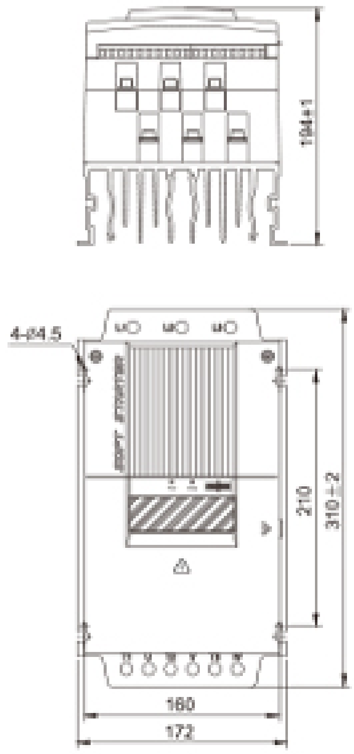
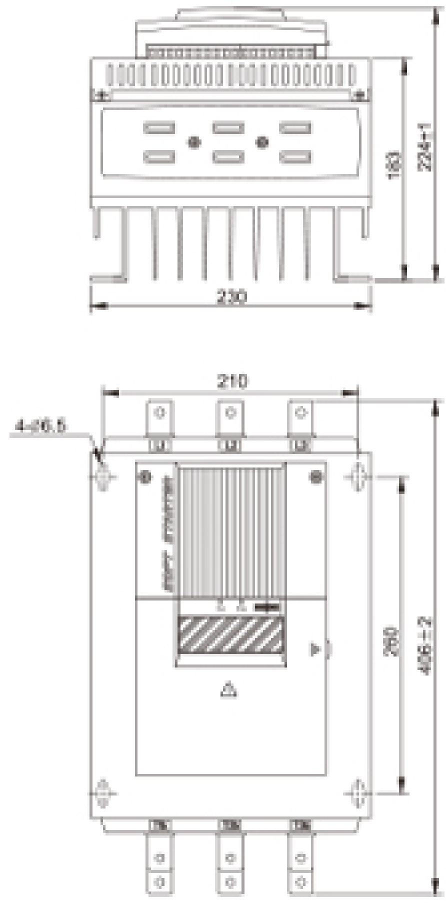
Measurement

HPISD18-60



HPISD75-110



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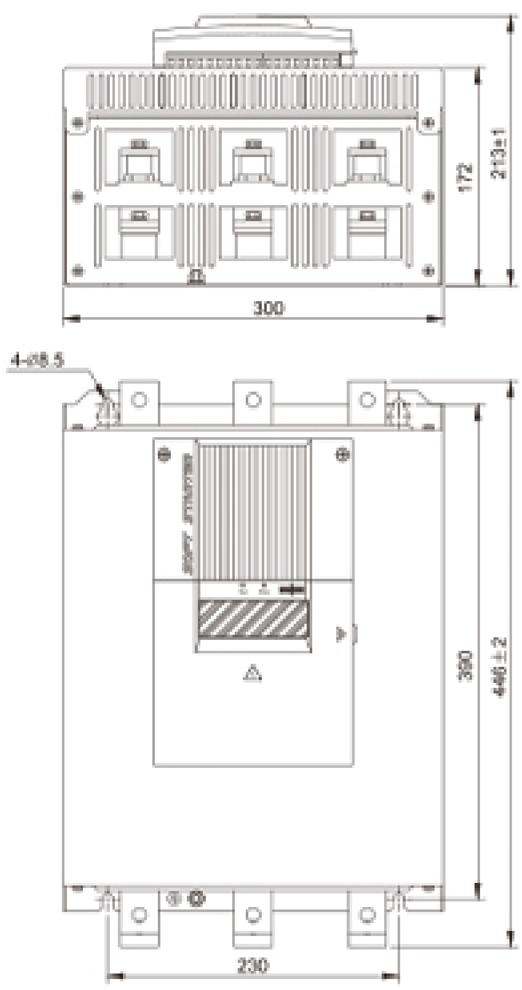
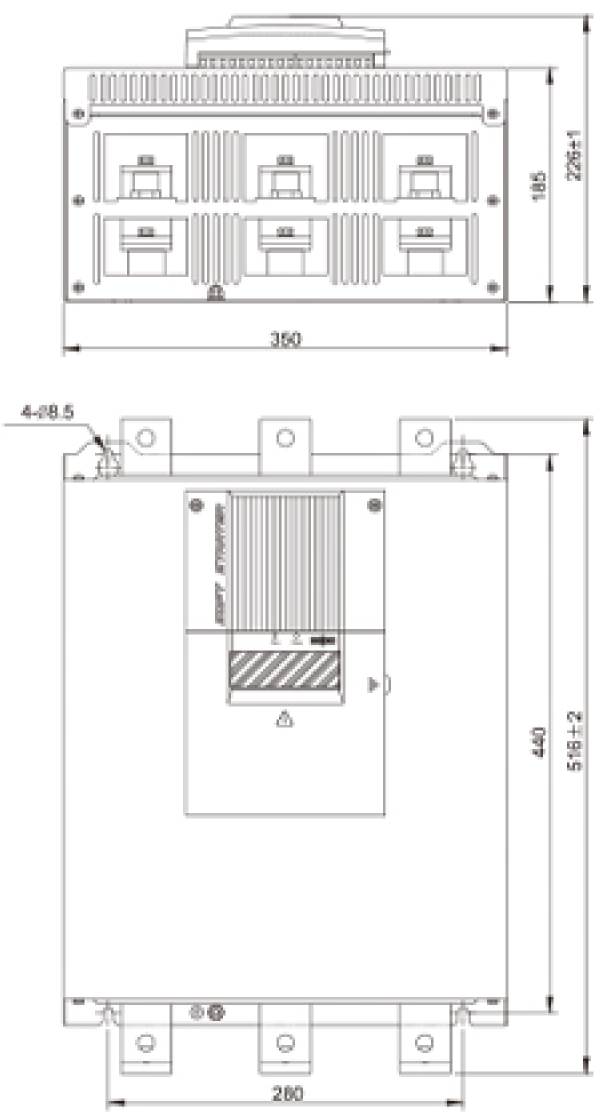


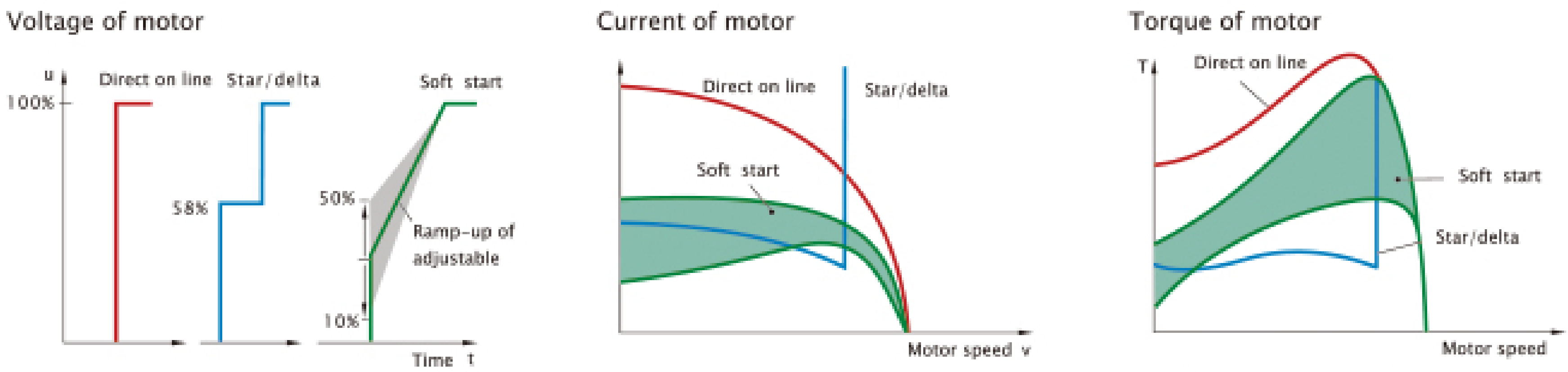
HPISD470-840



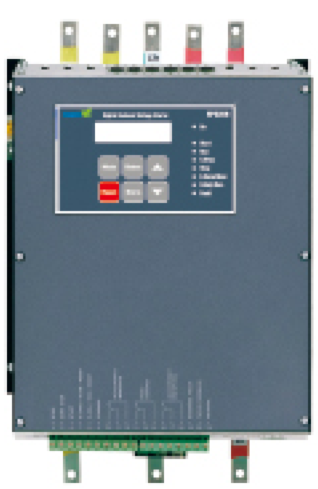
Function

Feature

- Multinational language supported, LCD display, set up the parameter in button type
- RS485 with communication interface modbus/profibus protocol
- Can programme set the signal relay
- Super strong perfect control and protective function
- Can be run online continuously without bypass. High reliability



Performance comparison of direct-on-line,star-delta and soft-start at voltage, current and torque of the motor.



HPS2DN 17...145

HPS2DN 175...250

HPS2DN 310...950

Ordering information

HP S2 DN 210 - B - 2 - 2 - 1 +3
XXX - X - X - X - X +2...

Enterprise code | Design serial code | Control sort | (1)Starter FLC | (2)Main voltage | (3)Control voltage | (4)Control input voltage | (4)Options

(1)Starter FLC: 17、31、44、58、72、85、105、145、170、210、250、310、390、460、580、720、820、950

	Code name	Specify	For
(2)Main Voltage 50/60Hz ±4Hz	A	230VAC	220~240VAC
	B	400VAC	380~420VAC
	C	500VAC	480~520VAC
	D	690VAC	660~690VAC

	Code name	Specify	For
(3)Control Supply Voltage (terminals 1-3) 50/60Hz ±4Hz	1	110VAC	100-120VAC
	2	220VAC	200-240VAC

	Code name	Specify	For
(4)Control Input Voltage (terminals 4-9) 50/60Hz ±4Hz	1	115VAC	110~120VAC
	2	230VAC	220~240VAC

	Code	Introducti on
(5)Required Options For more than one option indicate,for example.1+3 (Comm+Insulation)	0	No options
	1	Communications RS-485 MODBUS
	2	Communications RS-485 PROFIBUS
	3	Analogue card-Thermistor in+Analogue out
	4	Harsh environment treatment (must be factory supplied)
	5	Remoted panel Mountion kit with MMI

Parameters

230-690V Motor Power								
Motor Power (KW)				Size and Type of softstarter				
230V	400V	500V	690V		Main voltage	Control voltage	Control inputs	Functions Options
4	7.5	11	15	HPS2DN17	- X	- X	- X	- X + X...
7.5	15	18.5	25	HPS2DN31	- X	- X	- X	- X + X...
15	22	25	37	HPS2DN44	- X	- X	- X	- X + X...
18.5	30	37	55	HPS2DN58	- X	- X	- X	- X + X...
22	37	45	59	HPS2DN72	- X	- X	- X	- X + X...
25	45	55	75	HPS2DN85	- X	- X	- X	- X + X...
30	55	75	90	HPS2DN105	- X	- X	- X	- X + X...
37	75	90	132	HPS2DN145	- X	- X	- X	- X + X...
45	90	110	160	HPS2DN170	- X	- X	- X	- X + X...
55	110	132	200	HPS2DN210	- X	- X	- X	- X + X...
75	132	160	220	HPS2DN250	- X	- X	- X	- X + X...
90	160	200	257	HPS2DN310	- X	- X	- X	- X + X...
110	200	250	355	HPS2DN390	- X	- X	- X	- X + X...
132	250	315	450	HPS2DN460	- X	- X	- X	- X + X...
160	315	400	560	HPS2DN580	- X	- X	- X	- X + X...
200	400	500	710	HPS2DN720	- X	- X	- X	- X + X...
250	450	560	800	HPS2DN820	- X	- X	- X	- X + X...
280	500	630	850	HPS2DN950	- X	- X	- X	- X + X...

Purchasing guide

For normal duty applications, we recommend the same rated power HPS2DN soft starters. As pump compress or elevator, escalator conveyor belt(short)
For heavy duty applications, we recommend one higher level HPS2DN soft starters. As centrifugal, fan,mill,mixer conveyor belt(long)

Parameters

General information	
Supply voltage	Line to line 230V-690V (to be specified) 10%
Frequency	50/60Hz 4Hz (dual frequency)
Control Supply	110-120V of 220-240V (to be specified)
Control Inputs and Outputs	110-120V of 220-240V (to be specified)
Load	3 phase, 3 wire, squirrel cage induction motor
Operating temperature	0℃ to 50℃
Storage temperature	-20 ℃to 70℃
Maximum starting time	30 seconds
Maximum starts per hour	4 starts per hour at 400% In, Up to60 starts per hour at lower load applications
Operating parameters	
Starter FLC	Starter Full Load Current 17~950 Amp
Motor FLA	Motor Full Load Ampere 50%-100% of starter FLC
Pump control curves	6 field selectable curves preventing over pressure during start and water hammer during stop
Pulse start duration	A pulse of 80% Un for adjustable time 0-1 second, to start high friction loads
Initial voltage	10%-50% Un*(can be extended to 80%Un)
Current limit	100%-400% of Motor FLA* (can be extended to 500%)
Ramp-up time	1-30 seconds (can be extended to 90s*)
Ramp-down time	1-30 seconds (can be extended to 90s*)
Dual adjustments	Secondary start stop characteristics for Initial voltage, current limit, acceleration time deceleration time and motor FLA.
Energy saving	Activated when motor is lightly loaded for extended periods of time
Slow speed torque	Maximum torque produced while motor is operating at 1/6 of nominal speed to a maximum of 30 seconds
Tacho and linear acceleration	12 selectable curves-defines gain control to improve the tacho feedback linearity
Starting from diesel generator	Special starting characteristics become operative via an internal dip switch. (contact terminal 8,for dual adjustment)

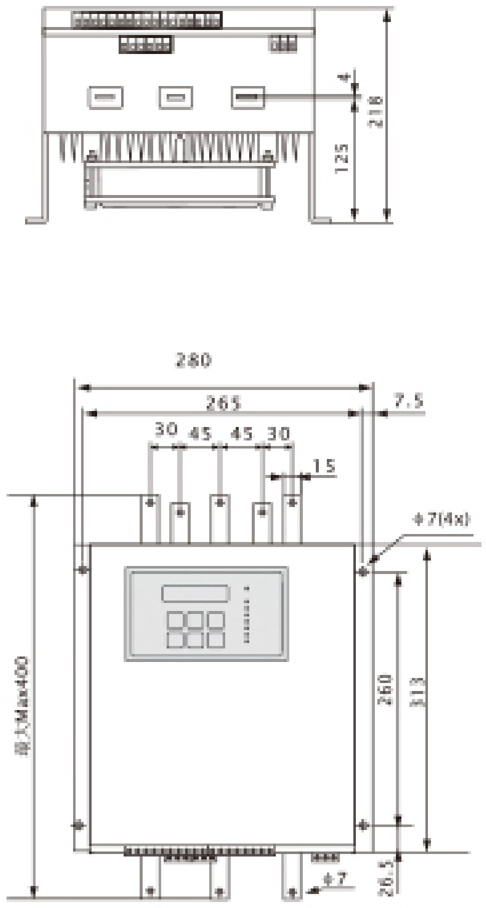
Parameters

Motor protection	
Too many starts	Determines maximum number of starts allowable during Start Period Range1-10starts in start period 1-60minutes
Start inhibit	Prevents starting for a variable period of 1-60 minutes after TOO MANY STARTS is indicated
Long start time (stall protection)	Starter trips if the full motor speed is not reached within the maximum start time of 1-30 seconds*
Electronic fuse (shear pin)	Trips starter in 1 cycle at 850% in during starting and 200%-850% in during running
Electronic overload (I t)	Adjustable between 75%-150% of motor FLA overload curve can be selected by setting trip time at 500% in,1-10 seconds
Under current	Starter trips when current drops below 20%-90% In,time delay 1-40 seconds
Under voltage(**)	Starter trips when mains voltage drops below 120-600V,time delay 1-10 seconds
Over voltage	Starter trips when mains voltage increases above 150-750V,time delay 1-10 seconds
Phase loss,(under/over frequency**)	Starter trips when 1 or 2 phases fail and when frequency is 4Hz of nominal frequency
Phase sequence	Starter trips when phase sequence is incorrect
Long slow speed time	Starter trips if operating at slow speed longer than 30 seconds
Wrong connection	Prevents starting if the motor is incorrectly connected to the starter
Shorted SCR	Prevents starting when one or more SCRs are shorted
Heatsink over temperature	Starter trips when heatsink temperature rises above 85
External fault	Starter trips when an external contact closes for 2 seconds
Motor insulation (optional)	Alarm level setting 0.2-5M.Trips when motor insulation decreases below 0.2-5M setting. The thyristors must be protected against short circuit
Thyristor Protection	Metal Oxide Varistors(MOVs) and snubber circuits
Control	
Analogue I/O	Input of motor overheat signal Ouput of analog signals of motor current
Displays	LCD in 4 selectable languages and 8 LEDs
Keypad	6 clearly defined keys for easy setting
Aux.contact-immediate	1 C/O,8A,250V A.C,2000VA(delay 0-60 seconds)
Aux.contact-end of acceleration	1 C/O,8A,250V A.C,2000VA(delay 0-120 seconds)
Fault contact	1 C/O,8A,250V A.C,2000VA(selectable as trip or trip fail safe)
Insulation alarm contact (optional)	1 C/O,8A,250V A.C,2000VA
Communication (optional)	RS 485 with Modbus/Profibus protocol for full control and supervision

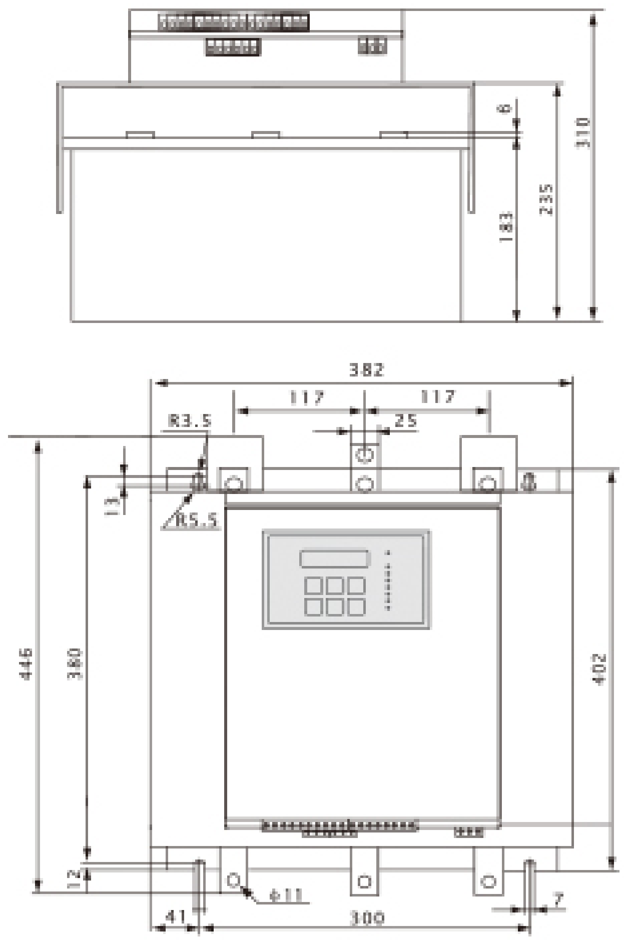
*Special settings (consult works)
**With optional Auto Reset

Measurement

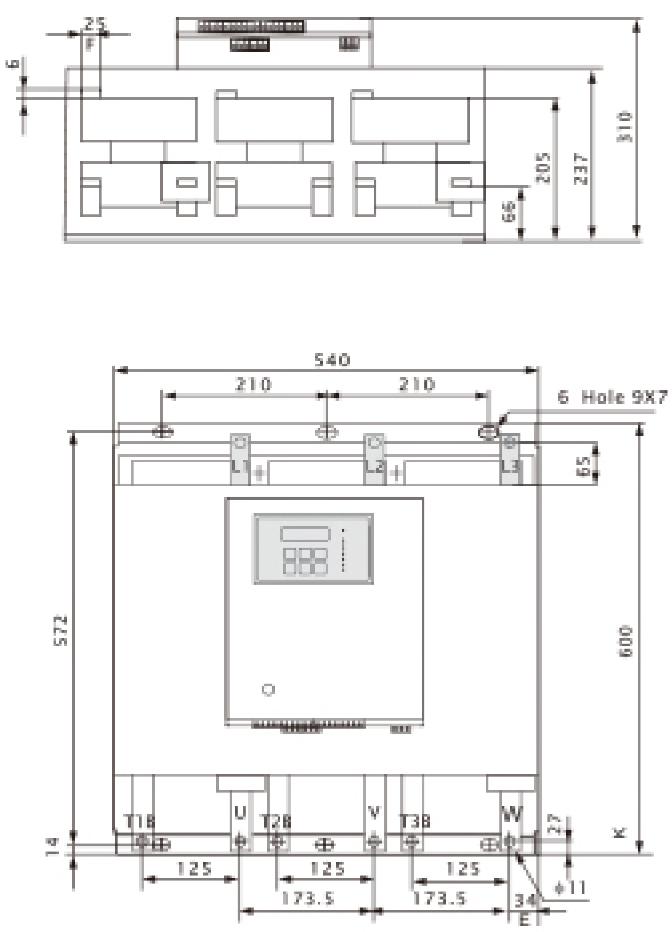
HPS2DN17···145



HPS2DN175···250



HPS2DN310···950



Note:

Model	Measurement E	F	K
HPS2 DN300...470	34	25	65
HPS2 DN570...720	41.5	40	62.5
HPS2 DN820...950	46.5	50	62.5

The tolerance of ummarked measurement should be according to GB/T1804-m

HPMV-DN ■■ | ■■ - ■■ - ■■

Enterprise code | (1)Main voltage | (2)Rated current | (3)Control supply voltage | (4)Options

(1)Main voltage	Nominal value	For
	2.3KV	+10%-15%
	3.3KV	+10%-15%
	4.16KV	+10%-15%
	6.0KV	+10%-15%
	6.6KV	+10%-15%
	10KV	+10%-15%
(2)Rated current	60A---1450A	
(3)Control supply voltage	Nominal value	For
Default 220VAC	110VAC	100~120VAC
	220VAC	200~240VAC
	110VDC	100~120VDC
	220VDC	200~240VDC
(4)Options Note:For more than one option indicate for example 1+3	Code	Introducti on
	1	RS485-Modbus RTU
	2	RS485-Profibus DP
	3	Analogue output
	4	Touch screen

Features

Products standard

- Q/HP 001-2009 HPMV series middle and High voltage AC motor solid soft starter equipment.
- IEC 62271-200:2003 3.6 40.5KV AC metal close switch equipment and control equipment.
- IEC 60694:1996 The standard public technical requirements of the high voltage switch equipment and control equipment.
- IEC 60146-1-1:1991 the basic requirements provisions of the semiconductor convertor.
- IEC 60947-4-2:2002 low voltage switchgear set and control equipments. part 4-2:contactor and motor starter, AC semiconductor motor control equipments.

Motor & Starter Protection

- Too many starts & start inhibit time
- Long start time (Stall protection)
- Electronic overload with selectable curves
- Electronic shear-pin*
- Undercurrent*
- Unbalanced current*
- Ground fault current*
- Phase loss
- Phase sequence and under/over frequency
- Under voltage*
- Over voltage*
- External faults(2separated inputs)
- Shorted SCR& Wrong connection
- Starter over temperature
- Power on without start signal
- Open Bypass contactor

Function

Feature

- Advanced high frequency isolation and transfer technology support perfect working power for the components of high voltage system.
- Static and dynamic average voltage technology support reliable running of main components of serial connected high voltage.
- Advanced wireless voltage testing technology. Electric EVT technology, stable signal communication, no interference orremove.
- Six starting curves, to suit different kinds of motors and applications. Automatically adjust the rotate speed of motors, smooth and stable accelerate curve, reduce electrical and mechanical impact.
- Six stopping curves, to suit for different kinds of loadings, with the function of terminal torque adjustment. High effective to against pump's water-hammer while stopping period.
- Smooth stepless acceleration and deceleration.
- Pulse start, increase starting torque.
- Rich protection functions which includes over voltage, under voltage, over loading, under current, phase loss, phase unbalance, phase sequence wrong, grounding, over temperature of SCR, over starting time, starting cycle limit, SCR faulty protections and so on.
- Low voltage testing method. To test the full functions and quality of HPMV-DN soft starter by a low voltage motor. Support a complete performance report and parameter record.
- KYN24A-12 housing, raw material is made by imported aluminized zincograph. With the advantage of anti-corrosion, oxidation resistance, nice visual, high protection level. And easily to connect with other standard KYN28A-12 middle cabinets.
- For generator supporting conditions, special control program can guarantee a successful starting on unstable voltage, current, frequency, as well 1.35 times of motors capacity.
- Dual parameter input: for dual speed motors and power net and generator supporting electricity conditions, and for one drive two motors conditions, soft starter can input two instructions of starting and stopping through required parameter by PLC.
- Friendly control menu and record index. Touch screen(optional).
- The RS485 communication with Modbus or Profibus protocol enables full control isolation testing function. (Optional)

Technical performance

- Control method: pulse start, voltage ramp, constant current,rotation speed (optional).
- SoftStart/SoftStop method: Soft Start, direct start, soft stop,free stop.
- Control panel: on cabinet, remoted control, control centre(o-Ptional)
- Communication: RS485,MODBUS, PROFIBUS
- Analogue output: motor working current, 0~10v or 4~20mA.
- Initial voltage: 10% 50%Un(can be extended to 5%~80%Un).
- Current limit: 100% 400%In (can be extended to 500%).
- Soft start, soft stop time: 1~30s (can be extended to 90s).
- current, 70%~700%In, 0 10 .
- Pulse start: adjustable time: ~ sparameter setting:
  1) control panel,
  2)communication
- Parameter setting: 1) control panel, 2)communication
- LCD display: working current, start times, running time, faulty message, etc. Optional languages: English, Chinese, Russian, German, French, Spanish.
- Noise: <80db
- starting interval time: No less than 30 mins if temperature >40 , starting current> 400%In. At least 15mins for better condition.
- cooling: natural cooling.
- Operating power: AC220V/50Hz 600VA.
- Main circuit power frequency endurance:42KV/MIN.
- Protection level:IP42 (ip54 optional).

Ordering and guide

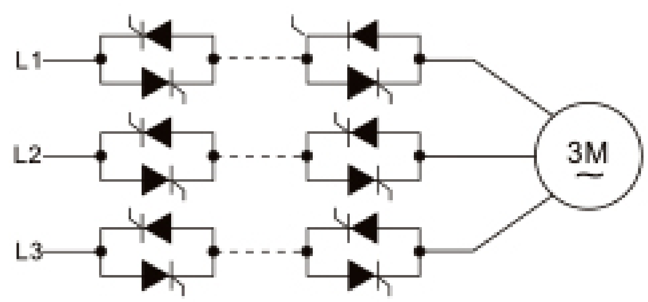
Model Code	Current (A)	Power (KW)	Measurement WxDxH(mm)
Voltage: 2.3 KV			
HPMV-DN-2.3-60	60	200	1000x1300x2300
HPMV-DN-2.3-100	100	330	1000x1300x2300
HPMV-DN-2.3-150	150	495	1000x1300x2300
HPMV-DN-2.3-200	200	660	1000x1300x2300
HPMV-DN-2.3-300	300	990	1000x1200x2300
HPMV-DN-2.3-400	400	1330	1200x1300x2300
HPMV-DN-2.3-500	500	1660	1200x1300x2300
HPMV-DN-2.3-600	600	2000	3300x1500x2400
HPMV-DN-2.3-800	800	2660	3300x1500x2400
HPMV-DN-2.3-1000	1000	3330	4250x1500x2400
Voltage: 4.16 KV			
HPMV-DN-4.16-60	60	360	1000x1300x2300
HPMV-DN-4.16-100	100	600	1000x1300x2300
HPMV-DN-4.16-150	150	900	1000x1300x2300
HPMV-DN-4.16-200	200	1200	1000x1300x2300
HPMV-DN-4.16-300	300	1800	1000x1300x2300
HPMV-DN-4.16-400	400	2410	1200x1300x2300
HPMV-DN-4.16-500	500	3010	1200x1300x2300
HPMV-DN-4.16-600	600	3610	3300x1500x2400
HPMV-DN-4.16-800	800	4820	3300x1500x2400
HPMV-DN-4.16-1000	1000	6030	4250x1500x2400
Voltage: 6.6 KV			
HPMV-DN-6.6-60	60	570	1000x1300x2300
HPMV-DN-6.6-100	100	950	1000x1300x2300
HPMV-DN-6.6-150	150	1420	1000x1300x2300
HPMV-DN-6.6-200	200	1900	1000x1300x2300
HPMV-DN-6.6-300	300	2870	1000x1300x2300
HPMV-DN-6.6-400	400	3820	1200x1300x2300
HPMV-DN-6.6-500	500	4780	1200x1300x2300
HPMV-DN-6.6-600	600	5736	3300x1500x2400
HPMV-DN-6.6-800	800	7650	3300x1500x2400
HPMV-DN-6.6-1000	1000	9570	4250x1500x2400
HPMV-DN-6.6-1200	1200	11500	4250x1500x2400
HPMV-DN-6.6-1400	1400	14000	4250x1500x2400
Voltage: 11 KV			
HPMV-DN-11-60	60	950	1000x1300x2300
HPMV-DN-11-100	100	1580	1000x1300x2300
HPMV-DN-11-150	150	2370	1000x1300x2300
HPMV-DN-11-200	200	3160	1000x1300x2300
HPMV-DN-11-300	300	4800	1000x1300x2300
HPMV-DN-11-400	400	6400	1200x1300x2300
HPMV-DN-11-500	500	8000	1200x1300x2300
HPMV-DN-11-600	600	9600	3300x1600x2400
HPMV-DN-11-800	800	12800	3300x1600x2400
HPMV-DN-11-1000	1000	16000	4250x1600x2400
HPMV-DN-11-1200	1200	19200	4250x1600x2400
HPMV-DN-11-1400	1400	22400	4250x1600x2400

Model Code	Current (A)	Power (KW)	Measurement WxDxH(mm)
Voltage: 3.3 KV			
HPMV-DN-3.3-60	60	250	1000x1300x2300
HPMV-DN-3.3-100	100	460	1000x1300x2300
HPMV-DN-3.3-150	150	710	1000x1300x2300
HPMV-DN-3.3-200	200	860	1000x1300x2300
HPMV-DN-3.3-300	300	1350	1000x1200x2300
HPMV-DN-3.3-400	400	1700	1200x1300x2300
HPMV-DN-3.3-500	500	2500	1200x1300x2300
HPMV-DN-3.3-600	600	2900	3300x1500x2400
HPMV-DN-3.3-800	800	3450	3300x1500x2400
HPMV-DN-3.3-1000	1000	4300	4250x1500x2400
HPMV-DN-3.3-1200	1200	5100	4250x1500x2400
HPMV-DN-3.3-1400	1400	6100	4250x1500x2400
Voltage: 6.0 KV			
HPMV-DN-6.0-60	60	520	1000x1300x2300
HPMV-DN-6.0-100	100	950	1000x1300x2300
HPMV-DN-6.0-150	150	1290	1000x1300x2300
HPMV-DN-6.0-200	200	1750	1000x1300x2300
HPMV-DN-6.0-300	300	2800	1000x1300x2300
HPMV-DN-6.0-400	400	3500	1200x1300x2300
HPMV-DN-6.0-500	500	4400	1200x1300x2300
HPMV-DN-6.0-600	600	5250	3300x1500x2400
HPMV-DN-6.0-800	800	7050	3300x1500x2400
HPMV-DN-6.0-1000	1000	8800	4250x1500x2400
HPMV-DN-6.0-1250	1250	10000	4250x1500x2400
HPMV-DN-6.0-1400	1400	12000	4250x1500x2400
Voltage: 10 KV			
HPMV-DN-10-60	60	880	1000x1300x2300
HPMV-DN-10-100	100	1600	1000x1300x2300
HPMV-DN-10-150	150	2150	1000x1300x2300
HPMV-DN-10-200	200	2900	1000x1300x2300
HPMV-DN-10-300	300	4700	1000x1300x2300
HPMV-DN-10-400	400	5880	1200x1300x2300
HPMV-DN-10-500	500	7300	1200x1300x2300
HPMV-DN-10-600	600	8800	3300x1600x2400
HPMV-DN-10-800	800	11750	3300x1600x2400
HPMV-DN-10-1000	1000	14500	4250x1600x2400
HPMV-DN-10-1200	1200	18200	4250x1600x2400
HPMV-DN-10-1400	1400	20300	4250x1600x2400
Voltage: 13.8 KV			
HPMV-DN-13.8-60	60	1200	
HPMV-DN-13.8-100	100	2000	
HPMV-DN-13.8-150	150	3000	
HPMV-DN-13.8-200	200	4000	
HPMV-DN-13.8-300	300	6000	
HPMV-DN-13.8-400	400	8000	
HPMV-DN-13.8-500	500	10000	
HPMV-DN-13.8-600	600	12000	
HPMV-DN-13.8-800	800	16000	
HPMV-DN-13.8-1000	1000	20000	
HPMV-DN-13.8-1200	1200	24000	
HPMV-DN-13.8-1400	1400	28000	

Technical Information

The Basic Principle of Solid Soft Starter

- Utilizing modern microelectronic technology controls the phase position of thyristor conduction angle, realizes to rise gradually the motor terminal voltage tothe system power supply voltage value from an initial setting value. It can optimize the start current and start torque according to driving condition.

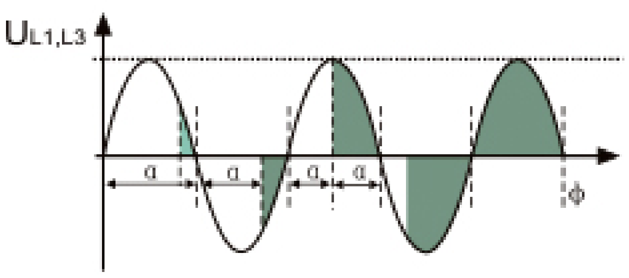


Medium Voltage Solid State Soft Starter Basic Principle Diagram

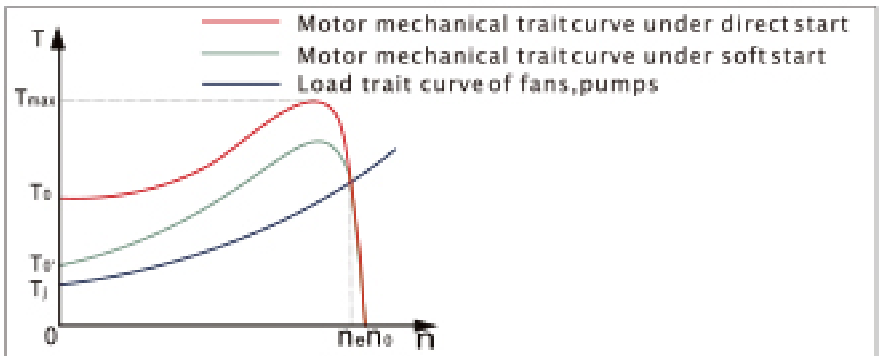
- Direct start under full voltage, it will come to a big start torqueTo,which results in a big mechanical force. Soft start can control Toto a proper range(as long as the start torque To' is more than the static resistance torque of the load systemTj),so that the motor can accelerate gradually, remaining the torque of motor more than the load torque until reaching the rated revolution. After that,the system reach balance and the start ends. The process of motors comply with the following equation,

$$T_e \quad T_L \quad \frac{GD^2}{375}\frac{dn}{dt}$$

Te—Motor torque, TL—Load resistance torque, under a given mechanical system,soft start can output different stat voltage curves, also different Te curves, thus go to a controllable start process.



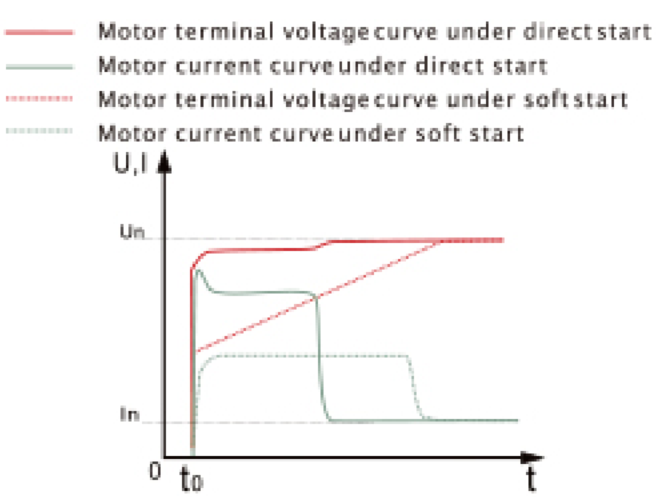
Phase position control for thyristors



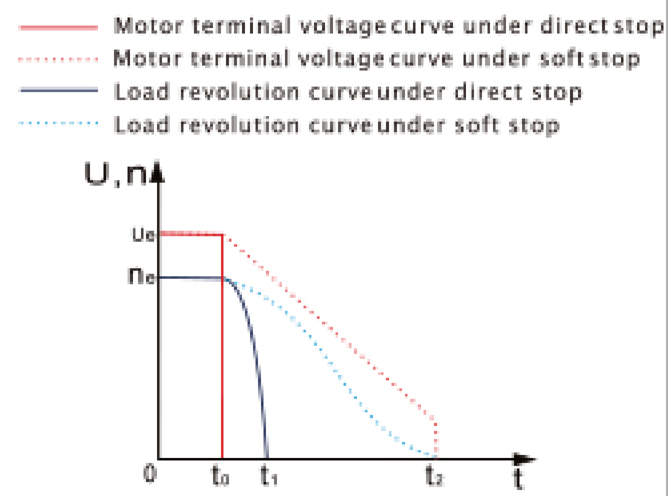
Featured mechanical trait curves

- Direct start under full voltage, the start current can over five times of the rated current.Soft start can reduce to 2~4 times of the rated current.

- Direct start under full voltage, the start current can over five times of the rated current.Soft start can reduce to 2~4 times of the rated current.

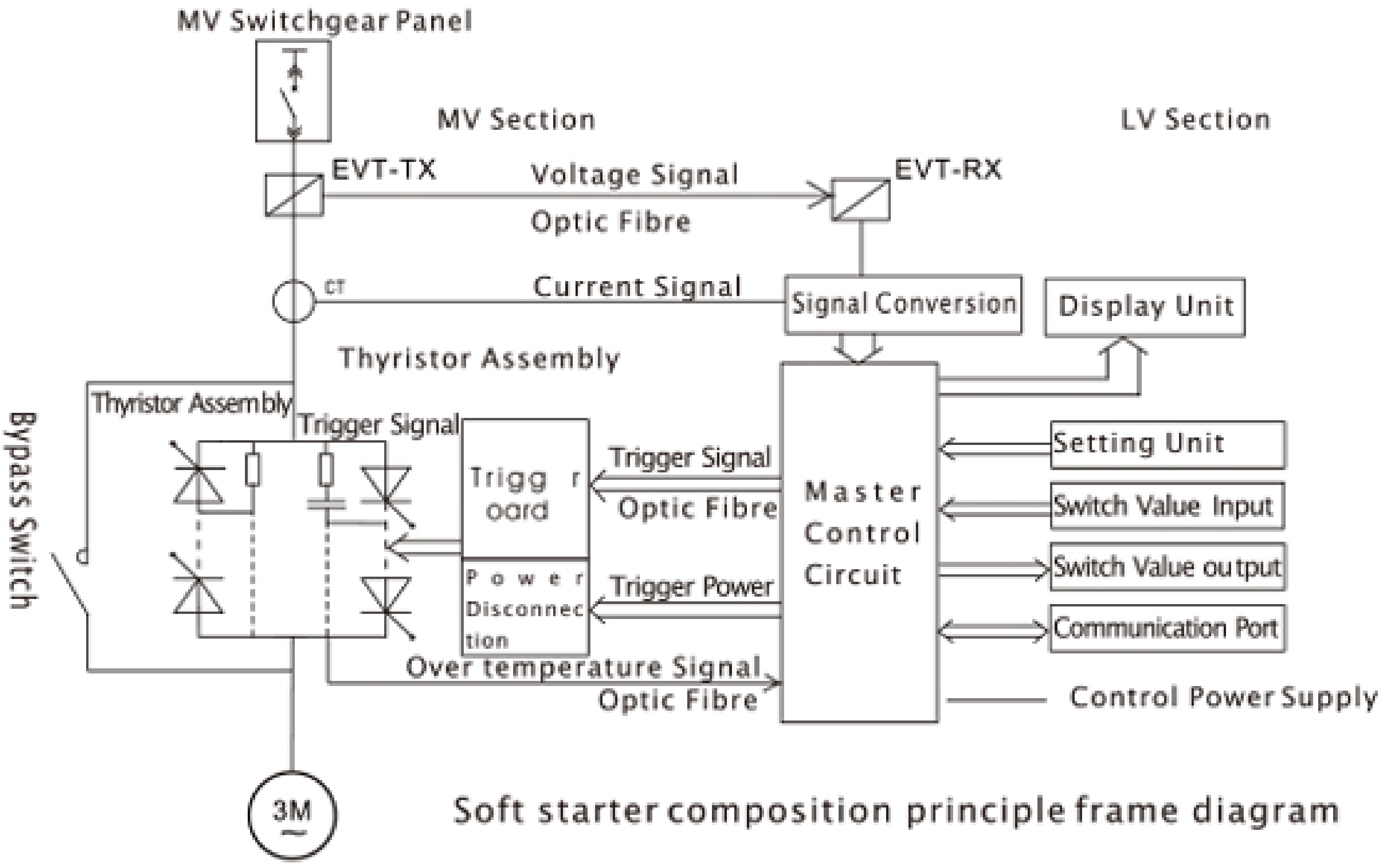


Change curves of voltage and current at start



Change curves of voltage and speed under featured soft stop

Technical Information

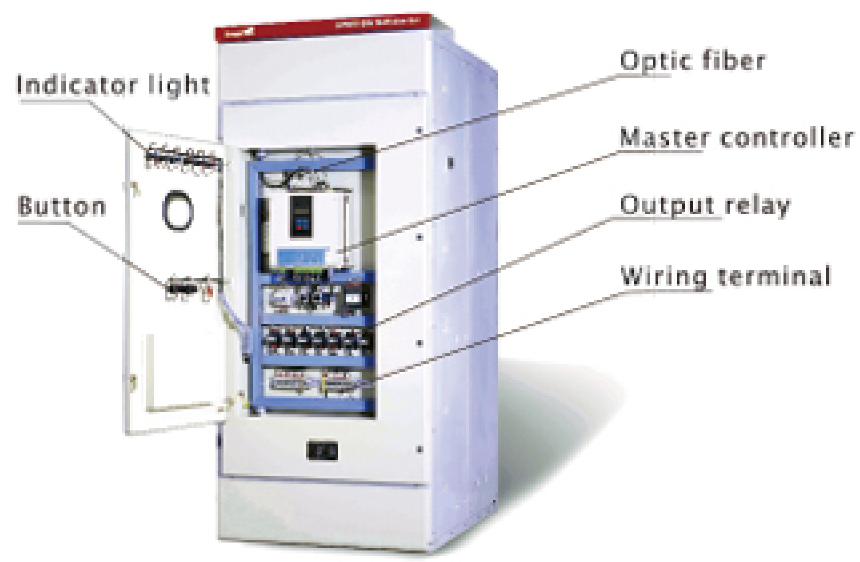


Soft starter composition principle frame diagram

HPMV Soft Starter Composition

- Soft starter is composed of two sections.
  MV Section: MV spare parts are mounted in the MV capsule. Including MV thyristorassembly,EVT-TX(voltage signal sender),CT,triggerboard,bypass switch.
  LV Section: LV spare parts are mounted in the LV capsule,including master control circuit,EVT-RX (voltage signal receiver), signal converter, setting unit, input and output unit, power supply.

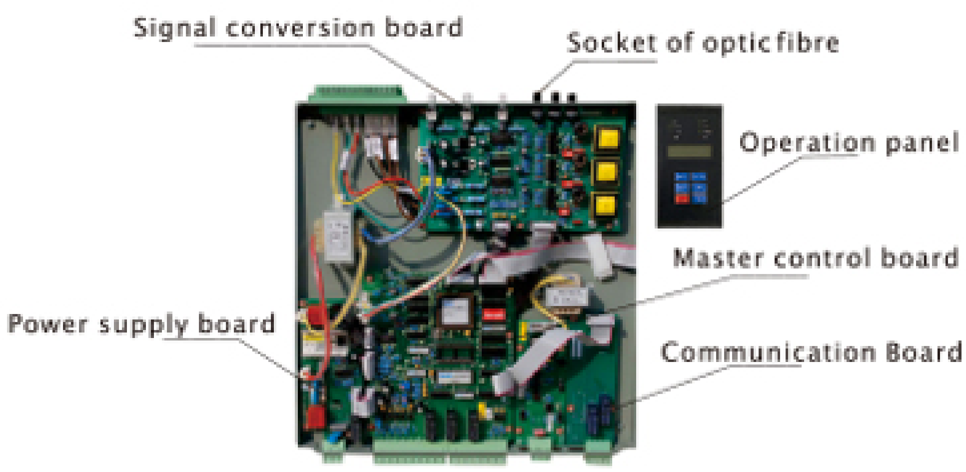
- The MV capsule is located at the back of the panel. After opening the front door and the door of LV capsule, you can see the MV spare parts through a transparent organic glass plate. The back door is fixed by screws. After loosing the screws and opening the back door, the MV spare parts can be seen.



Opened Low voltage capsule

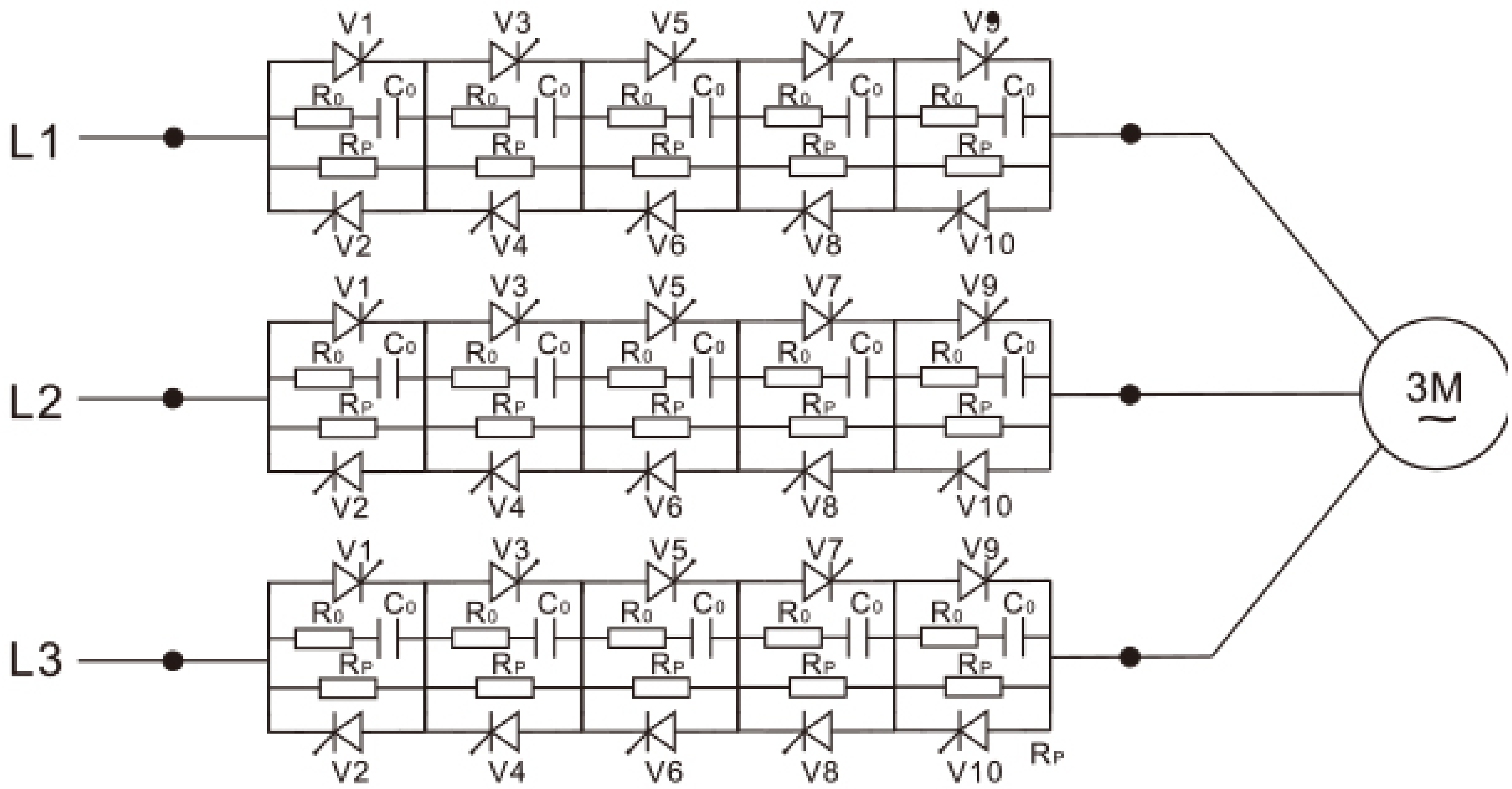
Low Voltage Capsule

- The LV capsule is in the front of the panel. The LV capsule can be seen after opening the front door. The LV capsule has been disconnected safely withthe MV capsule through a certain safe way. During testing for MV operation,the door of LV capsule can be opened. It is forbidden of opening the door of LV capsule when running!



Master control room

Technical Information



The quantity of thyristor on each
cascaded is different depending on voltage grade.

Control panel

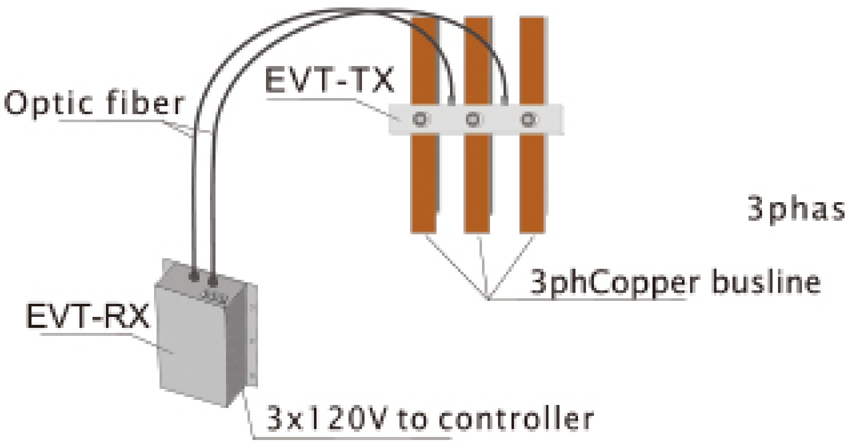
- HPMV-DN control panel provides simple and easy operating, as well as convenient monitor and reading of S/S status. We provides several parameter set for different motor applications. Meanwhile, the parameter could be changed according to customers' particular request.

The major feature:

- LCD-display
- Double line display
- Language: Chinese, English, Russian, German, French, Spanish.
- 8 reading status
- 6 buttom, menu tools, default value for quick using.

Fig 11 HPMV-DN control panel

Technical Information



Schematic diagram of electronic EVT

Low voltage testing

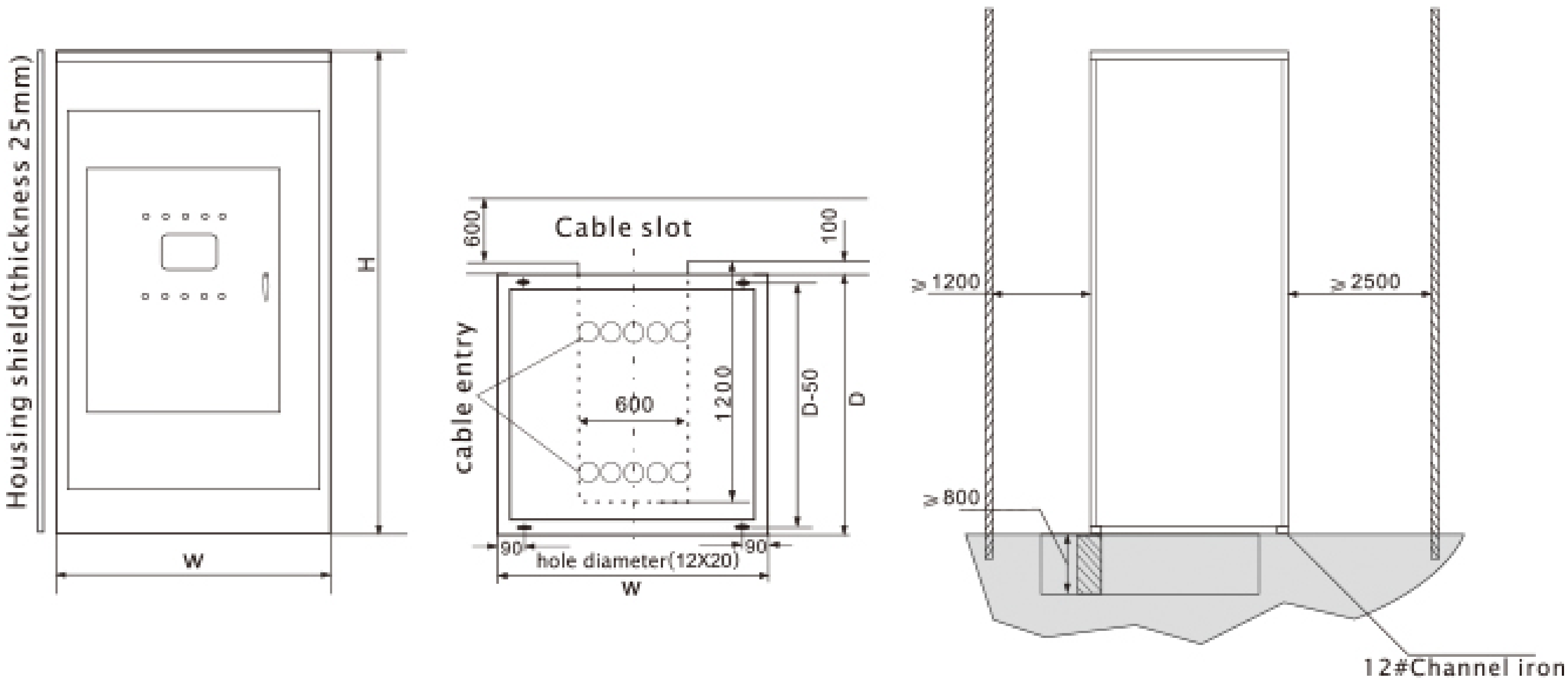
The environmental conditions

The working ambient temperature: -10℃ ~ 50℃

- The storage temperature: -20℃ ~ 70℃
- The working humidity: no higher than 95% at 50℃
- No pollution, explosion or chemical corrosion
- Pollution level: ≤ 3 (optional Lv4)
- Altitude: ≤ 1000m (optional 4000m)
- Vibration: the allowable vibration level is 10Hz~150Hz, vibration acceleration: ≤ 0.5m/s^2 Working frequency fluctuation: ± 5Hz, ± 1% within1sec

Products Model & Ordering

Dimension and installation



The explanation of housing and installation

- The default cable installation is bottom entry and bottom exit. Make sure there is sufficient space for cables under cabinet.
- Optionally, the cabinet could enhance a side board for each side. The thickness is 25mm.
- The door of low votlage capsule will open from right side.
- The default colour of major cabinet is MB2071(RAL7032)
- Special request is negotiable.

Ordering information and sample

- According to motor nameplate, we need to collect the information of motor and need to know the motor loading before ordering.
- If the order includes extra information, such as in-line cabinet or drawing, please provide us.

Ordering sample:

- Motor model: TMW2600-10-10
- Rated motor power: 2600kW
- Rated motor voltage: 10kV
- Rated motor current: 179A
- Motor loading: compressor
- Starting method: normal
- Soft starter: HPMV-DN-10-200-1
- Quantity: 2
- Special request: Side board required.

Protection Function

1. phase loss protection When any phase lack, tripping protection	🔴	🟢	🟠
2. Phase sequence protection When the phase sequence connection errors, tripping protection	🔴	🟢	🟠
3. Connection errors protection When the motor starter haven`t been or internal open circuit, tripping protection	🔴	🟢	🟠
4. Over voltage protection Main voltage up to more than 110-125% of the rated voltage, protection function delay 1 to 30 s (adjustable), tripping protection	🔴	🟢	🟠
5. Under voltage protection When the grid is less than 65% rated voltage, the time delay 1-10 s (set), tripping protection	🔴	🟢	🟠
6. Over current protection 5 times the rated current 1-10 s disconnect (configurable), 8.5 times the rated current, 1 cycle disconnect	🔴	🟢	🟠
7. Overload protection Run, 110-150% of the rated current, the cumulative heat load overload, 1-10 s disconnect (set)	🟢		
8. Over current protection Run.when the main current dropped to less than 20% rated current (set), 1-40 seconds time delay(set),trip protection	🟢		
9. Unbalanced current protection Main circuit current balances not exceed set numerical adjustable (10-100%), delayed action time (1-60 s adjustable), after starter trip protection	🔴	🟢	🟠
10.The grounding current protection When the grounding current is more than setting value (10-100% is adjustable), time delay of time (1-60 seconds is adjustable), starter trip protection	🔴	🟢	🟠
11.Thermal protection When thyristor radiator temperature over 85 degrees, tripping protection	🔴	🟢	🟠
12.Thyristor short circuit protection Any one (or more) thyristor short circuit, tripping protection	🔴		🟠
13.Starter timeout protection In setting the maximum starting time, the motor still not reach full speed, the tripping protection	🔴		
14. Starting intervalAfter The "starting frequency" instructions, banned starting time (set) in 1-60 minutes, limit the restart	🔴		
15.The bypass fault protection After the motor starting acceleration cannot switch to bypass, tripping protection	🟢		
16.The external fault protection Can through the dry contact input external fault signal trip protection	🔴	🟢	🟠

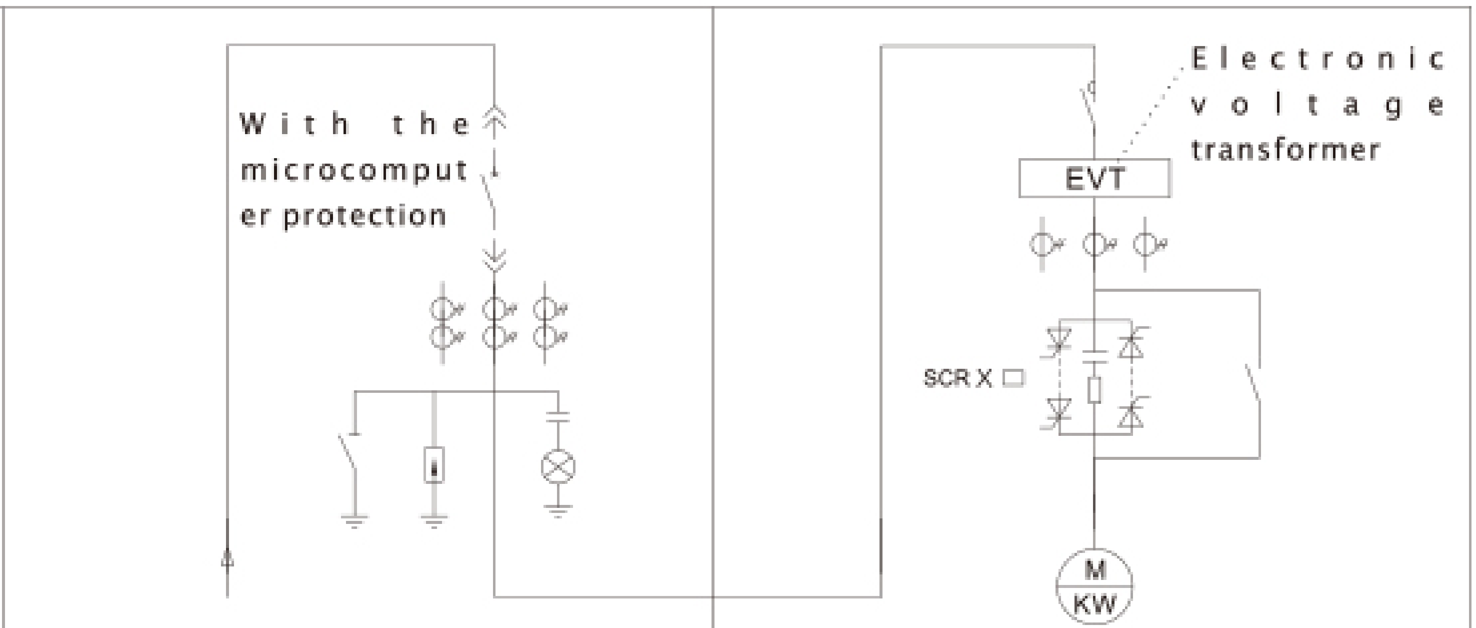
Note : 🔴 Start effectively 🟢 Run effectively 🟠 Soft stop effectively

Typical Drawing

Single line diagram

□KV
Schemes one:
Main contactor to standard schemes
one drive one primary scheme

Medium & high voltage ac motor solid soft starter



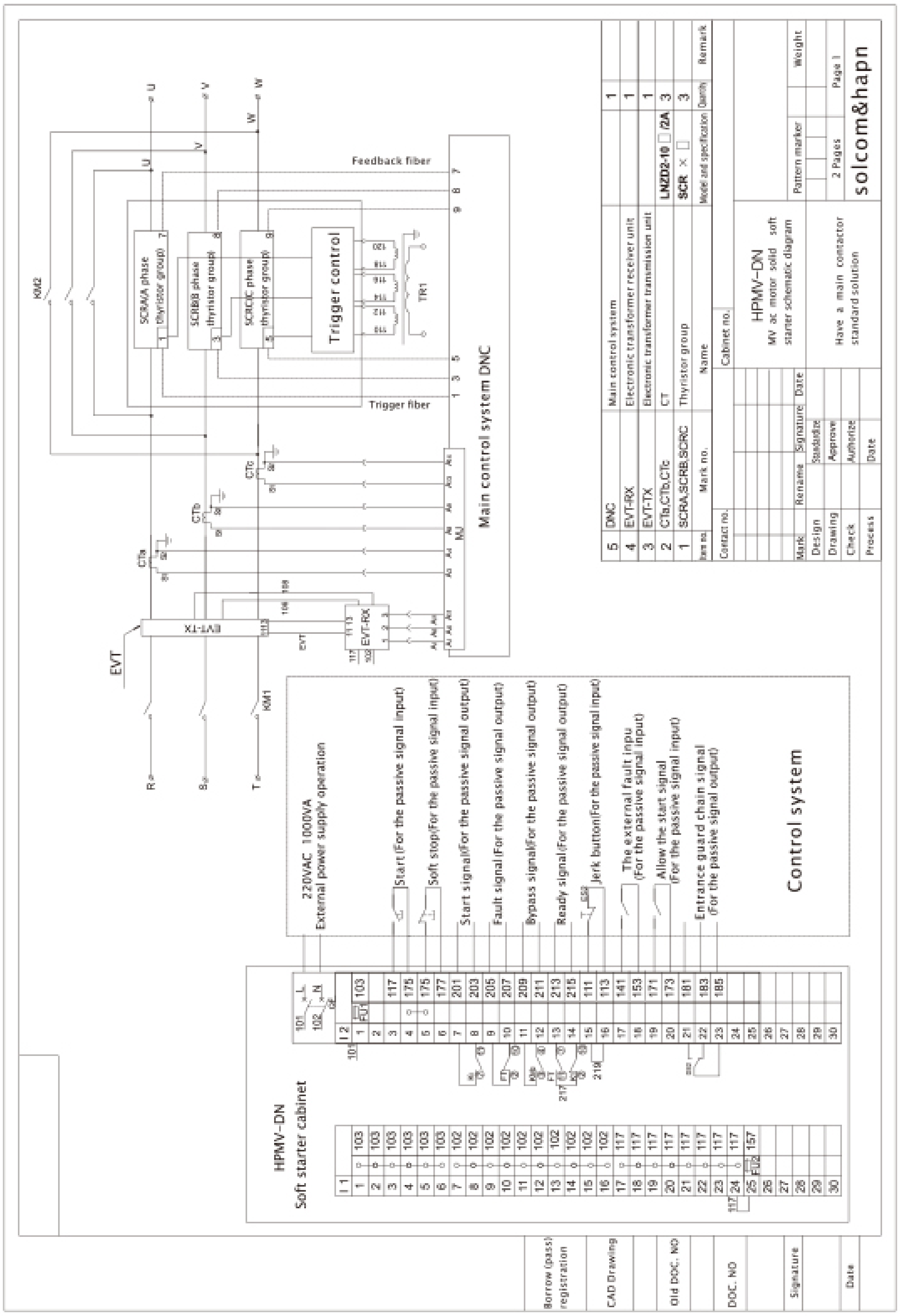
Model		AH1	AH2
Model		KYN28A-12	HPMV-DN-□-□
Name		High voltage switch cabinet	High voltage solid state soft starter cabinet
Dimension (W*D*H)		800 × 1300(1500) × 2300	1000 × 1300(1500) × 2300
Main component	Vacuum circuit breaker	VS1-12/□-□AC220V Handcart. Type	
	Thyristor	lightning arrester：HY5WS-17/50	SCR × □ 6500 Thyristor for ABB products
	CT	LZZBJ9-10 0.5/10P15□/□	LNZD2-10□/2
	Electronic voltage transformer	Earth switch：JN15-12	EVT-TX EVT-RX
	Microcomputer protector	NRM-512 AC220V	Main control system：HPMV-DNC
	Vacuum contactor		CKG-□/□ AC220V

Note: high voltage switchgear by the user to choose, customers can bring your own or buy separately

The supply of soft starter is limited to solid state soft starter itself (400A and below will with the build-in bypass switch)
Such as the need to form a complete set of switch cabinet and the bypass switch cabinet must be declared in order

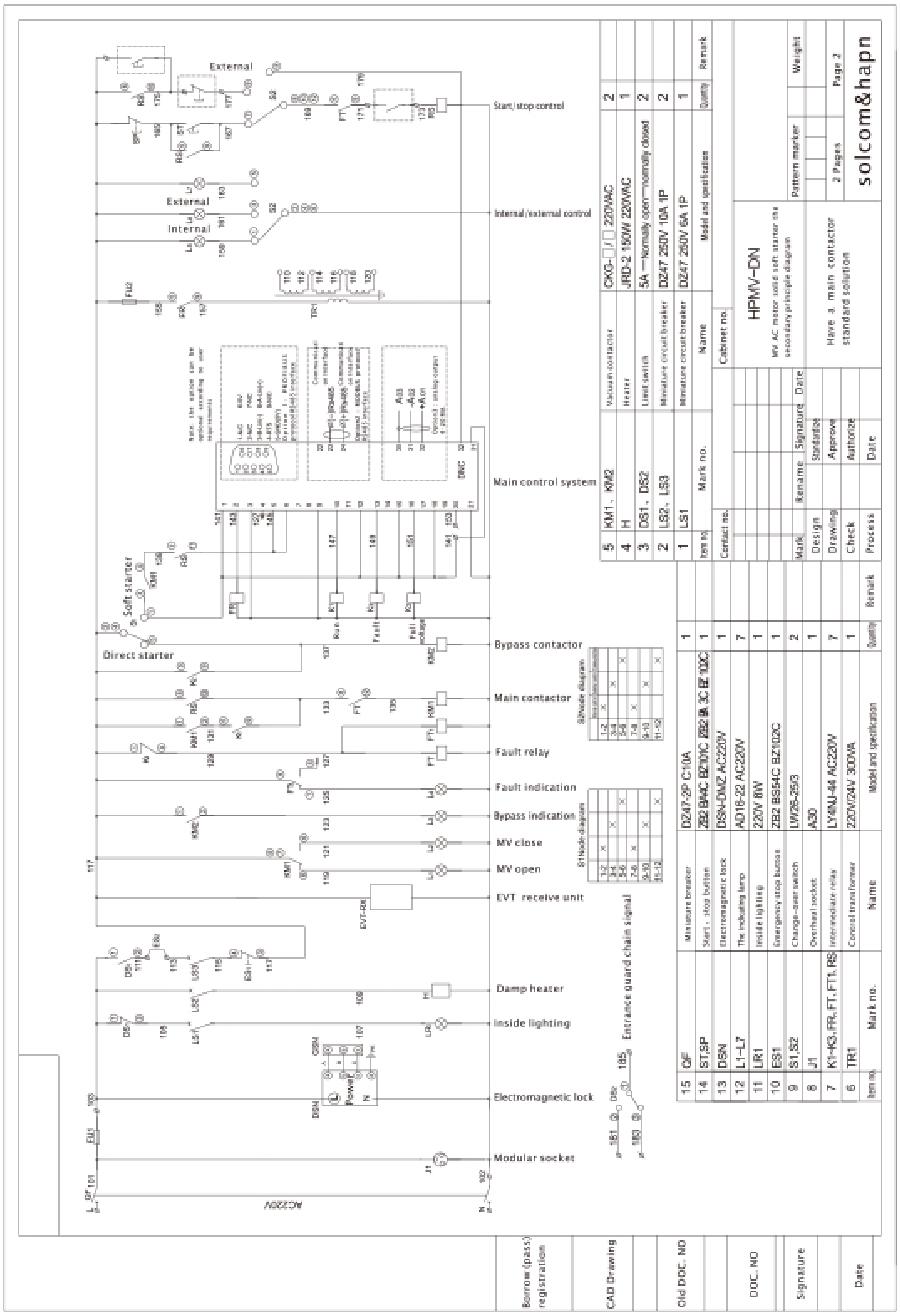
Typical Drawing

Second line diagram (1)



Typical Drawing

Second line diagram (2)



Product Selection & Feature

HPMV - YTG - ☐ - ☐ - ☐ - ☐

Enterprise code	(1) Integrated cabinet	(2) Main voltage	(3) Rated current	(4)Control supply voltage	(5)Option

(1) Integrated cabinet:
Combining high voltage switch cabinet, soft starter and bypass cabinet into one cabinet

(2) Main voltage

Specify	For
3.3	3.3KV-15%~+10%
4.16	4.16KV-15%~+10%
6	6KV-15%~+10%
10	10KV-15%~+10%

(3 Rated current 50A-400A(Max current model please contact factory supplier)

(4) Control supply voltage: AC110; AC220V; DC110V; DC220V

220VAC

Specif	For
110VAC	100-120VAC
220VAC	200-240VAC
110VDC	100-120VDC
220VDC	200-240VDC

(5) Options

Specify	For
Modbus	485 modbus communication
Profibus	485 profibus communication
A.out	4-20mA analog output

Structural features

- The device consists of a handcart type vacuum circuit breaker, HPMV-YTG soft starter, and a bypass vacuum contactor
- The cabinet is made of 2mm aluminum-zinc steel plate, processed by CNC numerical control equipment, and connected with high-strength bolts. The overall protection level is IP4x;
- The cabinet is divided into four separate functional unit compartments, followed by the trolley compartment room, the high voltage bus room, the high voltage cable room, and the high voltage soft starter room;
- The integrated cabinet design of high-voltage switch, soft-up cabinet and bypass cabinet is small in size, saves the space of the distribution room, and has the same power; of the distribution room, and has the same power;
- The product is 30%-50% of the soft starter of other methods. , And other equipment can be perfectly combined and cabinet installation;
- It is especially suitable for the technical transformation and replacement of the limited on-site location and the start-up products of similar manufacturers. (Switch cabinet split design is also optional)

Applications:

- Widely used in power systems, metallurgy, mining, petroleum, chemical, water treatment and other industries of high voltage squirrel-cage AC asynchronous & high-voltage synchronous motor. As a high voltage motor soft start, soft stop and control, protection and so on. Voltage range 3.3~10KV Controlled motor, power 220KW~5600KW.

Product Selection & Feature

Performance and parameters:

- Control mode: kick start, voltage ramp, constant current, speed control (Optional).
- Starting mode: soft start, straight up, soft stop, free stop.
- Operation mode: This cabinet, external control, communication remote control (optional).
- Communication mode: RS_485 interface: Modbus protocol and Profibus protocol (optional).
- Analog output: motor operating current, signal 0-10V or 4-20mA or 0-20mA.
- Initial voltage: 10% to 50% (expandable to 5% to 80% Un).
- Current limiting multiple: 100% to 400% In (expandable to 500% In). to 500% In).
- Start, stop time: 1~30S (expandable to 90S).
- Start jump: current, 70%-700% In (kick time 0~10S.)
- Parameter settings: 1--control panel button, 2--background communication settings.
- LCD display: operating current, number of starts, running time and failure
- Information and other parameters, default language: Chinese (English), German, French, and Western.
- Noise: <80db.
- Continuous start interval: In the ambient temperature greater than 40 °C, starting current is large at 400% In, the interval is not less than 30 minutes. When the temperature is low when the starting current is relatively small, the interval can be properly reduced, but at least it is 15 minutes.
- Cooling method: Natural cooling.
- Operating power: AC220V/50Hz 600VA (Special requirements require another put forward).
- Main circuit power frequency withstand voltage: 42KV/1 minute (except power unit).
- Protection Mode: Compound (see Protection Features)
- Protection class: IP42 (IP54 optional if special requirement).

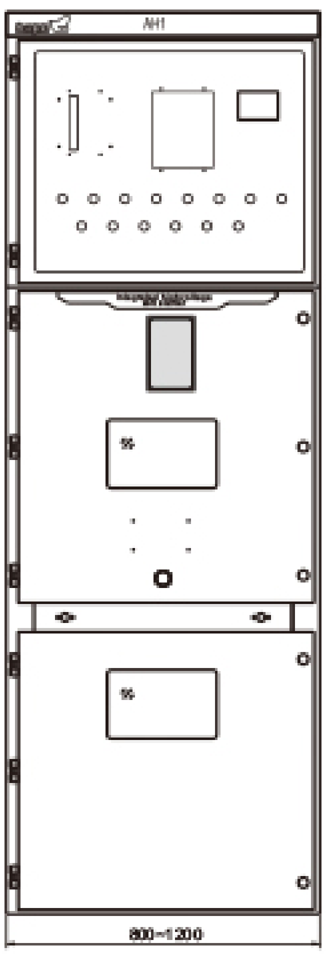
Working environment and conditions:

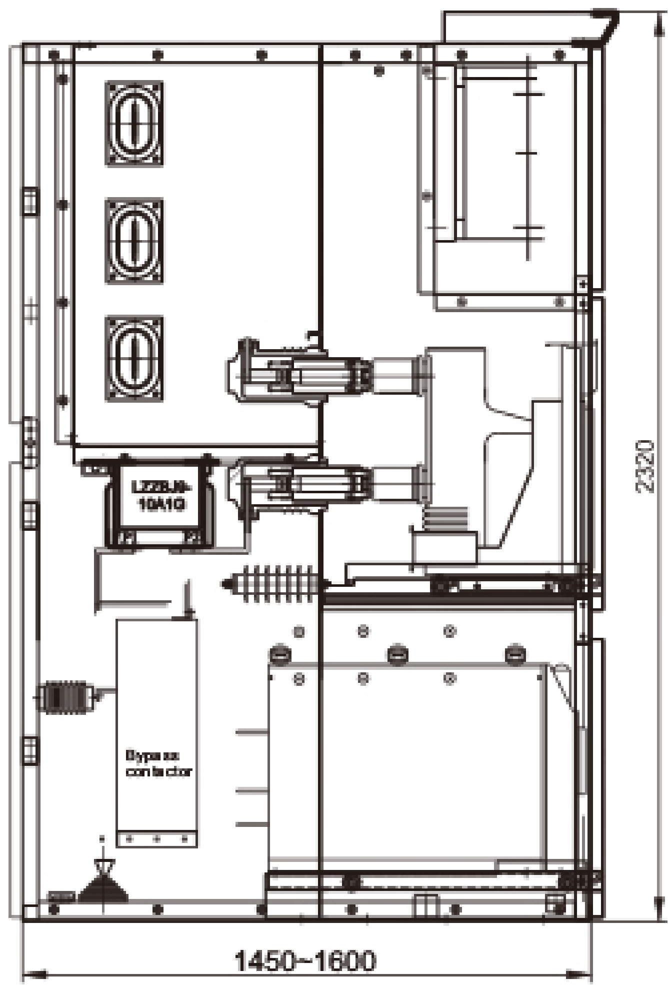
- Air temperature around the equipment is running: -10°C-50°C When storing: -20°C - 70°C (stated when ordering in special circumstances).
- The relative humidity of the air around the equipment: no more than 95% at +50°C. At lower temperatures, greater relative humidity is allowed.
- The environment surrounding the equipment is free of explosion hazards and corrosive gases.
- Pollution level: ≤ 3 (up to 4).
- Altitude: ≤ 1000m (expandable to 4000m).
- Vibration: Vibration conditions permitted at the installation site: The vibration frequency is 10Hz to 150Hz, and the vibration acceleration is not more than 0.5m/s2.
- Main power supply: 10KV/50Hz three-phase voltage continuous fluctuation does not exceed -15% ~ +10%.
- The frequency fluctuation does not exceed ±5Hz; the rate of change of frequency does not exceed ±1% per second. change of frequency does not exceed ±1% per second.

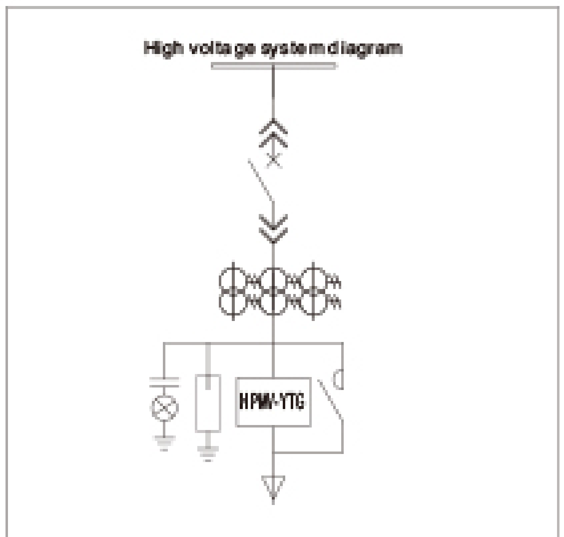
Note: The black font part of the performance and parameters and working environment and conditions is a standard configuration. If there is any other requirement in the parentheses, the part in the text will be in the contract when ordering.

Product structure size

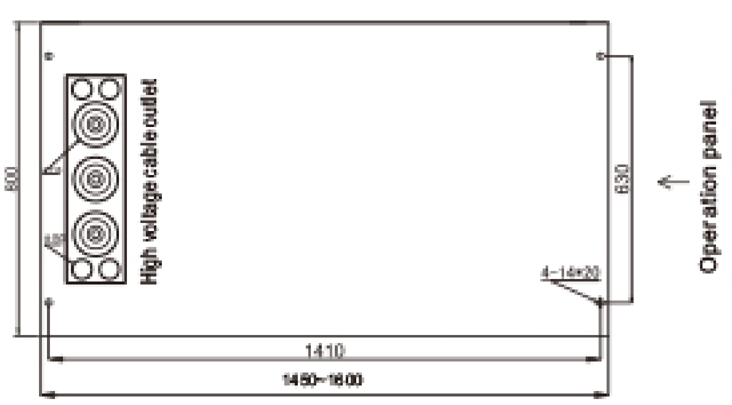
High voltage soft starter integrated cabinet system diagram and appearance







Name	Medium and high voltage ACmotor soft starter integrated cabinet		
Cabinet No.	According to the specific project		
Model	HPMV-YTG-**-**-YT		
Dimension	W1200*D1500(1600*H2300mm)		
Main components	Name	Model	Qty
	Soft starter	HPMV-YTG-**-**	1
	Vacuumbreaker	ZN63A-12/***	1
	Vaccum contactor	MVCR-12/***	1
	Computer protection	NRM-512	1
	Current Transformer	LZZBJ9-10	3
	Zero sequence transformer	LXK-Φ120	1



Product selection & Size

The 2.3KV voltage level can be replaced with the product of 3.3KV voltage grade; 4.16KV and 6.6KV voltage grade can use 6KV voltage grade Product replacement. The soft starter must be selected based on the rated current on the motor nameplate (even if the motor is not running at full load). table The corresponding KW value given in the above is for reference only. But pay attention to different voltage levels when the motor power is the same when the current is different, select type No. Please calculate the current according to the power before confirming.

				WXDXH (mm)
HPMV-YTG-3.3-50	3.3	50	220	1000X1500X2300Standard; 800X1500X2300Customized
HPMV-YTG-3.3-100	3.3	100	450	
HPMV-YTG-3.3-150	3.3	150	630	
HPMV-YTG-3.3-200	3.3	200	900	1000X1500X2300
HPMV-YTG-3.3-300	3.3	300	1250	1000X1500X2300
HPMV-YTG-3.3-400	3.3	400	1800	1200X1500X2300
HPMV-YTG-6-50	6	50	400	1000X1500X2300Standard; 800X1500X2300Customized
HPMV-YTG-6-100	6	100	800	
HPMV-YTG-6-150	6	150	1250	
HPMV-YTG-6-200	6	200	1600	1000X1500X2300
HPMV-YTG-6-300	6	300	2400	1000X1500X2300
HPMV-YTG-6-400	6	400	3200	1200X1500X2300
HPMV-YTG-10-50	10	50	690	1000X1500X2300Standard; 800X1500X2300Customized
HPMV-YTG-10-100	10	100	1400	
HPMV-YTG-10-150	10	150	2000	
HPMV-YTG-10-200	10	200	2800	1000X1500X2300
HPMV-YTG-10-300	10	300	4000	1000X1500X2300
HPMV-YTG-10-400	10	400	5600	1200X1500X2300

Note:
The above are some typical product data.
The specific parameters are based on the actual product.

Technical indicators

General information	
Main power suppl	Voltage: 2300V, 3300V, 4160V, 6000V~6900V, 10000V~11000V, +10%-15%
Insulation leve	For 2300V, Insulation voltage as 6900V
	For 3300V, Insulation voltage as 9900V
	For 4160V, Insulation voltage as 12,500V
	For 6000~6900V, Insulation voltage as 19,500V
	For 10000~11000V, Insulation voltage as 32,500V
Frequency	45~65Hz (frequency automatic adjustment)
Control voltage	110~230(Vcustomized)+10%-15%
Control input & output voltage	Same with control voltage or customized：24~230VAC/DC
Load	3 phase 3 wire squirrel cage induction motor
Working parameters	
Soft starter flc	The rated current of the starter can be found in the selection guide.
Motor fla	The full load current of the motor can be selected between 33% and 100% of the starter FLC.
Pump control curve	6 curves are optional to prevent overpressure during pump start and water hammer effect during stop
Pulse start	With 70~700% FLA current pulse, adjustable pulse time: 0~10 seconds for starting high static friction load
Initial voltage(*)	Can be set to 10-50% Un (10~80%Un can be provided with customized)
Current limit(*)	Can be set to 100-400% of motor FLA (can be extended to 100-500%)
Start ramp up time(*)	1-30 seconds adjustable (can be extended to 1~90S)
Stop ramp down time(*)	1-30 seconds adjustable (can be extended to 1~90S)
Double adjustment	About the start voltage, current limit, acceleration, deceleration time and dual start/stop parameter settings of the motor FLA
Speed feedback and linear increase	12 curves selectable to control motor speed linear gain by speed feedback

*Extensible range details contact factory

Motor protection	
Start times limit	The maximum allowable start times in the set start cycle: 1 to 10 starts in the 1 to 60 minute start cyde
Start prohibited	After the "start over frequency" indication is given, the prohibited start time is adjustable from 1 to 60 mins, limit the restart
Long start time(stall protection)(*)	If the motor has not reached the full beam within the set maximum start time 1~30 seconds (extended 1~90 seconds),
	the starter trip protection.
Electronic fuse	When the current reaches 850% FLA when starting, the current reaches 200%~850% FLA, and the starter trips in one cycle.
Electronic overload(I t)	Can be set at 75%~150% FLA, the overload curve can be selected by setting the trip time, at 500% FLA for 1~10S can be set
Under current	Main current drops below 20%~90% FLA, time delay is 1~40seconds, starter trip protectionMain current drops below 20%~90% FLA, time delay is 1~40 seconds, starter trip protection
Under voltage(**)	Main voltage drops below 50%~125%Un, time delay 1-10seconds Starter trip protection
Over voltage	The main voltage rises to more than 110%-125%, the time delay is 1-10seconds, and the starter trips protection.
Phase loss(low/high frequency)	The starter trips when the mains 1 to 2 phases are missing or the frequency deviates from the normal frequency ±5 Hz.
Phase sequence	The starter trips when the phase sequence is incorrect.
Wrong connection/shorted SCR	If the motor fails to properly connect to the starter, or if there is a thyristor short-circuiting the starter, start prohibited.
Heatsink over temperature	When the heat sink temperature is higher than 85°C, the starter trips.
External fault	The starter trips after 2 seconds when the external fault contact closes.
External fault2 External fault2	The starter trips after 2 seconds when the external fault contact closes.
Current unbalance	When the main loop current imbalance exceeds the set value and exceeds the delay time, the starter trip protection
Ground current fault	When the ground current exceeds the set value, and the delay time exceeds the delay time, the starter trip protection.
No start signal of main power(***)	When starter is connected to the 3phase main voltage and no soft start signal is added for over 30S, the starter trip protection is applied.
Can't switch to bypass faul	When starter starter motor enters full pressure, it cannot switch to bypass and starter trip protection. When starter starter motor enters full pressure, it cannot switch to bypass and starter trip protection.

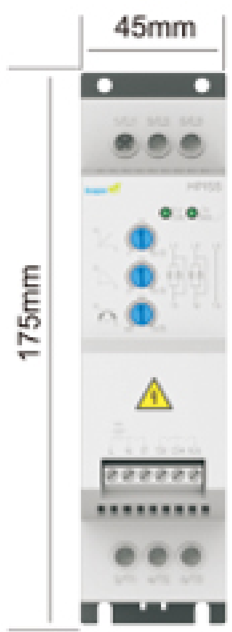
Product Selection & Feature

HP	IS	S	40 XX	-	30 XX	-	C X
Enterprise code	Type	Series code	Main voltage		Rated current		Control power voltage

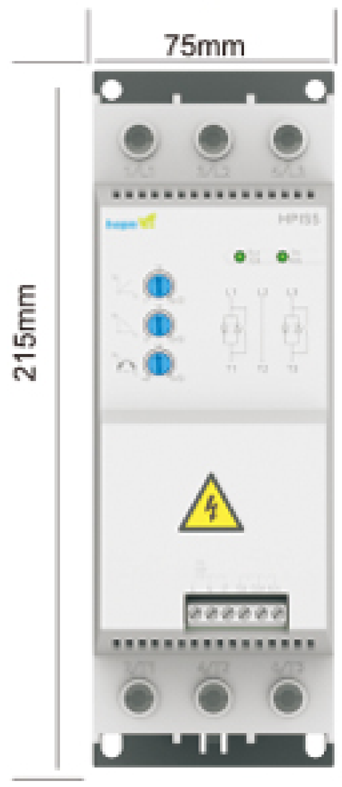
Main Features

- Structure most compact and robust, easier combined to the control system
- DIN guide base for easy fixed installation(structure A)
- Centralized knob-type adjustment parameters, convenient and intuitive operation
- With Led lamp, power, work status and fault analysis clearly
- Soft start and soft stop time adjustable, soft start initial voltage multiple levels optional
- With bypass inside, reduces losses and extends equipment life

A



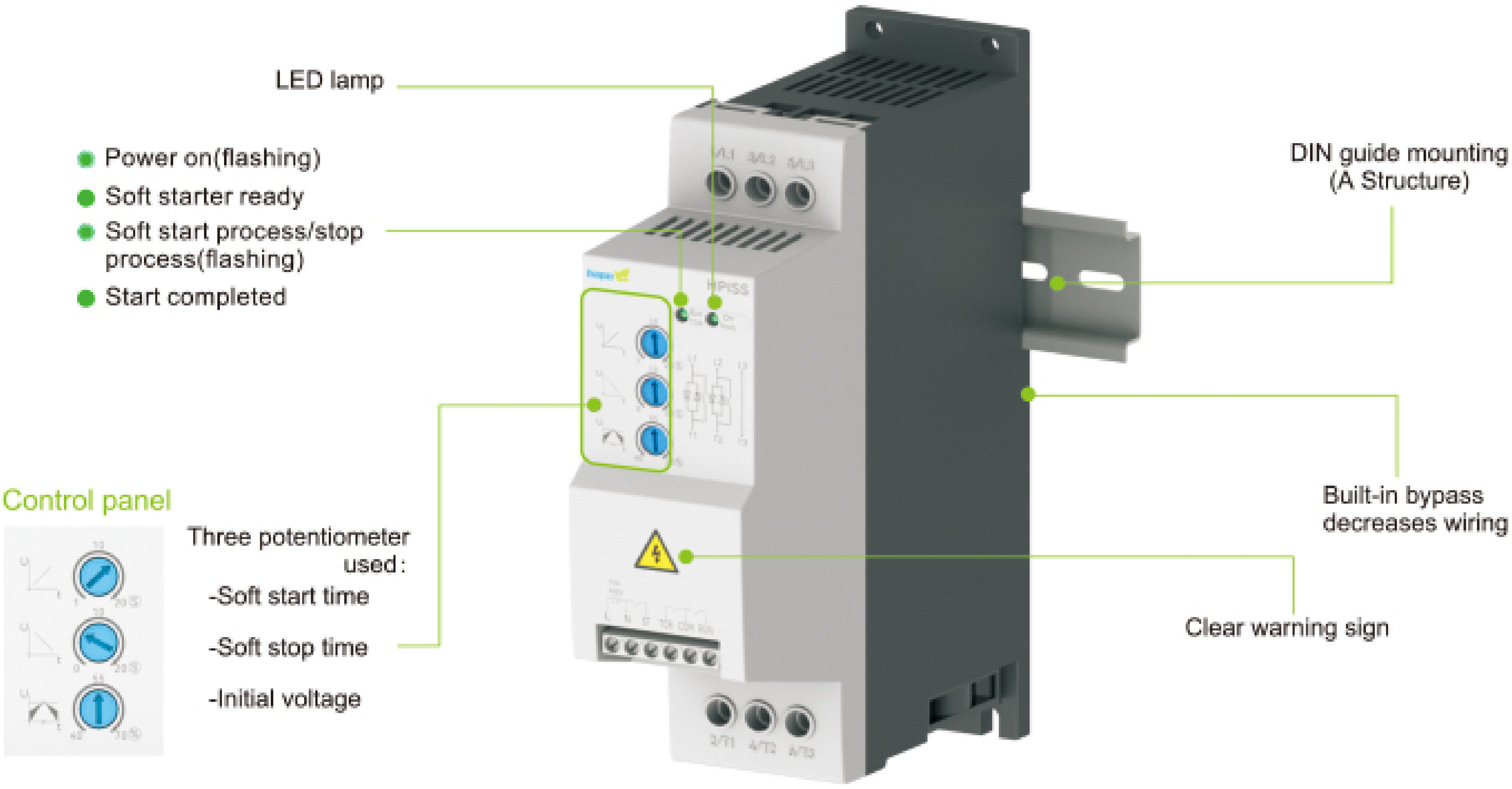
B



4A-105A Soft starter

Motor rated power rate(KW) 3 phase 50/60Hz			Motor rated current	Specification				Structure
200V	400V	500V	A	Type	Voltage	Current	Control Voltage	
0.75	1.5	2.2	3.9	HPISS	-XX-	4.0	-X-	A
1.5	3	4.0	6.8			7.0		
2.2	4.0	4.0	9.0			9.0		
3.0	5.5	5.5	12	HPISS	-XX-	12	-X-	
4.0	7.5	7.5	16			16		
5.5	11	15	25	HPISS	-XX-	25	-X-	
7.5	15	18.5	30			30		
9.0	18.5	22.0	37	HPISS	-XX-	37	-X-	B
11	22	30	45			45		
15	30	37	60	HPISS	-XX-	60	-X-	
22	37	45	72			72		
25	45	55	85	HPISS	-XX-	85	-X-	
30	55	55	105			105		

Technial date



Product Selection

Rated voltage	22:220V AC 50/60 Hz
	40:400V AC 50/60 Hz
	50:500V AC 50/60 Hz
Rated current	04:4A,07:7A,09:9A,12:12A,16:16A,25:25A,30:30A
	37:37A,45:45A,60:60A,72:72A,85:85A,105:105A
Control voltage	C:110~240V AC 50/60 Hz
	D:24VDC

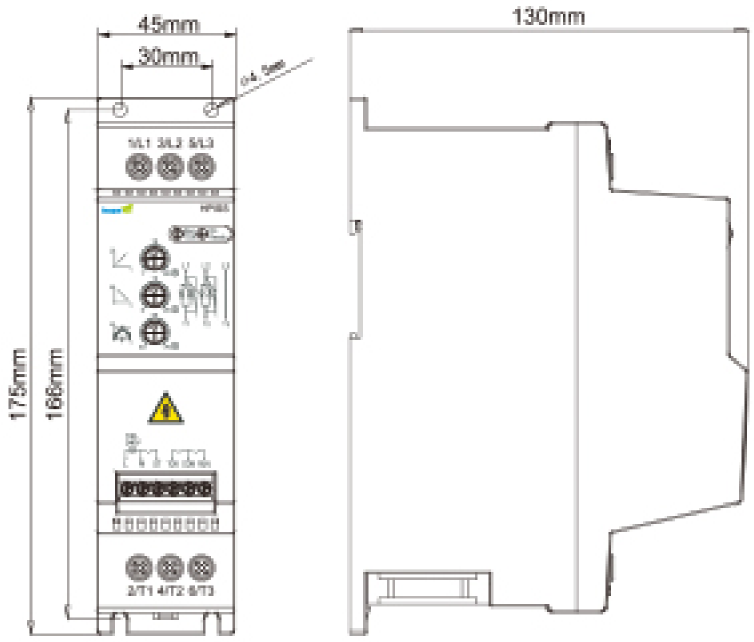
Technical Parameter

Main voltage range	208V~600V AC 50/60 Hz
Main current range	04~105A AC 50/60 Hz
Control voltage	C:110~240V AC 50/60 Hz
	D:24 VDC
Soft start time	1~20s
Soft stop time	0~20s
Initial voltage	40%~70%Ue
Bypass type	Built-in bypass
Mounting type	35mm DIN guide mounting or screws fixed

Dimensions

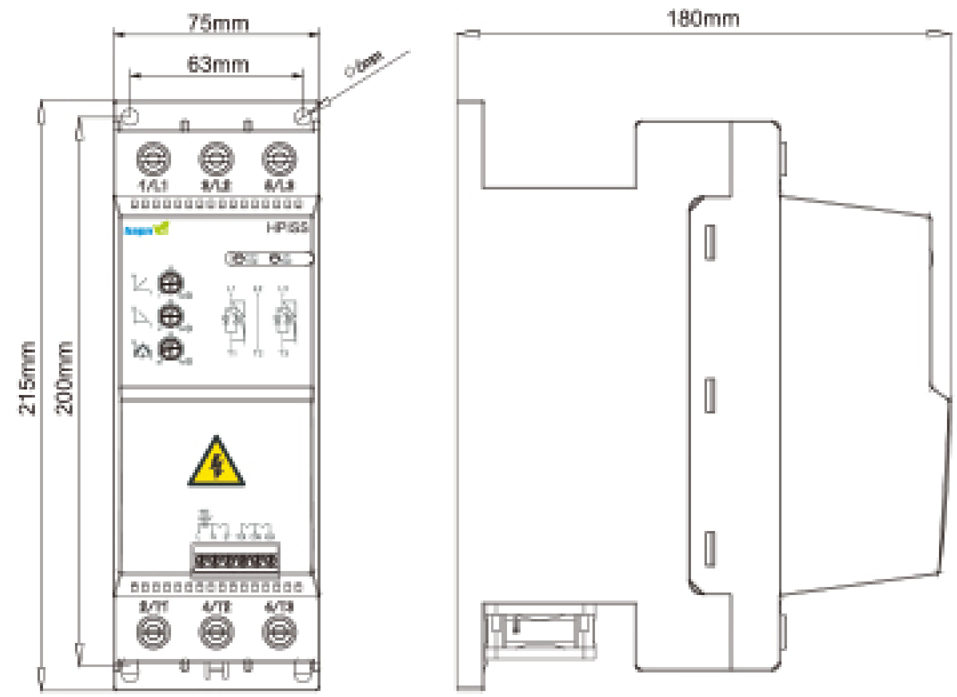
HPISS 4~30A

A structure

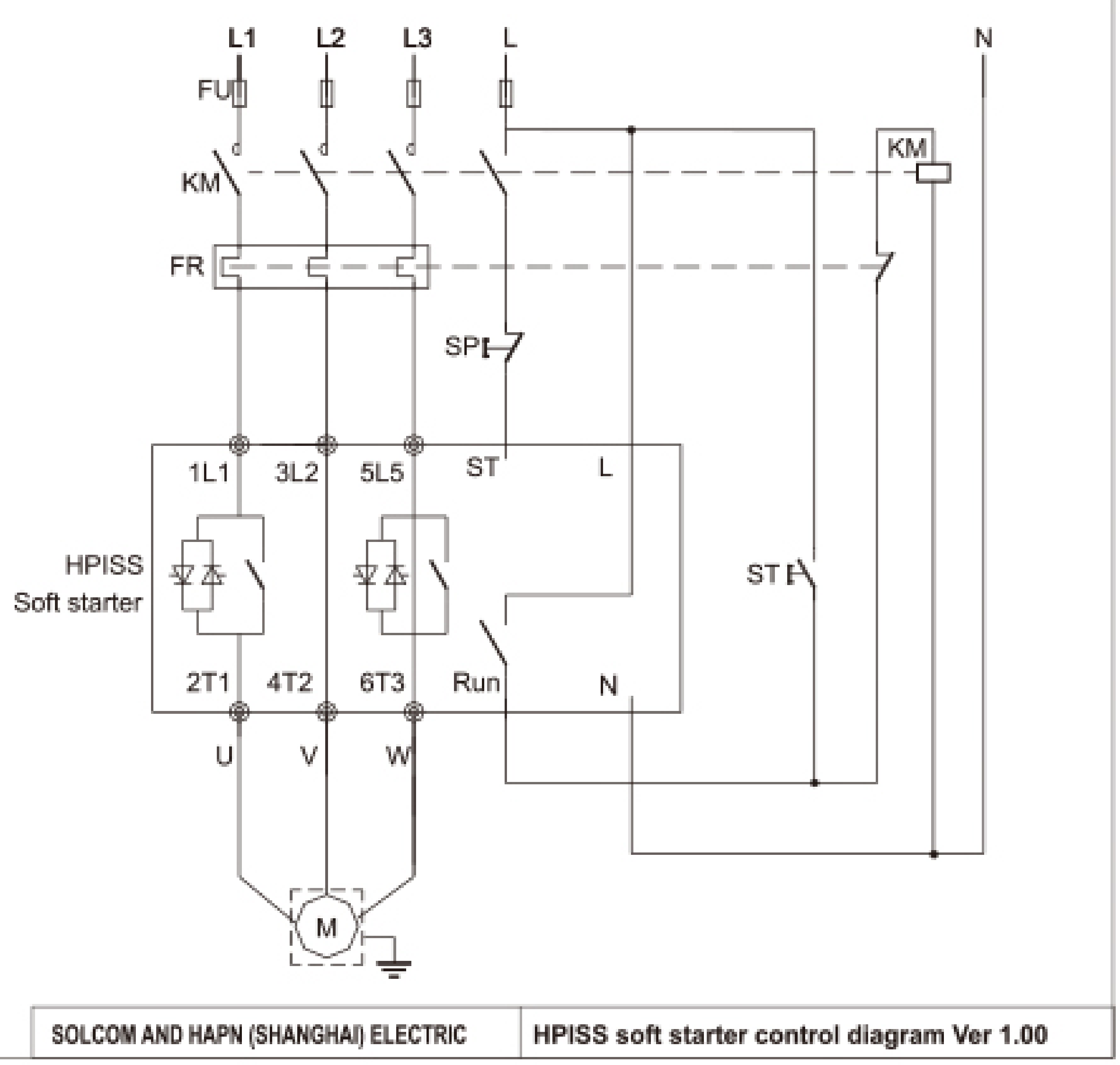


HPISS 37~105A

B structure



Electrical product schematic



Code	Name	Model
FU	Fuse	NGT
KM	Contactor	CJX1
ST, SP	Button	NP2-BA
FR	Hot relay	NXR

Product Selection & Feature

Feature

- Start/stop slope and voltage set by 3 different potentiometer built-in
- By pass relay built-in, No need for extra contactor
- Current limit startup mode
- The output torque can be maintained during the stop process(Continuous torque control), prevent water hammer effect
- External△， Y Wiring mode
- Real-time data of communication(A,B,C phase current, average current) *1
- Reading history fault records by communication (10 history log)*1
- The statistics data can be read by modbus communication.*1
- Protections:
  1) Overcurrent protection
  2) Undercurrent protection
  3) Over load protection with classes 10A, 10, 20 and 30
  4) Three phase current imbalance protection
  5) No voltage/Missing phase protection
  6) Phase sequence protection
  7) SCR overheating protection
  8) Max start time protection
- 1 start/stop Digital Input
- Communication Interface. *1
- Option Build In start/stop switch *2
- 2 Output relay(running relay, trip relay)

Note *1：Option, only if select the RS-485 communication interface with the function.
Note *2：The function is available by using optional SLR switch on operating panel.

Feature

- Three-Phase control
- Optional main voltage 220/400/500 VAC
- Wide Range Control Voltage 100 - 240VAC, 50/60 Hz
- Optional Control voltage 24VDC
- Rated current 1.5-150A
- Control Board Enhanced Coating
- Integrate construction, Protection grade IP21.

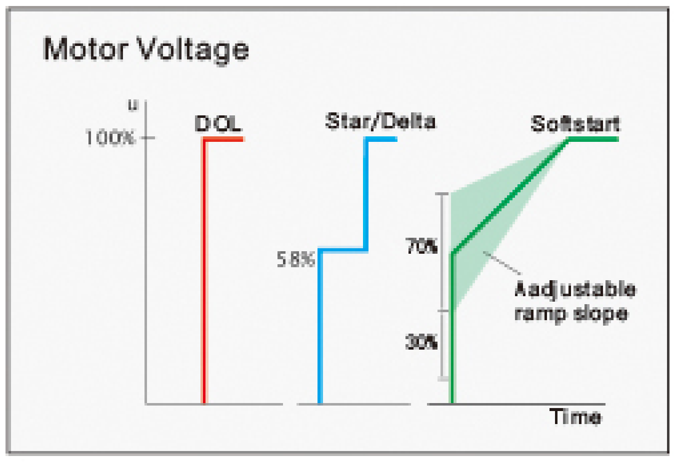
The controlling circuit boards in the SLR softstarter have a protective coating to ensure a reliable operation even in tough environments like wastewater plants, where corrosive gases and acids may exist.

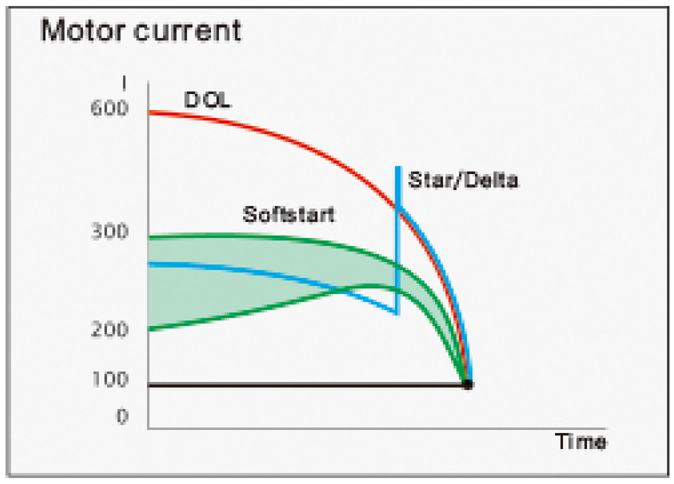
- Direct Potentiometer Setting, Easy To Use.
- All Range Bypass Built in, Easy To Install,
- Reduce Energy Consumption.
  Optional Modbus RTU for monitoring.
- Most of communication protocols supported.
- Motor protections build-in

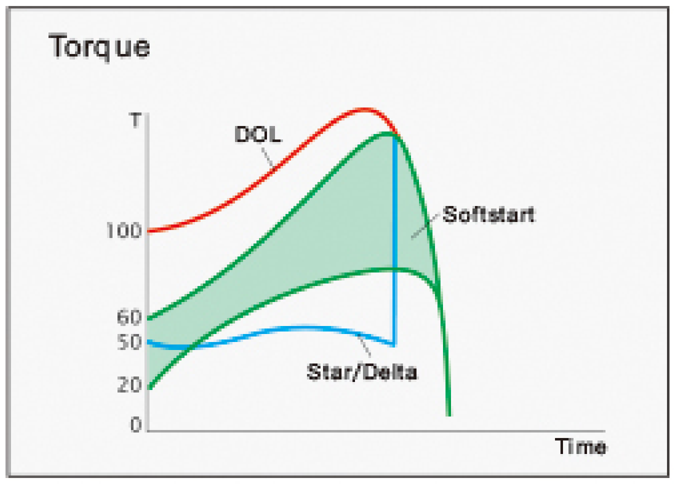
Product Selection & Feature

Parameters:

Input Voltage	220/400/500VAC 50/60Hz
Control Source Voltage	100~240VAC or 24VDC 50/60Hz
Current class	1. 5······150A
Initial Voltage	30%~70%
Start Slope	1~30Sec
Stop Slope	0~30Sec
Overload	3 x Ie for 7 Sec
	Valid for 50 % on time and 50 % off time.
Times of start per hour	<5, 5-10 (light load or no-load)
Overload grade	10A
Operation Environmental temperature	0 ℃ to + 50 ℃ (32 °F to 122 °F)
Store temperature	-40 ℃ to + 70 ℃ (-40 °F to 158 °F)
Maximum altitude	1000m (3280ft)
Ingress Protection grade	IP21







Product Selection

Ordering info.:

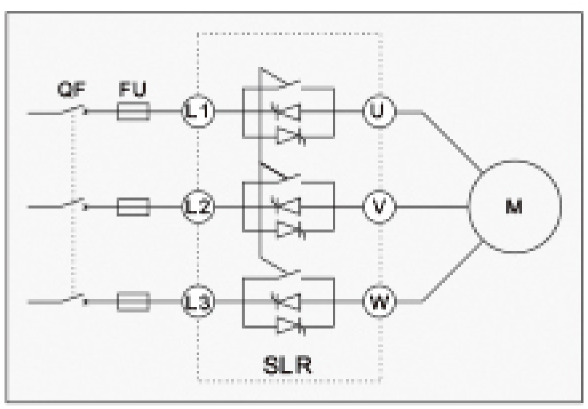
HP ISE - 40 75 - X - XXX - 1+2

- 1+2: Optional 1 means with RS485 Commucations; Optional 2 means with panel start switch
- XXX: Soft starter form *note4
- X: Control voltage "Note3
- 75: Rated current*Note 1
- 40: Main voltage "Note2
- ISE: Series soft starter
- HP: HP company

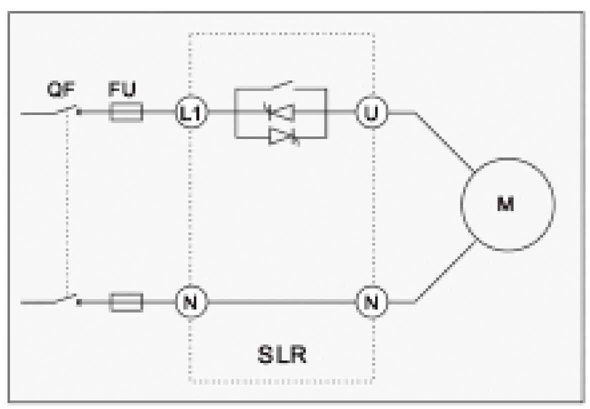
※Note
1 Rated current: 1.5-150A;
2、 Main voltage:
22 : 220V ; 40 : 400V ; 50 : 500V ;
3、 Control voltage:
A : 100~240VAC ; B : 24VDC;
4、 Soft starter form:
3P3 : 3 phase 3 control;
1P1 : 1phase 1 control;
5、If the panel start switch is selected, the 1 and 3 start terminals are invalid.

Internal control form:

1、3P3K form

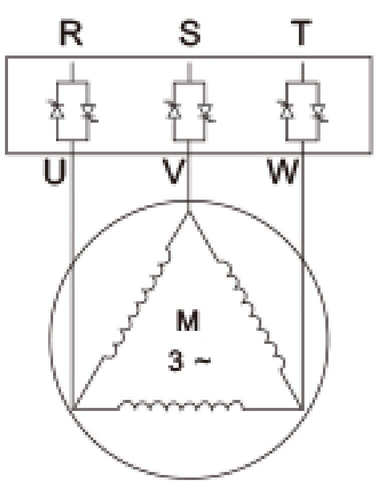


2、1p1k form only for 1 phase motor :

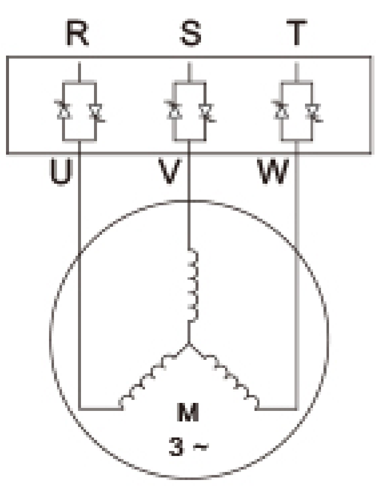


Application internal & external connection:

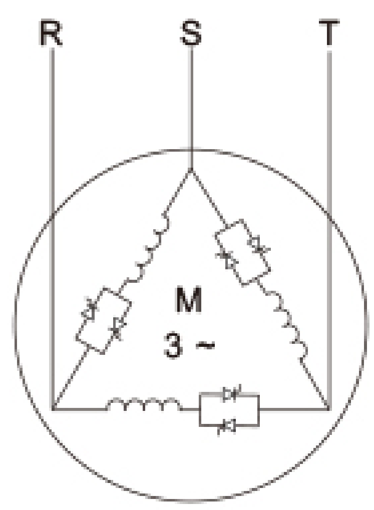
1、Triangle external form



2、 Star externa l form



3、Triangle internal form



Product Selection

Rated current

Parameters（Type 3P3）

Model	Motor power rating			SLR Rated operational current	Structure	Weight
	220V Pe/kW	400V Pe/kW	500V Pe/kW	Ie A	F	kg
HPISEXX 1T5-X-3P3	0.37	0.75	1.1	1.5	A	1
HPISEXX 2T2-X-3P3	0.55	1.1	1.5	2.2	A	1
HPISEXX 03-X-3P3	0.75	1.5	2.2	3	A	1
HPISEXX 4T5-X-3P3	1.1	2.2	3.7	4.5	A	1
HPISEXX 7T5-X-3P3	1.5	3.7	5.5	7.5	A	1
HPISEXX 11-X-3P3	2.2	5.5	7.5	11	A	1
HPISEXX 15-X-3P3	3.7	7.5	11	15	B	1.4
HPISEXX 22-X-3P3	5.5	11	15	22	B	1.4
HPISEXX 30-X-3P3	7.5	15	18.5	30	C	2.4
HPISEXX 37-X-3P3	11	18.5	22	37	C	2.4
HPISEXX 45-X-3P3	15	22	30	45	C	2.4
HPISEXX 60-X-3P3	18.5	30	37	60	C	2.4
HPISEXX 75-X-3P3	22	37	45	75	C	2.4
HPISEXX 90-X-3P3	25	45	55	90	D	5
HPISEXX 110-X-3P3	30	55	75	110	D	5.2
HPISEXX 150-X-3P3	37	75	90	150	D	5.2

※Note: 1、1T5 means 1.5A, 4T5 means 4.5A, 7T5 means 7.5A in Rated current.
2、Other voltage classes can be made to order.

Parameters（Type 1P1）

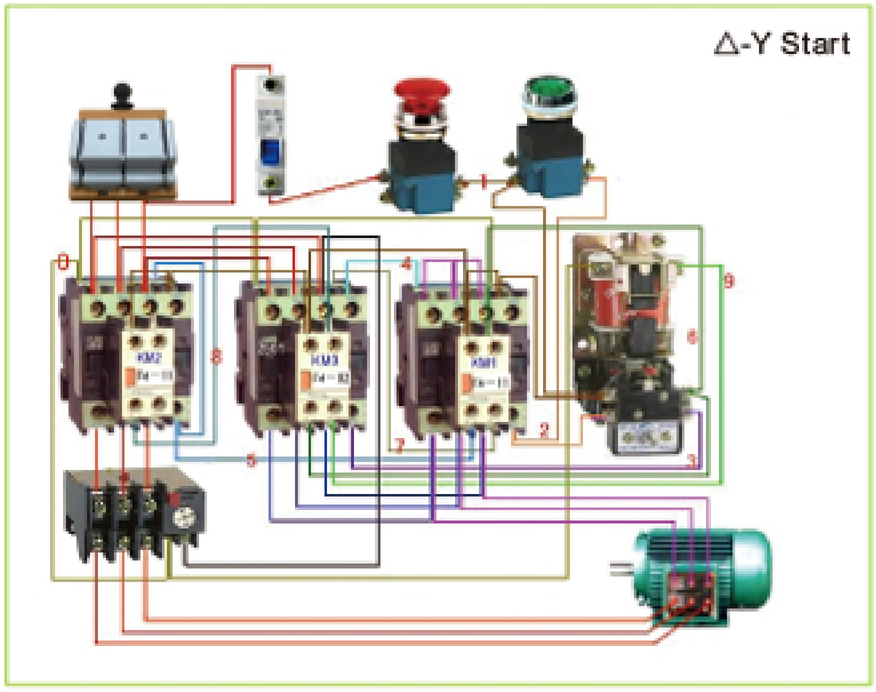
Model	Motor power rating		SLR Rated operational current	Structure	Weight
	220V Pe/kW	400V Pe/kW	Ie A	F	kg
HPISEXX02-X-1P1	0.37	0.55	2	A	1
HPISEXX03-X-1P1	0.55	0.75	3	A	1
HPISEXX04-X-1P1	0.75	1.1	4	A	1
HPISEXX06-X-1P1	1.1	1.5	6	A	1
HPISEXX09-X-1P1	1.5	2.2	9	A	1
HPISEXX12-X-1P1	2.2	3.7	12	A	1
HPISEXX20-X-1P1	3.7	5.5	20	A	1
HPISEXX30-X-1P1	5.5	7.5	30	C	2.4
HPISEXX37-X-1P1	7.5	11	45	C	2.4

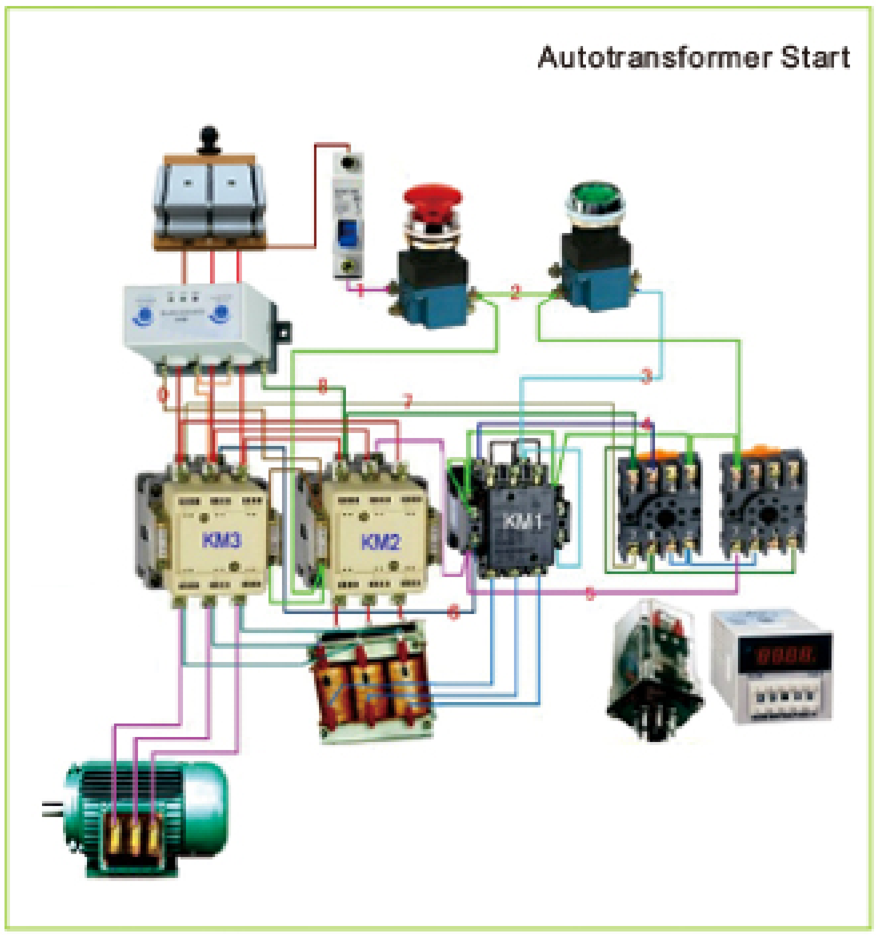
Ordering Guide

Light Load Application: For example pump, compressor, venting equipment, conveying equipment...select the HPISE soft starter based on rated power.（Select the model based on rated current when controlling heating equipment)

Heavy Load Application: For example, centrifugal fan, mixer, grinder, blender...Or other equipment started frequently in short time we recommend to choose a higher power grade softstarter.

Application Diagram





A Perfect Alternative to △-Y Start And Autotransformer Start

Reliable

Perfect motor's protection

HPISE Combine the perfect protection function， It can deal with the abnormal state of electric power grid or motor ，the powerful adaptability would ensure the stable operation.

Energy-saving

The built-in by-pass,

All range Bypass built in, save time, lower consume. when the motor operation at rated speed, the soft starter triggered by pass relay, so it would save the transistor heating and save energy consume. The bypass circuit is strictly screened and tested, help customer save the wiring and installation & check time. Meanwhile it will minimize the cabinet.

Efficient

Perfect pump control function

HPISE have many special functions to improve efficiency, for example the Continuous torque control for the pump.

High-quality

Non-contact start/stop motor control

The start and the stop process of HPISE with smooth current change and non surge close and non arcing break. Greatly prolongs the service life of the equipment.

Parameters

General	
Frequency	50/60Hz±5Hz
Rated Main Voltage	220-500±10% VAC (chose by customer); 400VAC± 10%(acquiescent)
Control Source Voltage	100-240VAC-15%+10% or 24VDC(chose by customer); 100-240VAC±10%(acquiescent)
The motor adapted	Three-phase squirrel-cage induction motor
Times of start per hour	<5 at 400% FLA
Operating data	
Motor rated operational current	Motor full load current: 1.5-150A
Initial voltage	30%~70%Un
Start Slope	1-30 seconds
Stop Slope	0-30 seconds
Motor protections	
Over current	During start , operation , stop , output current over limit
Unbalanced Current	Output current unbalanced level beyond the setting
I^2t over load	May set to 10A, 10...overload protection base on the setting to delay protection stop
Missing phase/No voltage	Stop the softstarter when 1 or 2 phases failed Or no voltage input
Thyristor(SCR) overtemp	Stop the softstarter when the radiator temperature rises above 80℃
Phase sequence	Forbid starting when the input phase sequence is wrong (If the function is unnecessary, please tell us before ordering)
Under current	Stop the softstarter when the current lower than under current protection value
Max start time	Stop the softstarter when the time of starting process exceeds the max start time

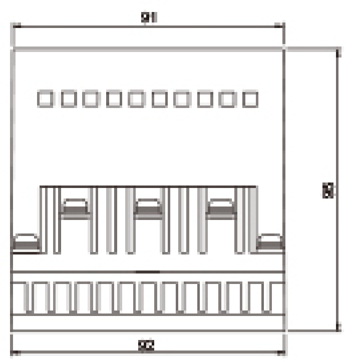
Rapid fuse

Model	SCR$I^2T(A^2S)$	Fuse rating
HPISEXX 1T5-X-3P3	70	5A
HPISEXX 2T2-X-3P3	150	10A
HPISEXX 03-X-3P3	270	10A
HPISEXX 4T5-X-3P3	610	16A
HPISEXX 7T5-X-3P3	1700	25A
HPISEXX 11-X-3P3	3630	32A
HPISEXX 15-X-3P3	5000	40A
HPISEXX 22-X-3P3	7500	50A
HPISEXX 30-X-3P3	10000	63A
HPISEXX 37-X-3P3	11000	100A
HPISEXX 45-X-3P3	12000	160A
HPISEXX 60-X-3P3	15000	200A
HPISEXX 75-X-3P3	18000	250A
HPISEXX90-X-3P3	40000	315A
HPISEXX110-X-3P3	60000	315A
HPISEXX150-X-3P3	100000	400A

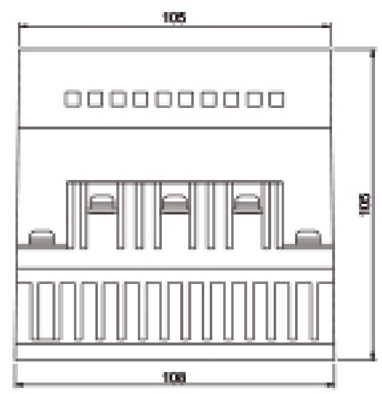
Product Structure Size

Dimension:

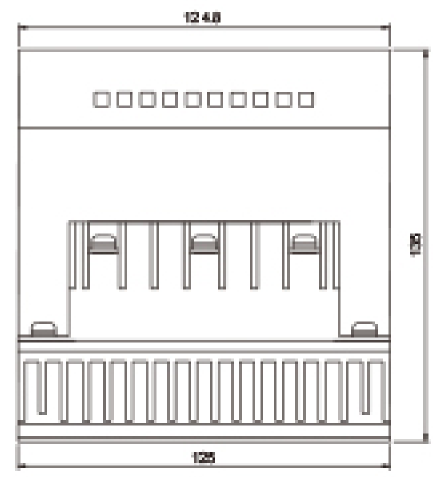
HPISE1.5~11A
Model A



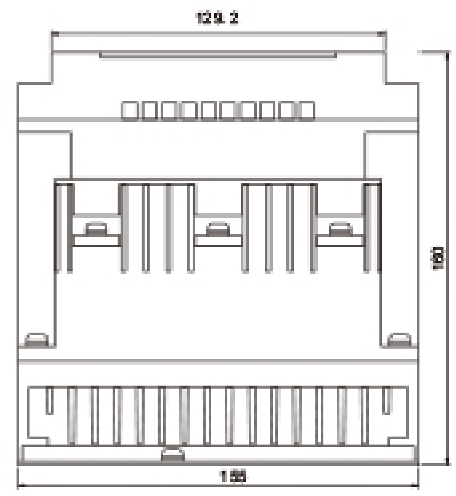
HPISE15~22A
Model B

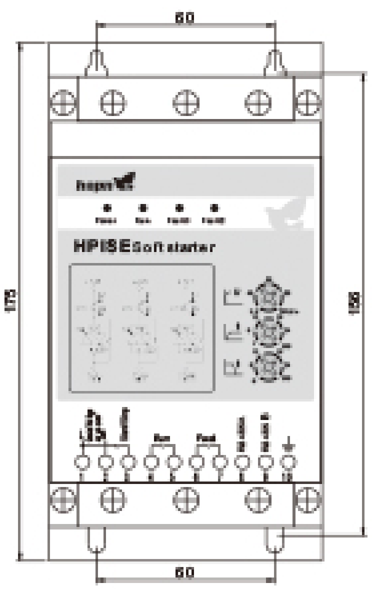


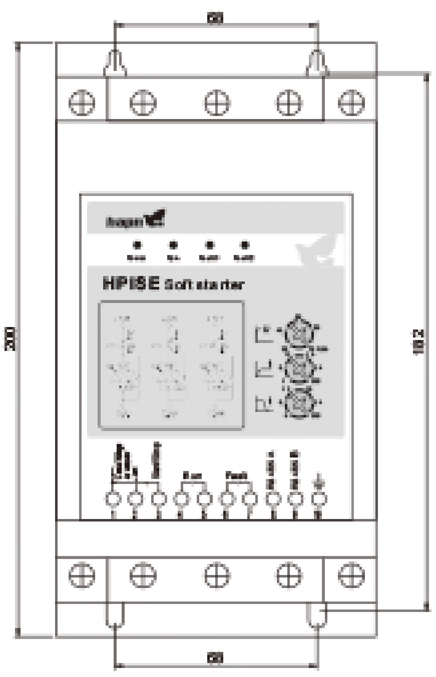
HPISE 30~75A
Model C

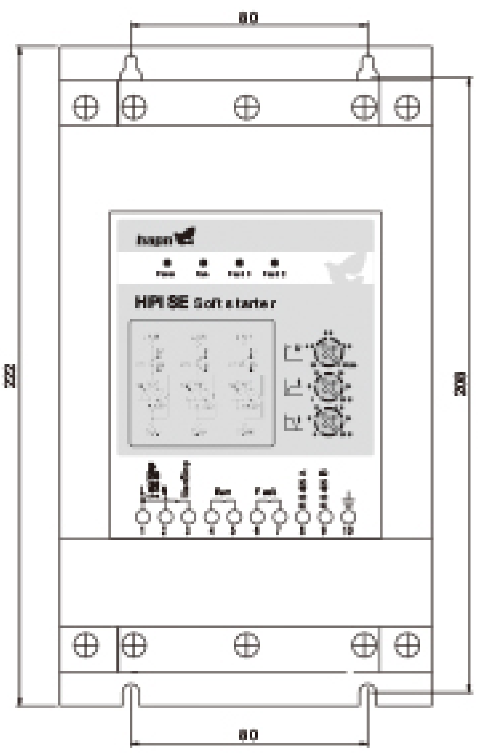


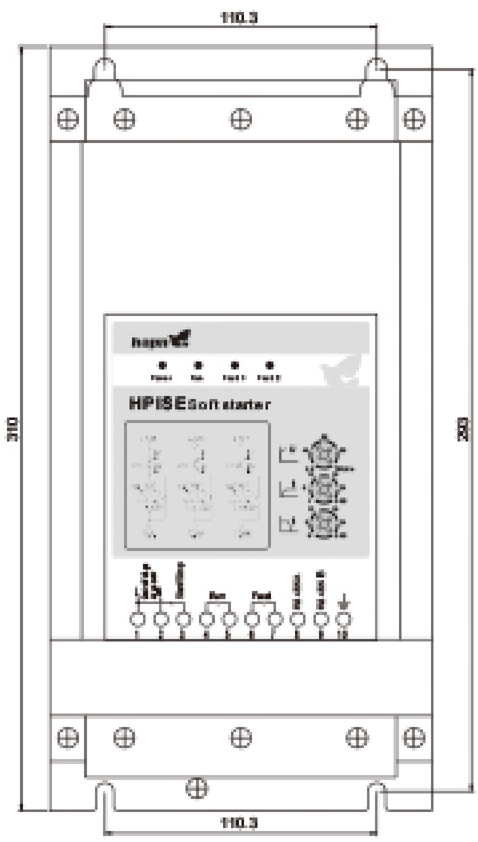
HPISE 90~150A
Model D



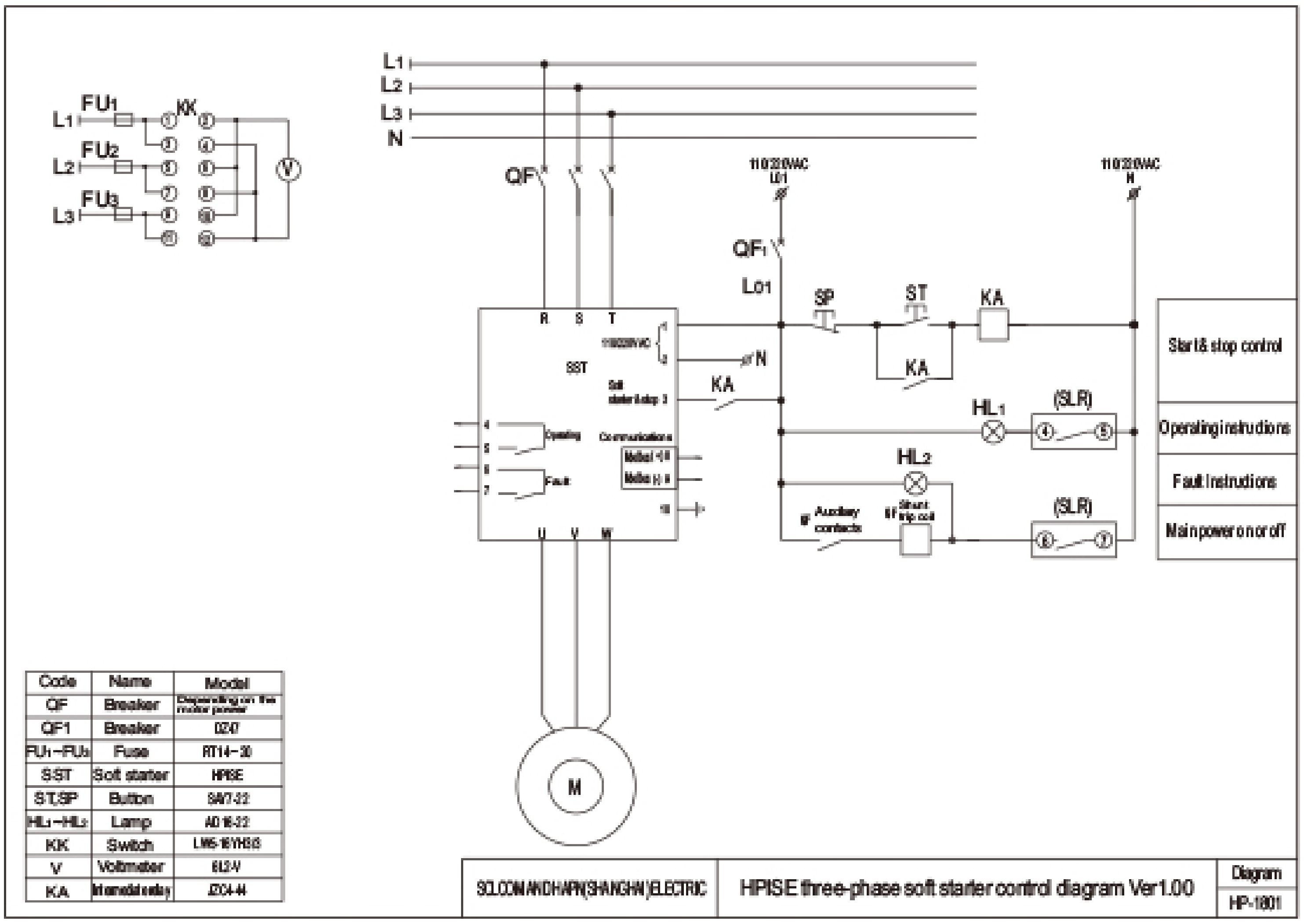




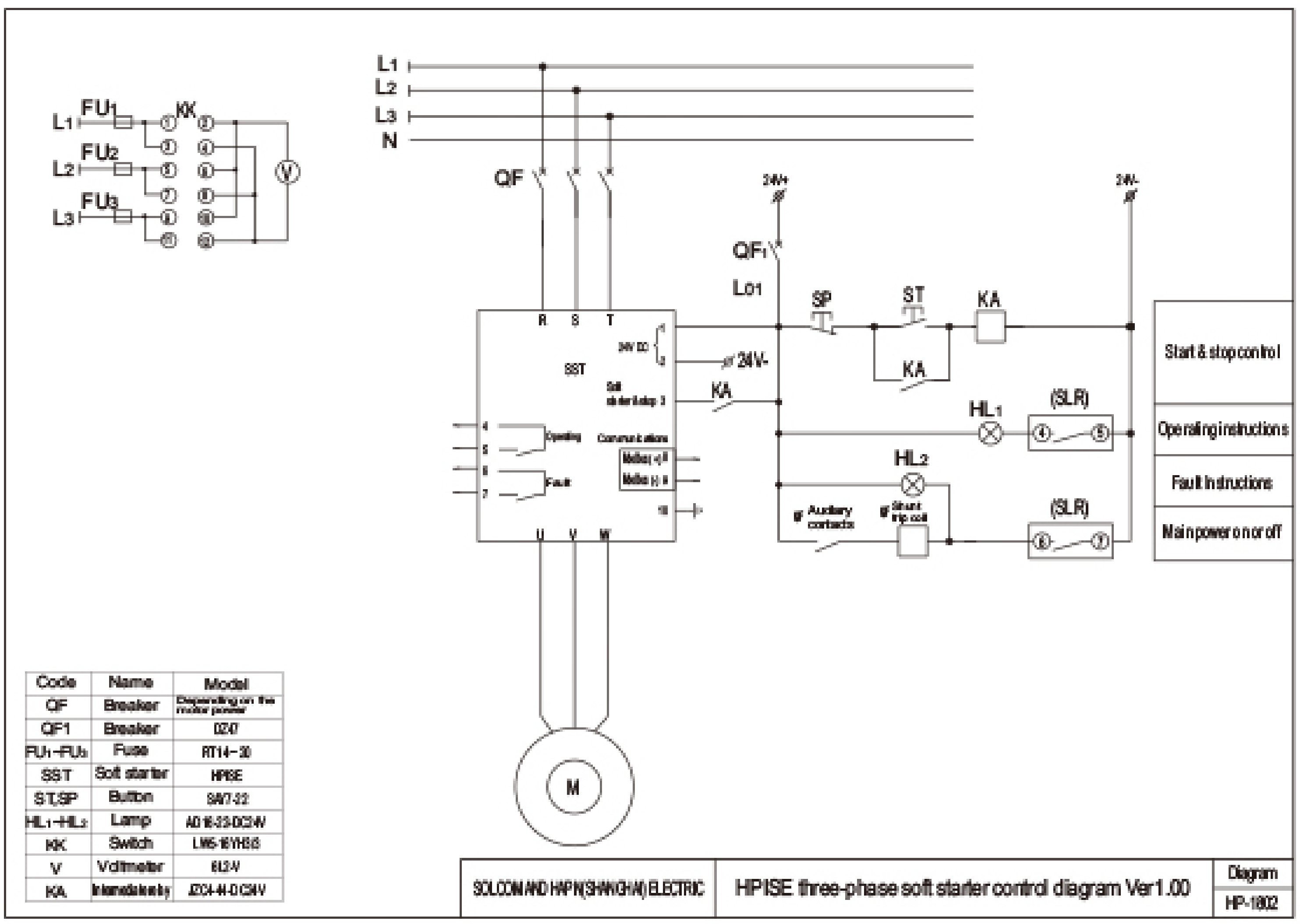




Typical Application

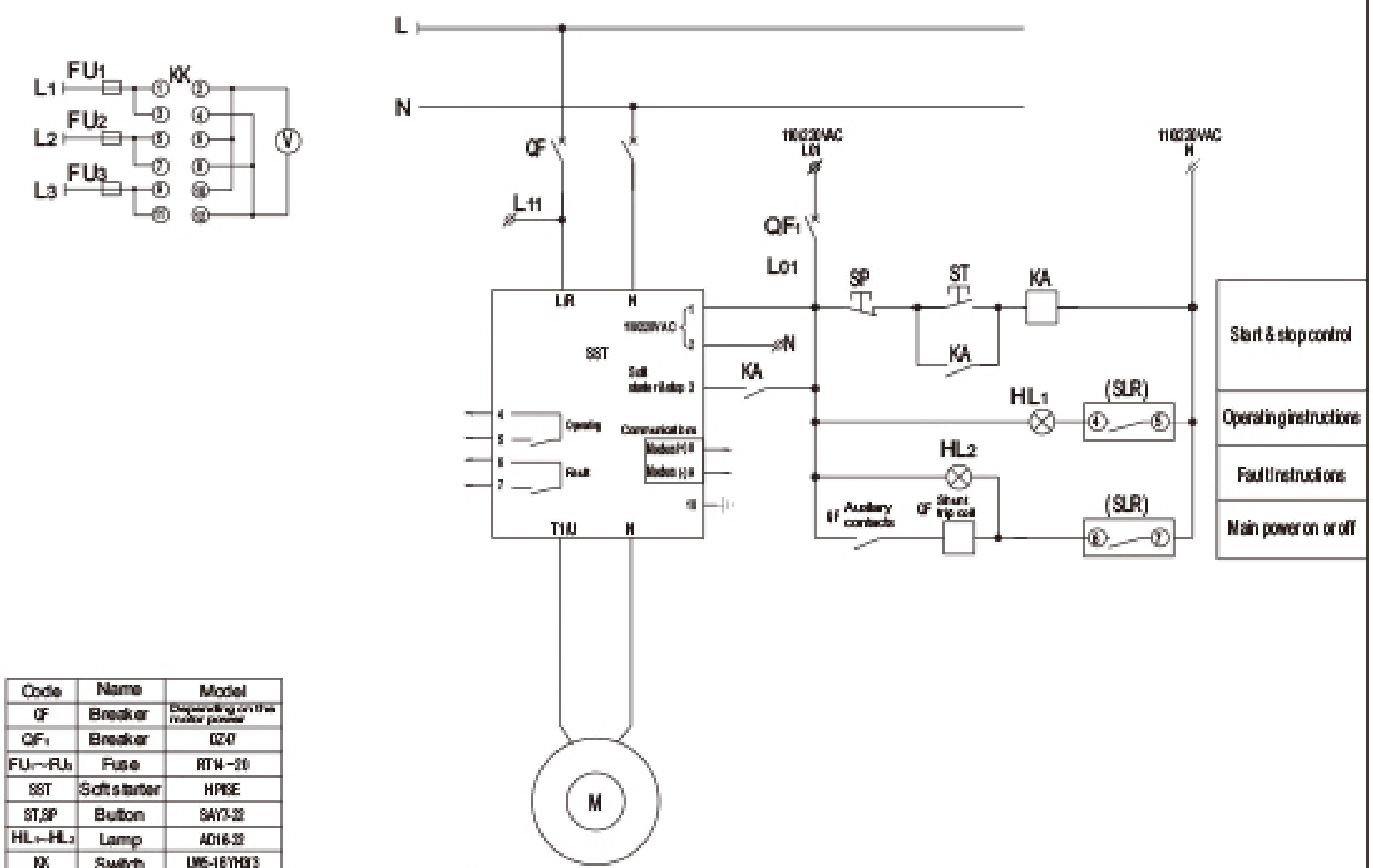


Code	Name	Model
QF	Breaker	Depending on the motor power
QF1	Breaker	DZ47
FU_1~FU_3	Fuse	RT14-20
SST	Soft starter	HPISE
ST,SP	Button	SAY7-22
HL_1~HL_2	Lamp	AD16-22
KK	Switch	LW5-16YH3/3
V	Voltmeter	6L2-V
KA	Intermediate relay	JZC4-44



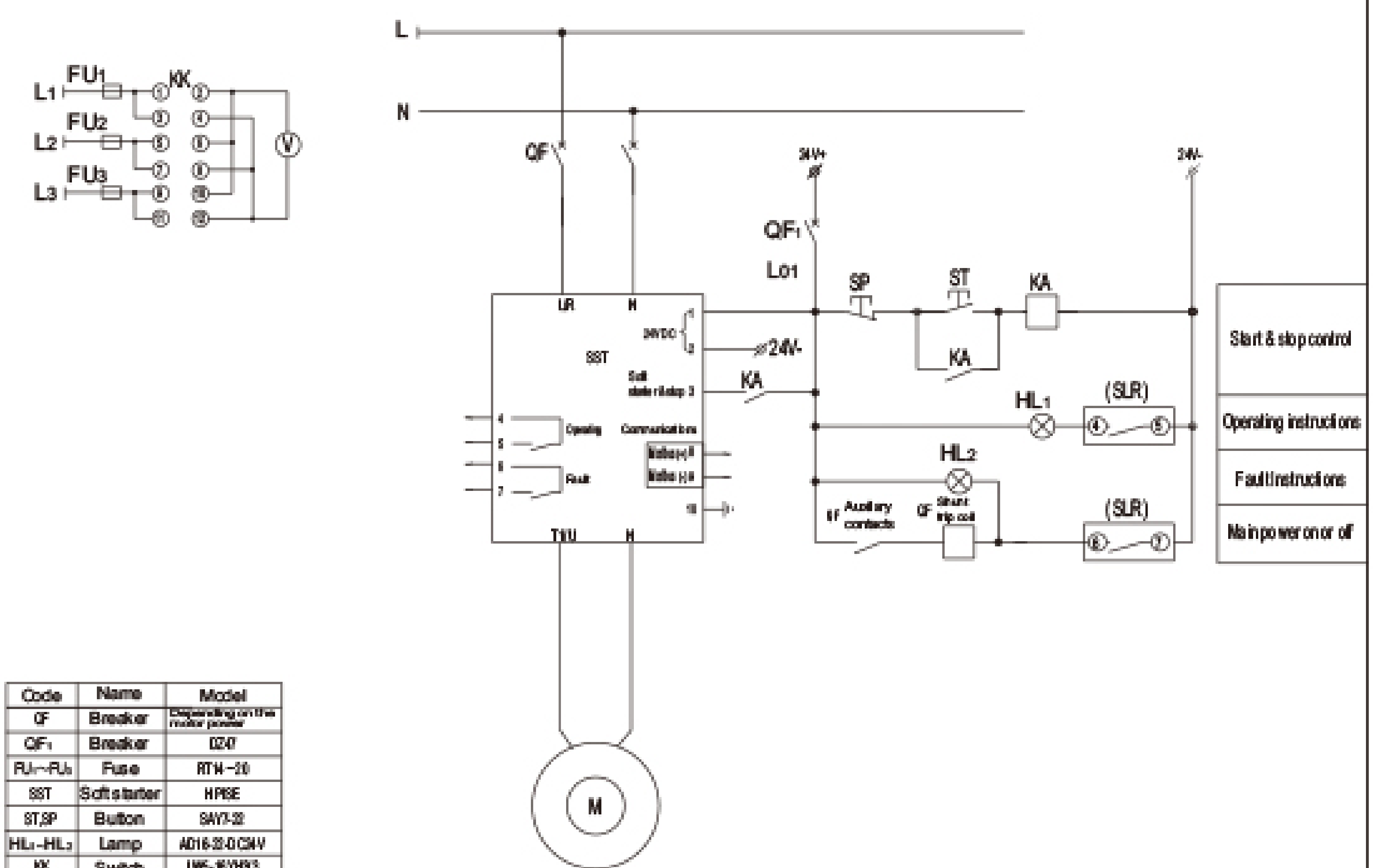
Code	Name	Model
QF	Breaker	Depending on the motor power
QF1	Breaker	DZ47
FU_1~FU_3	Fuse	RT14-20
SST	Soft starter	HPISE
ST,SP	Button	SAY7-22
HL_1~HL_2	Lamp	AD16-22-DC24V
KK	Switch	LW5-16YH3/3
V	Voltmeter	6L2-V
KA	Intermediate relay	JZC4-44-DC24V

Typical Application



Code	Name	Model
QF	Breaker	Depending on the motor power
QF_1	Breaker	DZ47
FU_1~FU_3	Fuse	RT14−20
SST	Soft starter	HPISE
ST,SP	Button	SAY7-22
HL_1~HL_2	Lamp	AD16-22
KK	Switch	LW5-16YH3/3
V	Voltmeter	6L2-V
KA	Intermediate relay	JZC4-44

SOLCOM AND HAPN (SHANGHAI) ELECTRIC | HPISE single phase soft starter control diagram Ver1.00 | Diagram HP-1803



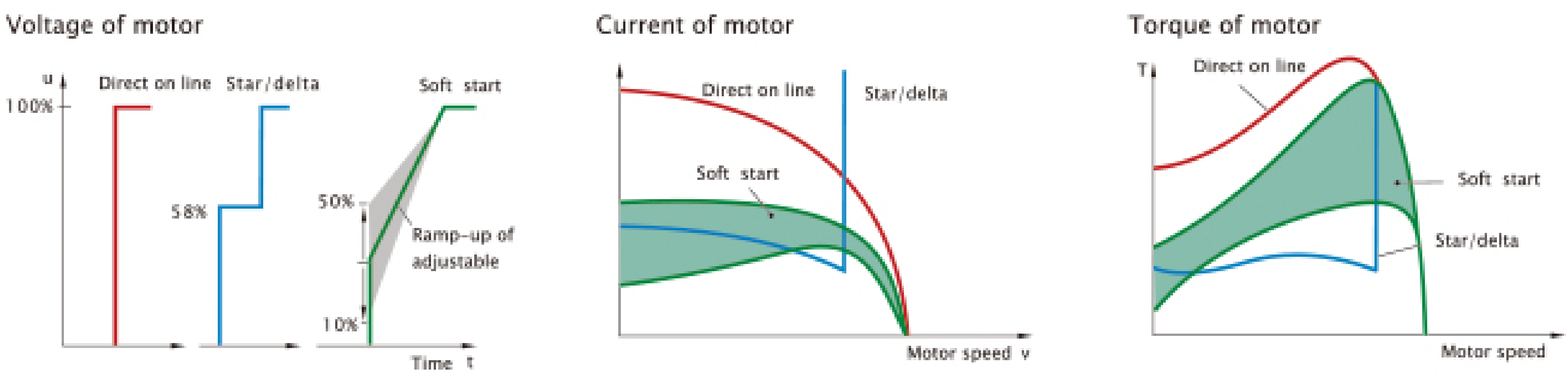
Code	Name	Model
QF	Breaker	Depending on the motor power
QF_1	Breaker	DZ47
FU_1~FU_3	Fuse	RT14−20
SST	Soft starter	HPISE
ST,SP	Button	SAY7-22
HL_1~HL_2	Lamp	AD16-22-DC24V
KK	Switch	LW5-16YH3/3
V	Voltmeter	6L2-V
KA	Intermediate relay	JZC4-44-DC24V

SOLCOM AND HAPN (SHANGHAI) ELECTRIC | HPISE single Phase soft starter control diagram Ver1.00 | Diagram HP-1804

Function

Feature

- Opening design of human-machine interaction.
- Unique motor fuzzy algorithm solves mechanical impact and shock problems.
- Extensive motor protect functions, long lifespan.
- Opening programming, customization based upon customer's demand, save cost.
- Load data indication and feedback system



Performance comparison of direct-on-line, star-delta and soft-start at voltage, current and torque of the motor.

Applications

- Starting equipment
- Packing Machinery
- Pump fan
- Extruder
- Centrifuge
- Mixer
- Gear-drive device
- Conveyor belt
- Woodworking Machinery
- Textile Machinery
- Propeller
- Process control
- Main power plant

Ordering information

HP IS D 210 - 380 - 220 - 1 + 2

xxx - xxx - xxx - x + 2 ...

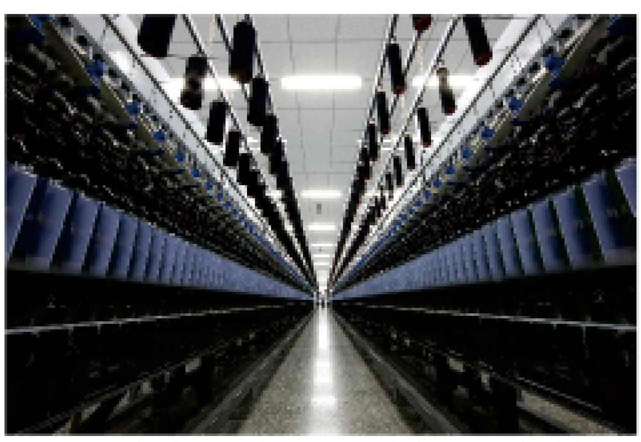
Enterprise code	Design serial code	Control sort	Starter FLC	Main voltage	Control voltage	Options
HP	IS	D	210 (xxx)	380 (xxx)	220 (xxx)	1+2 (x+2 ...)

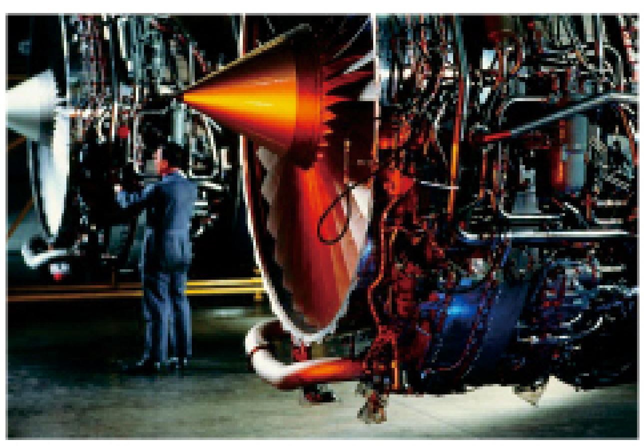
(1) Starter FLC: 18、30、45、60、75、90、110、145、175、210、250、300、370、470、570、720、840

(2) Main Voltage 50/60Hz ±4Hz	Specify	For
	220VAC	180-240VAC
	380VAC	380-420VAC
	500VAC	425-525VAC

(3)Control Voltage 50/60Hz ±5Hz	Specify	For
	110VAC	100-120VAC
	220VAC	200-240VAC
	380VAC	360 -400VAC

(5)Options	Code	Introducti on
	0	No option
	1	RS485 Co mmunication terminals (Modbus)
	2	4-20mA Analogue output



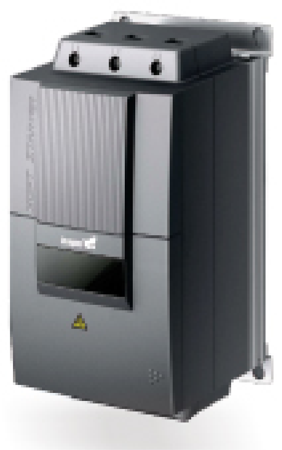


Parameters

Technical parameters	
Rated Voltage	220~500V(consult the manufacturer for higher voltage)
Rated Frequency	50/60Hz
Rated Current	18~840A
The motor adapted	Three-phase squirrel-cage induction motor
The soft start overload	75~150%,0~10s
Pulse parameter	80%Ue,0~1s
Control method	Soft start, soft stop, pump control, pulse start
Starts per hour	3~6 times/hour (as per loading application)
Adjustable starting torque	30%~80%(direct starting torque)
Number of functions	>145
I/O setting	
Analog input	1 PTC input
Logic input	4 Logic input (programmable)
Analog output	0~20mA,0~5V(optional);0~10V(optional)
Relay output	3 Relay output,2 of them are Programmable
Operation command input	Preset by LCD keyboard, control terminal, RS485 communication, switchable among them
Dialog Tool	Built-in remote monitor or installation software
Protection & communication display	
Protection & Supervision	Short circuit, over-voltage, under-voltage, overload, loss phase, phase sequence, over current, ground fault, current unbalance, overheat of motor, time of frequently start.
LED display	Parameters such as current, voltage and alarm.
Button-locking & Function Selection	All or some buttons can be locked and the function of some buttons can be defined to
Integrated communication protocol	User-defined
Optional communications	RS485
Working environment	
Working place	Indoor, no sunshine, no dust, no corrosion, no flammable gas, no grease, no steam, no dropping water, no salts and so on.
Altitude	Lower than 2000m.
Operating temperature	0℃~50℃
Humidity	Air relative humidity lower than 95%RH (25)
Vibration	No obvious vibration or shocking
Storage temperature	-10℃~50℃
Protection & structure	
Protection Class	IP20
Cooling	Natural cooling
Installation	In cabinet

Parameters

230-690V Motor Power								
Motor Power (KW)			Rated Current Ie(A)	Modle				Weight (kg)
220V	400V	500V			Main voltage	Control voltage	Option	
4	7.5	11	18	HPISD18	- X	- X	- X	4.5
7.5	15	18.5	30	HPISD30	- X	- X	- X	4.5
11	22	25	45	HPISD45	- X	- X	- X	4.5
15	30	37	60	HPISD60	- X	- X	- X	4.5
18.5	37	45	75	HPISD75	- X	- X	- X	4.5
22	45	55	90	HPISD90	- X	- X	- X	5.5
30	55	75	110	HPISD110	- X	- X	- X	5.5
37	75	90	145	HPISD145	- X	- X	- X	5.5
45	90	110	175	HPISD175	- X	- X	- X	22.7
55	110	132	210	HPISD210	- X	- X	- X	22.7
75	132	160	250	HPISD250	- X	- X	- X	22.7
90	160	200	300	HPISD300	- X	- X	- X	22.7
110	200	250	370	HPISD370	- X	- X	- X	24.8
132	250	315	470	HPISD470	- X	- X	- X	24.8
160	315	400	570	HPISDS570	- X	- X	- X	24.8
200	400	500	720	HPISD720	- X	- X	- X	24.8
250	450	560	840	HPISD840	- X	- X	- X	24.8



HPISD 18…60

HPISD 75…110

HPISD 145…370