STEP Share the convenience and happiness in an intelligent society

Shanghai STEP Electric Corporation

No.1560 Siyi Road, Jiading District, Shanghai
Zip：201802
Tel：+86-21-3101 0600/0800
https://www.step-ia.com/lv-ac-drive/

STEP Lift Control System Business Division
No.599 Meiyu Road, Jiading District, Shanghai
Zip：201802
Business Hotline：400-820-7921

Shanghai STEP Robotics Co., Ltd.
No.1518 Siyi Road, Jiading District, Shanghai
Zip：201801
Business Hotline：400-920-0275

Shanghai Sigriner STEP Electric Co., Ltd.
No.1560 Siyi Road, Jiading District, Shanghai
Zip：201801
Business Hotline：400-821-0325

Shanghai STEP Cable Technology Co., Ltd.
No.289 Xinqin Road, Jiading District, Shanghai
Zip：201802

Yixin（Shanghai）International Trade Co., Ltd.
No.599 Meiyu Road, Jiading District, Shanghai
Zip：201802

HONG KONG International STEP Electric Holdings Co., Ltd.
Unit AD, 9/F, Nathan Commercial Building,
430-436 Nathan Road, Kowloon, Hong Kong
Zip：999077
Business Hotline：+852-2759 2938

STEP Sigriner Elektronik GmbH
Am Industriepark 2B, D-84453 Mühldorf，Deutschland
Business Hotline：+49-8631 987 440
Fax：+49-8631 987 444

Sigriner Automation (Mfg) Sdn Bhd
No.6, Jalan Astana 1/KU2, Bandar Bukit Raja 41050,
Selangor, Malaysia
Business Hotline：+60-3-3341 1166

ADTECH (Shenzhen) Technology Co., Ltd.
Building P1, COFCO Science park, No.93-1 Xintang Road,
Rentian Community, Fuhai Street, Bao'an District, Shenzhen
Zip：518103
Business Hotline：400-168-2718

Anhui STEP Cable Co., Ltd.
Plant No.2, SME Business Park, Anhui Chuzhou High-tech
Industrial Park, Tianchang City, Anhui
Zip：239399

STEP Industrial Control (Hangzhou) Co., Ltd.
Building 4, No. 35, Xianxing Road, Xianlin Industrial Park,
Yuhang District, Hangzhou
Zip：311122
Business Hotline：0571-8868 3113

Shanghai Huitong Automation Technology Development Co. Ltd.
Room 3503, CITIC Plaza, No.859, North Sichuan Road, Shanghai
Zip：200085
Business Hotline：021-6357 0803，6357 0804

SKE (Shanghai) Engineering Co., Ltd.
No.1560 Siyi Road, Jiading District, Shanghai
Zip：201801
Business Hotline：021-6992 6265

STEP Industrial Intelligent Equipment（Suzhou）Co., Ltd.
No.37 Mazhuang Road, Yushan Town, Kunshan City, Jiangsu
Zip：215347
Business Hotline：0512-3691 0808

Shanghai Baijiang Intelligence & Science Co., Ltd.
No.1518 Siyi Road, Jiading District, Shanghai
Zip：201801
Business Hotline：400-821-0325

VER1.0

VFD | Hotline

400-821-0325

WECHAT ACCOUNT (AC DRIVES) WECHAT OFFICIAL ACCOUNT OFFICIAL WEBSITE

STEP

AS-M30 Series Intelligent Inverter

Catalogue

About STEP

Founded in 1995, Shanghai STEP Electric Corporation is the enterprise backed by the state, has been awarded as National High-Tech Enterprise, National Innovative Enterprise. In 2010, STEP was listed on the Shenzhen Stock Exchange as an A-share with abbreviation as Xinshida, and stock code as 002527. STEP is a member of the National Robot Standardization General Group, member of National Technical Committee 196 on Elevators of Standardization Administration of China, vice president of China Robot Industry Alliance, vice president of Shanghai Robot Industry Association, and vice president of Shanghai Intelligent Manufacturing Industry Association.

With focus on motion control technology together with servo drives, speed controls by frequency variation, robots and industrial controllers as key products, STEP advances digital and intelligent technologies and provides customers with integrated, intelligent manufacturing solutions in top quality.

STEP's products and solutions are widely used in 3C electronics, lithium batteries, semiconductors, photovoltaics, logistics, food and beverage, medical, automotive, dispensers, laser, machine tools, elevators, water pumps, HVACs, rubber and plastics, general energy saving, construction machineries, metal products, chemical products, furniture and other industries and segments, serving more than 110 countries and regions around the world.

STEP keeps focusing on research and development, has established research and development centers in Shanghai, Shenzhen, Xi'an, Hangzhou, Germany and Japan. Additionally, we have post-doctoral research stations, and the laboratory at the technology center has been certified as the national CNAS. STEP actively participates the preparation and revision of a number of national technical standards and industry technical standards. STEP has been awarded 730 nationally patents, including 242 invention patents and 266 software copyrights up to June 30th, 2023.

With headquartered in Shanghai, STEP operates production bases in Shanghai, Suzhou, Hangzhou, Shenzhen and Anhui, and more than 20 business offices across China. As part of the globalization strategy, STEP operates overseas subsidiaries in Germany, Japan and India and a joint venture in Malaysia, and will set up more offices in the world to develop the global market.

About VFD

Leading brand in the VFD industry in China

STEP VFD leads in the fields of secondary water supply, HVAC, and logistics warehousing. It is also widely used in industries such as elevators, rubber and plastics, lifting machinery, and general energy conservation.

STEP VFD covers full power range with annual production of 320,000 units.

目 录

AS-M30 Series Refined & Intelligent Inverter

AS-M30 Series Refined & Intelligent Inverter

The new member of the inverter family, the AS-M30 refined and intelligent inverter series, has a compact appearance design, is exquisite and practical, has an overload capacity of up to 200%, and can be widely used in speed control of various asynchronous motors; the product relies on a 32-bit MCU and adopts the world's leading vector control algorithm to achieve high-performance and high-precision motor drive control. While improving product reliability and environmental adaptability, it strengthens customer usability and industry-specific design, with more optimized functions, more flexible applications, and more stable performance

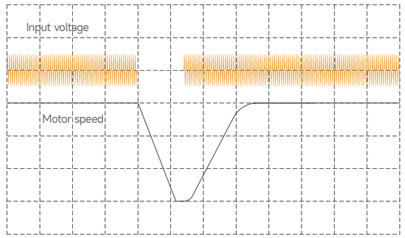
Product Features

- Four control modes: constant torque V/f, quadratic load V/f, vector control without PG sensor, energy saving mode
- Compact design, exquisite and practical
- Overload capacity: 150% rated output current 60s, 200% rated output current 2s
- Built-in Modbus communication interface
- The panel can be externally connected, easy to use
- PCB coating to resist harsh application environment
- The side of the plastic shell product has a removable protection plate, which supports side-by-side installation
- Realize high-performance vector control using flux and speed estimation technology
- Wide voltage range design ensures product adaptability to grid fluctuations
- Advanced independent air duct design, adaptable to various complex and harsh environment sites

Anti-electrical Shaking

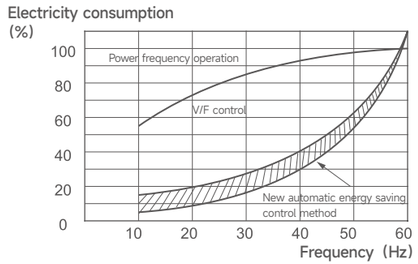
When there is a momentary power outage or a sudden drop in input voltage, the inertial energy on the load side can be fed back to the DC bus to make up for the temporary energy gap and avoid shutdown due to undervoltage

Significant effect in large inertia load situations



Energy-saving

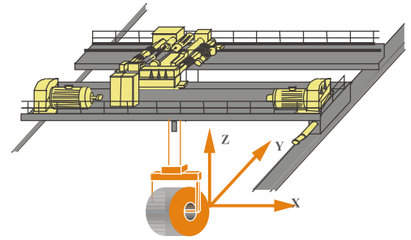
Optional energy-saving mode monitors the actual load size in real time, automatically adjusts and optimizes the voltage and current applied to the motor, so that the motor runs at the best efficiency point, achieving significant energy-saving effects



Braking Function

The motor is pre-magnetized before starting, and then the brake is opened by frequency, current, etc. to prevent the load from slipping due to insufficient torque; before stopping, the brake is triggered in advance to ensure the stability of the shutdown

Main applications: lifting systems, cranes, winches, etc



Multi-pump Control Function (Non-standard)

Using the built-in PID controller, multiple water pumps can be automatically switched on and off according to different pressures; the pumps can be rotated regularly to try to average the running time of each water pump; a dormant small pump can be set to ensure stable pressure at extremely low water consumption. Note: Please specify this function when ordering

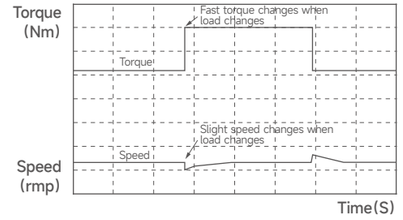
Speed Stabilization & Speed Regulation

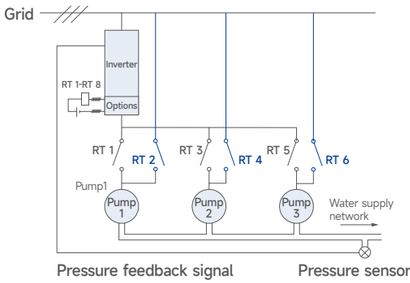
Speed stabilization accuracy: ±2% (V/F) ±0.2% (SVC)

Speed regulation range: 1: 40 (VF) 1: 200 (SVC)

Fast Response

By improving the response speed and controlling the speed change during load disturbance, the motor speed can be kept constant to the greatest extent. Compared with traditional inverters, the response time is shortened by more than half





Application Field


Thermal power generation


Petrochemical


Coal mine


Metallurgy


Cement manufacturing


Food machinery


Packaging machinery


Logistics equipment


Woodworking machinery


Fan & water pump

AS-M30 Product Structure

01

Optimized Heat Dissipation Structure

The independent heat dissipation duct is optimized from the original right angle to a rounded angle, which reduces the accumulation of hot air flow and greatly increases the heat dissipation efficiency

02

Thermal Design & Thermal Reliability

- Independent wind tunnel: including IGBT, rectifier bridge, electrolytic capacitor
- Low loss design is adopted above 25Hz, and the peak and trough 1/6 cycle is not chopped to enhance the local heat dissipation design
- Spare parts strictly adopt international standards, and the main test contents of type test are

Details	Absolute Allowed Temperature
Absolute allowed temperature	125℃
Transformer, IC, rectifier bridge	95℃
Electrolytic capacitor	130℃
Contactor	120℃
Charging resistor	180℃
IGBT radiator	85℃

- Temperature rise test of the whole machine: ambient temperature 40℃
- Factory aging test: high temperature 60℃

03

Strong & Weak Electricity Isolation Design

Adopt strong and weak electricity isolation design to avoid magnetic field interference and increase service life

04

EMC Design

- Equipped with a surge current absorption circuit to suppress surge current when power is turned on
- Optional AC input reactor and AC output reactor can significantly reduce harmonic current
- Optional EMC filter to reduce interference to external equipment and meet C2 international standards

05

Long Lifespan Design

Key components are all from first-class manufacturers in the industry and are designed to have a long lifespan

06

Automatic Spraying Process of Three-proof Paint

The automatic spraying equipment of three-proof paint is used, and the spraying path is programmed according to the layout characteristics of the circuit board to ensure that the coating is comprehensive, uniform and consistent. If it is to be used under particularly harsh conditions, thicker coating can be ordered

07

Wide Voltage Input Range

Comply with international standards for wide voltage input range, allowing for appropriate voltage fluctuations
Rated voltage：三相380-480V，50Hz/60Hz
Allowable voltage fluctuation range：323-528V，50Hz/60Hz

Performance & Configuration

Basic Application Functions	
Low frequency torque boost	The low-frequency torque of V/F control and speed sensorless vector control can be increased by about 0.1%~30.0% through voltage boost and torque boost
V/F curve	Linear type, multi-point type
Acceleration & deceleration curve	Linear or S-shaped acceleration and deceleration; three groups of acceleration and deceleration time; acceleration and deceleration time range: 0-3200s
Automatic voltage regulation (AVR)	When the grid voltage changes, it can automatically keep the output voltage constant
Built-in PID	Closed-loop control system that can easily realize process control
DC braking	DC braking range: 0.0Hz – maximum frequency; braking time: 0.0s-20.0s Braking action current value: 0%-100%
Jog control	The motor can be started and stopped immediately; the jogging frequency setting range is: 0.0-20.0Hz Jogging stop mode: deceleration/free/DC braking
Frequency Hopping	You can set 3 frequency hopping points and the corresponding frequency hopping range to prevent the inverter from running within the frequency band
Multi-speed	Up to 15 operating frequencies can be set via 4 logic input ports
Input sum	The algebraic operation result of 2 analog inputs is used as the frequency setting, making the frequency setting more flexible
2 sets of motor parameter switching	Two sets of motor parameters can be set and switched freely to match the currently driven motor
Inverter protection	Input/output phase loss protection, underload detection, over-torque protection, undervoltage protection, overvoltage protection, overcurrent protection, overheating protection, phase short circuit protection
Motor protection	Motor thermal protection, motor current limiting, motor overload, motor short circuit

Electrical Characteristics	
Input voltage	Three phase AC，380-480V,50/60Hz or single phase AC，200-240V,50/60Hz
Output voltage	0-100% output voltage，0.5Hz- 400Hz
Control mode	Constant torque V/F, quadratic load V/F, sensorless vector control, energy-saving mode
Switching frequency	1.5-12kHz　The automatic switching frequency adjustment function can be set: when the temperature rises, the switching frequency is automatically reduced After the temperature returns to normal, the switching frequency returns to the initial value
Overcurrent capability	150% of rated output current 60s, 200% of rated output current 2s

Control Signal		
Frequency setting signal	Integrated operator panel	Membrane switch (button), speed knob (potentiometer)
	External signal	UP/DOWN setting, analog input, multi-speed, external panel, serial communication
Start & stop control signal	Integrated operator panel	RUN/STOP buttons
	External signal	Logic input terminals, external panel, serial communication

Protective Function	
Inverter protection	Input phase loss protection, output phase loss protection, underload detection, over-torque protection, undervoltage protection, overvoltage protection, overcurrent protection, overheating protection, phase short circuit protection
Motor protection	Motor thermal protection, motor current limiting, motor overload, motor short circuit

Control Circuit Characteristics		
Available internal power supply	10V	10VDC ±5%, maximum current 10mA, used for reference potentiometer
	24V	24VDC±5%, maximum current 100mA, used for logic input port
Analog input	AI1	Voltage analog input: 0-5VDC, or 0-10VDC, impedance 30k
		Current analog input: 0/4-20mADC, impedance is 250Ω
		Resolution: 10 bit A/D conversion
		Default factory setting: 0-5VDC voltage input
	AI2	Voltage analog input：0-10VDC, or PTC probe input
		Resolution: 10 bit A/D conversion
Logic input	LI1-LI8	0-24VDC power supply
		Positive logic (source) and negative logic (sink) are optional, and the factory default is negative logic
		69 functions are available including forward, reverse, running, fault reset, multi-speed, etc.
		220V 0.4kw-2.2kw and 380V 0.4kw-0.75kw product only has 6 channels：LI1-LI6
Logic input	AI1、AI2	For inverters below 11kW (inclusive), AI1 and AI2 can be set as logic inputs
	Enforced valid input	f309 and f310 are forced valid inputs, and their configuration functions are always valid during power-on
Analog output	AO1、AO2	Voltage analog output: 0-10VDC, minimum load impedance is 470Ω
		Current analog output: 0/4-20mA, maximum load impedance is 700Ω
		Resolution: 8 bits
		Output frequency, output current, speed setting, serial output data and other functions are optional
		220V 0.4kw-2.2kw and 380V 0.4kw-0.75kw products have only one analog output, A01
Logic output	LO、CLO	Electrode open circuit, maximum current 100mA, maximum voltage 30VDC
		Logic output or pulse output is optional, the factory default setting is logic output
		Output frequency, output current, speed setting and other output functions are optional
Relay output	T1A、T1B、T1C T2A、T2B、T2C	T1A is normally open, T1B is normally closed, T1C is a common point
		T2A is normally open, T2B is normally closed, T2C is a common point
		Contact capacity：5A@250VAC, 5A@30VDC
		Fault, alarm, set frequency arrival and other functions are optional
		T1A default fault, T2A default operation
		220V 0.4kw-2.2kw and 380V 0.4kw-0.75kw products have only one relay output, namely T1A-T1B-T1C
Serial communication		MODBUS-RTU, 2-wire RS-485, terminal interface

Environment Characteristics			
Protection level	IP20	Environment humidity	95% no condensation or water accumulation
Working temperature Storage temperature	-10~40°C / -20~60°C	Altitude	Below 1000m
Cooling method	Forced air cooling	Installation site	Indoor

Naming Rules

AS-M30 - 4T - 007P5G / 0011P

① ② ③

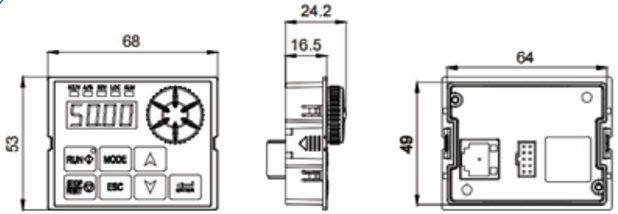
①Product Series:	②Power Supply Voltage:	③Suitable Motor Power:
AS-M30: refined & intelligent inverter	4T：Three phase 380V 2S：Single phase 220V	007P5G：7.5kW heavy load 0011P：11kW light load

AS-M30 Series Selection & Specifications

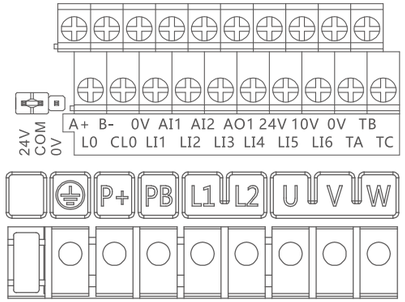
Inverter Model (single phase 2S)	Suitable Motor (kW)	Rated Input Current(A)	Rated Output Current(A)	Appearance & Dimensions(mm)			Installation Dimensions(mm)		
				H	W	D	H1	W1	Aperture
AS-M30-2S00P4	0.4	6.3	2.5	170	81	142	161	64.5	Φ5
AS-M30-2S0P75	0.75	11.5	5						
AS-M30-2S01P5	1.5	15.7	7						
AS-M30-2S02P2	2.2	27	10						

Inverter Model (three phase 4T)	Suitable Motor (kW)	G type machine rated input current(A)	G type machine rated output current(A)	P type machine rated input current(A)	P type machine rated output current(A)	Appearance Dimensions(mm)			Installation Dimensions(mm)		
						H	W	D	H1	W1	Aperture
AS-M30-4T00P4G/0P75P	0.4	2.1	1.5	3.6	2.6	170	81	142	161	64.5	Φ5
AS-M30-4T0P75G/01P5P	0.75	3.6	2.6	6.4	4.1						
AS-M30-4T01P5G/02P2P	1.5	6.4	4.1	8.7	5.5						
AS-M30-4T02P2G/0003P	2.2	8.7	5.5	10.9	6.9	145	107	160.4	135	95	Φ5
AS-M30-4T0003G/0004P	3	10.9	6.9	14	9.5						
AS-M30-4T0004G/05P5P	4	14	9.5	20.7	12.6	200	138	144.6	188	124	Φ5
AS-M30-4T05P5G/07P5P	5.5	20.7	12.6	26.5	18.5						
AS-M30-4T07P5G/0011P	7.5	26.5	18.5	36.6	25	232	153	169.8	220	139	Φ5
AS-M30-4T0011G/0015P	11	36.6	25	40	32						

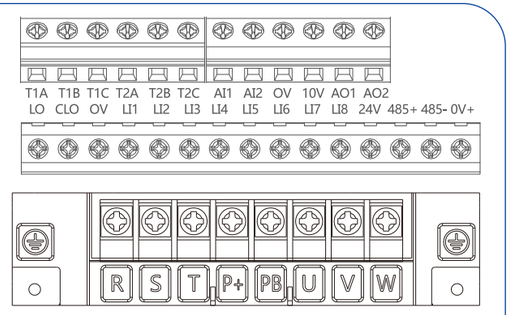
AS-M30 Series Dimension Diagram



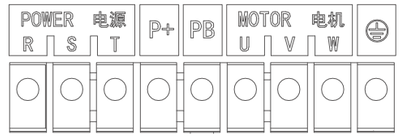
The panel can be led outwards, and the cabinet door opening size is 65*50mm



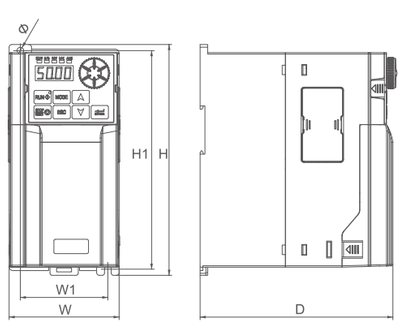
Terminal diagram(1) 220V 0.4-2.2kW



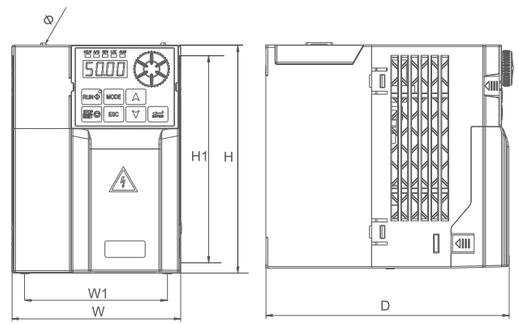
Terminal diagram(2) 380V 2.2-11kW



Terminal diagram(3) 380V 0.4-1.5kW



Appearance and dimension diagram(1)
220V 0.4-2.2kW 380V 0.4-1.5kW



Appearance and dimension diagram(2)
380V 2.2-11kW