

2012

# ENC INVERTER



**SHENZHEN ENCOM ELECTRIC  
TECHNOLOGIES CO., LTD**

## Company brief introduction

**Founding Time:** 2004

**Company Cert:** ISO9001:2000 quality control system approval

**Main Item:** Frequency Inverter /AC Drive /Variable Frequency Drive

**Production Cert:** CE approval

**Number of Employees:** 300

**Number of research staffs:** 30

**Factory Size:** 6800 m<sup>2</sup> brand-new manufacture base

**Annual capacity:** 400 million

**Honor of Encom:** National innovation Fund

Shenzhen Hi-tech R&D subsidies

Business-beginning subsidies for student abroad

Shenzhen Software Association member

## Products series

- EDS580 easy-fit cabinet inverter (3 phase 380V 0.75KW)
- EDS780 easy-fit single-board inverter (1 phase 220V 0.75KW)
- EDS800 mini universal inverter (1 phase 220V 0.2~1.5KW, 3 phase 380V 0.75-1.5KW)
- EDS1000 series multi-function universal inverter (1 phase 220V 0.4~3.7KW, 3 phase 380V 0.75~55KW, 3 phase 690V 18.5~132KW)
- EDS1100 special for drawing machine (3 phase 380V 0.75~55KW)
- EDS-A200 Series Single-phase Induction Motor Specialized Inverter (1 phase 220V 0.2~3.7KW)
- EDS-V300 current vector inverter (3 phase 380V 0.75~55KW)
- EDS2000 series high-performance universal inverter (3 phase 380V 75~ 400KW)
- EDS2080 series bypass /variable frequency integrated energy save and control machine (3 phase 380V 7.5KW~280KW)
- EDS2800 series current vector control engineering inverter (including special function for injection molding machine, 3 phase 380V 11~75KW)
- EDS2860 series special type with integrated energy save and control for injection molding machine (3 phase 380V 7.5~55KW)
- [EDS3000 series high performance closed loop vector control inverter](#)

## Unique performance characteristic:

1. Adopt control unit which takes DSP as core to realize hi-speed and hi-performance control to the system and to realize low-frequency hi-torque output;
2. Multiple I/O interface to fulfill special demands from every line;
3. Reasonable design of digital potentiometer and 3 classes menu;
4. Standard/optional RS485 communication interface;
5. Supports local and remote keypad, extended distance can reach 1000 meters;
6. Keypad parameter copy function;
7. Password protection function;
8. With an open product development platform, easy to customize.

## • Specification

### EDS800/EDS1000/EDS2000/EDS2080/EDS2800

item		Item description	
Input	Rated volt., frequency	3 phase 690V, 50Hz/60Hz; 3 phase 380V, 50Hz/60Hz; single phase 220V, 50Hz/60Hz	
	Allowed work volt. range	3 phase 690V: 586V~760V; 3 phase 380V: 320V~460V; single phase 220V: 200V~260V	
output	Voltage	690V grade: 0-690V; 380V grade: 0-380V; 200V grade: 0-220V	
	Frequency	0Hz-400Hz	
	Over loading capacity	G type: 150% of rated current for 1 minute, 200% of rated current for 0.5s; P type: 120% of rated current for 1 minute (for type of 3.7kw~132kw); 110% of rated current for 1 minute, 150% of rated current for 1 second (for type of above 160kw) EDS2800 series: 150% of rated current for 3 minutes, 200% of rated current for 5 seconds	
Control performance	Control mode	EDS2000 series: optimal space voltage vector PWM control; EDS2800: simple current vector control EDS1000 series: Speed sensorless slip vector control, open loop V/F control EDS800 series: optimal space voltage vector SVPWM constant voltage frequency ratio V/F control	
	Speed regulation range	1:100	
	Start-up torque	150% of rating torque at 1 Hz for EDS1000 series; 100% of rating torque at low frequency for EDS800 series; 150% of rating torque at 3 Hz for EDS2000 series; 130% of rating torque at 1 Hz for EDS2800 series.	
	Running speed stable state precision	$\leq \pm 0.5\%$ of rating synchronous speed	
	Frequency precision	Digital setting: max. frequency $\times \pm 0.01\%$ ; analog setting: max. frequency $\times \pm 0.5\%$	
	Frequency resolution	analog setting	0.1% of max. frequency
		digital setting	0.01Hz
		exterior pulse	EDS800/1000 series: 0.5% of max. frequency; EDS2000 series: 0.1% of max. frequency
		Digital keyboard settings	0.01Hz
	Torque boost	Automatic torque boost, manual torque boost 0.1%~20.0%	
V/F curve (volt. frequency characteristic)	Set rating frequency randomly at range of 5~400Hz, can choose constant torque, degressive torque 1, degressive torque 2, degressive torque 3 and user defined V/F curve in total 5		

	Accelerating decelerating curve	Modes: straight line accelerating decelerating, S curve accelerating decelerating and automatic Acce/Dece mode; 4 kinds of Acce/Dece time (unit of minute/second can be optioned), max. is 6000 minutes. EDS1000 series has two models: straight line accelerating decelerating, and S curve accelerating Decelerating; 7 kinds of accelerating decelerating time (unit of minute/second can be optioned), max. is 6000 minutes.
brake	Power consumption brake	Interior or exterior braking resistance for EDS1000/EDS2000; exterior braking resistance for EDS800 series (built-in braking unit)
	DC brake	Optional start-up and stop, action frequency 0~15Hz, action volt. 0~15%, action time 0~20.0 s
Jog		Jog frequency range: 0.50Hz~50.00Hz; jog accelerating decelerating time 0.1~60.0s can be set
Multi-section speed running		Realized by interior PLC or control terminal
Interior PID controller		Be convenient to make closed-loop system
Automatic energy save running		Optimize V/F curve automatically based on the load to realize power save running
Automatic volt. regulation (AVR)		Can keep constant output volt. When power source voltage varies.
Automatic current limiting		Limit running current automatically to avoid frequent over-current which will cause trip
Running function	Running order specified channel	Keypad provision, control terminal provision, serial port provision
	Running frequency specified channel	Digital provision, analog provision, impulse provision, serial port provision, combined provision, can be switched at any time by kinds of method
	pulse output channel	Impulse square wave signal output of 0~50KHz (for EDS1000/EDS800 it is 0~20KHz) can realize output of physical parameter such as setting frequency, output frequency and etc.
	Analog output channel	2 channel of analog signal output, each channel can be 4~20mA or 0~10V (for EDS800 series: 1 channel of analog signal output AO, which can be 4~20mA or 0~10V), through them the inverter can realize output of physical parameter such as setting frequency, output frequency and etc.
	Special channel of EDS2800	2-way 0-1A and 2-way 0-10V isolated analog input signal
keypad	LED display	Can display setting frequency, output frequency, output voltage, output current etc. in total 20 kinds of parameter (EDS800 has 14 kinds of parameter)
	Button lock	Lock all of the buttons; For EDS1000/EDS800: Lock all or part of the buttons(analog potentiometer can't be locked)
	Parameters copy	Parameters can be quickly copied. by using of keyboard and remote-control keypad(EDS800/EDS1000 series haven't this function)
Protection function		Over-current protection, over-voltage protection, lack-voltage protection, over-heat protection, over-load protection, missing phase protection (in option)etc.
Optional parts		Brake subassembly, remote-control keypad, connecting cable for remote-control keypad etc.
ambient	Use ambient	Indoor, not bare to sunlight, no dust, no corrosive gas, no flammable gas, no oil fog, no vapor, no water drop or salt etc.
	altitude	Lower than 1000m
	Ambient temperature	-10°C~+40°C(under ambient temperature 40°C ~50°C, please reduce the volume or strengthen heat sink)
	Ambient humidity	Smaller than 95%RH, no condensation water
	vibration	Smaller than 5.9m/s <sup>2</sup> (0.6g)
	Storage temperature	-40°C~+70°C
configuration	Defending grade	IP20
	Cooling mode	By fan with automatic temperature control
Mounting mode		Wall-amount for type of 132kwG/160kwP and below, cabinet/wall-amount for type of 160kwG/200kwP and above, all of the EDS2800 series are wall-amount.
Options for EDS2080 series		Isolating switch, circuit breakers, fuses, AC input / output reactors, the input / output EMI filters, ammeter, voltmeter, frequency meter

**(Actual specification shall be a bit different from above depending on different types, please refer to user's manual or consult with manufacturer when you choose our products)**



## Spec. ,Size and Gross Weight

INVERTER TYPE	Rated Power (KW)	Rated Output Current (A)	Size H*W*D(mm)	Packing size(cm)	G.W. (kg)
EDS580-4T0007	0.75	2.3	14*12.3*12.12	15.8*18*17	2
EDS780-2S0007	0.75	4.7	12*11*7	15.5*12*16.5	0.9
EDS800-2S0002	0.2	1.6	141.5*85*126	16*14*17	1.5
EDS800-2S0004	0.4	3			
EDS800-2S0007	0.75	4.7			
EDS800-2S0015	1.5	7.5			
EDS800-4T0007	0.75	2.3			
EDS800-4T0015	1.5	3.7			
EDS800-4T0015	1.5	3.7			
INVERTER TYPE	Rated Power (KW)	Rated Output Current (A)	Size H*W*D(mm)	Packing size(cm)	G.W. (kg)
EDS-A200-2S0002	0.2	1.6	141.5*85*126	16*14*17	1.5
EDS-A200-2S0004	0.4	3			
EDS-A200-2S0007	0.75	4.7			
EDS-A200-2S0015	1.5	7.5			
EDS-A200-2S0022	2.2	10	230*155*164	33*24*25	4
EDS-A200-2S0037	3.7	17			
INVERTER TYPE	Rated Power (KW)	Rated Output Current (A)	Size H*W*D(mm)	Packing size(cm)	G.W. (kg)
EDS1000-2S0004	0.4	3	170*125*135.5	25*20*21	2.5
EDS1000-2S0007	0.75	4.7			
EDS1000-2S0015	1.5	7.5			
EDS1000-4T0007G/0015P/C	0.75	2.3			
EDS1000-4T0015G/0022P/C	1.5	3.7			
EDS1000-2S0022	2.2	10	230*155*164	33*24*25	4
EDS1000-2S0037	3.7	17			
EDS1000-4T0022G/4T0037P/C	2.2	5			
EDS1000-4T0037G/4T0055P/C	3.7	8.5			
EDS1000-4T0055G/4T0075P/C	5.5	13			

EDS1000-4T0075G/4T0110P/C	7.5	17	290*200*187	38*29*27	6.5
EDS1000-4T0110G/4T0150P/B	11	25			
EDS1000-4T0150G/4T0185P/B	15	33	345*218*221	42*29*28	10.5
EDS1000-4T0185G/4T0220P	18.5	39	430*260*261	52*34*36	18
EDS1000-4T0220G/4T0300P	22	45			
EDS1000-4T0300G/4T0370P	30	60	505*280*261	63*38*34	25.5
EDS1000-4T0370G/4T0450P	37	75			
EDS1000-4T0450G/4T0550P	45	91	535*300*261	62*40*35	27
EDS1000-4T0550G/4T0750P	55	112	645*370*267	77*50*49	52
EDS2000-4T0750G/4T0900P	75	150	680*480*369	84*64*60	70
EDS2000-4T0900G/4T1100P	90	176			
EDS2000-4T1100G/4T1320P	110	210	750*480*381	91*64*63	99
EDS2000-4T1320G/4T1600P	132	253			
EDS2000-4T1600G/4T2000P	160	304	1500*600*500	170*80*77	180
EDS2000-4T2000G/4T2200P	200	380	1600*600*500	180*80*78	180
EDS2000-4T2200G/4T2500P	220	426			
EDS2000-4T2500G/4T2800P	250	474	1600*700*500	180*90*78	190
EDS2000-4T2800G/4T3150P	280	520			
EDS2000-4T3150G/4T3500P	315	600			
EDS2000-4T3500G/4T3750P	350	650			
EDS2000-4T4000GR	400	750	1800*900*600	200*110*88	240
EDS2860-4T0075	7.5	17	255*260*620	66*28*26	25
EDS2860-4T0110	11	25			
EDS2860-4T0150	15	33	255*280*660	77*42*40	36
EDS2860-4T0185	18.5	39	300*320*735	77*42*40	36
EDS2860-4T0220	22	45			
EDS2860-4T0300	30	60	300*360*830	97*35*30	46
EDS2860-4T0370	37	75			
EDS2860-4T0450	45	91	340*435*935	126*45*33	90
EDS2860-4T0550	55	112			

# EDS580 intelligent inverter integrated with motor

EDS580 performance advantages:

## 1. Smart design, with the motor naturally

Breaking traditional design of structure and appearance for inverter, innovative integrated design with motor, inverter mounted directly on position of the motor terminal box, sparing need for installing cabinet and wiring, simple and convenient installation, strong anti-interference, compatible with the same power motor from different manufacturers, combined with the motor, and totally natural!

## 2. Sophisticated design, super strong capability of withstanding harsh environment

Fully enclosed metal casing design and unique lower power consumption design, not only energy-saving but also heat losses reducing. To enhance the inverter's ability of anti-dust, anti-dirt and anti high-temperature, so it is able to show excellently for a long time even in harsh and complex environment!

## 3. Safe design, protecting equipment handily

Adopting pluggable dust-proof terminals externally, adding anti-jamming performance and overvoltage & over current design for internal hardware circuit, which resists strong electromagnetic noise, and protects the inverter in time even in exceptional situations. Collocation of external and internal part ensures stability and security of the inverter.

## 4. User-friendly design, ensuring efficient work

Excellent on-site operation makes all debug and control operations be done within the motor terminal box! (Also it can conduct multi-machine communication and PC operation through standard 485 communication interface.)

## 5. Distinctive value, creating new ideas of application

With ENC's strong and unique R & D strength, EDS580 provides intelligent power for the motor, has a number of intellectual property and patents, and its innovative value is totally outstanding from other competing products; With help of EDS580, motor manufacturers can make speed adjustable intelligent motor system to improve the grade and value of existing motors; the inverter is also suitable for the upgrade and re-equip of an existing project, which saves installation costs and improves the product reliability under dust and high temperature environment. EDS580 has great potential market value with its creative application of new ideas.

## EDS780 Single-Board Inverter

EDS780 frequency inverter is a kind of high performance single-board inverter developed by Shenzhen Encom. It has been applied cosmically to traverse weaving machine in textile industry.

EDS780's performance characteristic:

1. Small size, powerful function, extremely high cost performance.
2. Widely applicable in all types of control situation which needs installation
3. Adopt space voltage vector SVPWM control
4. Adopt independent 16 steps speed control; control is more accurate and convenient
5. Good adaptability to power supply can be applied to rural power grids with big fluctuation.
6. Panel control, terminal control and other methods controls can be realized
7. Configuration bulk capacitor can store certain pump energy.
8. Built-in simple PLC function, traverse function, more extensive adaptability.
9. Containing failure memory function, which is more convenient for finding problems.
10. RS485 communication function optional.

**Power range: 0.75KW 1 phase 220V**

## EDS-A200 Series Single-phase Induction Motor Specialized Inverter

### ■ Features of EDS-A200

- Adapt to single-phase motor
- 20%-50% efficiency saving
- Pulse/analog input output channels;
- 8 segments speed control;
- Multiple running frequency/command specified channels;
- Can realize copy for parameters by using long-distance keyboard;
- Hi-performance isolating OC output, AC or DC load of 220V/0.5A can be connected;
- Traversal function can be widely applied to all kinds of spinning devices;
- Built-in Braking unit
- Built-in user's timer/counter

**Power range: 0.2kw~3.7kw 220V**

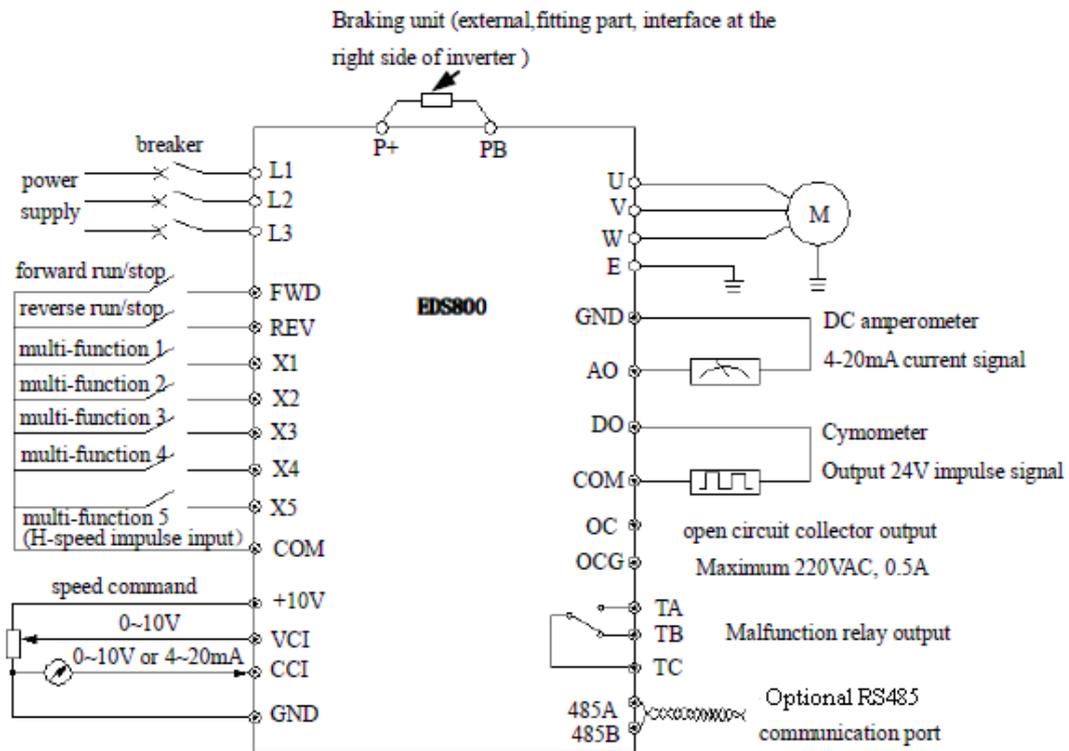
## **EDS800 Universal mini inverter (CE Approval)**

### **■ Features of EDS800**

- Small size (126\*85\*141.5mm), high cost performance.
- Can make up of inverter network independently and can set to be mainframe or sub-device
- Pulse/analog input output channels;
- 8 segments speed control;
- Multiple running frequency/command specified channels;
- Can realize copy for parameters by using long-distance keyboard;
- Hi-performance isolating OC output, AC or DC load of 220V/0.5A can be connected;
- Traversal function can be widely applied to all kinds of spinning devices;
- Built-in Braking unit
- Built-in user's timer/counter

**Power range: 0.2kw~1.5kw 220V; 0.75kw~1.5kw 380V.**

### **■ Basic running wiring diagram**



## EDS1000 series multi-function universal inverter (CE Approval)

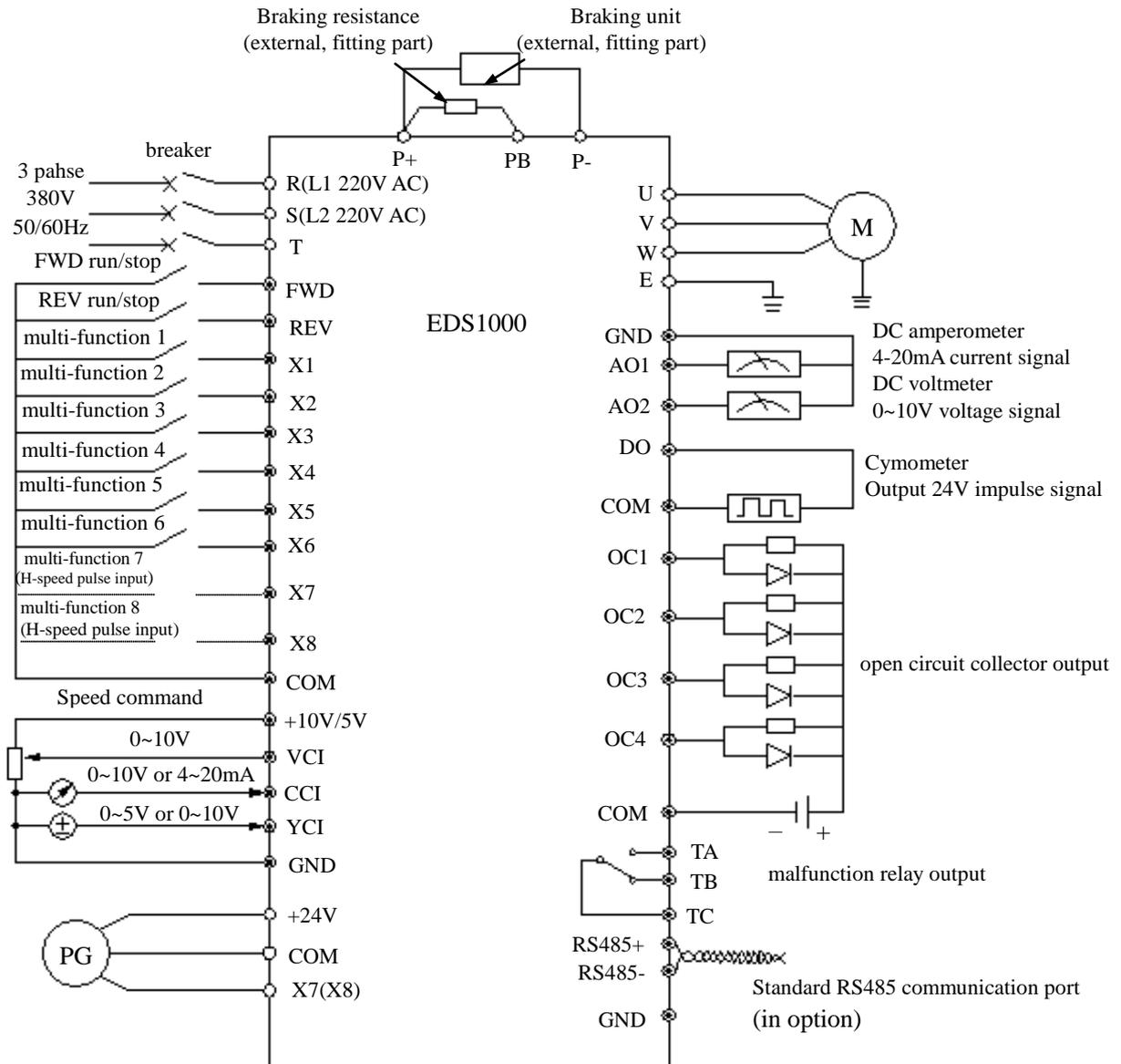


### ■ Features of EDS1000

- Small volume, be suitable for all kinds of spot;
- 150% of rated torque at 1 Hz frequency;
- Built-in PID controller, can realize constant pressure (flux etc.) “One drives multiple devices”

- control (function in option);
  - 16 (maximum) section speed control;
  - 0-20KHz pulse input output interface;
  - Spinning traverse function;
  - Bears automatic voltage regulation (AVR) and automatic current limiting function;
  - RS485 communication interface (part in option).
- Power range: 0.4kw~3.7kw 220V; 0.75kw~55kw 380V**

## ■ Basic running wiring diagram



## EDS1100 series inverter for drawing machine:

1. Independently constitute dual-inverter digital PID control system;
2. To identify rolling diameter of line-receiving tray automatically;
3. Automatic identification of mechanical transmission ratio;

4. Automatic identification of diameter of cable;
5. Automatically adjust PID parameters;
6. Automatically track speed of mainframe, and after power on it will go to zero point of tension balance bar (middle point);
7. Smooth starting, stable running, and constant tension;
8. System simplicity, low cost, easy maintenance, and more stable control effect

**Power range: 1.5kw~55kw 380V**

## **EDS-V300 current vector inverter**

1. Adopt current vector control technology, and optimize V / F control simultaneously;
2. Big torque at low frequency: output 150% rated torque at 0.5hz;
3. High steady-state accuracy: error rate of speed signal input and actual speed output is  $\pm 5\%$ ;
4. Unique self-learning technology: After entering the motor nameplate parameters, the inverter will start static and rotary tuning itself, in order to dynamically recognise motor parameters needed by motor vector control;
5. Good robustness: Generally not sensitive to motor parameters, not too dependent on parameters change, strong resistance to environment temperature change;
6. Simple and easy to adjust: No special setting for the motor and controller parameters. If any wrong parameter setting, just resume factory setting;
7. Fast and stable high speed down response, maximum frequency accelerating/decelerating time can be 0.1s;
8. Even there are sudden change of load, rapid acceleration and deceleration, inverter can do fast and intelligent self-adjustment. So rare over current, short circuit fault and etc.;
9. Offer many kinds of frequency input ways, RS485 communication interface as Standard configuration, MODBUS protocol optional.

**Power range: 0.4kw~2.2kw (220V); 0.75kw-55kw (380V)**

Suitable for: machine tools, wood machinery, stone machinery, mining machinery, printing machinery, drawing machine, textile, paper making, metallurgy, food, chemical, transmission, wire and cable, ceramic industry, building materials, packaging machinery,

tobacco, and other sites and industries.

## **EDS2000 series hi-performance universal inverter**

- Takes DSP as the core, Dual CPU Control (Including the keypad CPU control)
- Low frequency (1Hz) large output torque.
- Great overload capacity. 200% of rated current transiently
- 10 digital input channel, 3 analog input channel, can accept 0~10V, 0~5V and 4~20mA input signal.
- 2 pulse input channel (maximum 50 KHz), 2 OC digital output channel and 1 hi-speed pulse output channel are available.
- Two 0~10V voltage and two 4~20mA current analog quantum output channel.
- Output channel can be connected to standard secondary meter
- 16 (maximum) section speed control
- RS485 interface as standard part
- Remote keypad can be as long as 1000 meters off the inverter.

**Power range: 75~400KW 380V**

## **EDS2800 series inverter**



- Have all the features of EDS2000 series
- Full load output at Low-frequency (0.1Hz).
- With powerful over load ability--- 150% of rated current 3 minutes, 200% of rated

current 5 seconds.

- Perfect control function for injection molding machine.
- Provide 2-way 0-1A and 2-way 0-10V isolated analog input signal channels
- Effective control of the excitation current can control the heating of injection molding machines effectively

**Power range: 11KW~75KW 380V**

## **EDS2860 series special inverter for injection molding machine**

**(CE Approval)**



- Takes DSP as the core
- Double loop for power source/power save running, automatic reset and power-off reset function ensure production continuity and efficiency
- Great overload capacity: 150% of rated current for 3 minutes, 200% of rated current for 5 seconds
- No high pressure flooding energy loss, power save rate reaches 25%~65%
- Temperature of the oil is stable, cooling water can be saved by above 30%
- The investment can be returned for about 6-15 months by power save.

**Power range: 7.5KW~75KW 380V**

## **EDS2080 series bypass/variable frequency integrated energy save and control machine**



- Have all the features of EDS2000 series
- Bears automatic voltage regulation (AVR) and automatic current limiting function
- Power source/Variable frequency dual-loop operation with automatic reset, power-off

reset function

- Be able to retain the original loop system
- Can add isolating switch, breaker/ fuse, AC input / output reactors, input / output EMI filters and other accessories according to customers' need.
- Can add ammeter, voltmeter, cymometer and etc. according to customers' need.

**Power range:7.5KW~400KW 380V**

## Basic running wiring diagram

