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Simphoenix

DL350 Series

Universal Low-power Frequency Converter

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Profile

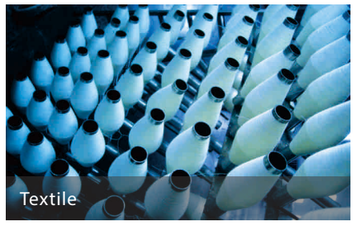
DL350 Series

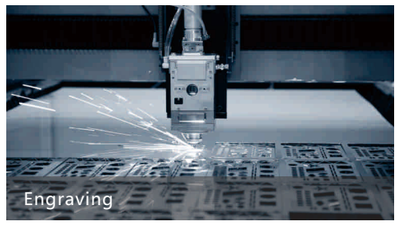
Universal Low-power Frequency Converter

The DL350 Series frequency converter is based on a brand-new software and hardware platform. It is a superior performance, compact, aesthetically durable low-power general-purpose frequency converter. It fully inherits the vector control, V/F control algorithm of Sifang's high-end frequency converters, as well as flexible parameter configuration, a variety of extension interfaces, and hundreds of alarms and warnings. At the same time, the control panel can be flexibly placed according to customer needs, easily achieving keyboardless operation and basic operating status monitoring. It is a superior performance, fully protective vector general-purpose frequency converter.

Typical Application

- Textile
- Food
- Transmission
- Engraving
- Crimping
- Wire cutting
- Ceramics
- Grinder
- Centrifuge





Product Analysis

General-purpose Applications

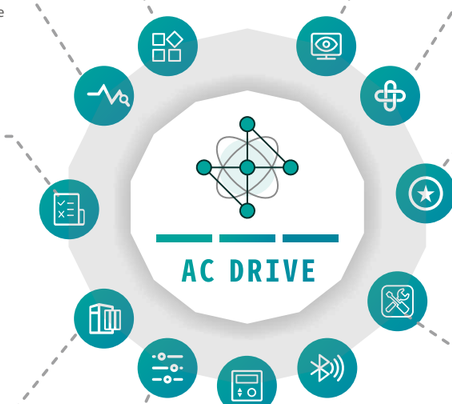
The low-power frequency converter with superior performance can run continuously at 110% load.

Load Analysis

Real-time monitoring of the motor operation process such as voltage, current, frequency, and other state variables to help analyze the operating conditions of the motor load.

Product Test

The whole series of products have passed experiments such as short circuit test, vibration test, voltage drop test, high and low temperature test, humidity test, surge test, radiation interference degree test, radiation/conductive disturbance test, etc.



Energy Braking

The whole series can be equipped with a built-in braking unit, and the shutdown speed is fast.

Multi-function Input Terminal

4 multi-function input terminals, with 21 terminal function definitions, 10 programmable outputs, up to 12 channel combination methods, to achieve flexible control parameters.

Panel Operation

The panel supports hot plugging, suitable for system integration in various application scenarios.

Status Monitoring

Monitoring various parameters set/running by the frequency converter itself, such as: set/running frequency, input terminal status, analog input/output, etc.

Control Method

VVVF space vector control, open-loop vector control algorithm

Special Function

Customized V/F curve, panel/analog/communication and other frequency setting combinations, multi speed operation, PID controller, I/O terminal function setting, analog channel function setting, automatic voltage regulation, automatic current limiting, linkage synchronization control, torque increase, swing frequency operation, etc.

Fault Detection

It can store up to 4 sets of historical fault records of the frequency converter, as well as 5 records of the last fault such as running frequency, output current, output voltage, DC side voltage, frequency converter module temperature, etc.

Communication Method

Equipped with RS485 communication interface, supports MODBUS RTU communication protocol; it is easy to achieve interconnection between the frequency converter and other industrial control devices such as PLC, industrial control machine, and has linkage synchronous control function.

Application

Automatic steamed bun molding machine scheme

The steamed bun made by traditional machine has the disadvantages of single taste, low output and high cost as well as relatively high consumption. Compared with traditional steamed bun molding machine, new machine with frequency regulation can freely choose the proportion between wrapper and stuffing to reduce the labor, control consumption in the production and improve the product appearance and taste.

Process requirement

- Stepless-speed regulation through potentiometric or communication interface, enabling the size, flour and stuffing to be adjusted the proportion.
- High Stable accuracy and steady running, enabling the noodle to be generated uniformly and smoothly with no harm to gluten.
- Light weight and small size convenient to install and operate.

Solution

According to the characteristics of automatic steamed bun machine, we recommend to use DL350 series inverter to have frequency changed via panel potentiometer, communicated with RS485 , and controlled with PLC or other industrial control machine.

Advantages

- High stable accuracy to ensure the good quality.
- Up to 16 types of frequency setting method to foster the formula adjustment during the food process and improve the yield and reduce the cost.
- Installation features such as small size and elegant appearance adaptable to food machine.
- Built-in excessive voltage and current protection, low voltage and short circuit protection.

Woodworking Sanding Machine Scheme

Woodworking Sanding Machine is solid wood processing equipment. The electrical control system contains multiple motors. The DL350 comes standard with an RS485 communication interface, and through the Modbus communication protocol, it achieves networking communication of multiple devices, achieving real-time control functions such as frequency setting, fault alarm, start-stop control, etc.

Solution

The sanding machine system mainly consists of HMI, PLC, DL350 frequency converter, and motor encoder. The machine tool is composed of five working positions: disc sanding 1, disc sanding 2, disc sanding 3, rough sanding roller 1, and rough sanding roller 2. Each working position can be controlled individually, and can be arbitrarily combined according to the needs of the site through the MODBUS communication protocol; the pressure part is precisely controlled by the PLC to collect the encoder signal to control the pressing height, and the pressing position accuracy can reach 0.1mm; the feeding part is speed-controlled by the DL350 frequency converter for the conveyor belt to ensure the stability and reliability of the feeding mechanism.

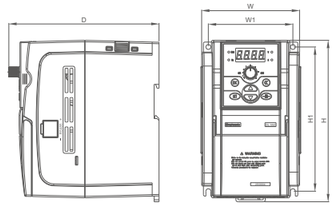
Advantages

- The keyboard can be flexibly pulled out, making it convenient for data external monitoring
- Integrate control algorithms such as V/F and SVC to adapt to various types of motors
- Real time monitoring data and factory visualization achieved through bus communication
- Electrical wiring is simpler and more convenient

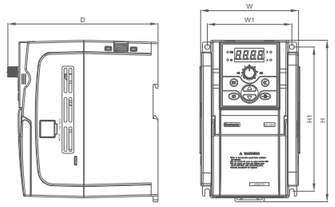
Specification

Input/output	Rated voltage,frequency		Three phase(4T#)380V 50/60Hz	Single phase(2S#)220V 50/60 Hz
	Permissible voltage fluctuation		380 ~ 415V±10%	220V±10%
	Voltage		0~input voltage	0~input voltage
	Frequency		0.0~1000.0Hz	
	Over loading endurance		110% rated current for long term; 150% rated current for 1 min; 180% for 2s	
Control characteristics	Control system		VF control/open loop vector control	
	Freq. Control resolution	Analog input	0.1% of maximum output freq.	
		Digital input	Low frequency mode:0.01Hz; High frequency mode: 0.1Hz	
	Freq. precision	Analog input	Within 0.1% of maximum output freq.	
		Digital input	Within 0.1% of setting output freq.	
	V/F curve (voltage-frequencycharacteristics)		Reference freq. can be discretional set between5 and 1000Hz.and V/F curve with multimode can be discretional set.	
	Torque boost		Manual torque boost can be set between 0 and 20 percent.	
	Automatic current/voltage limiting		During acceleration, deceleration, or steady-state operation, the system automatically detects the motor’ s stator current and voltage, and suppresses them within the permissible range using a unique algorithm.	
	UnderVoltage Suppression during Operation		Sesigned for users experiencing low grid voltage and frequent voltage fluctuations, the system can maintain long possible operation time even within the lower range of the permissible voltage, thanks to a unique algorithm and residual energy distribution strategy.	
Environment	Temperature		-10℃~40℃(non-condensing)	
	Moisture		90% below (no frosting)	
	Surrounding environment		Indoor without direct sunshine, erosion, combustible gas, dust and floating fiber	
	Altitude		0-1000 meters, with a 10% reduction in load for every 1000 meters increase	
	IP grade		IP 20	
	Cooling		Forced cooling	
Typical function	Multi-speed selection and wobble freq. running		Up to 7 stages of programmable multi-speed control, 5 running mode available	
	PID control available		Optional PID controller to realize simple control of closed-loop	
	RS485 communication and synchronization control		MODBUS protocol	
	Freq. setting	Analog input	DC voltage 0~10V, optional DC current 0~20mA	
		Digital input	It can set by operation panel, RS485, UP/DW terminal, also can set multiple combinations with analog input.	
	Output signal	Relay and OC output	One OC output and relay output (TA, TC) as many as 16 species of choices	
		Analog output	One 0~10V voltage signal, upper and lower limits can be set separately.	
	Voltage stabilizing running automatically		Three ways for selection: dynamic voltage regulation, static voltage regulation, no voltage regulation, to get the most stable operating result	
	Acceleration/deceleration time setting		0.1 Sec~600.0 sec continuous set	
	Operation functions		Upper and lower frequency settings, reverse operation restrictions, RS485 communication, frequency increase and decrease control, etc	
Function highlights	Operation panel display	Running status	Output freq., output current, output voltage,motor rotated speed, setting freq., model temperature, analog output/input	
		Alarm content	Last six times fault record, and the last failure parameter record including output frequency, setting frequency, output current, output voltage, DC voltage, model and temperature.	
	Protection/warning function		Overcurrent, overvoltage, undervoltage, overheating, short circuit, internal memory failure, etc	
	Installation		Wall-mounted	

Installation Size



Applicable Models：DL350-2S0004(B)~DL350-2S0007(B)



Applicable Models：DL350-2S0015(B)~2S0040(B)
/DL350-4T0007(B)~4T0040(B)

Model (Three-phase 380V)	Model (Single-phase220V)	W1 mm	W mm	H1 mm	H mm	D mm	Screw Specifications
——	DL350-2S0004(B)	67.5	81.5	132.5	148	134.5	M4
——	DL350-2S0007(B)						
DL350-4T0007(B)	——	86.5	101.5	147.5	165	154.5	M4
DL350-4T0015(B)	DL350-2S0015(B)						
DL350-4T0022(B)	DL350-2S0022(B)						
DL350-4T0030(B)	DL350-2S0030(B)	100	110	190	205	169.5	M5
DL350-4T0040(B)	DL350-2S0040(B)						

Model Description

DL350 −4 T 0007 (B)

Derivative product model	Built-in brike unit and 485 communication	
Power range (kW)	0004	0.4kW
	:	:
	0040	4.0kW
Power supply phase	T	Three phase
	S	Single phase
Voltage class	4	380V
	2	220V
Product series	E500 Series Low-power General Inwerter	

Model		Rated Capacity (kVA)		Rated Output Current (A)		Applicable motor Power (kW)	
DL350-2S0004(B)	DL350-4T0007(B)	1.1	1.6	3.0	2.5	0.4	0.75
DL350−2S0007(B)	DL350-4T0015(B)	1.9	3.0	5.0	4.5	0.75	1.5
DL350−2S0015(B)	DL350-4T0022(B)	2.9	3.6	7.5	5.5	1.5	2.2
DL350−2S0022(B)	DL350-4T0030(B)	3.8	5.0	10.0	7.5	2.2	3.0
DL350−2S0030(B)	DL350-4T0040(B)	5.3	6.3	14.0	9.5	3.0	4.0
DL350−2S0040(B)	——	6.3	——	16.5	——	4.0	——

System Wiring