Certificate

This product is allowed to leave the factory according to the factory standard.

Product Name: Intelligent soft start

Product Model : _____

Factory No. : _____

Inspector: _____

Examination date: _____

Maintenance bond

1. Warranty scope refers to the product body.
2. The warranty period of the product is 12 months (the warranty period of the product exported overseas is 6 months), within the warranty period, if in If failure or damage under normal use, the company will provide free maintenance.
3. If the following faults occur, that is, the certain maintenance fee will also be charged during the warranty period:

A) Failure caused by not using it in strict accordance with the Operation Manual or beyond the standard specifications ;
B) damage caused by loss or brutal handling after purchase;
C) Device aging or failure caused by use in an environment not meeting the requirements of this manual;
D) faults caused by self-repair and modification without permission ;
E) Failure not caused by storage ;
F) Failure caused when the product is used for abnormal function ;
G) Due to fire, salt erosion, gas corrosion, earthquake, storm, flood, lightning, voltage abnormality or other natural Fults caused by disasters or causes associated with disasters;
H) Unup product identification (such as nameplate, etc.)

4. The calculation of actual service fees, such as other contract. To the principle of contract priority.
5. The warranty basis of this product is the warranty card and the purchase invoice. Be sure to keep this card and present it under warranty Maintenance unit.
6. If you have any questions, you can contact your agent or contact our company directly.

After the warranty period, the company will provide a paid maintenance service.

Intelligent soft start product operating manual

Warning items :

◇ Thank you for choosing our company's online intelligent motor soft starter products, new motor control theory, motor protection technology and processing technology application, we will return your love with excellent product performance!

◇ The following matters must be noted during the installation, use and maintenance of this product :

⚠ Be sure to read this operation instructions in detail before installation.

⚠ A soft starter must be installed by a professional technician

⚠ The specification of the motor must match this soft starter.

⚠ It is str ictly prohibited to connect the capacitor at the output end (U, V, W) of the online intelligent motor soft starter.

⚠ After installation must be wrapped with insulation tape.

⚠ On–line intelligent motor soft starter or other related equipment shall be reliably grounded.

⚠ The input power supply must be cut off during the equipment maintenance.

⚠ It is not allowed to dismantle or refit the product without permission.

Product warranty card

Name of user: _____

Address : _____

Relephone : _____ **Portraiture:** _____

Zip code : _____ **Contacts:** _____

Use of equipment : _____ **Date of purchase :** _____

Product name : _____ **Matching motor:** _____

Product model : _____ **Supplier:** _____

Identification of product : _____

1. Overview:

This online intelligent soft starter is a combination of the latest motor control theory, motor protection technology and processing technology New motor intelligent control products, this product does not need to use another contactor, is the star triangle conversion, self–coup ling step–down, An ideal replacement for motor starting equipment ; this product is based on universal soft starter Improvement, to make its performance more excellent, use more stable and reliable.

1.1 Main functions:

First, effectively reduce the starting current of the motor ; reduce the distribution capacity and avoid the grid expansion investment.

Second: reduce the starting stress of motor and load equipment ; prolong the service life of motor and related equipment.

Third : soft shutdown function effectively solves the problem of inertial system ; beyond traditional starting equipment.

Fourth: with three unique starting modes, can adapt to the complex motor and load situation, to achieve a perfect starting effect.

Fifth: with perfect and reliable protection function ; effectively protect the safety of motor and related production equipment.

Sixth: the application of intelligent and network technology of online intelligent motor soft starter makes the motor control technology adapt to the fly

Rapid development of electric power automation technology higher requirements.

1 .2 Main features:

◆ Perfect humanized design:

◇ Beautiful appearance and reasonable structure of the harmony and unity.

◇ Perfect function and simple operation of the harmony and unity.

◇ Firm and reliable and compact structure of the harmony and unity.

◇ Artistic design of lean industrial products.

◆ Reliable quality assurance:

◇ Computer

simulation design is used.◇ SMT patch

production process.

◇ Excellent electromagnetic compatibility performance.

◇ High–temperature aging and vibration test of the whole machine before leaving the factory.

◆ Perfect and reliable protection function:

◇ Pressure loss, undervoltage and overvoltage protection.

◇ Online intelligent motor soft starter overheating, starting time is too long protection.

◇ Input phase, output phase, three–phase unbalanced protection.

◇ Starting overcurrent, operation overload, load short circuit protection.

◆ Products with independent intellectual property rights:

◇ Appearance design patent.

◇ Independent software copyright.

◇ Exclusive motor starting and protection technology.

◇ Unique testing and debugging equipment and process.

◆ Quick and thoughtful after–sales service:

◇ Reliable performance and quality to lay the foundation of quality service.

◇ Provide excellent and perfect supporting design scheme.

◇ Timely and thoughtful use of consultation.

◇ Continuously improve product performance according to user opinions.

2. Product model description and unpacking inspection:

Each online intelligent motor soft starter has been strictly inspected before leaving the factory. Users are receiving the product and unpacking it After that, please follow the following steps. If any problem is found, please contact the supplier in time.

◆ Unpacking inspection steps:

◇ Check the product model : check the specification sign on the product shell and confirm that the goods you receive match with the product you order.

Online type intelligent motor soft starter
model : Input voltage: 3-phase AC 380V ± 15%50Hz Applicable motor: 055KW manufacturing No: date of manufacture:

NENA – ZR/PR/LR/SZ/SP – 600/800

- 600/800 — Indicate the product type: Represent respectively the high torque and ultra–low voltage starting and operation
  1. Light– load type of economic
  2. Mini model heavy– load model
- ZR/PR/LR/SZ/SP — Product design series: The following represents the super–perfor mance intelligent special type
  1. Online soft starter
  2. Bypass soft starter
  3. Size of the soft starter cabinet
  4. Comprehensive online soft starter cabinet
  5. Comprehensive bypass soft
- NENA — Company name: the company name or code name

◇ Checked the product. Whether it is damaged during transportation, such as: internal parts fall off with abnormal sound, shell cracking, deformation, etc.

◇ Check other items: in addition to the product itself, the packaging box should also be a matching product inspection certificate and operation instructions.

3. Operating conditions and installation requirements:

The on– line intelligent motor flexible starter shall meet the following service conditions and installation methods: otherwise, the performance will not be guaranteed, In serious cases, the life of the online motor soft starter will even be shortened or even damaged.

3.1 Service conditions of on- line intelligent motor soft starter :

◇ Power supply : mains power, self–provided power station, diesel generator set three–phase AC 380V or 660V ± 15%, 50Hz or
At 60Hz, the power supply capacity must meet the starting requirements of the soft starter for the motor.

◇ Applicable motor: mouse cage three–phase asynchronous motor, the rated power of the motor should match with the rated power of the on– line intelligent motor soft starter.

◇ Starting frequency : no requirement, the specific number depends on the load situation.

◇ Cooling mode: forced air cooling.

◇ Protection level : IP20.

◇ Environmental conditions: below the altitude of 2000 meters, ambient temperature –10℃ ~ + 40℃, relative humidity below 95% RH, no condensation, no flammable, explosive, corrosive gas, no conductive dust, good indoor ventilation, vibration less than 0.5G.2000 meters above sealevel, need to be used.

◆ The company can provide users with products used under special conditions, such as explosion–proof, low temperature, high pressure type on– line intelligent motor soft starter, the conditions of use will be described separately.

3.2 Appearance and installation dimensions of on- line intelligent motor soft starter:

The classification of voltage	Rated operational current	Power rating	Display mode	Protection work Can kind	Input and output, and the number of termina ls	Overload capacity
380V	22A–560A	11kW–280kW	Chinese LCD display	11 Species	12 Or 15	100%–150%, 30S
660V	90A–400A	75kW–280kW				
1140V	60A–400A	75kW–280kW				

◆ Device type

(Online)ZR600 ①				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
Z6–0#	18.5/55	327*150*205	286*115	ϕ6
Z68–2#	75	380*230*270	337*170	ϕ6
Z68–3#	90/115	460*275*230	400*220	ϕ8
Z68–4#	132/185	480*365*245	410*258	ϕ8
Z68–5#	200/320	600*456*270	520*345	ϕ8

(Online)ZR800 ②				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
Z8–1#	18.5/55	358*180*200	315*153	ϕ6
Z68–3#	75/90	460*275*230	400*220	ϕ8
Z68–4#	115/185	480*365*245	410*258	ϕ8
Z68–5#	200/280	600*456*270	520*345	ϕ8
ZR68–6#	320/400	695*456*270	605*355	ϕ8
Z68–7#	450/600	790*620*335	680*500	ϕ10

(Online)(high)platform based Zr900 ③				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
Z8–1#	18.5/55	358*180*200	315*153	ϕ6
Z68–3#	75/90	460*275*230	400*220	ϕ8
Z68–4#	115/185	480*365*245	410*258	ϕ8
Z68–5#	200/280	600*456*270	520*345	ϕ8
Z68–6#	320/400	695*456*270	605*355	ϕ8
Z9–7#	450/600	790*620*335	680*500	ϕ10

(Bypass route)PR800 ④				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
PR–1#	18.5/75	285*154*160	245*131	ϕ6
PR–2#	90/200	465*285*210	416*215	ϕ8
PR–3#	250/350	515*325*225	445*250	ϕ8
PR–4#	400/450	590*385*225	500*300	ϕ8
PR–5#	500/600	670*445*250	560*320	ϕ8

3.3 Appearance and installation dimensions of the online Intelligent motor starting control cabinet:

The classification of voltage	Rated operational current	Power rating	Display mode	Protection work Can kind	Input and output, and the number of termina ls	Overload capacity
380V	22A–560A	11kW–280kW	Chinese LCD Show or digital display	11 Species	12 Or 15	100%–150%, 30S
660V	90A–400A	75kW–280kW				
1140V	60A–400A	75kW–280kW				

◆ Cabinet size

Body size(online)LR800 ⑤				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
L–1#	18.5/55	440*330*780	405*225	
L–2#	75/115	450*345*1000	413*255	
L–3#	132/280	550*415*1160	510*300	
L–4#	320/400	630*430*1300	585*310	
L–5#	450/700	730*500*1650	677*388	

综合型(online)SZ600 ⑥				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
SZ6–1#	18.5/55(挂式)	400*300*540	366*270	Φ6(hang)
SZ68–3#	75/115	450*355*1015	343*265	

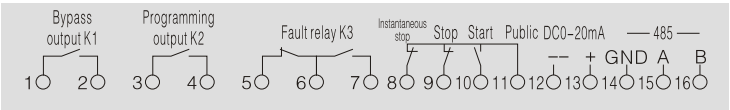
Integrated type(online)SZ800 ⑦				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
SZ8–2#	18.5/55	380*340*850	343*265	
SZ68–3#	75/90	450*355*1015	343*265	
SZ68–4#	115/185	550*415*1160	540*300	
SZ68–5#	200/400	670*445*1450	625*325	

Integrated type(bypass)SP800 ⑧				
Shell number	Power	Product dimensions length,width, and height	Install ation dimens ions, length and width	Instal l the eye
SP–1#	18.5/75	440*330*780	405*225	
SP–2#	90/185	450*580*1100	413*460	
SP–3#	200/400	580*680*1330	540*560	

4. Description of the external terminal of the online intelligent motor soft starter:

◆ external terminal is shown in Figure

Figure 4.1



◇ Terminal ①、②are bypass output: normally open passive contact and closed during operation. (Programmable to other functions) Contact capacity : AC250V / 5A.

◇ Terminal ③、④are programmable relay output: close when soft start starts. Active contacts are normally open and closed when the output is valid, see the instructions on page P19. Contact capacity is: AC250V / 5A.

◇ Terminal ⑤、⑥is fault output: when the online intelligent motor soft starter fails or loses power, and works normally Open circuit, for the passive contact.
Contact capacity is: AC250V / 5A.

Outside4.1

Code	Explain
0	Bypass output, often open
1	Fault output, often open
2	Delay output, often open
3	Fault output, normally closed
4	Delay output, often closed
5	Feeding output, often open
6	Feeding output, often closed

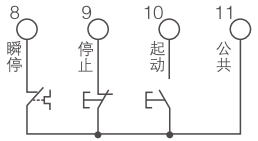
1. Bypass output, code 0
When the starting process is finished, the relay contact will close when the bypass function is set, and the contact will close when the stop command is issued Will be separated. Effective only if Online Mode is set to 0 in Manufacturer Settings.
2. fault output, coding 1,3 Set for the fault output normally open function of the relay, no fault contact open, have a fault contact closed, set to normal closed Otherwise, it is valid when the fault return menu is set to 1.
3. time –delay output, coding 2,4 Set the relay with delay output constant open function, and close the contact after starting with delay 0~240S (can be set) If normally closed, the "Joint control delay" menu setting is not valid when 0.
4. Feed output, code 5,6 Relay set as normally closed function for the feed output, the electrical contact on the circuit board, the contact disconnected during soft start and soft stop, After starting the motor at full speed, when the average current is greater than the "upper limit current", the delay to the "action time" contact is disconnected, Less than the "lower limit current", delay to the "action time" contact closed. When set to normal open, otherwise."Lower limit current", The Upper Current and Action Time can be set in the menu.

◇ Terminal ⑧is instantaneous stop input : this terminal must be short connected to terminal 10 when the soft starter is operating normally. If this terminal (10 is open, the online intelligent motor soft starter stops working unconditionally and is in a fault protection state. This terminal can be controlled at the normally closed output point of the external protection device.
Note: If you need an instantaneous stop, please open the instantaneous stop.

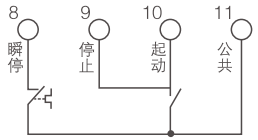
◇ Terminal ⑨、⑩are input terminals for external stop and start buttons. Wiring method is shown in Figure 4.2. Two–line mode when. ⑨、⑩Short connection.

◇ Terminal ⑫、⑬is 4 ~ 20 mA DC analog output: for real–time monitoring of motor current, indicating motor current is 100% of the nominal rated current of on– line intelligent motor soft starter, can be connected to 4–20 mA, DC current meter observation, the maximum output load resistance is 500 Ω. (Instructions are required when ordering).

◆ The external terminal is supplied by the internal DC24V. Do not connect the line wrong, otherwise it may cause damage to the soft starter of the online intelligent motor.



3接线方式



2接线方式：K 闭合则起动
K 断开则停止

图4.2

5、Control panel and operation

The control panel consists of a four– line dot array LCD screen and six buttons, as shown in Figure 5–1.

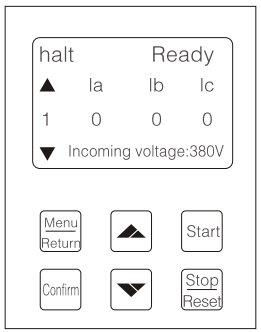


图5–1

5.1 Display instructions
There are 7 states of intelligent soft start, which are standby, setting, start, acceleration, operation, bypass, failure, and power start When there is no internal fault, turn to the standby state, and the second standby line alternately shows the soft starting rated current (ICL) and the motor rated power Flow (In) ; start on the left, the start, the right, the supply voltage on the left of the second line and the right Display the motor voltage, display the real–time current of U, V, W phase respectively in the left, middle and right of the fourth row ; accelerate and transport Rines or bypass runs. If a fault is detected in operation, the shutdown occurs and the fault information is displayed.

5.2 Keyboard instructions
● Start: press the key to start the motor;
● Stop / reset : pressing the motor can stop the motor, and pressing this key can reset the soft start ;
● Menu / return: used to enter and exit the menu, in the shutdown (display display "stop") or fault state, long press the key to enter the menu browsing state, and then enter the menu to press this key to return to the previous level ;
● Confirm: After entering the menu, press this key to select the current menu to enter the data setting state, and then press this key to confirm the current setting value, and return to the previous level. ;
● AV: add or subtract A (or V) to add (or decrease) data, keep press and hold the data to speed down, can also use the key Browse the menu.
Note: 1. In shutdown or fault state, long press the "confirm" button to enter the historical fault query, and exit, please press the "Return" button ;
2.When the display is abnormal, press the "AV" button at the same time to reset the display.
3. In the non– "setting" state, you can press the "A" and "V" buttons to turn the pages and display the monitoring data. Without pressing this button for a long time, the monitoring data screen will be automatically restored to the first page.

5.2 Parameter description
1. Parameter A

Order number	Name	Set the scope	give tacit conse nt to	Explain
Soft–up parameters				
A1	Soft up way	0~3	3	0 : Aging 1 : voltage ramp 2 : current limit 3 :current ramp
A2	Starting voltage	0~100%	30%	Starting mode 1,2 is valid
A3	Initial current	0~2.5	1.0	Starting current when starting, starting mode 3 is effective, in unit: times
A4	Flow limitmultiple	0~7.5	3.0	Starting mode 1,2,3 effective, unit ; times
A5	Jump peak	0~100	90%	
A6	The jump cycle	0~2.0S	0.4S	
A7	Start delay	0~240.0S	0.0S	After the start command, delay the start time
A8	Run–up time	0~90.0S	20.0S	Soft up process time
A9	Soft stop time	0~60S	0S	0: No soft stop function, non–zero is the soft stop time
A10	Joint control time	0~240.0S	0.0S	Delay time of time delay relay after start command
A11	mode of operation	0~6	3	1: keyboard 2: external control 3: keyboard + external control 4: Communication 5: Communication + keyboard 6: communication + external control
A12	rated current	0~1600A	100A	Set according to the rated current on the motor nameplate
A13	Upper limit current	0~200%	120%	Relay setting 5 or 6 is valid for feeding
A14	Lower limit current	0~120%	90%	Relay setting 5 or 6 is valid for feeding
A15	actuation time	0~10.0S	1.0S	Relay setting 5 or 6 is valid for feeding
A16	Soft start plus time	0~60S	0	
A17	Soft strengt	0~20倍	0	

Protection parameters				
A18	Short circuit multiple	0~12.0	6.5	Multiple of rated current, full effective, unit: times
A19	Speed break time	0~2.00S	0.20S	Blocking of silicon time during short circuit
A20	Overflow multiple	0~7.5	1.2	Rated current multiple, full pressure state is effective, unit: times
A21	Overflow time	0~10.0S	10.0S	Overcurrent blockade (break) time
A22	Overheat time	0~60.S	10.0S	Overheated blocking report time, the whole effective
A23	Overload curve	1~6	1	Inverse time limit curve number of motor overload protection, full pressure is effective
A24	Lack of phase time	0~60.0S	10.0S	Voltage deficiency phase protection time, the whole process is effective
A25	Current imbalance	0~100%	25%	Current imbalance ratio, soft start, full pressure, soft stop is effective
A26	Imbalance time	0~60.0S	5.0S	Time of current imbalance
A27	Underpre ssure lower limit	0~100%	70%	Full effective
A28	Overpres sure time	0~60.0S	2.0S	Time to report the reason
A29	Overpres sure upper limit	0~150%	120%	Full effective
A30	Overpres sure time	0~60.0S	2.0S	Overpressure reporting time
A31	Under–load current	0~100%	50%	The full pressure state is effective
A32	Adue time	0~60.0S	2.0S	Time for reporting
Protection switch				
A33	Short–circuiting switch	Switch	Open	Short circuit protection on or off
A34	Overflow switch	Switch	Open	Over current protection is either open or off
A35	Overheat awitch	Switch	Open	Over heated protection is either on or off
A36	Overload cut–out	Switch	Open	Overload protection is either on or off
A37	Lack of phase switch	Switch	Open	Lack of phase protection to open or off
A38	Instanta neous stop switch	Switch	Open	Unbalance protection is either open or off
A39	Overload cut–out	Switch is self–reset	Close	Insient stop protection on or off
A40	Undervol tage switch	Switch	Open	Undervoltage protection is on or off
A41	Overvolt age switch	Switch	Open	Overvoltage protection is switched on or off
A42	Starting failure	Switch	Open	Start failure protection open or close
A43	Under loa d switch	Turn off	Close	Unload protection is either open or off
A44	Phase sequence switch	Turn off	Close	Phase sequence protection to open or close
Communication parameters (remote parameters)				
A45	Principal and subord inate	0.1.2	0	0: ban 1: host 2: slave
A46	Stop number	0~32	1	Set to the station number at slave
A47	Digit capacity	0~12	8	
A48	Stop bit	0.1.2	1	
A49	Even–odd check	0.1.2	0	
A50	Baud rate	0~96	8	Actual waverate = Baud rate * 1200
A51	Current range	0~9999	400	4 mA corresponds to 0 and 20 mA corresponds to the set point
Privilege option				
A52	Customer privilege			Password 10, enter the customer privilege menu
A53	Manufact urer setting			Password 111, enter the manufacturer setting

2.B Parameter (customer privilege)

B1	Modify enabling	0~1	1	Parameter modification enable 1: enable 2: prohibited
B2	Language setting	English~in	centre	Centre
B3	Fault grab screen	Close~open	open	Record the current failure
B4	Learning parameters			Copy the set A parameter to the recovery parameter region
B5	Recovery parameters			Restrestore copies within the region to the A parameter
B6	Return			After the parameter is set, you can also directly return to the key to exit

3.C parameter (manufacturer's privilege)

C1	Rated voltage	0~1000	380V	The motor is rated voltage
C2	CT no- load voltage ratio	0~1800	100	Current transformer ratio is set according to Note 1
C3	La calibra tion	0~200%	100%	Correction shows the phase A current
C4	Ib calibra tion	0~200%	100%	The correction shows the phase B current
C5	Ic calibra tion	0~200%	100%	Correction shows the C phase current
C6	Voltage calibrat ion	0~200%	100%	Calibration shows voltage
C7	Run online	0、1	1	Online operation enable 1: enable 0: bypass
C8	Relay 1	0~6	0	Relay programming, refer to Table 4.1
C9	Relay 2	0~6	2	Relay programming, refer to Table 4.1
C10	Relay 3	0~6	3	Relay programming, refer to Table 4.1
C11	Power supply frequenc y	50、60HZ	50HZ	Income voltage frequency
C12	Clear history			
C13	Return			

5.4 Parameter setting

When the soft start factory data does not meet your requirements, you can follow the following steps (to modify the "start mode" and "flow limit"
Multiple " for example)

Step	Operate	Show	Explain
1	Power on	The shutdown is ready	Power up into the shutdown state
2	Long press the return key for 1 second	A1 start mode 2	Enter the setting state, the second line shows the serial number and submenu, and the third line shows the parameter value
3	Press AV	A1 start mode 2	Browse through the menu to find the Start Mode submenu
4	Press the confirmation key	A1 start mode 21	The third line number follows the outgoing cursor and flashes, indicating that the parameters can be set
5	Press AV	A1 start mode 31	Data were modified to 3
6	Press the confirmation key	A1 start mode 3	The cursor disappears, the data modification is completed, and saved, you can continue to browse the menu
7	Press AV	A4 current limiting multiple 3.0	Browse the menu to limit limit with order number A4
8	Press the confirmation key	A4 current limiting multiple 3.01	The second line number follows the outgoing cursor and flashes, indicating that the parameters can be modified
9	Press AV	A4 current limiting multiple of 3.51	Data were modified to 3.5 x
10	Press the confirmation key	A4 current limiting multiple of 3.5	The cursor disappears, the data modification is completed, and saved, you can continue to browse the menu
11	Press the return key	The shutdown is ready	Back to downtime

Note: In the fault state, you can also browse and modify the above steps.

6、Failure protection description

Intelligent online soft start starter has rich fault protection, all faults will be shut down after the set delay time, and display the fault information.

Note: Use the Reset the button to remove the fault

1. Short–circuit protection

The short circuit protection function can quickly block the SCR and break the bypass contactor when the output short circuit occurs, to prevent the SCR breakdown, soft starter burning or external accident expansion. When needing to break the bypass contactor, please note that the contactor must have the breaking ability.

Related parameters: rated current, short circuit multiple, quick break time, short circuit rejection

- When "short circuit withdrawal" is set to 1, enable this function ;
- Set the "short circuit multip le"> current limit multiple in the detection current> = "short circuit multiple" * "rated current" and timing> "quick break time", the response break, and report the "short circuit" fault ;
- Short circuit fault protection is effective.
- Possible failure causes:
- Short circuit to output cable, short circuit is made to motor coil
- Incorrect setting of rated current and short circuit multiple 2. Overcurrent protection

Overcurrent protection is used to prevent the motor and CR from burning due to excessive current when the motor is running at full pressure.

Related parameters: rated current, overcurrent multiple, overcurrent time, overcurrent rejection

- When "Overflow withdrawal" is set to 1, enable this function ;
- Set "overcurrent multiple"> =1.2, in the detection of current> "overcurrent multiple" * "rated current" and timing> "overcurrent time", the response break, and report "overcurrent" fault ;
- Effective at full pressure.
- Possible failure causes:
- Full speed during bypass
- Excessive load occurs in blocking rotation
- The rated current and overcurrent multiple are not set correctly. 3

Overheat protection is used to prevent the silicon controller from working for a long time in a high temperature state. This function must be used with a normal closed temperature switch.

Related parameters: overheating time, overheating withdrawal

- When "Overheated retirement" is set to 1 to enable this function ;
- Temperature switch disconnection time> = overheat time, response protection.
- is effective throughout Possible failure causes:
- Start–up starts too frequently
- The load is too large, and the large current starting time is too long
- Silicone breakdown
- The temperature switch is damaged

4. Overload protection

Overload protection is used to prevent long–term overload operation of the motor. The reverse time limit algorithm is divided into level 1~6 curves, including level 1 curve The shortest time, the time is as follows:

Note: Overload protection and overcurrent protection overlap. During the "overload" protection test, please prohibit the "overcurrent" protection.

Related parameters: rated current, overload curve, overload overcast

- When "overload projection" is set to 1, the function is enabled ;
- The higher the overload curve is set, the longer the protection time of the same multiple ;
- The phase with the largest current value in the three–phase current is taken as the calculation parameter of the overload reverse time limit algorithm.
- Overload protection is effective in the bypass full pressure state. Possible failure causes:
- The motor is overloaded for a long time
- The rated current is set as incorrect

Curve	Action time (unit : S)								
	1.05	1.2	1.5	2.0	3.0	4.0	5.0	6.0	7.0
1	No buckl	70	30	16	8	4.4	2.4	1.5	1
2		140	60	32	16	8.8	4.8	3	2
3		210	90	48	24	13.2	7.2	4.5	3
4		280	120	64	32	17.6	9.6	6	4
5		350	150	80	40	22	12	7.5	5
6		420	180	96	48	26.4	14.4	9	6

5, Voltage phase deficiency

Voltage phase absence protection is used to prevent input side phase breaking or severe imbalance.

Related parameters : phase absence time, phase absence withdrawal

- "Misphase phase" set to 1, enable this function ;
- Any one phase, two phase or all three–phase fracture phase, will be protected ;
- The whole process is effective. Possible failure causes:
- Poor incoming line contact
- Unbalanced voltage on the grid side
- Not powered on

6、Current imbalance

Current imbalance protection is used to prevent the expansion of faults caused by si breakdown, voltage imbalance, motor wire package fault, poor contact and other hidden dangers.

Related parameters: rated current, current imbalance (imbalance), imbalance time, and imbalance withdrawal

Note: The menu "current imbalance" is the full name of the current imbalance percentage.

- When the "unbalanced withdrawal" is set to 1, the function is enabled ;
- The imbalance protection algorithm is excited only when the current of any phase is greater than the "rated current" / 25;
- The maximum value of the difference between any one phase and the three– phase average current / average current> = "current imbalance", and the timing time> = "imbalance time", the response protection, and the "current imbalance" fault ;
- Soft rise, full

pressure, soft stop when effective. Possible failure causes:

- Poor contact between the access and exit lines
- Grid–side voltage imbalance
- Motor wire packageproblem

7,instantaneous stop

Instant stop is used to fault signal or emergency stop button of external equipment. refer to Figure 4.1 for wiring method.

Related parameters : instantaneous stop and drop back

- When "instantaneous stop and withdrawal" is set to 1, enable this function ;
- is effective throughout

8. Underpressure protection

Undervoltage protection is used to prevent system startup due to low voltage.

Related parameters: rated voltage, undervoltage lower limit, undervoltage time, under voltage drop back

- When "Undervoltage drop back" is set to 1, enable the function ;
- Detect voltage / rated voltage <= undervoltage lower limit, and timing time> = undervoltage time, response protection, and report the "undervoltage" fault ;
- is effective throughout.

Possible failure causes:

- Undervoltage lower limit or rated voltage set error
- Power supply transformer has overload and magnetic saturation
- Cable is too long or too thin, the voltage attenuation is serious

9, overvoltageprotection

Overvoltage protection is used to prevent equipment damage caused by excessive system voltage. Related parameters: rated voltage, upper limit of overvoltage, overvoltage time, and overvoltage rejection

- This function is enabled when the "overpressure drop back" is set to 1;
- Detection voltage / rated voltage> = upper overvoltage limit, and timing time> = overvoltage time, response protection, and report the "overvoltage" fault ;
- is effective throughout.

Possible

failure causes:

- Overvoltage upper limit or rated voltage is set in error
- The network side voltage is too high

10. Start–off failure
Starting failure protection is used to prevent the bypass contactor from absorbing or forcing it comp letely after the soft start ends
Pressure output, resulting in a motor impact.
Re lated parameters : start ing fa i lure (reject ion)
● "Start failure" is set to 1, enable the function ;
● Cut bypass (on line mode : ful l voltage), the motor side voltage is not ful l voltage response protect ion ;
● Effect ive when soft start and end cut bypass (fu l l pressure) . Possible failure
causes:
● Current limiting multip le or starting time is set too low, due to the large load, the bypass is not full speed 11, under load
Under load protection is used to prevent no or light load operation of the motor, which will usually damage the equipment,
Such as submersible pump, etc.
Related parameters: under load rejection, under load current (multip le), under load time
● "Under load cast back" when set to 1, to enable this function ;
● (Detect ing current rated current) * 100% <= off– load current (percentage) , and t im ing t ime> = off– load t ime , response p rotect ion , and reported "off– load " fau lt ;
● Effect ive on bypass (fu l lp ressure) ;
poss ib le fa i lure causes :
● Incorrect parameter setting;
● The submersible pump has no water

7、Start mode description

The soft "start mode "starting mode can be set by the in the soft start parameter to meet different requirements. There are four ways to choose from, p lease refer to the A1 parameter in 5.3.

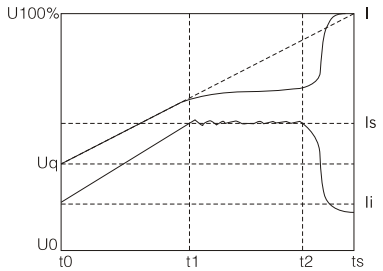
1. Aging

The ag ing method is used for the ag ing of the soft starter. This method can trigger the SCR for a long time with a certain conduction Ang le, that is, save electricity, and can take the motor or bulb for a long time.

Related parameter s : starting mode, starting voltage Experience parameter: "Start Mode" =0" Start ing vo ltage " =25%

2. Voltage slope

The voltage ramp mode is to complete the starting process of the motor by setting the input voltage rise rate of the motor. Because the voltage is a smooth transition from the initial value to the rated value, the whole starting process is very stable. The initial output torque can be increased by setting the initial voltage. In order to prevent the current from exceeding the limit, the current multiple should be set according to the load type. If the value does not affect the start, the value should be as small as possible. If the current limiting function is not needed, the value should be set to the maximum. Characteristic curves are shown in Figure Figure 7–1. Refer to Table 7–1 for the parameter settings.



Graph 7–1

Related parameters: starting mode, starting voltage, rated current, current limiting multiple, and starting time

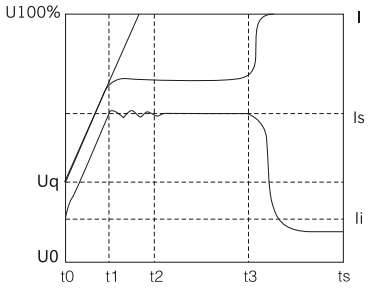
Experience parameters: "Starting mode" =1, "rated current" = namep late calibration
Note: This method is not suitable for the motor shaft end without load connection working condition. In the air connection, because the mechanical inertia is too small, the electric opportunity enters the shock area, and the electric opportunity is slightly shaken, which is a normal phenomenon. You can set the "current limit multiple" <2.0 times elimination, and then adjust the parameter after connecting the actual load. Usually this working condition is only encountered in the test machine, please rest assured to use it.

Table 7–1:

	Water pump	Belt machine	Ventilation fan	Dust fan	Hammer type broken	The forehead type broken	Oscillating screen
Starting voltage	30%	30%	30%	40%	40%	50%	50%
Flow limit multiple	3.0	2.8	3.0	4.5	3.0	3.0	5.0
Run–up time	15s	20s	20s	45s	40s	50s	15

2. Limit the flow

The characteristic curve of flow limiting mode is shown in Figure 7–2. The difference from the voltage ramp is that it will go through a very short ramp and quickly enter the flow limit until the start is complete

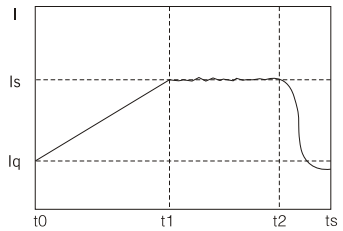


Graph 7–2

Related parameters: starting mode, starting voltage, rated current, current limiting multiple, and starting time Experience parameters: "Starting mode" =2. "Rated current" = namep late calibration

3. Current slope

The current slope mode is controlled by the current. During the whole starting process, the current gradually according to the set slope Increase until the set current multip le, which is very adaptable, negative for large and small inertia Both has very good starting effect. Characteristic curves are shown in Figure 7–3 and refer to 7–2 for parameter settings.



Graph 7–3

Related parameters ; starting mode, starting current, rated current, current limiting multip le, and starting time

Experience parameters: "Start mode" =3, "Rated current" = namep late mark

Table 7–2:

	Water pump	air compressor	Belt machine	Ventilation fan	dust elimi nation fan	Hammer type tattered	Jaw type tattered	Oscillating screen
Starting voltage	1.0	1.0	1.0	1.0	1.5	1.5	1.5	2.0
Flow limit multiple	3.0	3.0	3.0	3.0	4.5	3.0	3.0	5.0
Run–up time	15s	8s	15s	20s	45s	40s	50s	15

8. Power test machine

8.1 Check before power–on

Carefully check and confirm according to the following terms and conditions before power–on operation

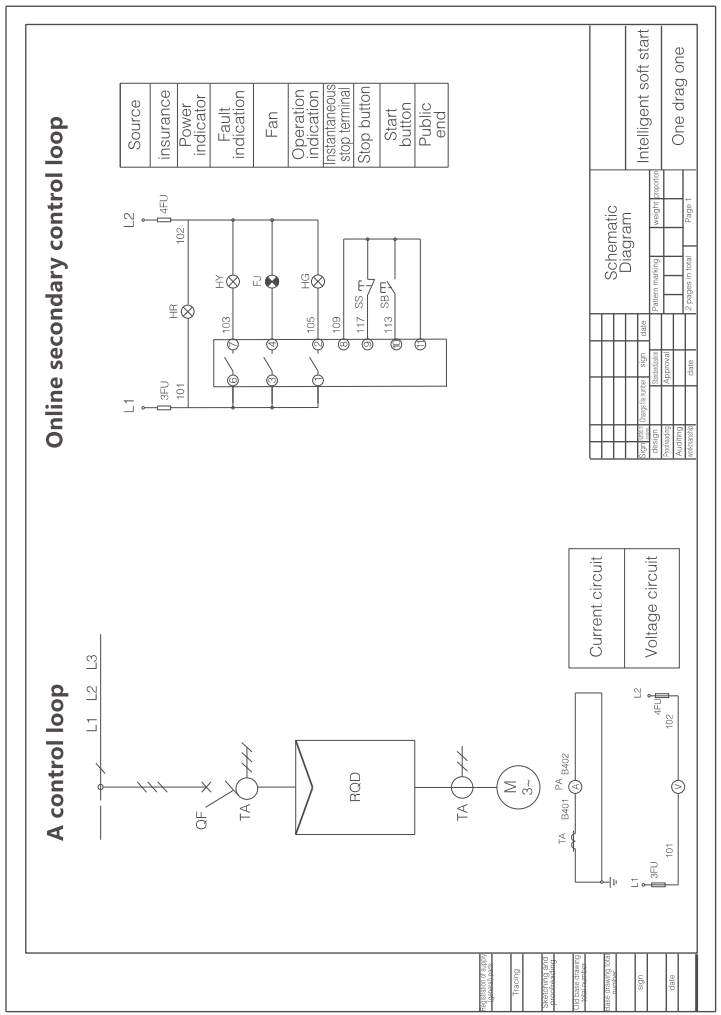
- Whether the rated power of the soft starter (cabinet) matches with the motor.
- Whether the insulation performance of the motor meets the requirements.
- Whether the input and output main circuit wiring is correct, and whether the bypass corresponding phase is correct.
- Whether the fixing bolts of wiring terminals and copper bars are tightened.8.2 Power–on for trial operation
- After the self–test is completed, the first line of the display shows "Stop" ready to stop, indicating that it can be started
- Set the rated current of the motor according to the rated current on the motor nameplate
- According to the equipment driven by the motor, refer to table 7–1 or 7–2 coarse adjustment parameters, the starting mode suggests to use mode 3 (current ramp mode), and open the "start failure" protection.
- Point to check whether the rotation direction of the motor is correct, and replace the motor line order incorrectly.
- After starting, observe the input voltage, three–phase current, phase order Angle and other data. The three–phase current needs to be balanced. When the phase order Angle is a multiple of 120, the input voltage balance. You can turn the page through "AV" to view the monitoring data.
- In the process of power trial operation, if abnormal, such as abnormal sound, smoke or odor, the power should be quickly cut off and the cause is found out.
- If the fault shutdown occurs during starting or operation, press the stop key to reset the fault state when stopping

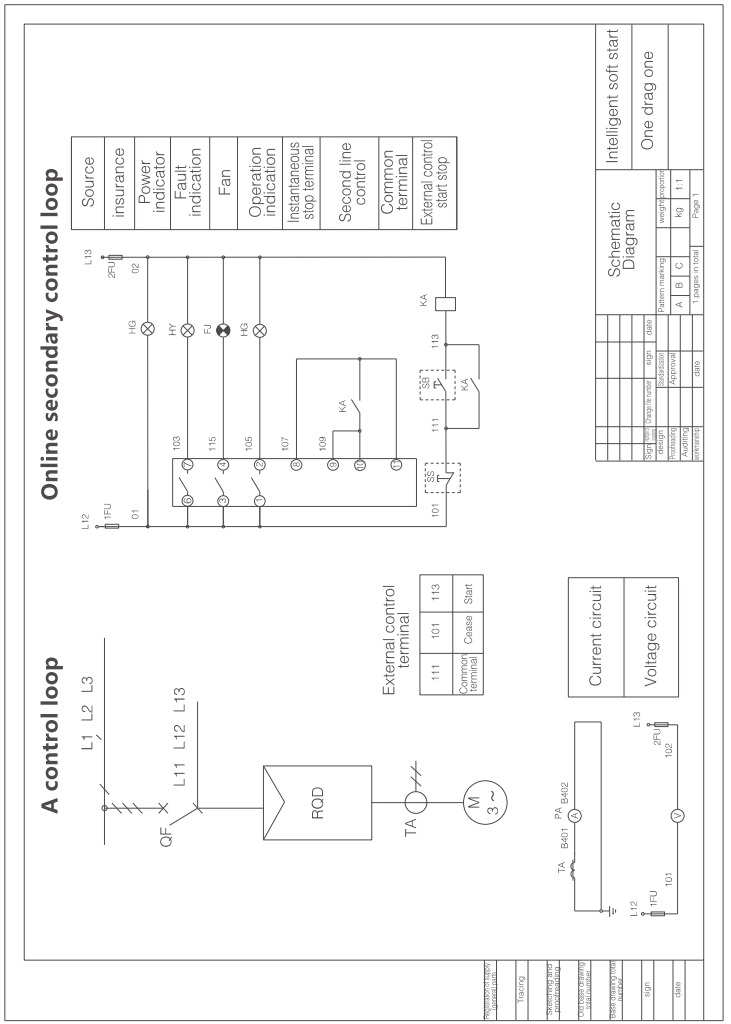
"Note : When the ambient temperature is lower than–10 degrees Celsius, the display screen and other components may be abnormal, should be preheated for more than 30 minutes before the power off to start again.

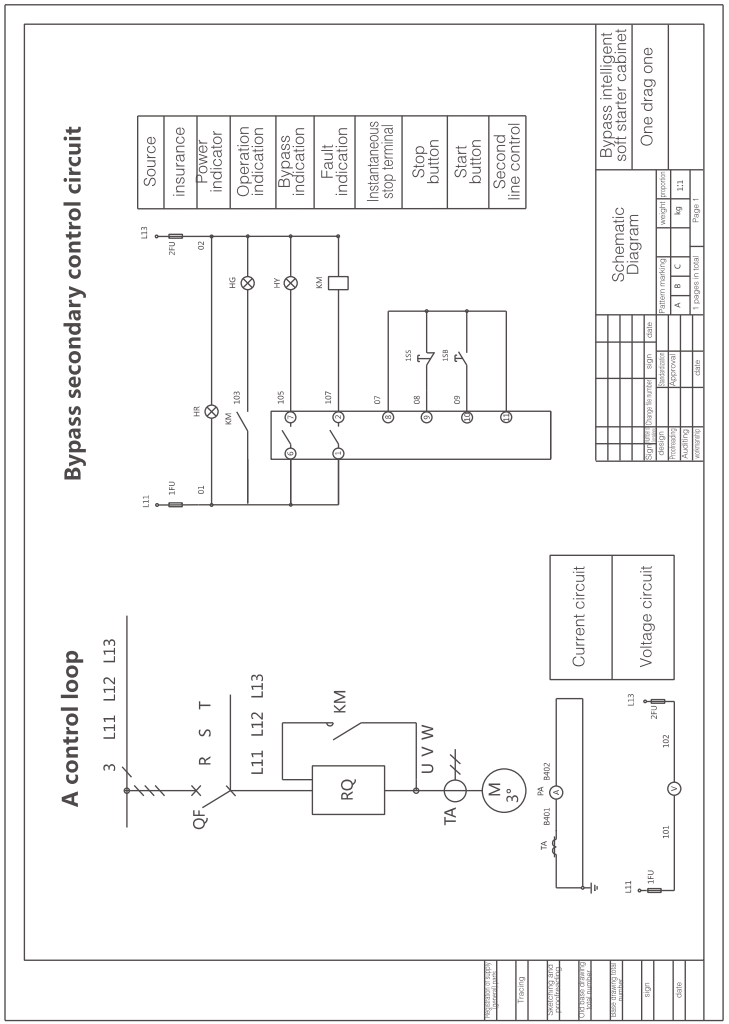
8.3 Common phenomena in the trial run

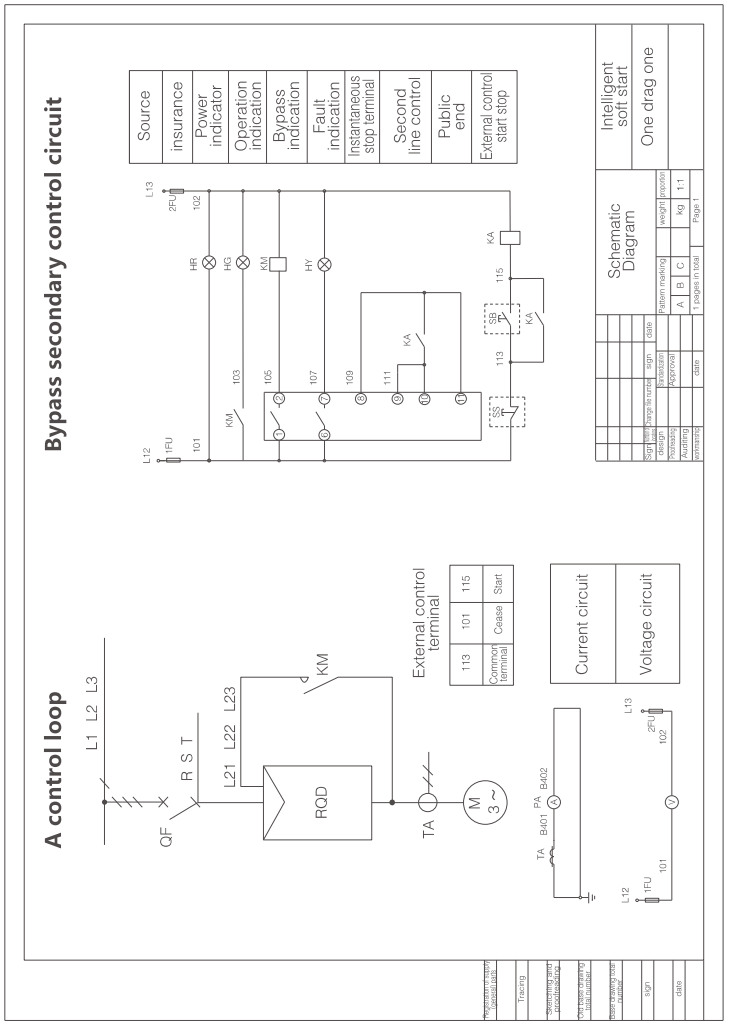
1. The blocking time is long in the initial starting stage. Increase the "starting voltage" in starting mode 1 or 2, and increase the "starting current" in starting mode 3.
The starting process is weak, please increase the "current limit multiple". If the starting current is too high, please reduce the current limit multip le.2. After starting, report the " start failure" protection, please increase the "current limit multiple" or extend the "start time".
3. During the starting process, please confirm whether there is no load connection at the shaft end. If there is no load connection, please determine whether to use the "current ramp start type and set the" current limit multiple " to 2.0, or lower. You can also disappear without adjusting the parameters, connecting the load shock phenomenon.
4. The starting process is too fast, please confirm whether it is light or no load, and if the starting process time can be extended by lowering the "current limiting multiple".

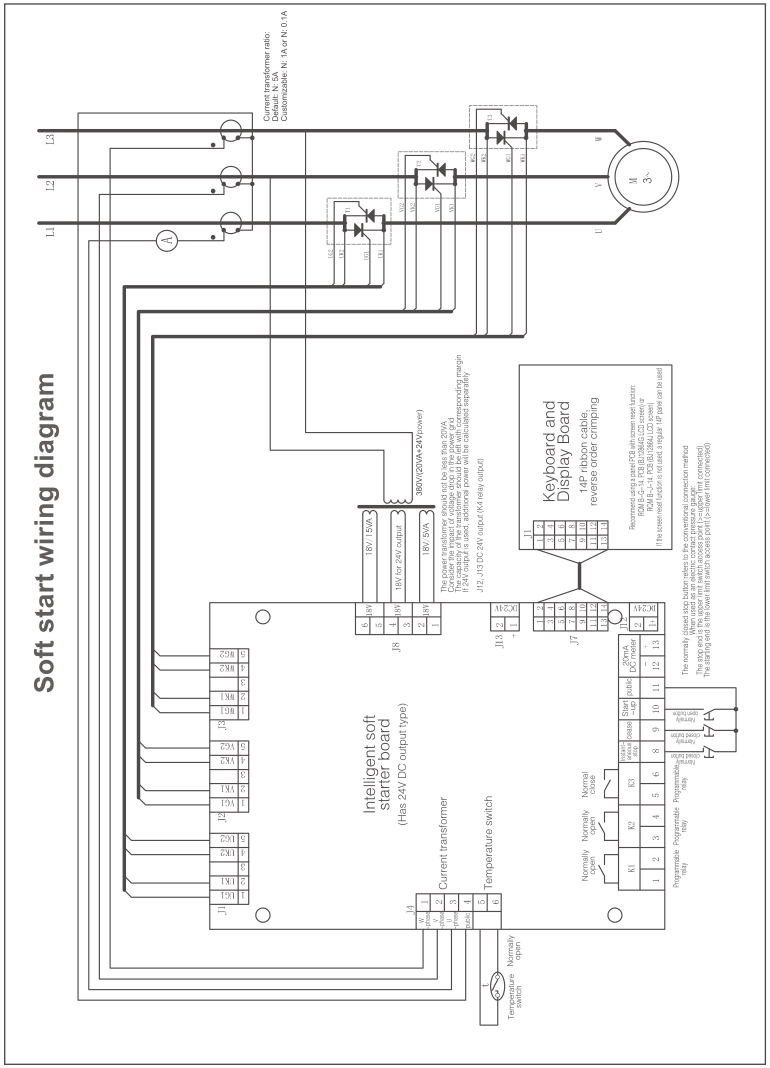
Electrical schematic diagram:

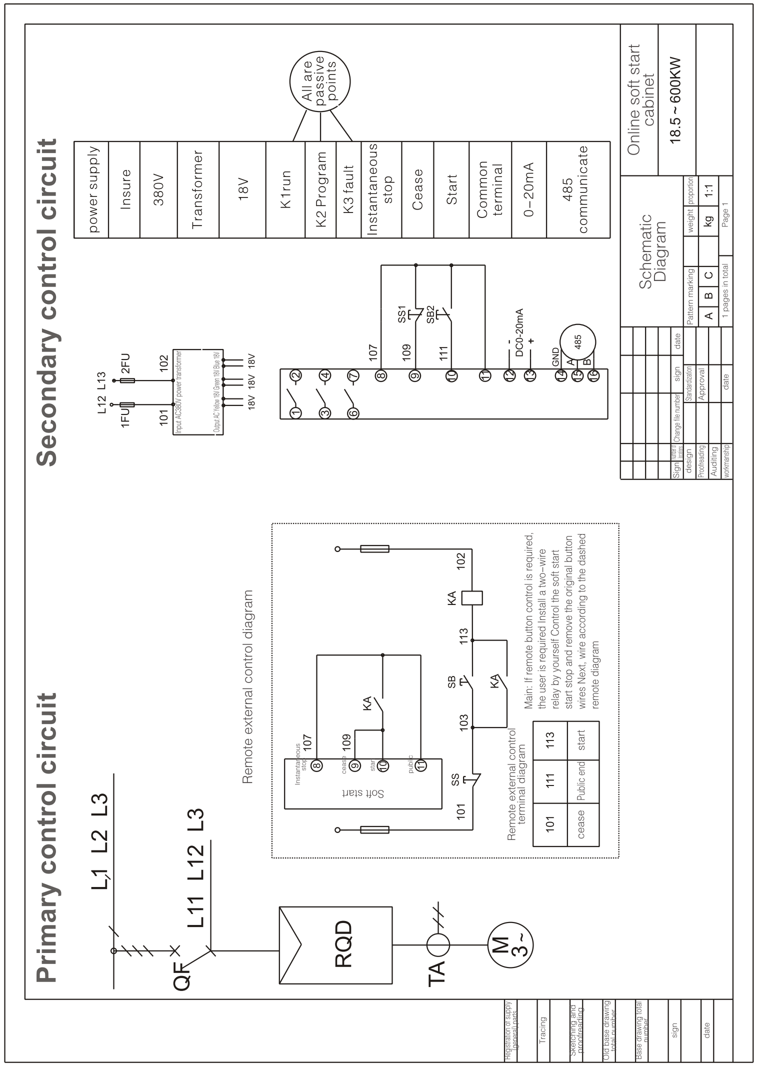





Bypass secondary control circuit
A control loop
3 L11 L12 L13
R S T
L11 L12 L13
QF
RQ
KM
U V W
TA
M
3~
Current circuit
Voltage circuit
Source
insurance
Power indicator
Operation indication
Bypass indication
Fault indication
Instantaneous stop terminal
Stop button
Start button
Second line control
Schematic Diagram
Bypass intelligent soft starter cabinet
One drag one


Bypass secondary control circuit
A control loop
L1 L2 L3
R S T
L21 L22 L23
QF
RQD
KM
TA
M
3~
External control terminal
Common terminal
Cease
Start
Current circuit
Voltage circuit
Source
insurance
Power indicator
Operation indication
Bypass indication
Fault indication
Instantaneous stop terminal
Second line control
Public end
External control start stop
Schematic Diagram
Intelligent soft start
One drag one


Soft start wiring diagram
Intelligent soft starter board
(Has 24V DC output type)
Keyboard and Display Board
14P ribbon cable, reverse order crimping
Current transformer
Temperature switch


Primary control circuit
Secondary control circuit
Remote external control diagram
Remote external control terminal diagram
All are passive points
Online soft start cabinet
18.5～600KW
Schematic Diagram