ZDRV.C14-90L2
Product Manual

⚡Features

▷ Simple wiring, quick operation, knob speed adjustment

▷ Sensorless, sensorless vector control

▷ Motor line distance can reach up to 10 meters

▷ Adjustable acceleration/deceleration and speed

▷ Comprehensive fault detection and protection functions

⚡Driver

⚡Model Definition

Z DRV. C14- 90 L2
① ② ③ ④ ⑤

Mark	Description	Content
①	Company	Z:Zhongda
②	Model	DRV:Brushless Motor Driver
③	Version	C14:C14Series
④	Power	90:Max. output power 90W (supports 60W)
⑤	Voltage	L2:Low voltage DC 24V

⚡Compatible Motor

⚡Dimensions

Unit: mm
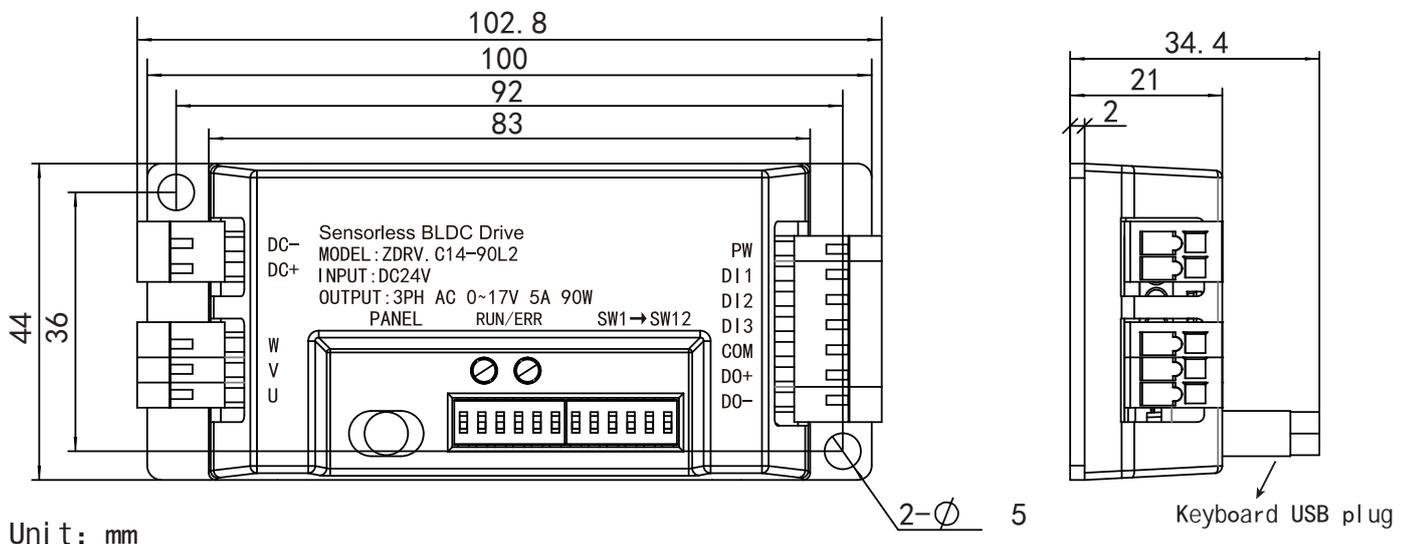
Interface Description
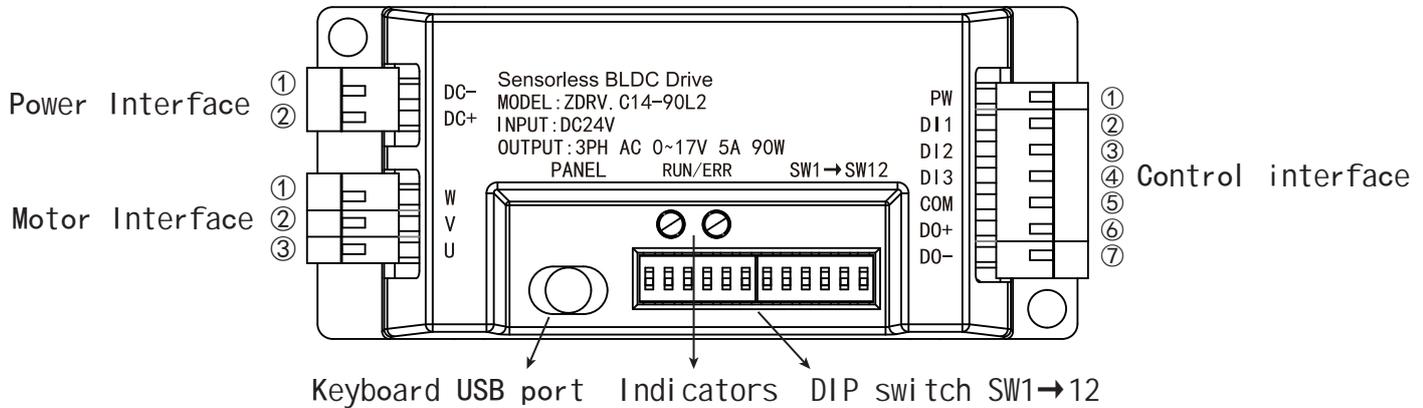
Interface	Pin No.	Pin Name	Pin Function
Power Interface	①	DC−	DC power input negative
	②	DC+	DC power input positive
Motor Interface	①	W	Motor power output terminal
	②	V	
	③	U	
Control Interface	①	PW	External active NPN/PNP control common
	②	DI1	Preset function: Forward run
	③	DI2	Preset function: Reverse run
	④	DI3	Preset function: Fault reset
	⑤	COM	Internal passive control common (0V)
	⑥	DO+	Preset function: Fault output
	⑦	DO−	

Press down

Wire entry
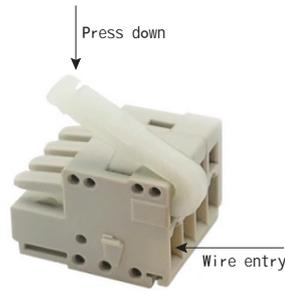
Keyboard USB Interface

The keyboard interface is a microUSB interface,which is used with the ZDRV. K10-ENT external keyboard and connected using a microUSB data cable. The following figure shows the keyboard interface:

Note: Don't use a USB to microUSB cable to connect the driver directly to the computer.

Indicators

The red and green lights flash regularly when alarming. Please see Fault and Maintenance for details.

DIP Switches

The driver has two groups of 6-position dip switches, SW1-12 are defined from left to right.

Switch No.	Function	Setting	
SW1~SW6	Speed Setting	Refer to Speed DIP Settings Table (max. 3000 rpm)	
SW7	Power matching	OFF=60W	ON=90W
SW8	Stop mode	OFF=Free stop	ON=Deceleration stop
SW9~SW12	Accel./Decel. selection	Refer to Accel./Decel. DIP Settings Table	
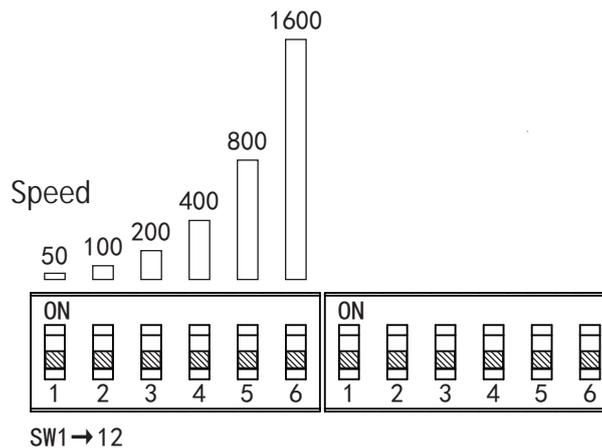
Speed

1600
800
400
200
100
50

ON
1 2 3 4 5 6

ON
1 2 3 4 5 6

SW1→12

Speed DIP Settings Table

（Speed （rpm)=200+SW1*50+SW2*100+SW3*200+SW4*400+SW5*800+SW6*1600）

SW1 （50）	SW2 （100）	SW3 （200）	SW4 （400）	SW5 （800）	SW6 （1600）	Set speed （rpm）
OFF	OFF	OFF	OFF	OFF	OFF	200
ON	OFF	OFF	OFF	OFF	OFF	250
OFF	ON	OFF	OFF	OFF	OFF	300
ON	ON	OFF	OFF	OFF	OFF	350
OFF	OFF	ON	OFF	OFF	OFF	400
ON	OFF	ON	OFF	OFF	OFF	450
OFF	ON	ON	OFF	OFF	OFF	500
ON	ON	ON	OFF	OFF	OFF	550
OFF	OFF	OFF	ON	OFF	OFF	600
ON	OFF	OFF	ON	OFF	OFF	650
OFF	ON	OFF	ON	OFF	OFF	700
ON	ON	OFF	ON	OFF	OFF	750
OFF	OFF	ON	ON	OFF	OFF	800
ON	OFF	ON	ON	OFF	OFF	850
OFF	ON	ON	ON	OFF	OFF	900
ON	ON	ON	ON	OFF	OFF	950
OFF	OFF	OFF	OFF	ON	OFF	1000
ON	OFF	OFF	OFF	ON	OFF	1050
OFF	ON	OFF	OFF	ON	OFF	1100
ON	ON	OFF	OFF	ON	OFF	1150
OFF	OFF	ON	OFF	ON	OFF	1200
ON	OFF	ON	OFF	ON	OFF	1250
OFF	ON	ON	OFF	ON	OFF	1300
ON	ON	ON	OFF	ON	OFF	1350
OFF	OFF	OFF	ON	ON	OFF	1400
ON	OFF	OFF	ON	ON	OFF	1450
OFF	ON	OFF	ON	ON	OFF	1500
ON	ON	OFF	ON	ON	OFF	1550
OFF	OFF	ON	ON	ON	OFF	1600

Speed DIP Settings Table

(Speed（rpm)=200+SW1*50+SW2*100+SW3*200+SW4*400+SW5*800+SW6*1600）

SW1 （50）	SW2 （100）	SW3 （200）	SW4 （400）	SW5 （800）	SW6 （1600）	Set speed （rpm）
ON	OFF	ON	ON	ON	OFF	1650
OFF	ON	ON	ON	ON	OFF	1700
ON	ON	ON	ON	ON	OFF	1750
OFF	OFF	OFF	OFF	OFF	ON	1800
ON	OFF	OFF	OFF	OFF	ON	1850
OFF	ON	OFF	OFF	OFF	ON	1900
ON	ON	OFF	OFF	OFF	ON	1950
OFF	OFF	ON	OFF	OFF	ON	2000
ON	OFF	ON	OFF	OFF	ON	2050
OFF	ON	ON	OFF	OFF	ON	2100
ON	ON	ON	OFF	OFF	ON	2150
OFF	OFF	OFF	ON	OFF	ON	2200
ON	OFF	OFF	ON	OFF	ON	2250
OFF	ON	OFF	ON	OFF	ON	2300
ON	ON	OFF	ON	OFF	ON	2350
OFF	OFF	ON	ON	OFF	ON	2400
ON	OFF	ON	ON	OFF	ON	2450
OFF	ON	ON	ON	OFF	ON	2500
ON	ON	ON	ON	OFF	ON	2550
OFF	OFF	OFF	OFF	ON	ON	2600
ON	OFF	OFF	OFF	ON	ON	2650
OFF	ON	OFF	OFF	ON	ON	2700
ON	ON	OFF	OFF	ON	ON	2750
OFF	OFF	ON	OFF	ON	ON	2800
ON	OFF	ON	OFF	ON	ON	2850
OFF	ON	ON	OFF	ON	ON	2900
ON	ON	ON	OFF	ON	ON	2950
OFF	OFF	OFF	ON	ON	ON	3000

⟲ Accel./Decel. DIP Settings Table

SW9	SW10	SW11	SW12	Accel./Decel. Time (s)
OFF	OFF	OFF	OFF	1
ON	OFF	OFF	OFF	0.1
OFF	ON	OFF	OFF	0.2
ON	ON	OFF	OFF	0.4
OFF	OFF	ON	OFF	0.5
ON	OFF	ON	OFF	0.8
OFF	ON	ON	OFF	1
ON	ON	ON	OFF	1.2
OFF	OFF	OFF	ON	1.5
ON	OFF	OFF	ON	2
OFF	ON	OFF	ON	3
ON	ON	OFF	ON	4
OFF	OFF	ON	ON	5
ON	OFF	ON	ON	6
OFF	ON	ON	ON	8
ON	ON	ON	ON	10

⟲ Wiring Diagram

Fault output

Open collector output sink current less than 50mA
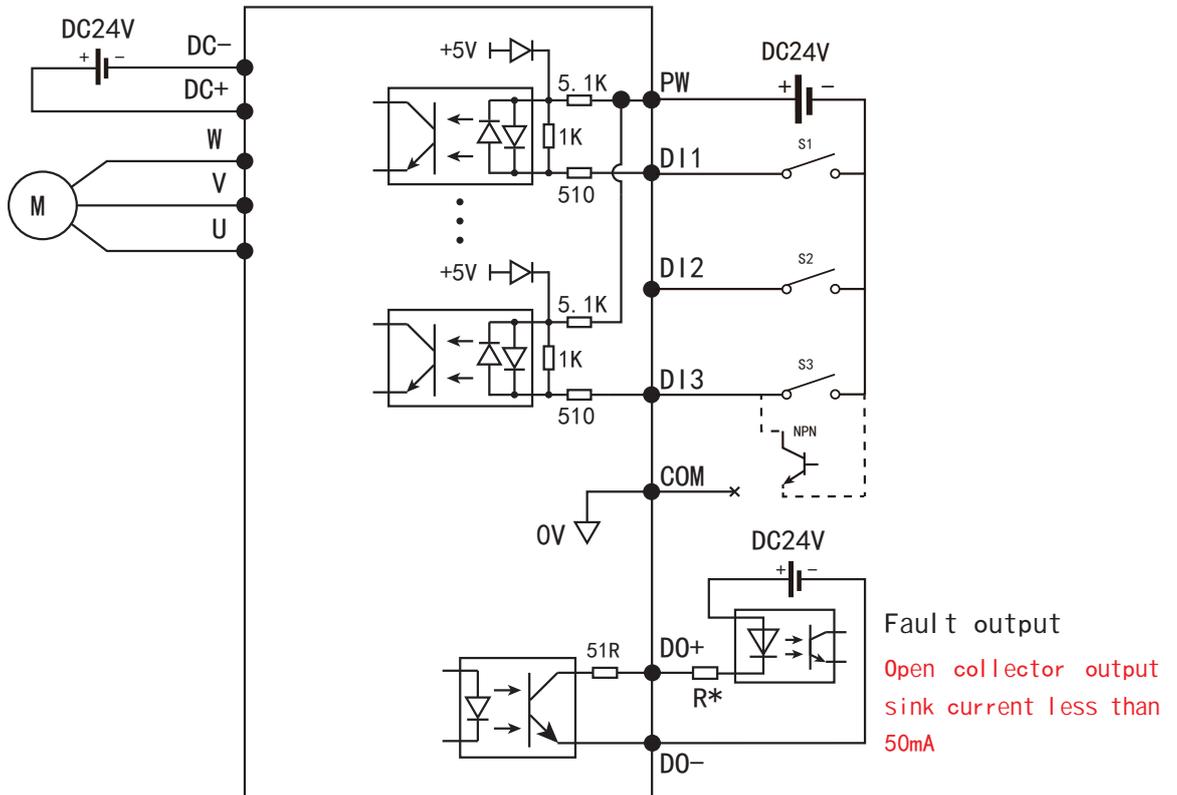
Input signal circuit

Driver
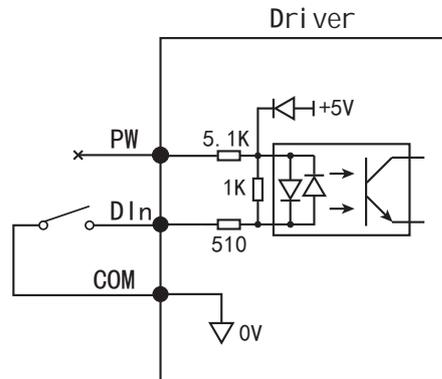
○ The switch quantity wiring method requires the customer to prepare their own power supply (5V) or use an internal power supply;
○ To prevent the motor from switching directions at high speeds, it is best to stop the motor for switching;
○ The GND of other controllers needs to be connected to the COM of the driver.
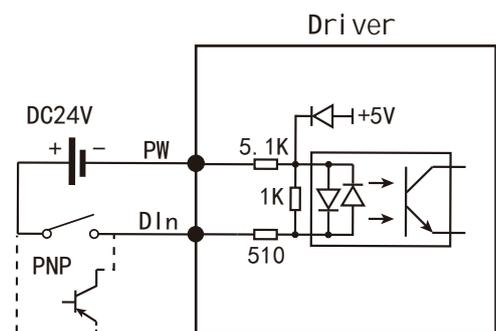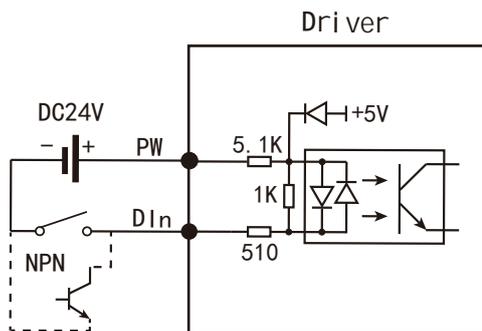
Driver

Driver

○ By default, the DI portand PW form a 24V loop trigger;
○ DI port high level: 18V~30V;
○ To prevent the motor from switchingdirectionsathighspeeds, it is best to stop the motor for switching.

Output signal circuit
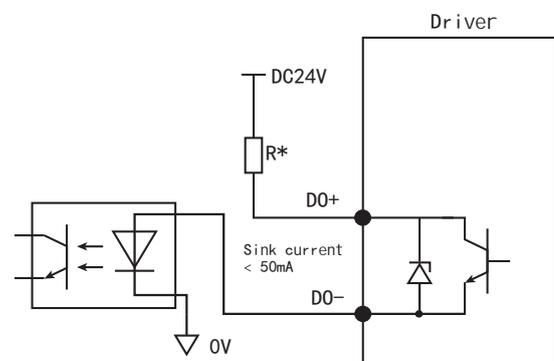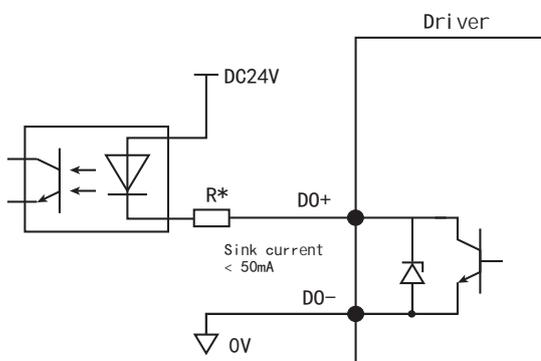
Driver

Driver

○ The signal output of the driver is an open-drain output. The state of the signal doesn't indicate the voltage level of the signal, but indicates the on-off state of the internal transistor.
○ External power supply: DC5 ~ 30 V, 50 mA or less.
○ Recommended resistance value when connecting current limiting resistor R*
　DC24V: 2.7kΩ~5.1kΩ (1W)
　DC5V: 510~1kΩ (0.25W)

🌀 Failure and maintenance

The following table shows that when the driver detects a fault and stops, the LED (red and green) flashes alternately to display the fault indication. The user can troubleshoot and repair according to the fault code.

The green light flashes once for 5, The red light flashes once for 1
Fault code = (Green flashes × 5) + Red flashes

Fault Code	Fault Name	Cause	Solution	Treatment
E.OCH	Hardware Overcurrent	0 Green 1 Red	1. Acceleration and deceleration are too fast 2. Voltage is too low 3. Driver power is too low 4. Sudden load 5. Phase short circuit 6. Strong external interference source	1. Increase the acceleration and deceleration time 2. Check input voltage 3. Select high-power driver 4. Check if the load is normal 5. Check/replace the cable or motor 6. Check if there is a strong interference source
E.OC	Software Overcurrent	0 Green 2 Red		
E.OL	Motor overload	0 Green 3 Red	1. The power supply voltage is too low 2. Motor power is too large 3. The motor is stalled or the load suddenly changes	1. Check the power input 2. Set the rated current of the motor 3. Reduce the load and check the motor and machinery
E.OC1	U phase overcurrent	0 Green 4 Red	1. Acceleration/deceleration too fast 2. Insufficient driver power 3. Sudden load application 4. Phase-to-phase short circuit 5. U/V/W phase loss	1. Increase the acceleration/deceleration time 2. Select a high-power driver 3. Check if the load is normal 4. Check/replace the cable or motor 5. Check if U/V/W are connected securely
E.OC2	V phase overcurrent	1 Green 0 Red		
E.OC3	W phase overcurrent	1 Green 1 Red		
E.OV	DC bus overvoltage	1 Green 2 Red	1. Input voltage too high 2. Rapid forward/reverse switching 3. Being dragged by external force and in power generation state	1. Check the power supply voltage 2. Increase the forward and reverse switching time 3. Add an external braking device
E.LV	DC bus undervoltage	1 Green 3 Red	1. Low power voltage 2. Over-acceleration triggering external power protection 3. Supply voltage drop 4. Driver hardware fault	1. Verify power input 2. Increase acceleration time 3. Fault reset 4. Contact technical support
E.LOC	Locked rotor	1 Green 4 Red	1. Overload 2. Motor stuck	1. Check the motor mechanical connection 2. Check the motor connection line
E.OH	Driver overheating	2 Green 0 Red	1. Excessive load 2. Driver hardware abnormality	1. Cooling treatment 2. Derating
E.POUT	Motor phase loss	2 Green 1 Red	1. U/V/W output phase loss 2. Driver hardware abnormality	1. Check the connection between the driver and the motor 2. Contact technical support