Either transformation of old equipment or installation of new equipment
JIUKANG motor soft starter is your best selection

SINO-U.S JOINT-VENTURE
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INTELLIGENT ACHOTOR SOFT STARTER

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Instructions for operation

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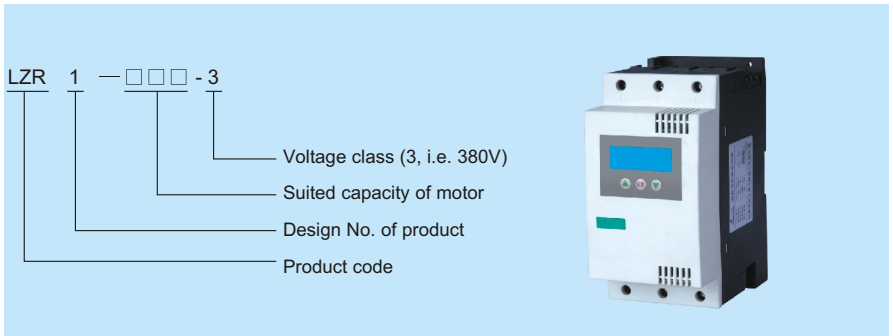
Essential information for the safety in installing

- No layman is allowed to install and connect the soft starter;
- Never connect the power inlet lines L1, L2, L3 to output terminals U, V, W.
- Never connect the output terminals U, V, W of soft starter to the capacitor, otherwise, soft starter will be damaged easily;
- Never connect control terminals 01 and 02 of soft starter to 380V power supply;
- Never use the megohmmeter to measure the insulation resistance between the input terminals and output terminals;
- When maintaining, must switch off the circuit breaker, otherwise, the maintainer will suffer from electric shock.
- The soft starter must be earthed reliably;
- User shall not assemble, disassemble or maintain the soft starter without our consent.

Service & environment conditions

- Power supply of main circuit: Three-phase 380V (-10%+15%) 50Hz ± 0.2%;
- Control circuit power: 220V，50Hz;
- Applicable motor: Common squirrel-cage motor (negotiate with the manufacturer if need wound motor and synchronous motor)
- Frequency of starting: It is suggested that the frequency of starting and stopping should be 12 times per hour at most, and the interval for every start and stop should be 5min at least.
- Cooling way: Natural air cooling
- Installation way: Fixed with 35mm rail or bolt
- Protection degree: IP20~IP30，determined by power grade
- Environment condition: When altitude is over 3000m, please reduce the capacity correspondingly.
- □ Environment temperature: -25~+40℃
- □ Relative humidity should not exceed 95%(at 20℃~65℃);
- □ No condensation, corrosive gas or conductive dust Installed indoors, and the installation site should be quite ventilated.
- □ The shock force shall be less than 0.5g.

Model description of intelligent AC motor soft starter

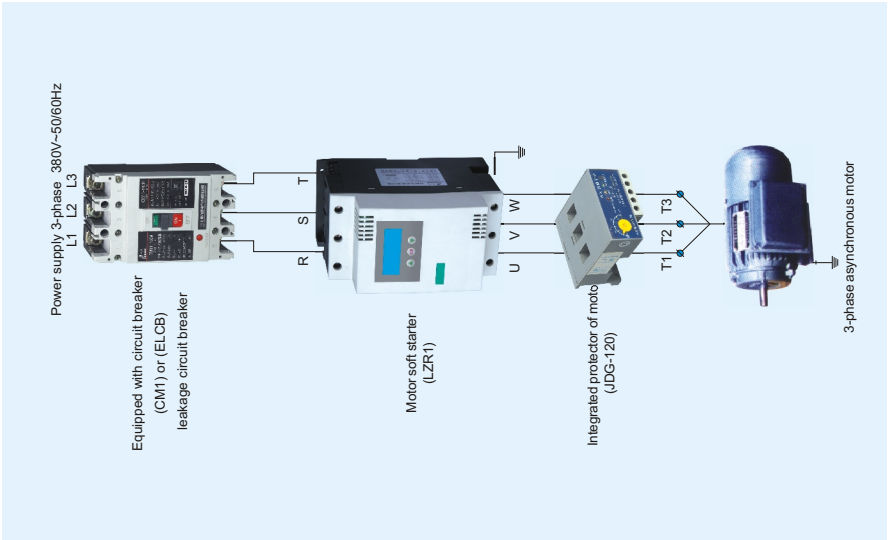


Main technical indexes:

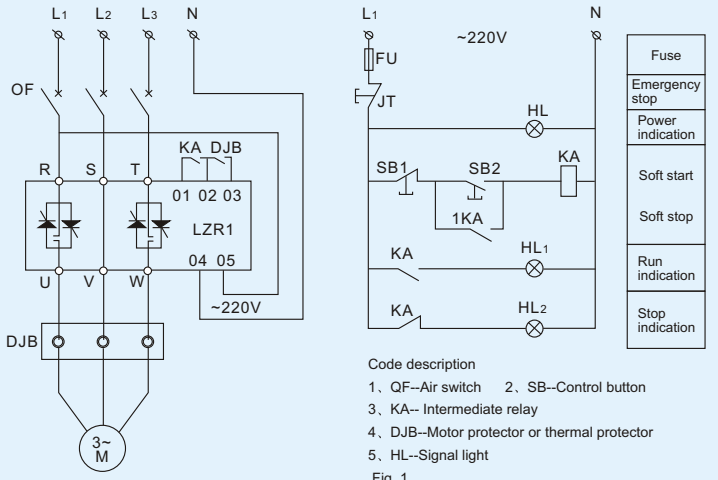
- 380V； Rated voltage: 380V;
- 5.5KW，7.5KW，11KW，18.5KW，22KW，30KW，37KW;
- Rated capacity: 5.5KW，7.5KW，11KW，18.5KW，22KW，30KW，37KW;

  Frequency of starting and stopping of soft starter should be 12 times per hour at most, and the interval for every start and stop should be 5min at least.

■ Connection diagram of LZR1 main circuit



■ LZR1—□□□–3电路连接图：



Code description

1、QF--Air switch　2、SB--Control button

3、KA-- Intermediate relay

4、DJB--Motor protector or thermal protector

5、HL--Signal light

Fig. 1

☐ Main circuit connection of soft starter

The power lines L1, L2 and L3 are connected to the soft starter input terminals R, S and T, and the soft starter output terminals U, V and W are connected to motor through the motor protector (notice: Make sure that the input and output terminals are connected correctly!)

☐ Control circuit connection of soft starter

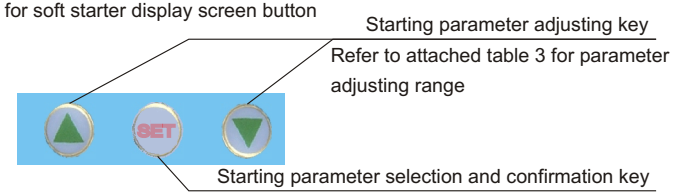
■ 01 and 02 terminals are the (passive) start and stop control terminals (make 01 and 02 to start up, and break to stop. Also can use the self-lock button or intermediate relay to carry out start and stop control);

■ 02 and 03 terminals (passive) are connected with motor protector (DJB), used to protect the output normally open contact;

■ Terminal 04 is connected with null line (N) of control power supply of soft starter;

■ Terminal 05 is connected with phase line (L1) of control power supply of soft starter;

☐ Instruction for soft starter display screen button



■ Soft starter operation methods

■ Make sure that the connection of soft starter is correct according to figure 1, then, switch on the circuit breaker QF, the soft starter LCD brightens, it displays as follows:

■ Push down the key SET, LCD of soft starter displays as follows:

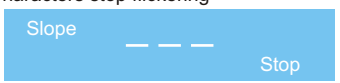
Characters flicker

■ Press the key UP or DOWN to select ramp or jump, then press the SET key to confirm, the LCD displays as follows: Characters flicker

■ Press the key UP or DOWN to select suitable starting time, then press the SET key to confirm, the LCD displays as follows: Characters flicker

■ Press the key UP or DOWN to select suitable starting voltage (refer to the attached table 2), then press the SET key to confirm, the LCD displays as follows: Characters flicker

■ Press the key UP or DOWN to select suitable soft stop time, then press the ENTER key to confirm, the LCD displays as follows: Characters stop flickering



■ After the starting parameters of soft starter are well set, push down the starting button SB, intermediate relay KA begins to work, soft starter proceeds soft starting, built-in bypass relay closes after the soft starting time, and the soft starting operation is finished. LCD displays as follows: Lines flicker in turn

□ Fault recovery

■ Fault display

When the motor comes across overload or over-current open phase, the motor protector (DJB) will output signal of protection operation (normally open contact closes), it will disconnect the soft starter once the 02 and 03 terminals receiving signal, then liquid crystal screen displays: ERR.

At this moment, the start button is locked, it is unable to start up the soft starter by pushing down the start button!

■ State recovery

Disconnect the circuit breaker QF, find out the source of trouble, eliminate the faults, then reset the motor protector (DJB), close circuit breaker QF, and the soft starter will resume normal state (the former set parameter will not be changed).

■ High power built-in bypass

LZR1 series 5.5KW~37KW soft starter is a patented product (patent number: ZL200620044145.2) of high-tech built-in bypass technology, it has the most compact volume when comparing with the similar products in the country. This built-in soft starter is the third generation product with most advanced technology and newest style following the first generation product of on-line type and the second generation product of external bypass type.

□ The soft starter adopting built-in bypass technology does not need additional external AC contactor, it is convenient in installing and wiring, economic in installation cost.

□ Noiseless running, making/breaking without electric spark, the built-in relay adopts non-electricity operation; with advantages of power saving, energy saving, electromagnetic pollution free, long service life.

□ Elegant appearance design (patent number: ZL200630038542.4), it has the smallest volume when comparing with the similar products, and occupies little space.

■ Outline and mounting size

□ Geometric installation dimension of 5.5~22KW

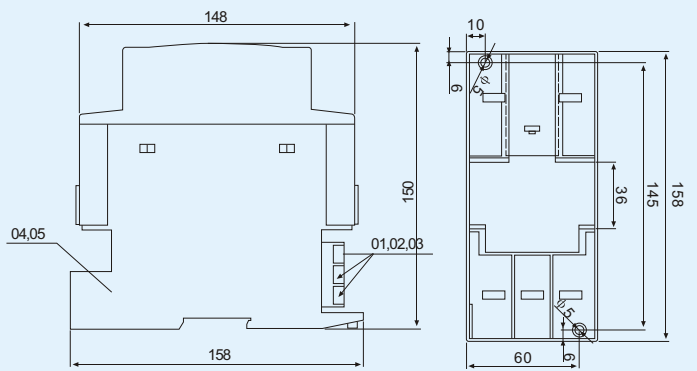


Fig. 2

□ Geometric installation dimension of 30~37KW

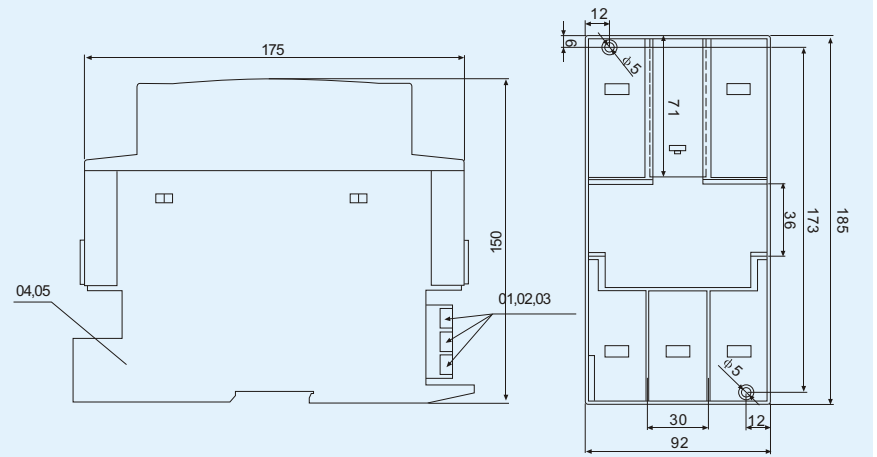


Fig. 3

Appendix: Table 1

Table of LZR1 soft starter kits (only for reference)

Power (KW)	Current (A)	Model & spec. Of soft starter	Model & spec. Of circuit breaker	Model & spec. Of motor protector	Setting value of over-current protection	Spec. of copper core mm^2
5.5	11	LZR1-5	CM1-63/16A	JDG1-120	12A	2.5
7.5	15	LZR1-7	CM1-63/20A	JDG1-120	17A	4
11	22	LZR1-11	CM1-63/32A	JDG1-120	25A	6
18.5	37	LZR1-18.5	CM1-63/50A	JDG1-120	41A	10
22	44	LZR1-22	CM1-63/63A	JDG1-120	49A	16
30	60	LZR1-30	CM1-100/80A	JDG1-120	67A	25
37	74	LZR1-37	CM1-100/100A	JDG1-120	82A	35

Appendix: Table 3

Parameter setting adjusting range of LZR1 soft starter

Starting mode	Starting voltage	Ex-factory value	Starting time	Ex-factory value	Starting time	Ex-factory value
Slope, jump	100V~300V	150V	5S~60S	15S	5S~60S	5S

Instructions for operation

Appendix: Table 2

Parameter setting adjusting range of LZR1 soft starter

Machinery type	Load type	Starting way		Value setting		Soft starting time	Remark
		Voltage	Current	Voltage	Current		
Water pump	Standard load	Slope		150V		15S	
Air compressor	Standard load	Slope		150V		10S	
Belt conveyor	Standard load	Slope		170V		25S	
Agitator	Standard load	Slope		150V		25S	
Crusher	Standard load	Slope		150V		20S	
Ball mill	Heavy load	Jump		170V		25S	★
Fan	Heavy load	Slope		170V		35S	

If the power is supplied by the self-contained generator, you had better use the current limited starting way for the motor start.

"Three Guarantees" of Jiukang soft starters shall remain in force for one year since the date of purchase, free service is available from Shanghai Jiukang Electric Co, Ltd. for damages due to quality problem of soft starter within this period. When beyond this period, repair cost also is free, but ask for reasonable parts cost.

- "Three Guarantees" service item
- Conditions for "Three Guarantees" service
- The products must be purchased from Jiukang Company or from the authorized dealers/agents;
- The Warranty Card must be sealed and confirmed by Jiukang Company or the authorized dealers/agents;
- Conditions for "Three Guarantee" products: Intact appearance, complete fittings
- "Three Guarantees" service will not be prepared for the following products
- Products that come across faults due to improper installation or operation;
- Products that are damaged due to improper operating environment, improper storing or force majeure;
- Products that are disassembled by unauthorized person, or are refitted or equipped with other parts;
- Product code, warranty mark or Jiukang mark is imperfect due to being altered, tore off or destroyed.

Please properly keep the Operating Manual, Purchase Invoice and Warranty Card.

After-sale service

Appendix: Table 4

Common faults and eliminations of soft starter

Fault symptom	Cause	Measures	Remarks
Display screen does not go on	1、04 and 05 terminals are wrong wired or have not been electrified; 2、Fuse wire is burnt out; 3、The emergency stop button is pushed down; 4、There is something wrong with the display screen.	1、Check the wiring of 04 and 05 terminals and check if they have been electrified; 2、Check and change the fuse wire; 3、Reset the emergency stop button; 4、Return back to the factory for changing.	
Refuse to start	1、01 and 02 are wrong wired; 2、Intermediate relay does not work, or DJB is disconnected; 3、There is something wrong with the soft starter.	1、Check the wiring of 01 and 02; 2、Check if DJB has been put through, change the button or intermediate relay; 3、Change the soft starter	
Start directly	1、Starting voltage is too high; 2、Starting time is too short; 3、Bypass conduction; 4、Module conduction.	1、Lower the starting voltage; 2、Prolong the starting time; 3、No-load start, operate and stop for one time; 4、Return back to the factory for changing.	