



# PI150 series



## Smart Frequency Inverter



Official Wechat Account



WeChat Service Number

Hotline:  
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[www.powtran.com](http://www.powtran.com)

## Product Orientation

PI150 is a new generation of compact inverter developed by POWTRAN Technology for the needs of the machinery supporting market. The debugging is more convenient, the efficiency is more outstanding, the application is more reliable. The sensorless vector control is freely retractable in a compact structure, complements the terminals and the keyboard, and is unobtrusive and naturally blends with each other.

PI150 series compact vector inverter, built-in RS485 communication protocol, the product conforms to the international CE certification, and has obtained national design patents.



## Performance Feature

### Save installation space

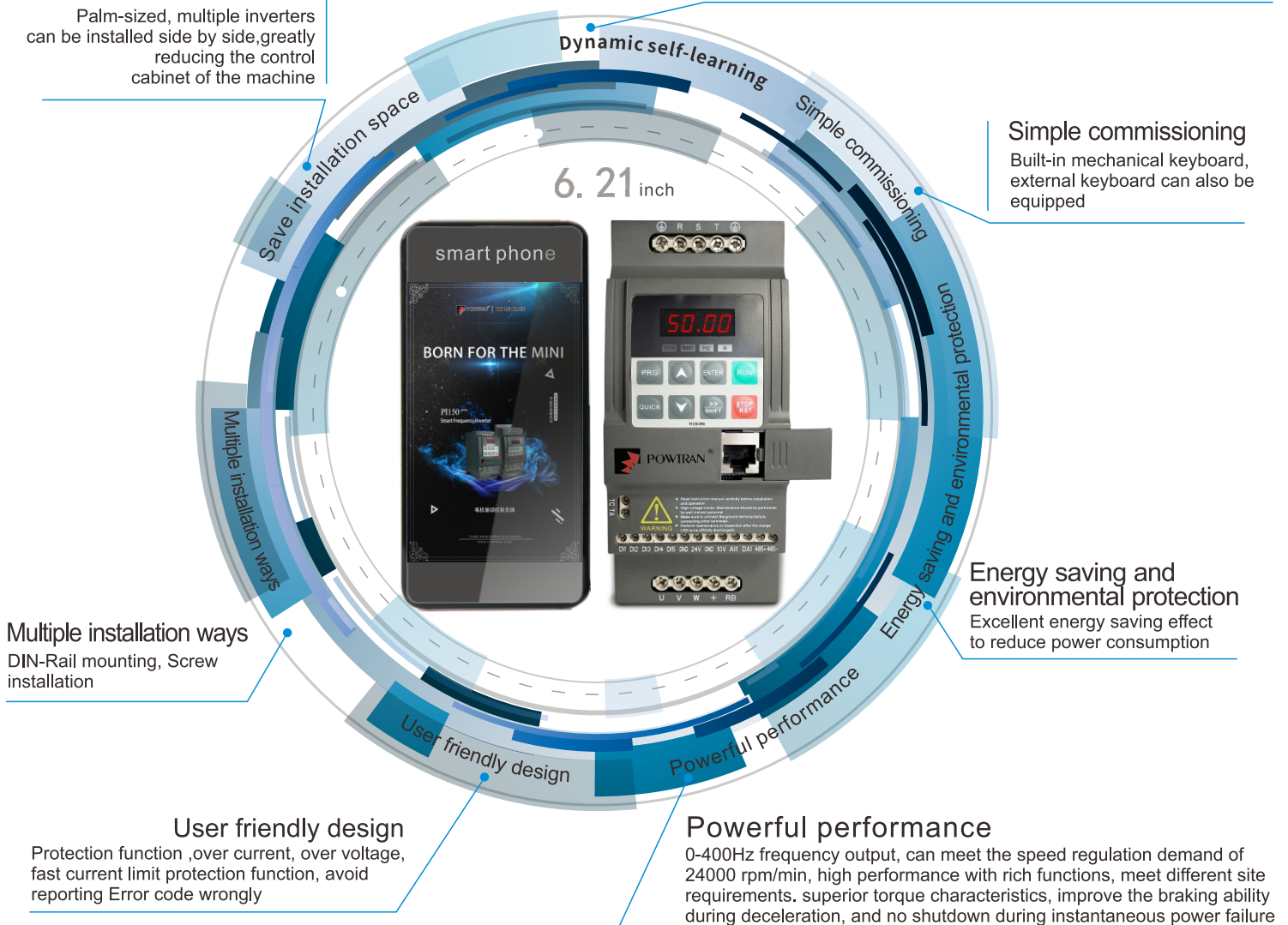
Palm-sized, multiple inverters can be installed side by side, greatly reducing the control cabinet of the machine

### High precision parameter self-learning function

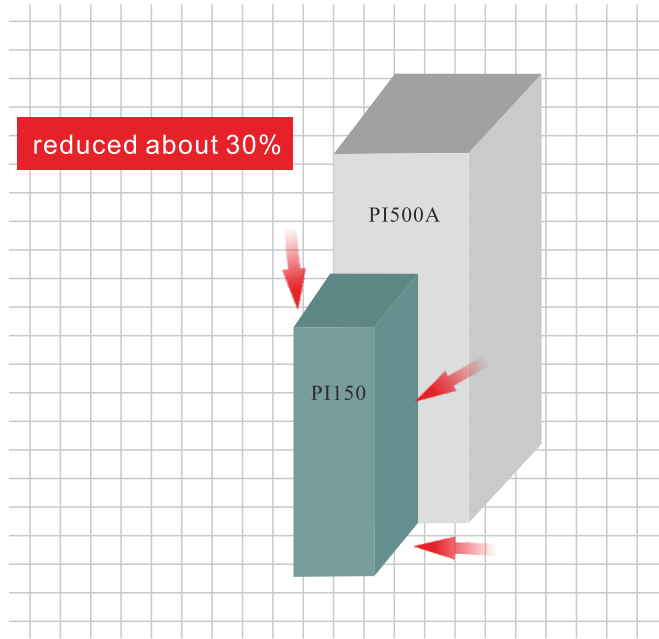
The motor parameters can be accurately obtained through static and dynamic self-learning, and the best control accuracy and dynamic response can be obtained under sensorless vector control.

### Simple commissioning

Built-in mechanical keyboard, external keyboard can also be equipped



# PI150 inverter 5.5kW and the same power machine volume comparison chart



## Multiple installation methods

(Multiple inverters can be installed side by side, greatly reducing the control cabinet of the machine)



Installed side by side

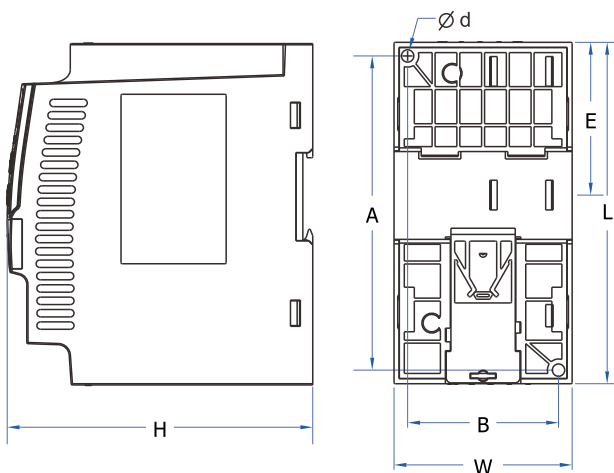


Screw installation, flexible



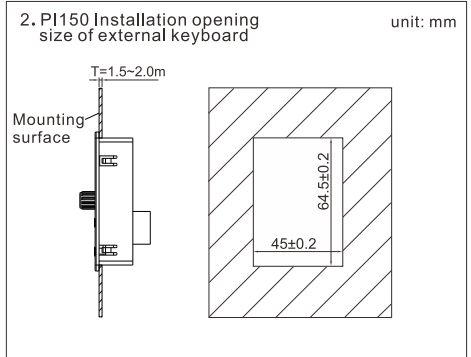
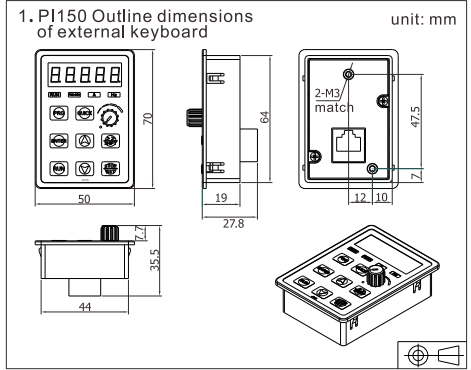
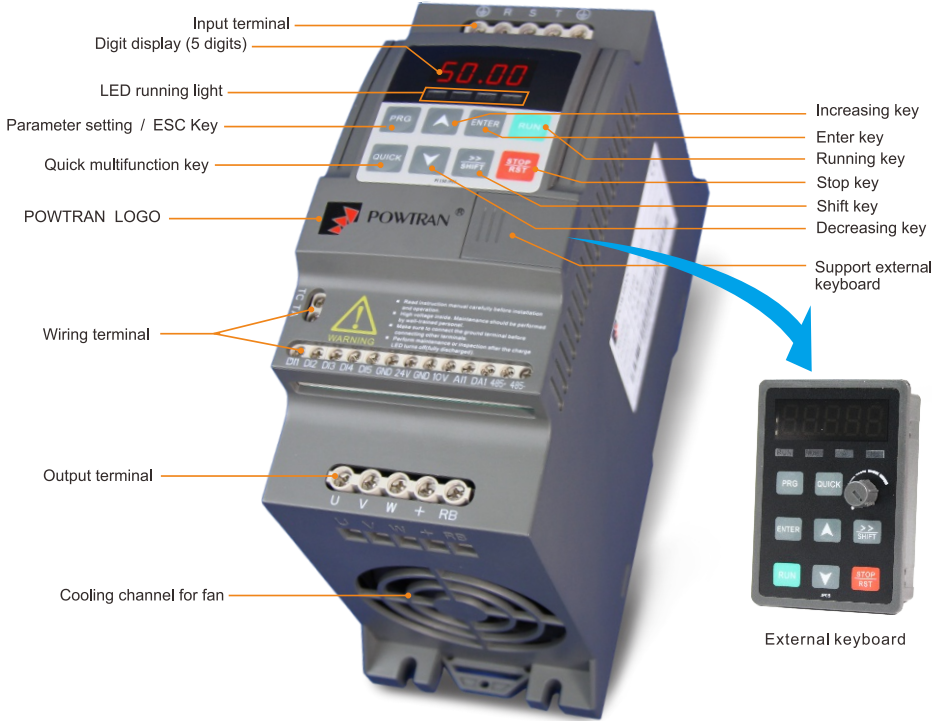
DIN-Rail mounting, quick and convenient

## External structure



Base No.	Dimensions(mm)			Installation dimensions(mm)			DIN-R ail mounting (mm) E	N.w. (kg)
	L	W	H	A	B	d		
F1	138	72	123.5	127	61	Ø5	62	1.1
F2	185	72	134	175	45	Ø5	82	1.3

# Configuration



# Specification and size

Base No.	Inverter model	Input voltage (V)	Output power (kW)	Input current (A)	Output current (A)	Selection of braking unit / braking resistance (recommended)				
						Energy consumption braking unit	Selection of braking resistance (100% braking torque, 10% braking volume, max. 10 seconds)			
							Resistance value (Ω)	Resistance power (kW)	Number of resistors	Minimum allowable braking resistance (Ω)
F1	PI150 0R4G1(Z)	1PH 220	0.4	5.4	2.5	Built in standard configuration of Z-type machine	300	0.07	1	48
	PI150 0R4G2(Z)	3PH 220		4.1	2.5					
	PI150 0R7G1(Z)	1PH 220	0.75	8.2	4.0		700	0.13	1	96
	PI150 0R7G2(Z)	3PH 220		5.3	4.0					
	PI150 0R7G3(Z)	3PH 380		4.3	2.5					
	PI150 0R7G4(Z)	3PH 480		4.1	2.5					
	PI150 1R5G1(Z)	1PH 220	1.5	14.0	7.0		96	0.21	1	32
	PI150 1R5G2(Z)	3PH 220		8.0	7.0					
	PI150 1R5G3(Z)	3PH 380		5.0	3.8					
	PI150 1R5G4(Z)	3PH 480		4.9	3.7					
PI150 2R2G3(Z)	3PH 380	2	5.8	5.1	215	0.4	1	130		
PI150 2R2G4(Z)	3PH 480		5.7	5.0					300	0.31
F2	PI150 2R2G1(Z)	1PH 220	2	23	10	Built in standard configuration of Z-type machine	66	0.31	1	32
	PI150 2R2G2(Z)	3PH 220		11.8	10					
	PI150 004G3(Z)	3PH 380	4	10.5	9		118	0.8	1	80
	PI150 004G4(Z)	3PH 480		9.4	8.0					
	PI150 5R5G3(Z)	3PH 380	5.5	14.6	13		86	1.0	1	60
	PI150 5R5G4(Z)	3PH 480		12.5	11					

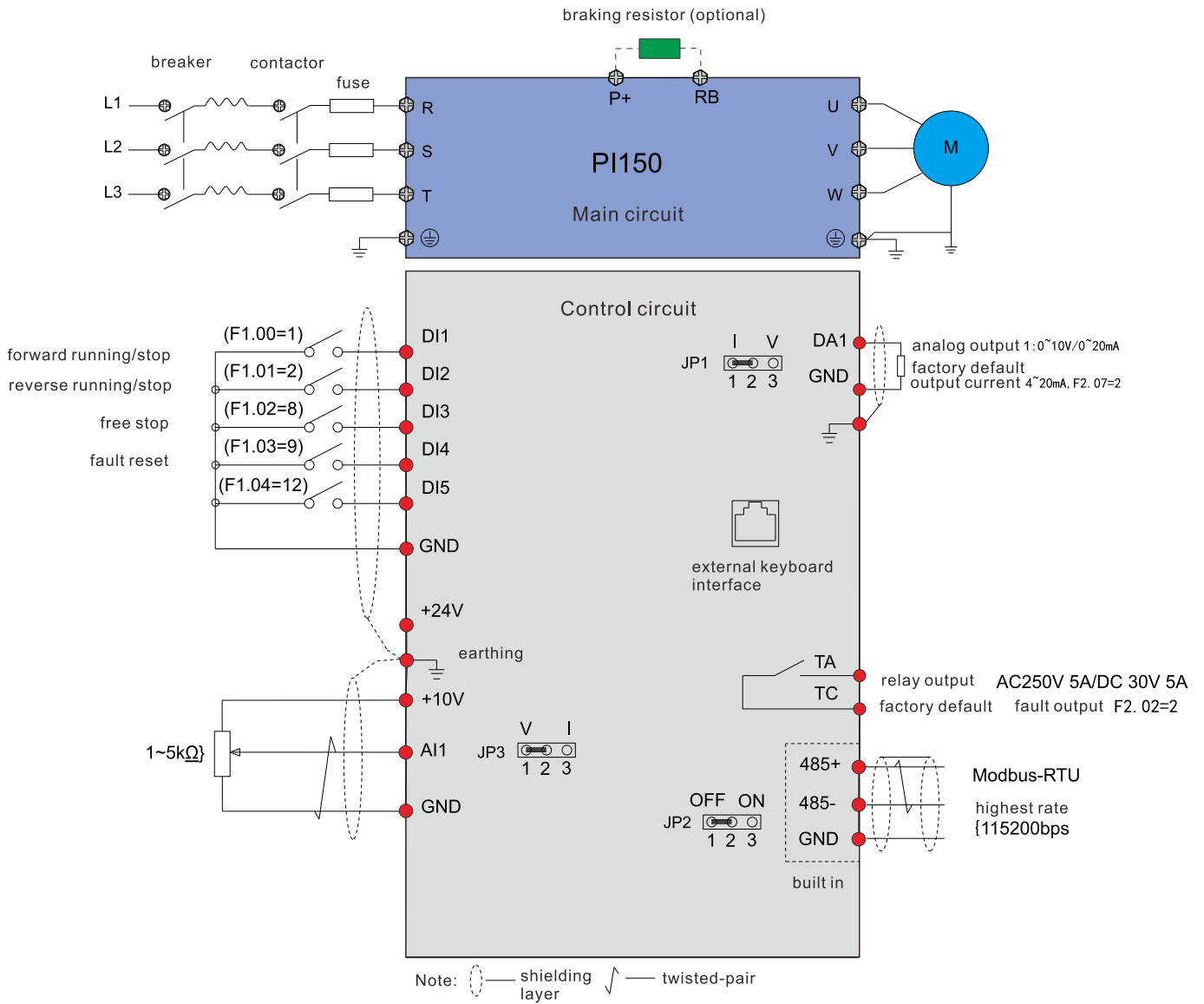
Note: 1. The default starting braking voltage for models with built-in braking unit are G1:380V , G3:690V;  
 2. The above table is the guidance data. The user can select the power and resistance value of the resistance according to the actual situation;  
 3. For the product introduction of frequency converter with G2 (three-phase 220V ~ 240V) and G4 (three-phase 480v) voltage levels, please contact the sales personnel for consultation.

# Technical Features

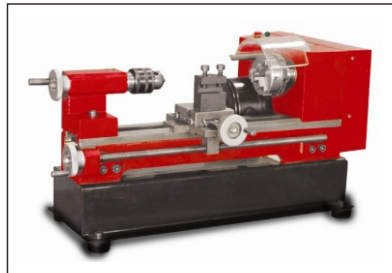
Item	Function		Specification
Power	Rated voltage		AC 1PH 220V(-15%)~240V(+10%) AC 3PH 220V(-15%)~240V(+10%) AC 3PH 380V(-15%)~440V(+10%) AC 3PH 480V(-10%)~480V(+10%)
	Input frequency		50Hz/60Hz
	Allowing fluctuations		Less than 3% of voltage unbalance rate 3% Input frequency fluctuation: $\pm 5\%$ Distortion satisfy IEC61800-2 standard
Control	Control system		High performance vector control inverter based on DSP
	Control method		V/F control, vector control W/O PG
	Automatic torque boost function		Realize low frequency (1Hz) and large output torque control under the V/F control mode
	Acceleration/deceleration control		Straight or S-curve mode. Four times available and time range is 0.0 to 6500.0s
	V/F curve mode		Linear, square root/m-th power, custom V/F curve
	Over load capability		G type: rated current 150% - 1 minute, rated current 180% - 2 seconds
	Maximum frequency		1、 Vector control: 0 to 300Hz; 2、 V/F control: 0 to 3200Hz
	Carrier Frequency		0.5 to 16kHz; automatically adjust carrier frequency according to the load characteristics
	Input frequency resolution		Digital setting: 0.01Hz Analog setting: maximum frequency*0.025%
	Start torque		G type: 0.5Hz/150% (vector control W/O PG)
	Speed range		1:100 (vector control W/O PG)
	Steady-speed precision		Vector control W/O PG: $\leq \pm 0.5\%$ (rated synchronous speed)
	Torque response		$\leq 40\text{ms}$ (vector control W/O PG)
	Torque boost		Automatic torque boost; manual torque boost(0.1% to 30.0%)
	DC braking		DC braking frequency: 0.0Hz to max. frequency, braking time: 0.0 to 100.0 seconds, braking current value: 0.0% to 100.0%
	Jogging control		Jog Frequency Range: 0.00Hz to max. frequency; Jog Ac/deceleration time: 0.0s to 6500.0s
	Built-in PID		Easy to realize closed-loop control system for the process control
Automatic voltage regulation(AVR)		Automatically maintain a constant output voltage when the voltage of electricity grid changes	
Torque limit and control		Automatically track current motor torque when the inverter starts	
Personalization Function	Self-inspection of peripherals after power-on		After powering on, peripheral equipment will perform safety testing, such as ground, short circuit, etc.
	Quick current limiting		The current limiting algorithm is used to reduce the inverter over current probability, and improve whole unit anti-interference capability
	Timing control		Timing control function: time setting range(0m to 6500m)
Running	Input signal	DI input terminal	5 digital input terminals
		AI1 analog input	1 analog input terminals respectively for optional range (0 to 20mA or 0 to 10V)
		Multi-speed	At most 16-speed can be set(run by using the multi-function terminals or program)
		Emergency stop	Interrupt controller output
		Fault reset	When the protection function is active, you can automatically or manually reset the fault condition
	Output Signal	PID feedback signal	Including DC(0 to 10V), DC(0 to 20mA)
		Output signal	One way relay output; One way AD1 analog output
		Relay output	There are 40 signals each way. Contact capacity : normally open contact 5A/AC 250V, 1A/DC 30V
	DA1 analog output		One way analog output, can select frequency, current, voltage etc 16 signals Output signals can be sent 0~10V/0~20mA
	Running command channel		Three channels: operation panel, control terminals and serial communication port. They can be switched through a variety of ways
Frequency source		Total 7 frequency sources: digital, analog voltage, analog current, multi-speed and serial port. They can be switched through a variety of ways	
Run function		Limit frequency, jump frequency, frequency compensation, auto-tuning, PID control	
Protection function	Inverter protection		Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overheat protection, overcurrent stall protection, overvoltage stall protection, losing-phase protection (optional), communication error, PID feedback signal abnormalities, PG failure and short circuit to ground protection
Display	LED display keyboard	Running information	Monitoring objects including: running frequency, set frequency, bus voltage, output voltage, output current, output power, output torque, input terminal status, output terminal status, analog AI1 value, motor Actual running speed, PID set value percentage, PID feedback value percentage
		Error message	At most save three error message, and the time, type, voltage, current, frequency and work status can be queried when the failure is occurred
	Key lock and function selection		Lock part or all of keys, define the function scope of some keys to prevent misuse
	IGBT temperature		Show the inverter inner IGBT temperature
Communication	RS485		Built in 485
Environment	Environment temperature		-10℃ to 40℃ (temperature at 40℃ to 50℃, please derating for use)
	Storage temperature		-20℃ to 65℃
	Environment humidity		Less than 90% R.H, no condensation
	Vibration		Below 5.9m/s <sup>2</sup> (= 0.6g)
	Application sites		Indoor where no sunlight or corrosive, explosive gas and water vapor, dust, flammable gas, oil mist, water vapor, drip or salt, etc.
	Altitude		No need degrade use under 1000m, degrade 1% for altitude rise 100m when above 1000m, do not use it above 3000m
	Protection level		IP20
Product standard	Product adopts safety standards		IEC61800-5
	Product adopts EMC standards		IEC61800-3
Other	Cooling method		Forced air cooling
	Install method		DIN-Rail mounting, Screw installation

# Wiring diagram

202108EV1.1



# Application



It is widely used in woodworking engraving machines, machine tools, packaging machinery, automatic production lines, etc.