of 9600 Series Frequency Inverter



9600 系列變頻器典型接線圖

Typical Wiring Diagram for 9600 Series Frequency Inverter



第二部份：變頻器外形尺寸及其配件選型
Part II: Frequency Inverter Dimensions and Accessories
制動組件選型指南 Guide to brake assembly

制動組件選型指南 Guide to brake assembly

下表為指導數據，用戶可根據實際情況選擇不同的電阻阻值和功率，(阻值一定不能小於表中推薦值，但功率可以放大)。制動電阻的選擇需要根據實際應用系統中電機發電的功率來確定，與系統慣性、減速時間、位能負載的能量等都有關係，需要客戶根據實際情況選擇。系統的慣量越大，需要的減速時間越短；制動得越頻繁，則制動電阻需要選擇功率越大，需要選擇的阻值越小。

The following table is the guidance data, where a user can select the resistance and the power according to the actual conditions (The resistance must not be less than the recommended value in the table, but the power can be increased.). The brake resistor is selected according to the power generated by the motor in the actual applications, related to the system inertia, the deceleration time, the energy of potential load, depending on the customer requirements. The larger system inertia is, the shorter deceleration time is needed; the more frequent brake is applied, the larger power of the brake resistor is selected and the resistance is smaller.

阻值的選擇 Selection of resistance

制動時，電機的再生能量幾乎全部消耗在制動電阻上。 During the brake, the recycling energy from the motor is almost consumed on the brake resistor.

可根據公式：U*U/ P= Pb According to the formula: U*U/ P= Pb

■ 公式中 U- - -系統穩定制動的制動電壓 U in the formula - - - brake voltage

（不同的系統也不一樣，對於 380VAC 系統一般取 700V) (depending on the system, generally take 700V for 380VAC system)

■pb---制動功率 pb--- brake power

制動電阻的功率選擇　Power selection for brake resistor

理論上制動電阻的功率和制動功率一致，但是考慮到降額為 70%。In theory, the power for the brake resistor is consistent with the brake power. However, derating is considered as 70%.

可根據公式：0.7*Pr=Pb*D　　According to the formula: 0.7*Pr=Pb*D

■Pr---電阻的功率　Pr-- resistance power

■D---制動頻度（再生過程占整個工作過程的比例）　D--- brake frequency (The recycling process shares the ratio of the whole work.)

電梯---20%~30%　開卷和取卷---20%~30%　離心機---50%~60%　Elevator -- -20%~30%　unwind and wind ---20%~30%　centrifuge ---50%~60%

偶然制動負載--5%　一般取 10%　Sudden brake load --5% generally take 10%

變頻器制動組件選型表（以 G 型機為例）　Brake assembly table (Model G for example)

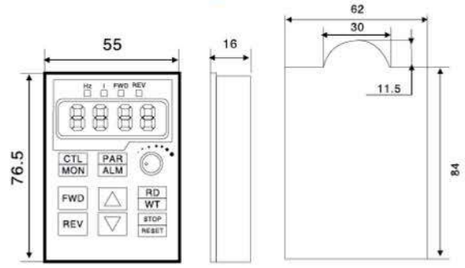
Voltage (V)	Power Level	Resistance (Ω)	Capacity (Watt)	Remark

電壓（V）	功率等級	電阻值（歐姆）	容量（瓦特）	備注
220	0.4KW	200	80	內置制動單元　Built-in brake unit
	0.75KW	200	80	內置制動單元　Built-in brake unit
	1.5KW	100	150	內置制動單元　Built-in brake unit
	2.2KW	60	250	內置制動單元　Built-in brake unit
	3.7KW	40	300	內置制動單元　Built-in brake unit
	5.5KW	30	500	內置制動單元　Built-in brake unit
380	0.75KW	360	200	內置制動單元　Built-in brake unit
	1.5KW	180	400	內置制動單元　Built-in brake unit
	2.2KW	180	400	內置制動單元　Built-in brake unit
	3.7KW	100	500	內置制動單元　Built-in brake unit
	5.5KW	100	500	內置制動單元　Built-in brake unit
	7.5KW	50	1000	內置制動單元　Built-in brake unit
	11KW	50	1000	內置制動單元　Built-in brake unit
	15KW	40	1500	內置制動單元　Built-in brake unit
	18.5KW	40	1500	內置制動單元　Built-in brake unit
	22KW	30	3000	訂貨時，可定做 內置於制動單元 The brake unit can be customized when ordering.
	30KW	20	5000	
	37KW	20	5000	
	45KW	15	9600	
	55KW	15	10000	
	75KW	10	12000	
	93KW	8	20000	
	110KW	8	20000	
	132KW	6	25000	
	160KW	6	25000	
放電周期定義為10%　The discharge cycle is defined as 10%				

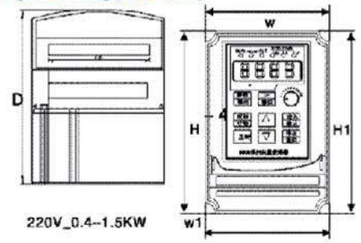
備註：　Remark:

- 制動組件用來消耗某些位能或慣性較大負載向變頻器回饋的能量，避免因電壓過高導致變頻器跳閘。適用於大慣性負載及頻繁制動或快速停車的場合。
The brake assemblies are used to consume some potential or energy fed from the load with larger inertia to the frequency inverter, which can avoid inverter trip owing to high voltage. They can be applied for the load with larger inertia and frequent brake or quick parking.
- 制動組件屬於外圍設備，本公司 0.75-18.5 提供內置制動單元，22KW 以上如需制動剎車功能，定貨時定購本公司內帶制動功能的變頻器。
The brake assemblies belong to peripherals. The brake unit is built in the inverter (0.75-18.5). If the brake function over 22kW is required, please order the inverter with the brake.
- 不可直接將放電電阻連接到 P、N 端子，如果變頻器的端子是 P、N 時，必須外加剎車放電模塊。93KW 以上如需使用 P、N 端子請在訂貨前聲明。
Don't directly connect the discharge resistor to the P or N terminal. If the inverter terminal is P or N, the discharge block must be additionally installed. If the brake assembly over 93KW is connected to the P or N terminal, please remind us before ordering.

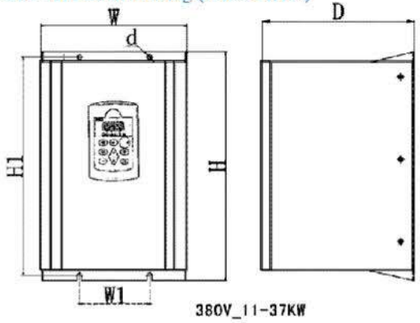
通用產品外形圖及尺寸
General Inverter Diagrams and Dimensions



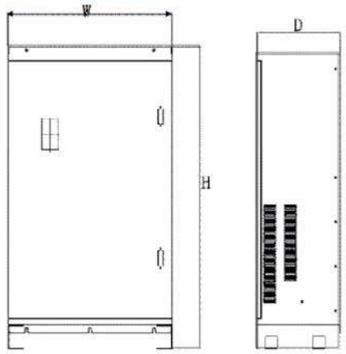
塑殼產品(0.4kw-7.5kw)
Inverter with plastic housing (0.4kw-7.5kw)



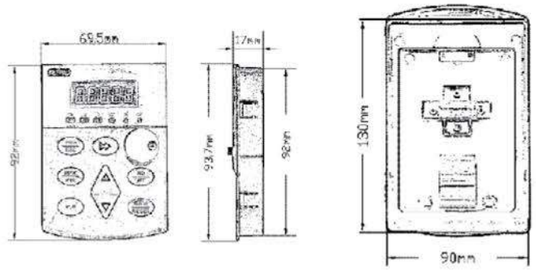
鐵殼產品(11kw-160kw)
Inverter with metal housing (11kw-160kw)

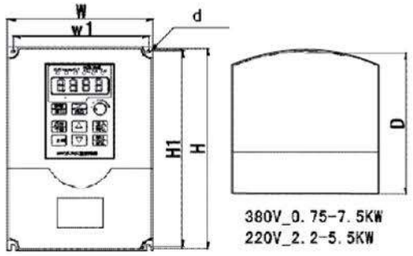


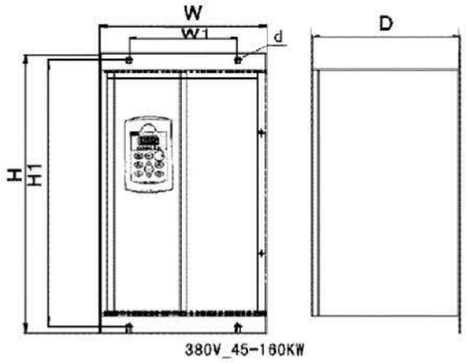
大功率產品(187kw-630kw)
Inverter with high power (187kw-630kw)



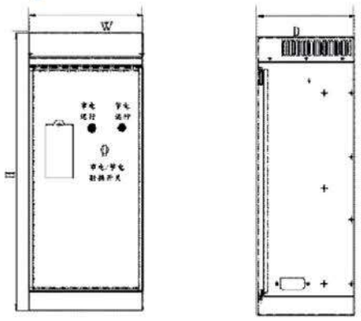
大鍵盤及卡座開孔尺寸
Large keyboard and opening dimensions







工變頻一體櫃
Integrated cabinet



產品外形尺寸及安裝孔位尺寸一覽表

Inverter Dimension and Installation Opening List

變頻器型號 Model Number	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	d (mm)
9100-1T-00040-G-B	85	77	140	132	125	Φ3
9100-1T-00075-G-B						
9100-1T-00150-G-B						
9X00-1T-00220-G-B	126	115	170	160	160	Φ4
9X00-3T-00075-G-B						
9X00-3T-00150-G-B						
9X00-3T-00220-G-B						
9X00-3T-00400-G-B 9X00-3T-00550-P-B						
9X00-1T-00400-G-B	150	134	220	203	172	Φ4
9X00-1T-00550-G-B						
9X00-3T-00550-G-B 9X00-3T-00750-P-B						
9X00-3T-00750-G-B 9X00-3T-01100-P-B						
9X00-3T-01100-G-B 9X00-3T-01500-P-B	218	108	338	323	228	Φ9
9X00-3T-01500-G-B 9X00-3T-01850-P-B						
9X00-3T-01850-G-B 9X00-3T-02200-P						
9X00-6T-01100-G	265	130	430	420	240	Φ9
9X00-3T-02200-G 9X00-3T-03000-P 9X00-6T-01500-G						
9X00-3T-03000-G 9X00-3T-03700-P 9X00-6T-01850-G						
9X00-3T-03700-G 9X00-3T-04500-P 9X00-6T-02200-G						
9X00-3T-04500-G 9X00-3T-05500-P 9X00-6T-03700-G	353	200	600	576	299	Φ11
9X00-3T-05500-G 9X00-3T-07500-P 9X00-6T-04500-G						
9X00-3T-07500-G 9X00-3T-09300-P 9X00-6T-05500-G						
9X00-3T-09300-G 9X00-3T-11000-P 9X00-6T-07500-G	397	300	684	600	336	Φ11
9X00-3T-11000-G 9X00-3T-13200-P 9X00-6T-09300-G						
9X00-3T-13200-G 9X00-3T-16000-P 9X00-6T-11000-G						
9X00-3T-16000-G 9X00-3T-18700-P 9X00-6T-13200-G						
9X00-3T-18700-G 9X00-3T-20000-P 9X00-6T-16000-G	590	-	1114	-	410	-
9X00-3T-20000-G 9X00-3T-22000-P 9X00-6T-18700-G						
9X00-3T-22000-G 9X00-3T-25000-P 9X00-6T-20000-G						
9X00-3T-25000-G 9X00-3T-28000-P 9X00-6T-22000-G						
9X00-3T-28000-G 9X00-3T-31500-P 9X00-6T-25000-G	692	-	1260	-	355	-
9X00-3T-31500-G 9X00-3T-37500-P 9X00-6T-28000-G						
9X00-3T-37500-G 9X00-3T-40000-P 9X00-6T-31500-G						
9X00-3T-40000-G 9X00-3T-45000-P 9X00-6T-37500-G	814	-	1624	-	430	-
9X00-3T-45000-G 9X00-3T-50000-P 9X00-6T-40000-G						
9X00-3T-50000-G 9X00-3T-56000-P 9X00-6T-45000-G						
9X00-3T-56000-G 9X00-3T-63000-P 9X00-6T-50000-G						
9X00-3T-63000-G 9X00-6T-56000-G						
9X00-6T-63000-G						
9X00-3T-00750-ZS-B (一體櫃)	220	-	685	-	240	-
9X00-3T-01100-ZS-B (一體櫃)						
9X00-3T-01500-ZS-B (一體櫃)						
9X00-3T-01850-ZS-B (一體櫃)						
9X00-3T-02200-ZS (一體櫃)	285	-	700	-	270	-
9X00-3T-03000-ZS (一體櫃)						
9X00-3T-03700-ZS (一體櫃)						
9X00-3T-04500-ZS (一體櫃)	330	-	930	-	340	-
9X00-3T-05500-ZS (一體櫃)						
9X00-3T-07500-ZS (一體櫃)						

備註：X= 0, 1, 6　其它型號外形和尺寸可參考 G 型，大功率工變頻一體櫃尺寸可來電咨詢。

Remark: X= 0, 1, 6. For other shapes and dimensions, please refer to the Model G. The integrated cabinets for large power inverter can contact us.

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