MIKOM
Electrical Technology

Inverter
Servo Drives

V1.4

CE

MIKOM Electrical Technology Co., Ltd.

MIKOM Electrical Technology Co., Ltd. is a high-tech enterprise which integrates research and development, production, sale and service, with the registered trademark of "**MIKOM**". The company is devoted to becoming a professional supplier in the field of industrial automation and is able to provide comprehensive and professional solutions of automatic control system for customers.

The company mainly produces PLCs, temperature controllers, motion controllers, frequency converters, servo drivers and so on which are widely applied to automation related fields such as auto industry, printing-packaging industry, printing and dyeing industry, machinery manufacturing industry, electronic industry, power industry, tyre industry, power equipment and municipal engineering.

Relying on its strong technical R & D team and taking international advanced products as the benchmark, the company, on high starting pint and with high requirement, makes continuous innovation and ceaseless surpassing. It has mastered core technologies of PLC, high-performance vector frequency converters, servo drivers, etc. and successively developed MX PLC, MV frequency converters, MS servo drivers, etc., which are all patented.

The company always sticks to the business philosophy of "Creating Profits for Customers Equals Creating Profits for the Company". Shouldering the responsibility of maximizing the demands and interests of customers and developing the automation cause of the society, the company constantly improves and perfects its products so as to meet the demands of the market and customers.

Under the enterprise tenet of "Forge a Time-honored Enterprise, Create a National Brand", the company will give full display to its advantage in independent innovation, build high-quality, efficient and eco-friendly manufacture system and continuously improve the core competence, in an effort to turn the company into the leader of the domestic industrial control industry.

Naming rule

MV 30 G 4 T 5.5G/7.5P S-1 B

Brake unit
B: Built-in brake unit Empty: No brake unit (optional)

Keyboard type
1: Basic keyboard 2: Digital potentiometer keyboard
3: Analog potentiometer keyboard 4: LCD keyboard

Version type
S: Standard version
C: Customized version

Efficacy level
5.5 G: 5.5 KW overloading type
P: 7.5 7.5 KW light load type

Input phase number
S: Single phase
T: Three-phase

Voltage class
2 : 220V
4 : 380V

Subfamily
G: General type
F: High-frequency type
L: Lift dedicated
B: Grate dedicated
T:Textile dedicated
M: Machine tool spindle

Variable frequency drive series
MF10: Multifunctional VF type inverter
MV10: General open-loop vector inverter
MV20: High-performance open-loop vector type inverter
MV30: High-performance closed-loop vector type inverter
MV40: Permanent magnet synchronous open-loop servo drive
MV60: Asynchronous servo drive
MV80: Permanent magnet synchronous closed-loop servo drive

Standard platform series

Series	Voltage class	Power range
MF10: Multifunctional VF type inverter	220V	0.4~2.2KW
MV10: General open-loop vector inverter	220V 380V	0.4~2.2KW 0.75~400KW
MV20: High-performance open-loop vector type inverter		
MV30: High-performance closed-loop vector type inverter		
MV40: Permanent magnet synchronous open-loop servo drive		
MV60: Asynchronous servo drive		
MV80: Permanent magnet synchronous closed-loop servo drive		

Special plane series

- ◆ Crane dedicated inverter
- ◆ Grate dedicated inverter
- ◆ Textile dedicated inverter
- ◆ Rotary cutter dedicated inverter
- ◆ Air compressor dedicated inverter
- ◆ Injection molding dedicated inverter
- ◆ Printing industry dedicated inverter
- ◆ Tension control dedicated inverter
- ◆ Machine tool spindle dedicated inverter
- ◆ High frequency output dedicated inverter
- ◆ Constant pressure water supply dedicated inverter
- ◆ Carpenter's high speed milling machine dedicated inverter

Typical industry application

Air compressor industry

- High performance vector frequency conversion
- Constant pressure closed-loop control
- Multimachine networking control
- Energy saving up to 20% ~ 50%
- Smart stay and low voltage wake up
- Standard inverter scheme and air compressor dedicated inverter scheme and air compressor energy saving integrated ark scheme is optional

Injection molding machine industry

- The integration of energy-saving control cabinet or injection molding machine dedicated inverter scheme is optional
- Asynchronous servo scheme and double closed loop synchronous servo scheme is optional
- No high pressure throttle, the overflow of energy loss, energy saving rate is as high as 25% ~ 70%
- Soft start tracking operation, reduce the degree of the original mechanical wear, prolong the service life of the injection molding machine
- Independent air duct design,after parts,the top of the fan is easy to remove, convenient for maintenance;Environment adaptiveness, high protection level

Printing and packaging industry

- High performance vector control/torque control technology to realize constant linear velocity and constant tension control
- There is a tension sensor, speed encoder and no speed encoder three kinds of tension control scheme, which can be widely substitute torque motor, DC motor and magnetic powder clutch
- Dynamic torque current control, fast response speed
- Coil diameter calculation dedicated function, automatic computation the current coil diameter
- Double location free switching function
- Suitable for cutting machine, coating machine, paper machine, printing machine, compound machine, jig dyeing machine and other equipment

Hoisting crane

- Professional design logical time-sequenced brake function, guarantees the brake open moments of comfort and security, uplink no “overshoot "phenomenon, fell instantly without" weightlessness ".
- Can choose the S curve acceleration and deceleration, elevator suspension slow, reduce the impact of the cargo, the guarantor to ride comfort. Adjustable deceleration time and frequency, to insure the construction elevator flat layer.
- Loosen the brake set, to ensure that the motor start, you can set different brake frequency, starting current, current detection time guarantee the size of the increase torque, prevent slip groove.
- Inverter with perfect open phase protection, under-voltage protection, over-current, overheating, overload,fault inverter can output signals or the brake action, to prevent the occurrence of slip motor groove phenomenon.

Machine tool industry

- Abundant comprehensive capabilities, excellent servo characteristics, make its can be applied to different CNC system, which can realize synchronous control; high speed response; high torque at low speed cutting and high speed constant power cutting; electronic gear; uniaxial orientation, multipoint positioning and low-speed reaming, spindle positioning, rigid tapping function, etc
- Asynchronous servo top speed of 8000 r/min. Synchronous servo can be weak magnetic 2 ~ 3 times
- Support high precision nc machine tools using a direct-drive permanent magnet synchronous motor
- Spindle open-loop control: a variety of vector control mode to adapt to a variety of machine tools

Typical industry application

Wood processing

- The built-in rotary cutting machine, rolling machine, peeling machine process algorithm
- Unique vector control algorithm, dynamic torque current control, rapid response to load changes
- According to the screw knife position automatically adjust the rotary cutter feeding speed
- Rotary cutting process parameters online set, the function parameters can be modified view online
- Wide voltage scope, is especially suitable for the occasion of the rural power grid conditions, stable and reliable work

Textile industry

- To reduce end breakage rate, improve production efficiency
- Special external radiator, easy to clean cotton wool
- Function of the unique set of frequency, suitable for yarn winding equipment
- Rich indicator: full yarn indicates, line indicates, power down indicates

Stone machining

- Simple and convenient operation, installation of attachment
- Smooth running curve, lower plate breakage, start smooth
- To reduce mechanical damage, reduce maintenance costs
- Internal security rope constant tension control, frequency advocate complementary operation and safety shutdown functions and alarm prompt function

Oil field

- Pumping unit dedicated inverter, without energy feedback or braking energy
- More advanced process algorithm, higher power saving effect, less harmonic and reactive current
- Can provide outdoor digital control cabinets, constant temperature control cabinet can in the field of high and low temperature long-term reliable work
- Rich flexible monitoring function

Constant pressure water supply

- Excellent PID function, can according to customer's actual water consumption, water pressure test automatically, realize the constant pressure water supply
- Any traffic system are under constant pressure
- Concentration constant pressure water supply: built-in yituo many water supply expansion card, more time constant pressure water supply timing round robin, solve the switch process flow and water hammer
- PID have sleep and wake up function, built-in bypass system
- High efficiency and energy saving, stable pressure, with feedback too high too low, undervoltage, short circuit, lack of phase, overload protection, etc
- To avoid the frequent start and stop of pump, and start a smooth, reduce the impact of the pump increases the service life of the pump

MV series technical indicators

Item		Specifications
Input	Rated voltage, frequency	Single-phase:220V±15%,50Hz/60Hz,frequency:±5% Three-phase:380V±15%,50Hz/60Hz,frequency:±5%
	Rated current	Refer to the rating
Output	Voltage	Single-phase:0～220V;Three-phase:0～380V
	Frequency	0～400Hz
	Current overload capacity	150% Rated current for 1m,180% Rated current for 10s, 200% Rated current for 1s
Standard functions	Modulation Mode	The magnetic flux vector PWM modulation
	Motor type	General motor, frequency conversion motor, synchronous motor
	Speed range	Closed-loop vector (synchronous,asynchronous)1:5000 Open-loop vector 1:200 V/F1:100
	Startup torque	Closed-loop vector (synchronous,asynchronous)0Hz 180% Open-loop vector 0.25Hz 150% V/F0.5Hz 150%
	Speed stability accuracy	Closed-loop vector (synchronous,asynchronous)0.02% Open-loop vector 0.2% V/F0.5%
	Velocity pulsation	Closed-loop vector (synchronous,asynchronous)0.1% Open-loop vector 0.3% ; V/F0.5%
	Frequency accuracy	Digital setting: Max frequency×±0.02% ; Analog setting: Max frequency×±1%
	Torque boost	Fixed boost Customized boost 0.1%~30.0%
	V/F curve	One user set V/F curve way, A variety of torque characteristic curve method and voltage separation control
	Acceleration-deceleration curve	Two kinds of way:Straight-line ramp、S-curve ramp Four kinds of acceleration/deceleration time with the range of 0.1～3600s
	DC braking	DC braking frequency:0.00～60.00Hz Braking time: 0.1～30.0s
	Jog	Jog frequency range:0.10～60.00Hz Jog acceleration/deceleration time:0.1～60.0s, Jog time interval can be set
	Multistage speed operation	Through the built-in PLC control or terminal control 16 segment speed operation
	Onboard PID	It realizes process-controlled closed loop control system easily
	Automatic energy saving operation	Automatic optimization control according to the load situation, achieve energy-saving operation
	Auto voltage regulation(AVR)	It can keep constant output voltage automatically when the mains voltage changes
	Speed tracking start function	Rotation of motor no impact smooth start
	Automatic current limiting	Current limit automatically during the operation, prevent frequent over-current fault tripping
	Textile pendulum frequency	Textile pendulum frequency control, the realization of center frequency adjustable frequency function
	Fixed-length control	Through the terminal count input function, the realization of fixed length control
	Busbar voltage over-voltage suppression	Real-time dynamic control of busbar voltage, prevent the frequent overvoltage fault tripping
	Instantaneous stop non-stop control	Instantaneous power lost, through the busbar voltage control to achieve uninterrupted operation
Run control	Bind function	Bind the run command channel and the frequency of a given channel, synchronous switch
	Run the command channel	Operation panel control command channel、terminal control command channel、Modbus/MXLink communication command channel. Can switch through a variety of ways
	Given frequency channel	Keybord setting,analog voltage,Analog current setting, simple PLC setting, Multistage speed setting, process of the closed loop setting、Modbus/MXLink communications setting. Can switch through a variety of ways.
	Protection mode	Over-current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, module protection, open phase protection, PI feedback loss, outside a given loss, speed deviation is too large, self-tuning fault protection, inverter load protection, contactor fault protection, CPU abnormal interference protection, EEPROM read and write fault protection, abnormal parameter copy protection, abnormal communication protection, encoder broken line protection, stalling protection, over/owed torque protection, etc.
	Auxiliary frequency source	It can implement fine tuning of auxiliary frequency and frequency synthesis
Peripheral interface	Analog input	3 roads analog signal input,2 roads 0～10V/0～20mA,1 road differential input -10～+10V
	Analog output	2 roads analog signal output 0～10V/0～20mA, Can realize the set frequency, output frequency and so on the analog output
	Digital input	8-way multi-function input terminals,X8/DI high-speed pulse input terminals, maximum support (50KHz)
	Digital output	2 ways multifunctional output terminals,Y2/DO high-speed pulse output terminals, maximum support (50KHz)
	Relay output	Two-way relay output: MA NC, MB NO ,MC COM;M1 NC, M2 NO, M3 COM
Communicat	485 communication	Standard 485 difference signal, support the Modbus protocol and MXLink protocol. support the external and internal map mapping of mailing address
	The bus option	Reserve
Panel	LED display	It can display a set frequency, output frequency, output voltage, output current and other parameters
	Key lock to choose	By setting the buttons can change some or all of the lock, in order to prevent wrong operation
	Multifunctional MK key	Can realize point, free downtime, running direction switch, menu to switch, command channel switch
Other	Installation location	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapour, drip or salt
	Ambient temperature	-10℃～50℃,de-rated if the ambient temperature is more than 40℃
	Altitude	Less than 1000 meters, if 1000 meters above sea level above need to be used derating, every 1000 meters higher derating 10%, highest do not exceed 3000 m
	Humidity	5%～95%RH, without condensing
	Vibration	Less than 5.9m/s^2(0.6g)
	Storage temperature	-40℃～+70℃
	Cooling mode	Force-air cooling
	Way to install	Wall-mounted, flatwise
	Efficiency	45KW and below ⩾93%; 55KW and above ⩾98%

MF series technical indicators

Item		Specifications
Input	Rated voltage, frequency	Single-phase:220V±15%,50Hz/60Hz,frequency:±5% Three-phase:380V±15%,50Hz/60Hz,frequency:±5%
	Rated current	Refer to the rating
Output	Voltage	Single-phase:0～220V;Three-phase:0～380V
	Frequency	0～400Hz
	Current overload capacity	150% Rated current for 1m,180% Rated current for 10s, 200% Rated current for 1s
Standard functions	Modulation Mode	V/F modulation
	Motor type	General motor, frequency conversion motor
	Speed range	V/F1:50
	Startup torque	V/F1Hz 100%
	Speed stability accuracy	V/F0.5%
	Velocity pulsation	V/F0.5%
	Frequency accuracy	Digital setting: Max frequency×±0.02% ; Analog setting: Max frequency×±1%
	Torque boost	Fixed boost Customized boost 0.1%~30.0%
	V/F curve	Four kinds:one user set V/F curve way, A variety of torque characteristic curve method
	Acceleration-deceleration curve	Two kinds of way:Straight-line ramp、S-curve ramp Four kinds of acceleration/deceleration time with the range of 0.1～3600s
	DC braking	DC braking frequency:0.00～60.00Hz Braking time: 0.1～30.0s
	Jog	Jog frequency range:0.10～60.00Hz Jog acceleration/deceleration time:0.1～60.0s, Jog time interval can be set
	Multistage speed operation	Through the built-in PLC control or terminal control 16 segment speed operation
	Onboard PID	It realizes process-controlled closed loop control system easily
	Automatic energy saving operation	Automatic optimization control according to the load situation, achieve energy-saving operation
	Auto voltage regulation(AVR)	It can keep constant output voltage automatically when the mains voltage changes
	Automatic current limiting	Current limit automatically during the operation, prevent frequent over-current fault tripping
	Textile pendulum frequency	Textile pendulum frequency control, the realization of center frequency adjustable frequency function
	Fixed-length control	Through the terminal count input function, the realization of fixed length control
	Busbar voltage over-voltage suppression	Real-time dynamic control of busbar voltage, prevent the frequent overvoltage fault tripping
	Instantaneous stop non-stop control	Instantaneous power lost, through the busbar voltage control to achieve uninterrupted operation
Run control	Bind function	Bind the run command channel and the frequency of a given channel, synchronous switch
	Run the command channel	Operation panel control command channel、terminal control command channel、Modbus/MXLink communication command channel. Can switch through a variety of ways
	Given frequency channel	Digital setting,analog voltage,Analog current setting, simple PLC setting, Multistage speed setting, process of the closed loop setting、serial port setting. Can switch through a variety of ways.
	Protection mode	Over-current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, module protection, peripheral protection, outside a given loss, speed deviation is too large, self-tuning fault protection, inverter load protection, contactor fault protection, CCI overcurrent protection, compare benchmark abnormal protection,current detect abnormal protection,abnormal communication protection, encoder broken line protection, stalling protection, over/owed torque protection, etc.
	Auxiliary frequency source	It can implement fine tuning of auxiliary frequency and frequency synthesis
Peripheral interface	Analog input	2 roads analog signal input,1 road 0～10V/0～20mA,1 road panel analog 0～10V
	Analog output	1 road analog signal output 0～10V, Can realize the set frequency, output frequency and so on the analog output
	Digital input	5-way multi-function input terminals
	Digital output	1-way multifunctional output terminals
	Relay output	1-way relay output: ROA NO, ROB NC ,ROC COM
Communicat	485 communication	Standard 485 difference signal, support the Modbus protocol and MXLink protocol. support the external and internal map mapping of mailing address
Panel	LED display	It can display a set frequency, output frequency, output voltage, output current and other parameters
	Key lock to choose	By setting the buttons can change some or all of the lock, in order to prevent wrong operation
	Multifunctional MK key	Can realize point, free downtime, running direction switch, menu to switch, command channel switch
Other	Installation location	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapour, drip or salt
	Ambient temperature	-10℃～50℃,de-rated if the ambient temperature is more than 40℃
	Altitude	Less than 1000 meters, if 1000 meters above sea level above need to be used derating, every 1000 meters higher derating 10%, highest do not exceed 3000 m
	Humidity	5%～95%RH, without condensing
	Vibration	Less than 5.9m/s^2(0.6g)
	Storage temperature	-40℃～+70℃
	Cooling mode	Force-air cooling
	Way to install	Wall-mounted, flatwise

Control performance

Close-loop vector

High performance of vector control technology, accuracy torque of AC motor and excitation of decoupling control, realize high accuracy, high dynamic response speed control and torque control.

Note: Blue- motor current, Yellow - motor speed

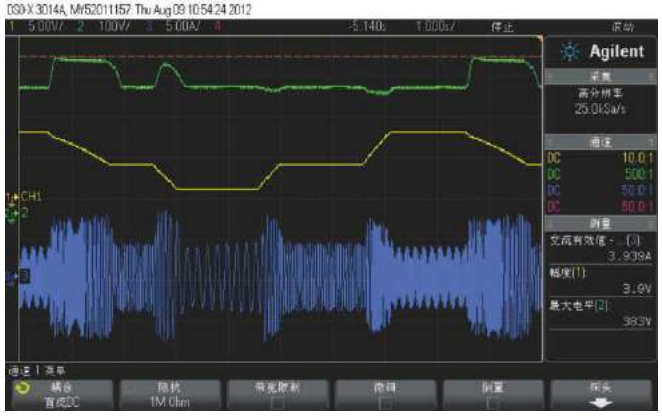
Note: Blue- motor current, Yellow-motor output torque

Multistage speed

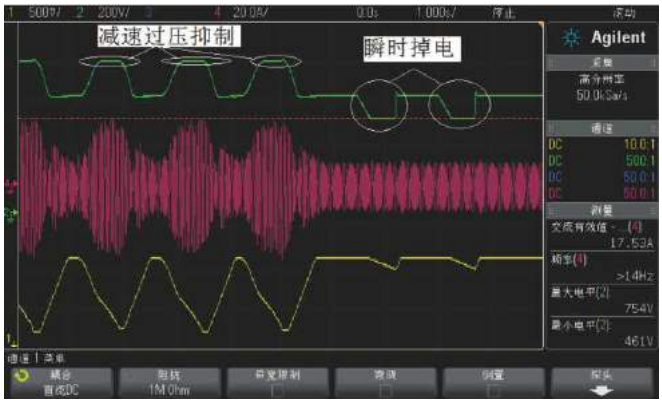
As many as 16 segment multistage frequency and given four period of accelerate and decelerate time for users to choose, running stage is the terminal can be used for choosing also can use the built-in easy PLC program control, especially suitable for the different stages with different speed in the product process or equipment.

Busbar voltage control (overvoltage suppression, instantaneous stop constantly)

By controlling the motor feedback energy, busbar voltage overvoltage suppression can automatically adjust the deceleration rate, combined with motor over-excitation control technology, Realize the large inertia load fast scram, improve production efficiency. In view of the grid electricity is like, instantaneous stop constantly function can realize inverter of trouble-free run continuously for a long time.



Note:Green-bus voltage,Blue-motor current, Yellow-motor speed



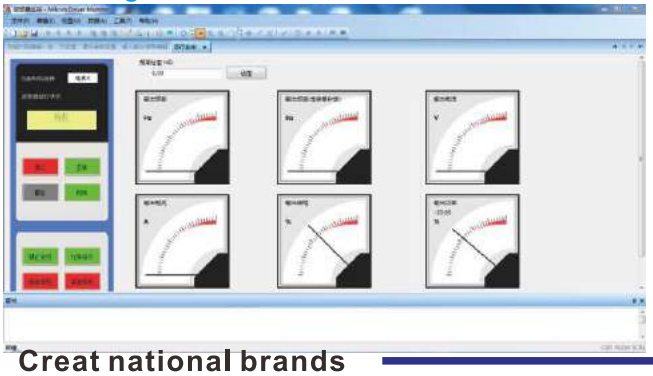
Note:Green-bus voltage, Red-motor current,Yellow-motor speed

Through DriverMonitor software to improve the maintenance

- ◆ Can be set and comparison and copy of the function code
- ◆ Operation monitoring, fault monitoring, oscilloscope
- ◆ Test run, motor self-learning
- ◆ Operating environment: Windows2000、XP、Win7
- ◆ Use of the oscilloscope function, the operation situation of Inverter with multi-channel chart graph form

Function code display changes

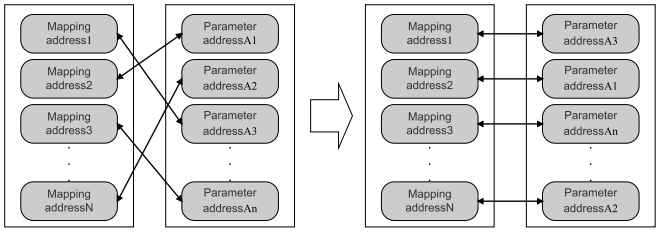
Running monitor



Characteristic performance

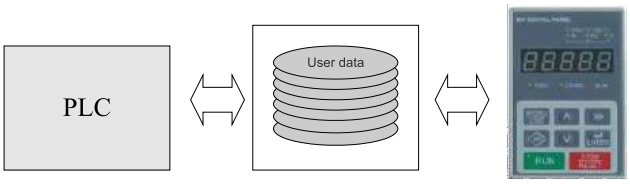
Address mapping

Use communication way to access the inverter parameter, through parameter address mapping function, users can address parameters of inverter fixed remapping, realize the parameters address unified and continuous access to discrete address between different models, is greatly strengthened the communication program of portability, shorten the development cycle of the system and simplify the maintenance work late.



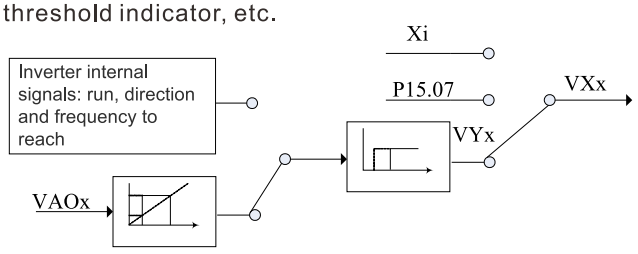
User data area

Inverter provides a 64*16 bit off electricity to save the user data area, through the keyboard and communication methods can realize the read and write operations on the data area, which is beneficial to overcome the application field of diversity and uncertainty, simplify the design and debugging process of external controller.



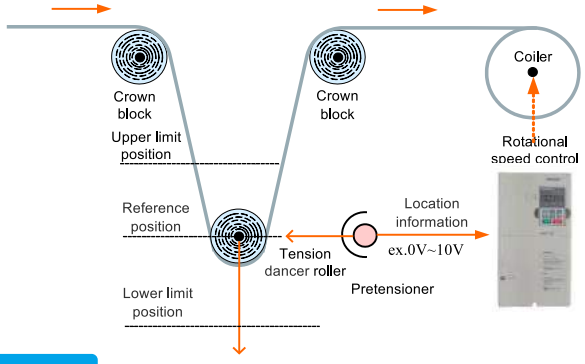
Virtual terminal

Through the digital output input terminal of the virtual, inverter internal signal transmission become more flexible, reliable, under the premise of without external controller realize the maximization of the machine function; Using virtual simulation output terminals, can easily implement all analog signal threshold indicator action inside the inverter, such as the output current threshold indicator, overload cumulative threshold, internal temperature threshold indicator, etc.



Process PID (Tension control)

Advanced PID algorithm,with digital filtering, differential front, integral saturation inhibition and feedback threshold protection function, the PID output can be given as the primary also can be used as auxiliary fine-tuning given, adapt to a variety of closed loop control.



MXLink introduction and communication network

MXLink is independent research and development of the electrical it a small industrial equipment field bus. Access MXLink equipment can automatic switching part of the data, this makes the other devices in the network data access, This makes the other devices in the network data access,becomes as simple as access to its data. The equipment Data access between MXLink is completely equivalent (N:N network). MXLink can automatically detect the new join in the network equipment, any equipment from network interruption, other equipment will continue to exchange data, by any one device, MXLink can monitor to the whole network of communications.

MF/MV series inverter support RS485 interface MXLink network, with MIKOM PLC communications network, up to 16 station; the highest baud rate 115.2 K.

PG card type selection

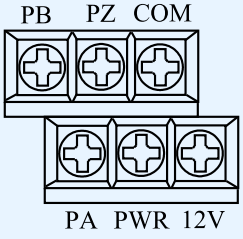
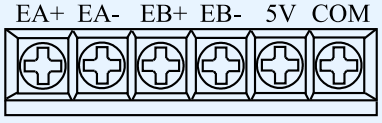
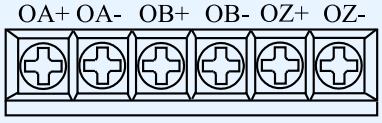
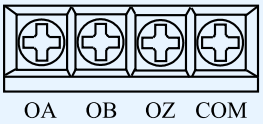
Offers a variety of encoder interface card: open collector ABZ(100 KHZ), with UVW signal difference ABZ (300 KHZ), the province line UVW (300 KHZ), rotary encoder.

Incremental difference PG card with the UVW

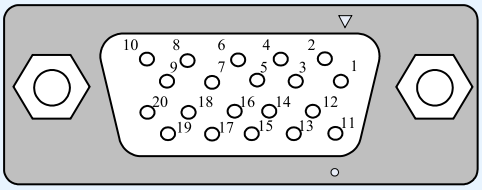
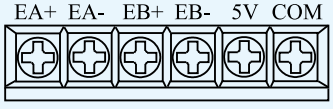
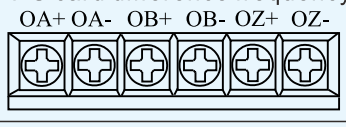
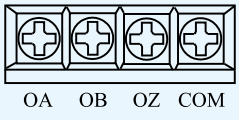
Incremental open collector PG card

Rotary PG card

PG card terminal instructions

Incremental open collector PG card		
Open collector output encoder signal input	Terminal label	Terminal function declaration
Open collector output encoder signal input  	PA	Connect the encoder phase A
	PB	Connect the encoder phase B
	PZ	Connect the encoder phase Z
	PWR	Input circuit common port
External pulse for a given input	Terminal label	Terminal function declaration
Pulse+direction, A/B phase, the CW/CCW common and differential input  	EA+/EA-	Pulse differential signal input
	EB+/EB-	Direction differential signal input
	5V	Power output
	COM	5VGND
PG card support difference frequency output and open collector output	Terminal label	Terminal function declaration
PG card difference frequency output  	OA+/OA-	Phase A pulse differential output signal
	OB+/OB-	Phase B pulse differential output signal
	OZ+/OZ-	Phase Z pulse differential output signal
PG card open collector frequency dividing output  	OA	Phase A open collector output signal
	OB	Phase B open collector output signal
	OZ	Phase Z open collector output signal
	COM	Output GND

PG card terminal instructions

Incremental difference PG card with the UVW and Rotary PG card			
PG card differential encoder pulse input	Pin No	Photoelectric encoder, rotary encoder	
Differential signal encoder pulse input 	1	W+	COS+
	2	空	空
	3	W-	COS-
	4	空	空
	5	A-	SIN-
	6	空	空
	7	A+	SIN+
	8	空	空
	9	B+	GND
	10	B-	空
	11	V+	EXC-
	12	V-	空
	13	GND	EXC+
	14	GND	空
	15	5V	空
	16	5V	空
	13	Z+	空
	18	Z-	空
	19	U+	空
	20	U-	空
External pulse for a given input	Terminal label	Terminal function declaration	
Pulse+direction, A/B phase, the CW/CCW common and differential input 	EA+/ EA-	Pulse differential signal input	
	EB+/ EB-	Direction differential signal input	
	5V	Power output	
	COM	5VGND	
PG card support difference frequency output and open collector output	Terminal label	Terminal function declaration	
PG card difference frequency output 	OA+/ OA-	Phase A pulse differential output signal	
	OB+/ OB-	Phase B pulse differential output signal	
	OZ+/ OZ-	Phase Z pulse differential output signal	
PG card open collector frequency dividing output 	OUT-A	Phase A open collector output signal	
	OUT-B	Phase B open collector output signal	
	OUT-Z	Phase Z open collector output signal	
	GND	Output GND	

PLC card-support industry function self-defined

Intro

PLC card for **MIKOM** series inverter of a special research and development MX1C series multi-function miniature PLC, by extending the card in the PLC integration in inverter.
Traditional special inverter to realize the special function need by changing the underlying, but PLC card simply by writing a different ladder diagram program, without changing the underlying can realize the special function.

The PLC card can be directly read/write call and control of each parameter in the inverter, simple, reliable, strong performance, expand the function of inverter, satisfy the application of inverter in various industries, such as rotary cutter, constant pressure water supply, printing, wire drawing machine and other special industries.

New generation of high-performance programmable controller

Resource

- 6 input/4 output, shareable inverter I/O (8 input /4 output) and 2AI/2AO
- Compatible MX1H instruction set
- Basic instruction processing speed is 0.084 us/step
- Comprehensive instruction processing speed is 1K step/ms
- Process capacity of 12K step, 2K bytes uninterrupted output
- Have PID instruction, constitute a closed loop system, inverter is more reliable and accurate control equipment.

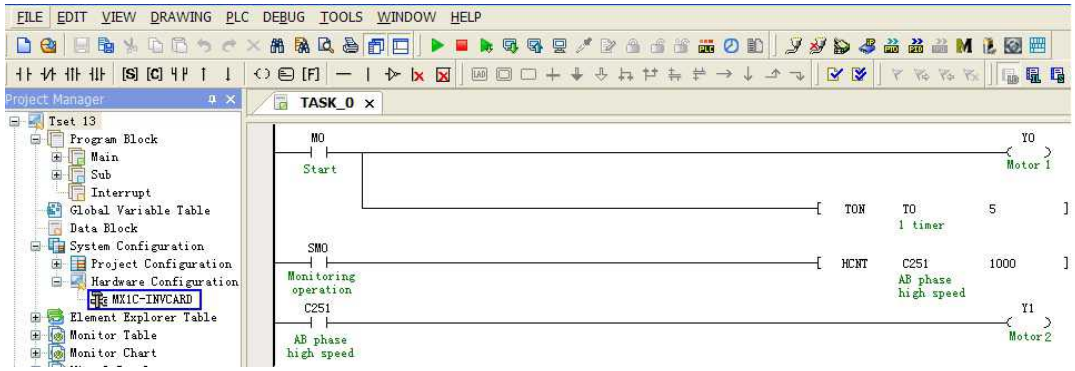
Communication

- 1-road RS485 port, Modbus programme
- Modbus/Free port/MXLink networking

Programming environment

- Support the ladder diagram, the statement table and sequence function diagram
- Chinese editing environment, the user program software encryption

Programming interface



When use PLC card programming, the programming software in the PLC model selection MX1C-INVCARD

New generation of high-performance programmable controller

- After inverter the built-in PLC card is equivalent to an inverter and a powerful PLC, PLC card is compatible with the inverter I/O and 2 analog input and 2 analog output, more simple and convenient, save a lot of cost.
- The PLC card can direct reading and writing the parameters of the inverter through internal agreement, communication speed can reach 1~2 ms.
- The PLC card can take advantage of the special register follow one's inclinations to read and write the customer need to signal such as voltage, current and rotate speed,have a faster update period, better real-time performance.

MF10 series multi-function V/F inverter

Product overview

Multi-function V/F inverter, mini design, startup frequency of 1HZ output 100% of the motor torque, output current limit flow control, bus voltage suppression system control, realize the long trouble-free non-stop running.

Technique data

Power range: single-phase:0.4KW～1.5KW;
three-phase:0.75KW～1.5KW
Output frequency: 0～400HZ
Control mode: V/F control
Starting torque: 1HZ can output 100% rated torque
Overload capacity: 150%1m ; 180%10s ; 200%1s
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc

Basic interface: 2 road analog input, 1 road plate potentiometer; 1 road analog output; 5 road multi-function input terminals; 1 road multi-function output terminals; 1 road relay output; optional built-in keyboard, external keyboard
Communication interface: Standard RS485 interface hardware

Product advantage

- ◆ Small size, compact structure
- ◆ Adopting modular design, stable performance
- ◆ Built-in PID function, constitute a closed loop control system, PID with sleep wake up function
- ◆ By built-in a simple PLC function automatically run multistage speed, or external control terminal realize 8 period of speed operation
- ◆ Three kinds of V/F curve way: straight line mode, user set V/F curve mode, power down torque characteristic curve mode
- ◆ Two types of acceleration-deceleration curve mode: linear acceleration and deceleration, S-curve acceleration and deceleration
- ◆ Perfect protection function, high efficiency heat dissipation design
- ◆ Run command channel and the frequency of a given channel can bind the synchronous switch
- ◆ Built-in address mapping function, realize the internal mapping, external mapping function, can convenient remote control and fast reading data, high responsiveness
- ◆ With functions of pendulum frequency, timing meter long and users dedicated to save parameter set

Industry application

Widely used in textile machinery, printing machinery, packaging machinery, food machinery, reflow soldering and flow production line, etc, especially suitable for all kinds of OEM applications.

MV10 series general open-loop vector inverter

Product overview

MV10 series general vector inverter, simple operation, have excellent performance of vector control, high cost performance and easy to maintain, and the printing with the packaging machinery, textile, machine tools, water supply, air blower, and many other fields have outstanding performance.

Technique data

Power range: single-phase:0.4KW～2.2KW;
three-phase:0.75KW～400KW
Output frequency: 0～400HZ
Speed adjustable range: 1:200
Control mode: No PG open loop vector control and V/F control
Run mode: Speed way
Starting torque: 0.25HZ can output 150% rated torque
Overload capacity: 150%1m ; 180%10s ; 200%1s
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc
Basic interface: 2 road analog input;2 road analog output; 8 road multi-function input terminals; 2 road multi-function output terminals; 1 road relay output
Communication interface: Standard RS485 interface hardware

Product advantage

- Advanced vector control algorithm, the low frequency starting torque is big, 0.25HZ reach 150% rated torque
- Built-in PID function, constitute a closed loop control system, PID with sleep wake up function
- By built-in a simple PLC function automatically run multistage speed, or external control terminal realize 16 period of speed operation
- Built-in automatic torque compensation function, slip compensation function
- Support for multiple frequency given way, digital given, analog given, PID given, communication given, etc., Through the terminal keyboard free switch a given way
- Common DC bus
- Rich programmable input/output terminals, meet the demand of customers a variety of control
- Can realize the instantaneous power failure non-stop, and have the start function of rotate speed tracking, stop quickly to start again
- The unique address mapping function, the user to save parameters group and keyboard copy function
- Can provide many kinds of fault protection function, over current, over voltage, lack of phase, overload, etc
- Single-phase 0.4KW~2.2KW brake unit is optional; Three-phase 0.4KW~18.5KW standard built-in brake unit

Industry application

Numerical control lathe, grinding machine, drilling machine, textile machinery, printing and dyeing equipment, packaging and printing machinery, processing machinery, paper production line, fan, water pump, three-dimensional warehouse, ceramic machinery, glass machinery, etc.

MV20/MV30series high-performance vector inverter

Product overview

Mv20 series of high-performance open-loop vector inverter, excellent performance, powerful, stable quality, excellent craftsmanship, the design fully consider the user demand, wide application scope.
MV30 series of high-performance closed-loop vector inverter, steady speed precision fast torque response and low frequency high torque, used in applications demanding high levels.
MV20/MV30 has with the international high-end inverter as excellent control performance and can meet the demand of various transmission applications.

Technique data

Power range: single-phase:0.4KW～2.2KW;
three-phase:0.75KW～400KW
Output frequency: 0～400HZ
Control mode: MV20：open-loop vector control, V/F control;
MV30：Closed-loop vector control, open-loop vector control and V/F control
Run mode: Speed way,Torque mode
Starting torque: Open-loop vector: 0.25HZ output 150% rated torque
Closed-loop vector: 0HZ output 150% rated torque
Speed adjustable range: Open-loop vector: 1:200
Closed-loop vector:1:5000
Overload capacity: 150%1m ; 180%10s ; 200%1s
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc
Basic interface: 3 road analog input,1 road differential input; 2 road analog output; 8 road multi-function input terminals; 2 road multi-function output terminals; 2 road relay output
Expansion card: configuration of the PLC card, 6 road input 4 road output
Communication interface: Standard RS485 interface hardware

Product advantage

- ◆ Advanced vector control algorithm, the low frequency starting torque is large, open-loop 0.25 HZ 150% rated torque, closed-loop 0 HZ 150% rated torque
- ◆ Steady speed precision, open-loop vector by 0.2%, 0.02% closed-loop vector
- ◆ Wide range of speed, the open-loop vector 1:200 and closed-loop vector 1:5000
- ◆ Built-in PID function, constitute a closed loop control, can also support the bypass system
- ◆ Built-in automatic torque compensation function, slip compensation function
- ◆ Support for multiple frequency given way, digital given, analog given, PID given, communication given, etc., Through the terminal keyboard free switch a given way
- ◆ Various state parameters on-line monitoring, have complete fault diagnosis, alarm, protection, etc
- ◆ Run the command channel and the frequency of a given channel can bind the synchronous switch
- ◆ Common DC bus
- ◆ Speed tracking function
- ◆ According to the temperature automatic adjusting the carrier frequency, reduce the noise. According to the temperature regulating fan speed automatically
- ◆ Keyboard lead distance of up to 200 meters
- ◆ Perfect protection function, high efficiency heat dissipation design
- ◆ The unique address mapping function, the user to save parameters group and keyboard copy function
- ◆ Rich programmable input/output terminals, meet the demand of customers a variety of control
- ◆ Can extend PLC card, simply by writing a different ladder diagram program, without changing the underlying can realize the special function.

Industry application

Plastic machinery, textile machinery, printing and dyeing equipment, packaging and printing machinery, processing machinery, paper production line, wire drawing machine, pharmaceutical machinery, mixer, sealing and cutting machine, blown film machine, petroleum machinery, etc.

MV60 series asynchronous servo drive

Product overview

Mv60 series asynchronous servo drive has the characteristics of accurate, stable and fast, suitable for high precision positioning occasions, the built-in function of electronic gear, positioning accuracy is ±1 pulse, the response speed is greater than 100HZ. During operation can be in position control, speed control and torque control of free switch between.
MV60 series asynchronous servo driver adopts optimal PID algorithm to complete the current loop, speed loop and position loop adjustment control, excellent performance, the spindle positioning, servo fixed-length, high-speed response has a wide range of applications.

Technique data

Power range: single-phase:0.4KW～2.2KW;
three-phase:0.75KW～400KW
Output frequency: 0～400HZ
Control mode: Asynchronous motor open-loop and closed-loop vector control, V/F control
Run mode: Position mode, Speed mode,Torque mode
Starting torque: 0HZ 180% rated torque
Overload capacity: 150%1m ; 180%10s ; 200%1s
Basic interface: 3 road analog input,1 road differential input; 2 road analog output; 8 road multi-function input terminals; 2 road multi-function output terminals; 2 road relay output
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc
Expansion card: Configurable PLC card, configurable three PG card (incremental difference PG card, incremental open collector PG card, rotary PG card)
Communication interface: Standard RS485 interface hardware
Pulse given way: pulse+direction, the CW/CCW pulse, AB mutually orthogonal pulse; Differential signal support 300KHZ, open collector signal support 100KHZ

Product advantage

- ◆ By optimization of PID control algorithm, improves the position and speed control precision and dynamic performance
- ◆ Strengthen the function of vibration suppression, improve the system to follow
- ◆ With the function of improving response speed servo standard configuration
- ◆ Overload capacity is strong, torque can be up to 2 times the rated load
- ◆ Pulse output can be arbitrary frequency division, frequency division pulse frequency stable and pulse number of accurate
- ◆ High dynamic response, the loading speed fluctuation is small
- ◆ Common DC bus
- ◆ According to the temperature automatic adjusting the carrier frequency, reduce the noise. According to the temperature regulating fan speed automatically
- ◆ Monitoring the function is all ready, convenient user debugging and fault diagnosis
- ◆ Wide range of speed,and the stable operation of the top speed of 8000r/min, the minimum speed of 0.03r/min
- ◆ Function of overall accurate: stable speed way, precise location mode, excellent torque mode, these three models can switch freely through external terminals

Industry application

Kaiping plate shears, wood cutting machine, rotary cutting machine, machine tool spindle, injection molding machine, industrial washing machine, die-casting machine, hydraulic station, pressure hoop machine machinery, packaging machinery, printing machinery, paper cutting, ball mill, etc.

MV40/MV80 series of permanent magnet synchronous servo drive

Product overview

MV40 series of permanent magnet synchronous open loop servo drive, MV80 series for permanent magnet synchronous closed-loop servo drives, superior control algorithm, high performance, high reliability and high speed response, realize accurate position control, speed control, nonlinear weak magnetic speed control and position correction space vector control at low speed, improve the efficiency of the movement, energy saving is obvious.

Technique data

Power range: single-phase:0.4KW～2.2KW;
three-phase:0.75KW～400KW
Output frequency: 0～400HZ
Control mode: Synchronous motor open loop and closed-loop vector control
Run mode: Position mode, Speed mode,Torque mode
Starting torque: 0HZ 180% rated torque
Overload capacity: 150%1m ; 180%10s ; 200%1s
Basic interface: 3 road analog input,1 road differential input; 2 road analog output; 8 road multi-function input terminals; 2 road multi-function output terminals; 2 road relay output
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc
Expansion card: Configurable PLC card, configurable three PG card (incremental difference PG card, incremental open collector PG card, rotary PG card)
Communication interface: Standard RS485 interface hardware
Pulse given way: pulse+direction, the CW/CCW pulse, AB mutually orthogonal pulse; Differential signal support 300KHZ, open collector signal support 100KHZ

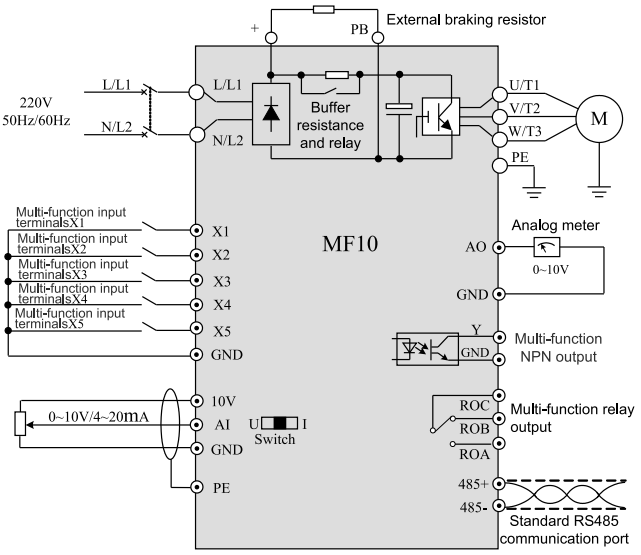
Product advantage

- By optimization of PID control algorithm, improves the position and speed control precision and dynamic performance
- Strengthen the function of vibration suppression, improve the system to follow
- With the function of improving response speed servo standard configuration
- Overload capacity is strong, torque can be up to 2 times the rated load
- Pulse output can be arbitrary frequency division, frequency division pulse frequency stable and pulse number of accurate
- Can automatically learn the direction and Z phase offset angle of the encoder and UVW directionand offset angle, the direction of the sale and the offset Angle
- Common DC bus
- According to the temperature automatic adjusting the carrier frequency, reduce the noise. According to the temperature regulating fan speed automatically
- High dynamic response, the loading speed fluctuation is small
- Monitoring the function is all ready, convenient user debugging and fault diagnosis
- Speed way, position method, torque method, three models can switch freely through external terminals
- Support the simultaneously weak magnetic function, can reach 2~3 times of weak magnetic, high speed stability, no shake, steady speed precision, torque accuracy is higher
- Configurable PLC card, allows users to secondary development

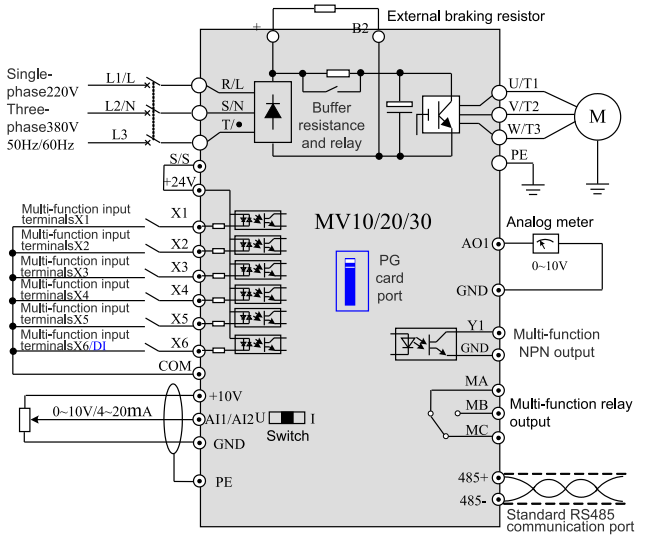
Industry application

Kaiping plate shears, wood cutting machine, tile press, bending hoop machine, CNC machine tools, etc.

MF series terminal wiring diagram

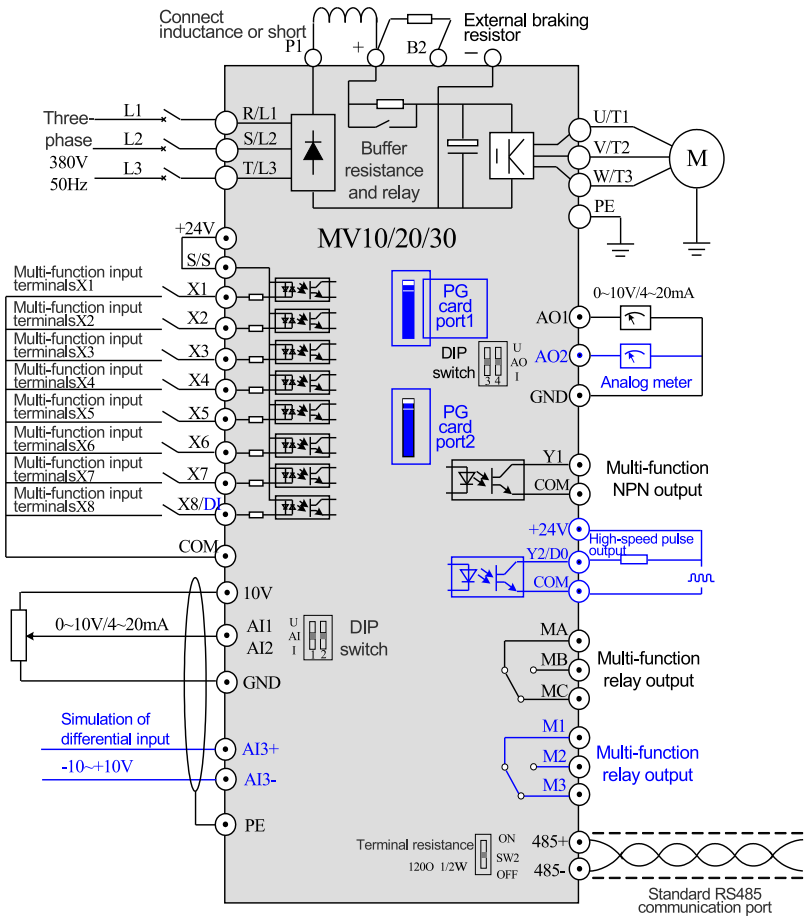


The terminal wiring diagram of MV series 2.2KW and the following



Note: MV10 exclusive of blue part

MV series 4KW or more and terminal wiring diagram



Note: MV10 exclusive of blue part

MV60M/MV80M series spindle positioning dedicated servo drives

Product overview

MV60M/MV80M is spindle positioning dedicated servo drives which researched and developmented on the basis of MV60/MV80. MV60M for asynchronous servo spindle, MV80M for synchronous servo spindle, stable positioning accuracy, speed, fast start stop, etc.

MV60M/MV80M drive has been widely used in the spindle positioning, currently in CNC lathe, CNC milling machine, CNC boring machine, CNC grinding machine, CNC drilling machine, engraving machine, machining center and other industries widely used.

Technique data

Power range: single-phase:0.4KW～2.2KW;
three-phase:0.75KW～400KW
Output frequency: 0～400HZ
Control mode: MV60M:Asynchronous motor open-loop and closed-loop vector control, V/F
MV80M:Synchronous motor open loop and closed-loop vector
Run mode: Position mode, Speed mode,Torque mode
Starting torque: 0HZ 180% rated torque
Overload capacity: 150%1m ; 180%10s ; 200%1s
Basic interface: 3 road analog input,1 road differential input; 2 road analog output; 8 road multi-function input terminals; 2 road multi-function output terminals; 2 road relay output
Protection function: over current protection, over-voltage protection, under-voltage protection, overload protection, overheating protection, etc
Expansion card: Configurable PLC card, configurable three PG card (incremental difference PG card, incremental open collector PG card, rotary PG card)
Communication interface: Standard RS485 interface hardware
Pulse given way: pulse+direction, the CW/CCW pulse, AB mutually orthogonal pulse; Differential signal support 300KHZ, open collector signal support 100KHZ

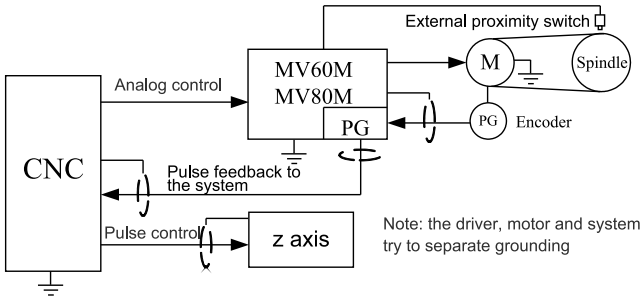
Product advantage

- ◆ Abundant comprehensive capabilities, excellent servo characteristics, make its can be applied to different CNC system, which can realize synchronous control; high speed response; high torque at low speed cutting and high speed constant power cutting; electronic gear; uniaxial orientation, orientation of multipoint and low-speed reaming, spindle positioning, rigid tapping function, etc.
- ◆ Wide range of speed, MV60M:stable operation of the top speed of 8000 r/min, the minimum speed is 0.03 r/min, MV80M: weak magnetic can reach 2~3 times
- ◆ Common DC bus
- ◆ MV80M can self-learning magnetic declination of synchronous motor, the motor parameters and the parameters of the encoder
- ◆ MV80M can drive high precision nc machine tools with direct drive motor
- ◆ Has stabilized, lack of phase, too long, encoder break the protection function such as, the function of the special group, the core of the control algorithm

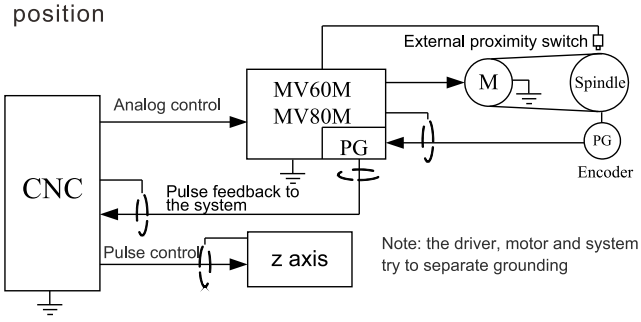
MV60M/MV80M machine tool spindle servo drives

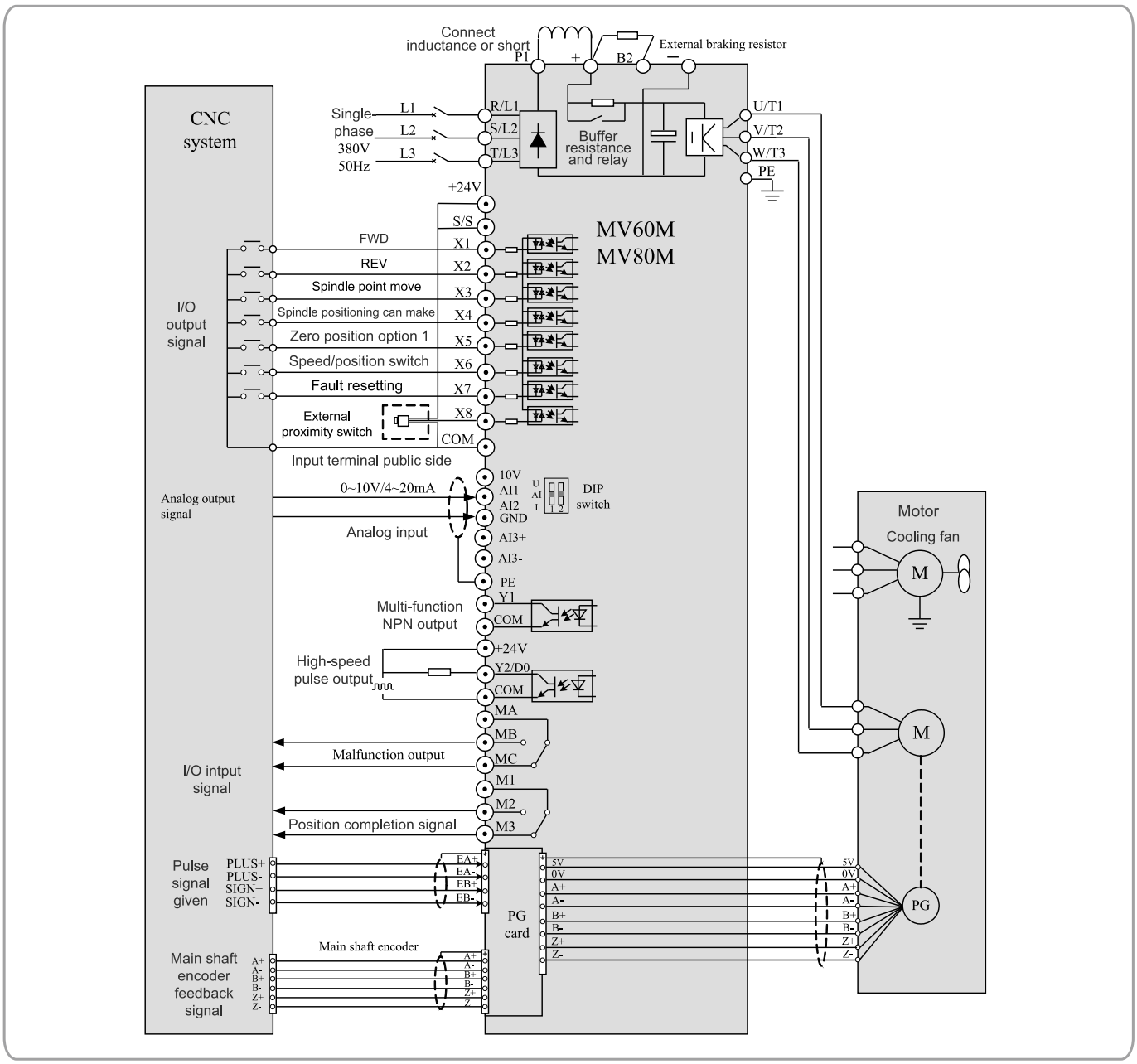
Speed+position control

Encoder mounted on the motor shaft , available encoder Z position, can also be external proximity switch position



Encoder mounted on the Mechanical spindle, available encoder Z position, can also be external proximity switch position





Spindle positioning related to common parameters

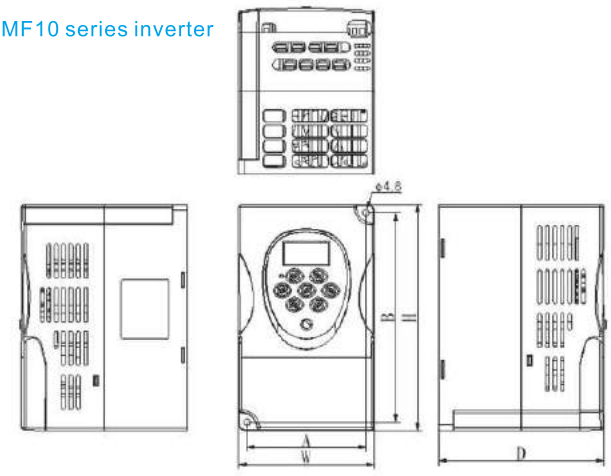
Application	Function code	Parameter name	Setting range	Factory setting	Unit
Speed control	P02.00	Speed loop proportion gain (high speed)(ASR1-Kp)	0.00～100.00	20.00	0.01
	P02.01	Speed loop integral time (high speed)(ASR1-Ti)	0.000～10.000	0.200	0.001s
	P02.02	ASR1 Switching frequency	0.00～P02.04	10.00	0.01Hz
	P02.03	Speed loop proportion gain (Low speed)(ASR1-Kp)	0.00～100.00	20.00	0.01
	P02.04	Speed loop integral time (Low speed)(ASR1-Ti)	0.000～10.000	0.200	0.001s
	P02.05	ASR2 Switching frequency	P02.02～P00.11	5.00	0.01Hz
Position control	P19.00	Servo operation Settings	0～2	0	1
	P19.01	Location for a given source	0～3	0	1
	P19.06	Electronic gear molecule	1～32767	1	1
	P19.07	Electronic gear denominator	1～32767	1	1
	P19.12	Position loop gain 1	0.01～500.00	10.00	0.01Hz

Spindle positioning dedicated parameter

Application	Function code	Parameter name	Setting range	Factory setting	Unit
Position control	P26.00	Spindle positioning can make choice	0～1	0	1
	P26.01	Zero input selection	0～1	0	1
	P26.02	Zero update mode	0～1	0	1
	P26.03	Reserve			
	P26.04	Orientation moving direction	0～2	0	1
	P26.05	Directional speed	0.00～100.00	5.00	0.01Hz
	P26.06	Directional acceleration-deceleration time	0.1～100.0	6.0	0.1s
	P26.07	Spindle zero position1	0.00～359.99	0.00	0.01℃
	P26.08	Spindle zero position2	0.00～359.99	45.00	0.01℃
	P26.09	Spindle zero position3	0.00～359.99	90.00	0.01℃
	P26.10	Spindle zero position4	0.00～359.99	135.00	0.01℃
	P26.11	Spindle zero position5	0.00～359.99	180.00	0.01℃
	P26.12	Spindle zero position6	0.00～359.99	225.00	0.01℃
	P26.13	Spindle zero position7	0.00～359.99	270.00	0.01℃
	P26.14	Spindle zero position8	0.00～359.99	315.00	0.01℃
	P26.15	Zero point selection terminal change to determine time delay	0.000～1.000	0.010	0.010s

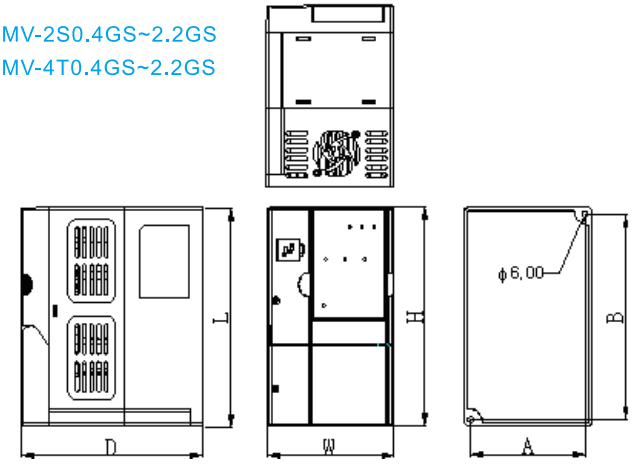
Overall dimension

MF10 series inverter



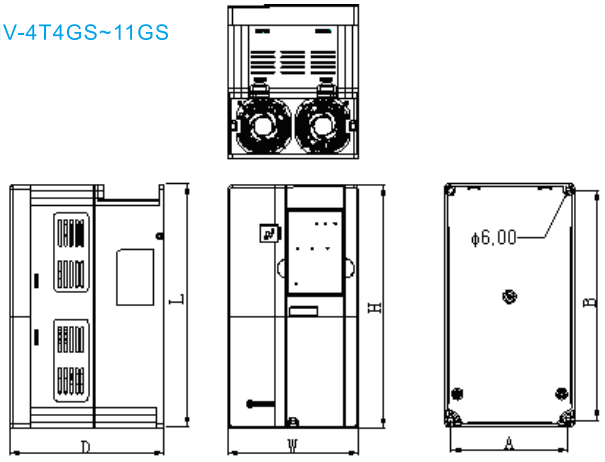
A1 is molded case series

MV-2S0.4GS~2.2GS
MV-4T0.4GS~2.2GS



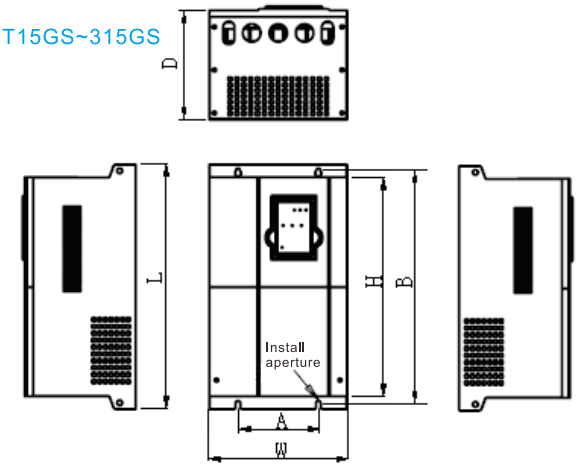
B1 is molded case series

MV-4T4GS~11GS



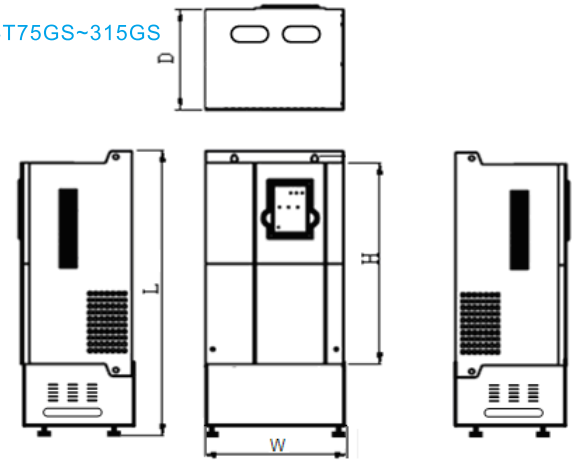
B2、B3 are molded case series

MV-4T15GS~315GS



C1、C2、C3、D1、D2、D3、D4 for metal wall-mounted series

MV-4T75GS~315GS



D5、D6、D7、D8 for vertical series

These wall-mounted D1, D2, D3, D4 can by adding base into the form of vertical D5, D6, D7,D8

Overall dimension

Series	Power	Installation dimension		Overall dimension				Install aperture (mm)	Structure code
		A(mm)	B(mm)	H(mm)	W(mm)	D(mm)	L(mm)		
MF Series	2S0.4GS	79.00	139.00	150.00	90.00	110.00	150.00	4.80	A1
	2S0.75GS								
	2S1.5GS								
	4T0.75GS								
	4T1.5GS								
MV Series	2S0.4GS	94.00	169.00	180.00	105.00	120.00	180.00	6.00	B1
	2S0.75GS								
	2S1.5GS								
	2S2.2GS								
	4T0.75GS								
	4T1.5GS								
	4T2.2GS								
	4T4GS	126.00	246.00	260.00	140.00	165.00	260.00	6.00	B2
	4T5.5GS								
	4T7.5GS	154.00	305.00	320.00	170.00	193.00	320.00	6.00	B3
	4T11GS								
	4T15GS	140.00	406.00	382.00	240.00	190.00	426.00	6.50	C1
	4T18.5GS								
	4T22GS								
	4T30GS	150.00	478.00	452.00	290.00	212.00	494.00	6.50	C2
	4T37GS								
	4T45GS	190.00	574.00	540.00	315.00	243.00	600.00	8.50	C3
	4T55GS								
	4T75GS	300.00	708.00	678.00	390.00	302.00	735.00	9.00	D1
	4T90GS								
	4T110GS						1052.00		D5
	4T132GS	380.00	840.00	808.00	500.00	350.00	865.00	11.00	D2
	4T160GS						1250.00		D6
	4T185GS	380.00	900.00	868.00	500.00	350.00	925.00	11.00	D3
	4T200GS						1250.00		D7
	4T220GS	500.00	1039.00	1000.00	640.00	368.00	1080.00	13.00	D4
	4T250GS								
	4T280GS						1470.00		D8
	4T315GS								

MIKOM

Electrical Technology

MIKOM Electrical Technology Co., Ltd.
Add: No.85, Dandong road, Hi-tech zone,Weihai
Zip: 264209
Tel: 0631-5808951
Fax:0631-5801751
Http://www.mikom.com.cn
Technical Support:400-680-8951