雷诺尔
Shanghai RENLE
Science&Technology Co., Ltd.

RENLE

Shanghai RENLE Science & Technology Co., Ltd

No.188 Building 1, Lane 3968, Chengbei Road, Jiading District,
Shanghai, 201807, P.R. China
Tel: +86–21–3953 8058, 5996 6666
Fax: +86–21–3953 8129
E–mail: info@renle.eu

RENLE Europe GmbH
Wendemuthstraße 5
22041 Hamburg
Germany
Tel: +49 40–2508 415
Fax: +49 40–5009 7043

http://www.renle.eu
National toll free service
Hotline: +86 800–8200–785
August , 2019

Technical innovation benefits the world
RENLE Science &technology

Copyright notice

All photographs in this catalog are taken on actual location. No organization or person is allowed to reprint or modify them without prior permission. The products and their description in this catalog are subject to upgrade with the renovation of the products. Please refer con stantly to RENLE's official website: www.renle.com. Shanghai RENLE Science & Technology Co, Ltd reserves the right of final interpretation.

Technical innovation benefits the world

RENLE Science & technology

RENLE

SSD1 Model
Motor Soft Starter

雷诺尔

Shanghai RENLE
Science&Technology Co., Ltd.

雷诺尔

Shanghai RENLE
Science&Technology Co., Ltd.

About RENLE

Shanghai RENLE Science & Technology Co., Ltd. is one large industrial enterprise for capital operation, brand operation, industry operation and so on. RENLE is specialized in the production of LV/MV/HV motor soft starter, LV/MV/HV frequency converter, intelligent electric equipment, new energy electric equipment and complete sets of LV/HV transmission and distribution equipments.

National key projects

Expo 2010 Shanghai China, 2008 Bejing Olympic Games, Yangshan Deepwater PortProject of Shanghai International Shipping Center, Shanghai Pudong Airport, ShanghaiHongqiao Airport, the Three Gorges Project, Gansu Satellite Launching Center,South-to-North Water Diversion Project, West-to-East Natural Gas Transmission Project,China National Petroleum Corp. and SINOPEC etc.

Manufacturer of intelligent power grid and new energy electric

RENLE

SSD1 series

Motor Soft Starter

Product Description

SSD1 series intelligent soft starter adopts international advanced electronics technology, microprocessor technology and modern control theory to efficiently limit start voltage of asynchronous motor. The equipment could be widely applied to fan, pump, conveyor and compressor and other heavy load equipment. It is an excellent product to neplace traditional startup equipments such as star/triangle transition, self-coupling voltage reduction, magnetron voltage reduction and so on.

Technical Characteristics

- Parameter setting adopts Tree-menu management for easy checking & modification.
- Dynamic fault record function which is convenient for seeking the reason of fault;
- Over current, three-phase current imbalance, overheat, phase loss and motor overload protection;
- BYOD standard Modbus communication protocol;
- Reasonable structure design to make installation easier and use more convenient; Terminals are plug-type, easy for wiring.
- Combined both drive board and main board into one, lowering the cost and easy for operation.
- Executive Standards: GB14048.6-2008 and IEC

Typical Application

SSD1 series intelligent soft starter could be widely applied to electric power, metallurgy, petroleum, petrochemical, mining, chemical industry, construction, building materials, municipal project, arm industry, light industry, textile, printing and dyeing, paper industry, and pharmacy and so on.

- Pump: make use of soft stop function to relieve the influence of water hammer so as to save system maintenance cost.
- Ball mill: make use of voltage ramp startup to reduce gear torque friction so as to save cost and time.
- Fan: reduce belt friction and mechanical conflict to save maintenance cost.
- Compressor: make use of current limitation function to realize smooth startup so as to reduce motor heating and prolong its service life.
- Conveyor: make use of soft start to realize smooth and gradual startup process in order to avoid product move and liquid overflow.

Technical Features

- Main loop work voltage: AC380（+10%−15%）;
- Main loop work current: 40A～1200A;
- Main loop frequency: 50Hz/60Hz（±2%）;
- Control loop power supply: 110−220V±15%(0.5A)AC/DC;
- Soft starting rising time: 1～120S;
- Soft stop time: 0～60S;
- Current limiting times: 1.5～5.0Ie;
- Initial voltage: 25%～80%Ue;
- Cooling method: natural cooling;
- Communication method: RS485 series communication;
- Starting times≤10/h

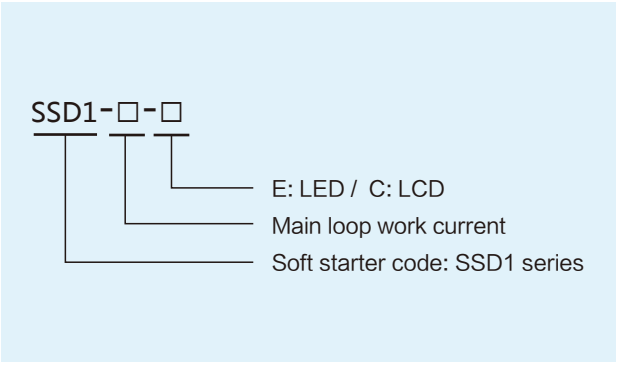
Usage and Environment Standard

Protection class	IP00
Vibration resistance	comply with IEC 68−2−6: 2 Hz to 13Hz is 1.5mm peak value; 13 Hz to 200Hz is 1gn
Impact resistance	comply with IEC 68−2−27: 15g, 11ms
Maximum ambient pollution class	Class 3, comply with IEC 947−4−2
Maximum relative humidity	93% no condensing or drip. Comply with IEC 68−2−3
Ambient temperature	Storage: −25℃ to +70℃ Running: 10℃ to +40℃ without derating. Maximum +60℃, when temperature above 40℃, the current will reduce by 2% for temperature rising per 1℃.
Maximum running altitude	2000m without derating (above 2000m, current will reduce by 0.5% for altitude rising per 100m)
Running position	vertical position，between ±10°

Relationship between Altitude and Output Rating Ratio

Altitude	Output current rating ratio
Below 2000m	1.00
2000m−2500m	0.91
2500m−3000m	0.88

Instruction for Product Model

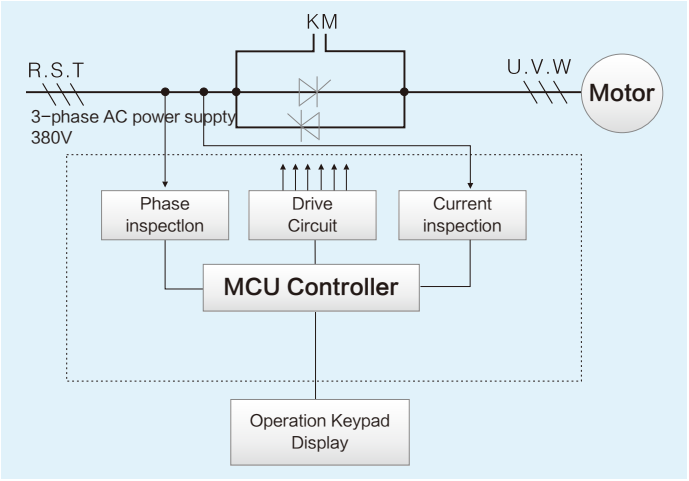


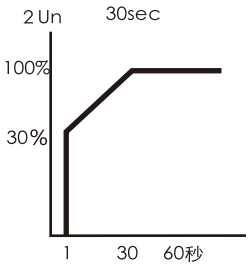
Notice for Model Selection

- Soft starter must supply bigger torque than load resistance torque to complete start of related equipments such as pump, centrifugal pump. Single start constant load: permitted 40s for startup under 3 times limited current; permitted 25s for startup under 4 times limited current.
- Recycle start: if starting motor 10 times every hour, permitted 25s for startup under 3 times limited current; and permitted 15s for startup under 4 times limited current. Now the correspondent heat protection level is class 10.
- Permit to start heavy load motor such as ball mill, fan 5 times every hour. If limited current value is as above, the protection level is class 20. If increasing startup frequency, we have to adopt bigger power level product.

Working principal

Main circuit of SSD1 soft starter adopts 6 SCRs (anti-parallel connected in series) to connect with stator circuit of AC motor. Based on function of SCR electronic switch, the soft starter makes use of microprocessor to adjust trigger angle to change SCR's conducting angle, so as to change motor input voltage value to realize the control of motor soft start. When completing the start, the output of soft starter will reach rated voltage. Then contactor KM which controls three-phase bypass will switch on to make motor run into the grid.

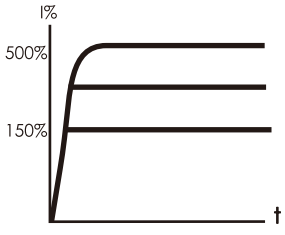




Voltage Mode

It is used to determine the initial motor torque.(When the frequency is a constant value, motor torque is proportional to the square of the applied voltage.)

Setup range: 30% -80% . When adjusting the parameter, the user has to consider current impact and mechanical impact. If the value is too big, it will lead to a very big initial current. And then current impact and mechanic impact will be too much more. Under voltage mode, current will change with the exact load. But if maximum value is limited to 5 times of rated current, the user could increase start time to reduce its start current. When the load is light or empty, it will also complete start process even though it does not reach setup rising time because of motor potential energy which has accelerated the establishment.



Limit Current Start

Maximum Permitted Current during motor start.

Setup range: 150-500 % FLA(motor rated current). If asking for an extending range, please contact the manufacturer. If the setup value is too big, the motor will get bigger current from the main circuit to accelerate its speed. If the setup value is too small, it will cause that the motor still could not reach the full speed after completing its acceleration process. In order to help start current quickly reach limited value, it's better to setup start time short.

Motor and system protection functions:

SSD1 series soft starter provides many protections upon motor and soft starter. The main functions are as below:

1. Protection for three-phase input phase failure. It won't start unless there is load with power supply from main loop and three phases.
2. Protection for overheat. Monitor the temperature. Frequent starts will lead to too high SCR's temperature. (Over 80° C)
3. Protection for overlong start time. It is not good for motor and soft starter if start time is too long. So the default limit for start time is 30s. And the user could set up this time between 10~300s in accordance with exact load.
4. Protection for big current belongs to timing limit. If the current is over 5~8 times (available for setup), it will cut off output within 20ms ~2s (available for setup).
5. Protection for inverse overload. There are 4 grade curves stall protection.
6. Light load alarm; trip protection.
7. Frequency mistake alarm.

Humanized Operation Interface

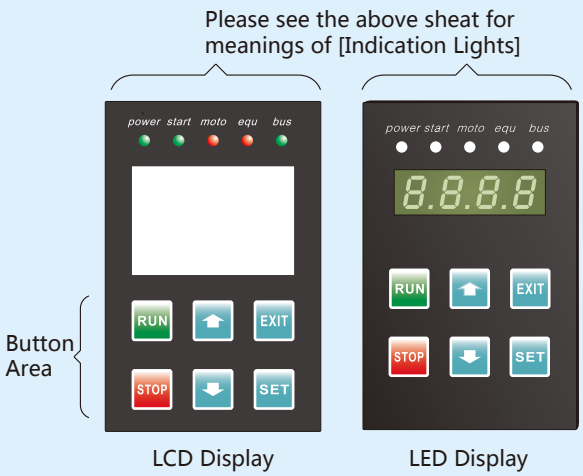
LED Indication Light

There are 8 LED lights on the display panel to indicate soft starter's status.

power	Power indication	Green	On = Control system is supplied with power
start	Start indication	Green	On = Motor runs normally Off = Motor stopped Flash = Motor is starting
Moto	Motor failure	Red	On = Motor fault indication, such as over-load,locked rotor, etc.
equ	Equipment failure	Red	On = Soft starter's failure, such as input phase failure, thyristor overtemperature
bus	Bus indication	Green	On = Normal communication (See communication manuals)
A		Green	On = Current (unit : A)
SEC		Green	On = Time (unit : second)
%		Green	On = Current/voltage percentage

Key Function Description:

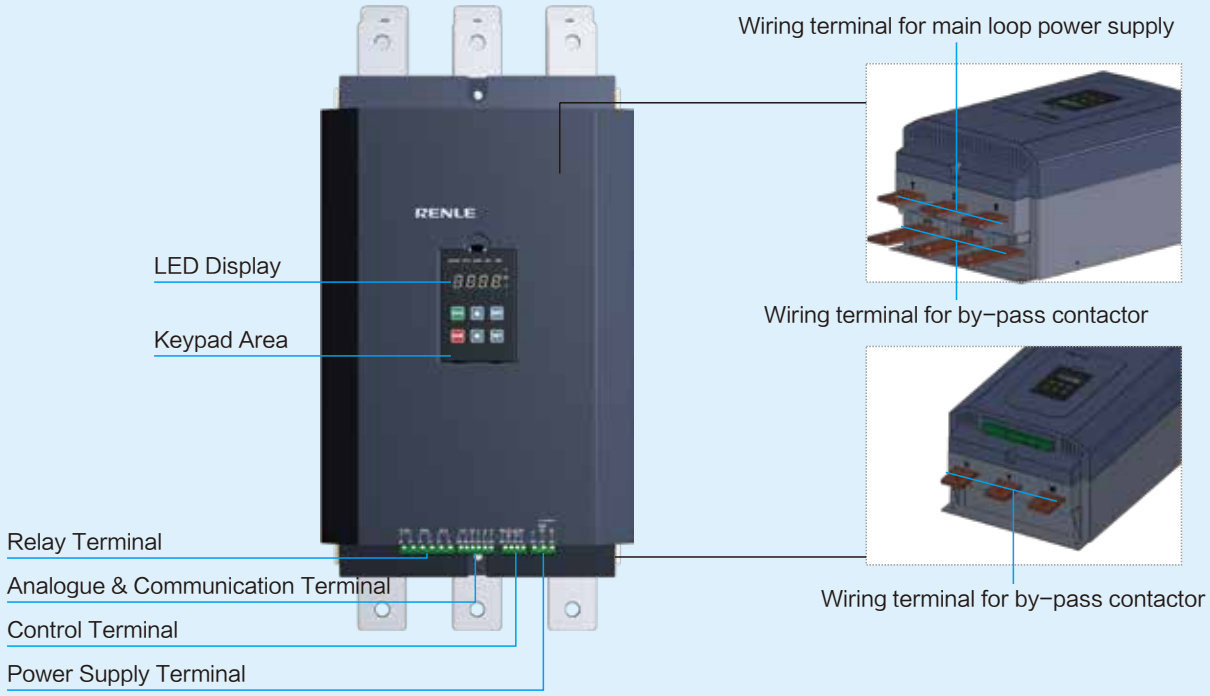
- **RUN** Start key: Start the motor, must set the control source
- **STOP** Stop key: Stop the motor, must set the control source
- **SET** Parameter setting key: Enter the next level of menu, key of saving the parameter
- **EXIT** Return key: Exit from the previous menu
- Plus or minus key: increase and decrease key for menu and setting parameters



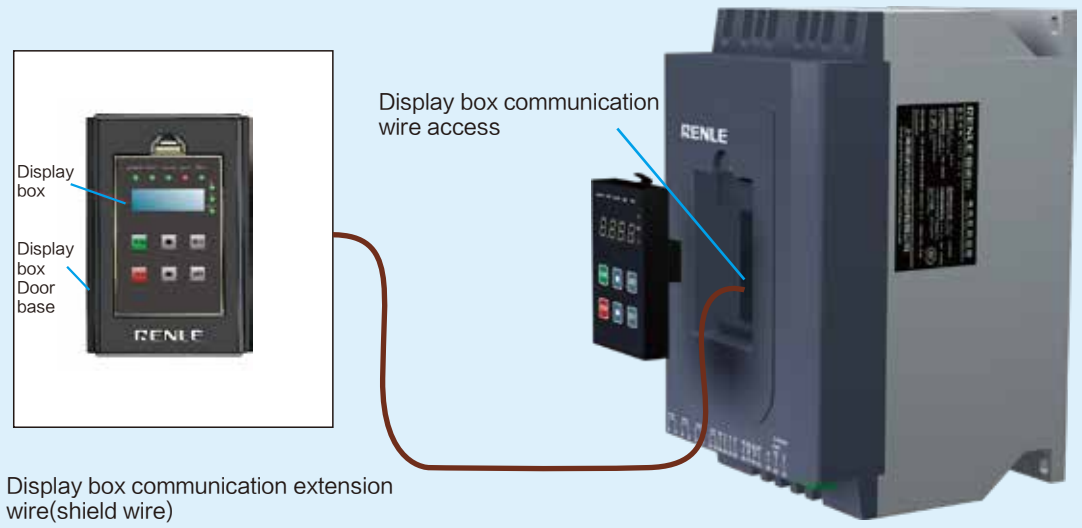
Outline and wiring terminals

M1 Type

M2 Type / M3 Type / M4 Type



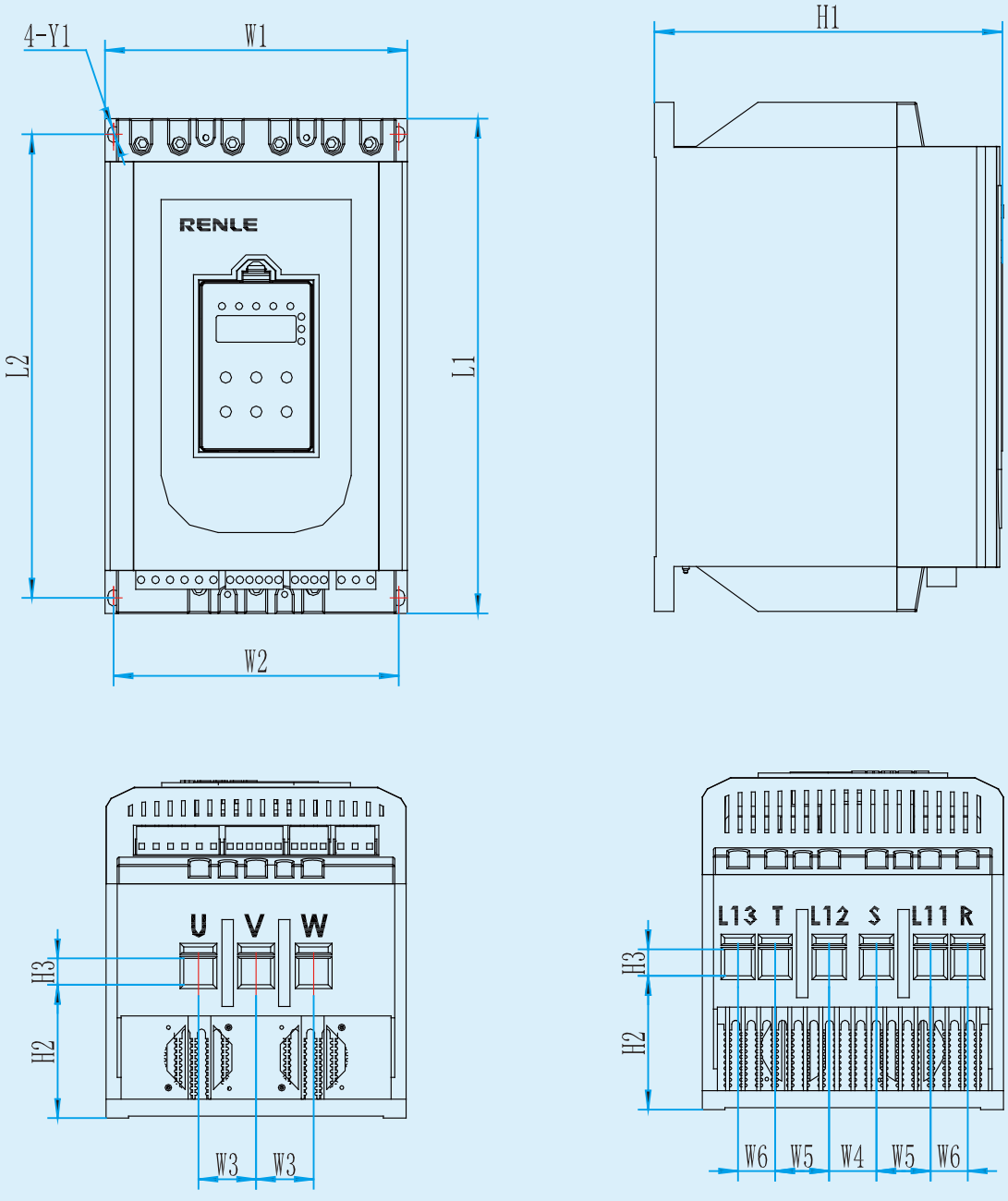
Extension Wire Control Diagram



⚠ Note: The display box door base and display box communication extension wire(shield wire) in the diagram are for option.

The size of hole on the door should be: $64^{+0.5}_{+0.2}$x$107^{+0.5}_{+0.2}$

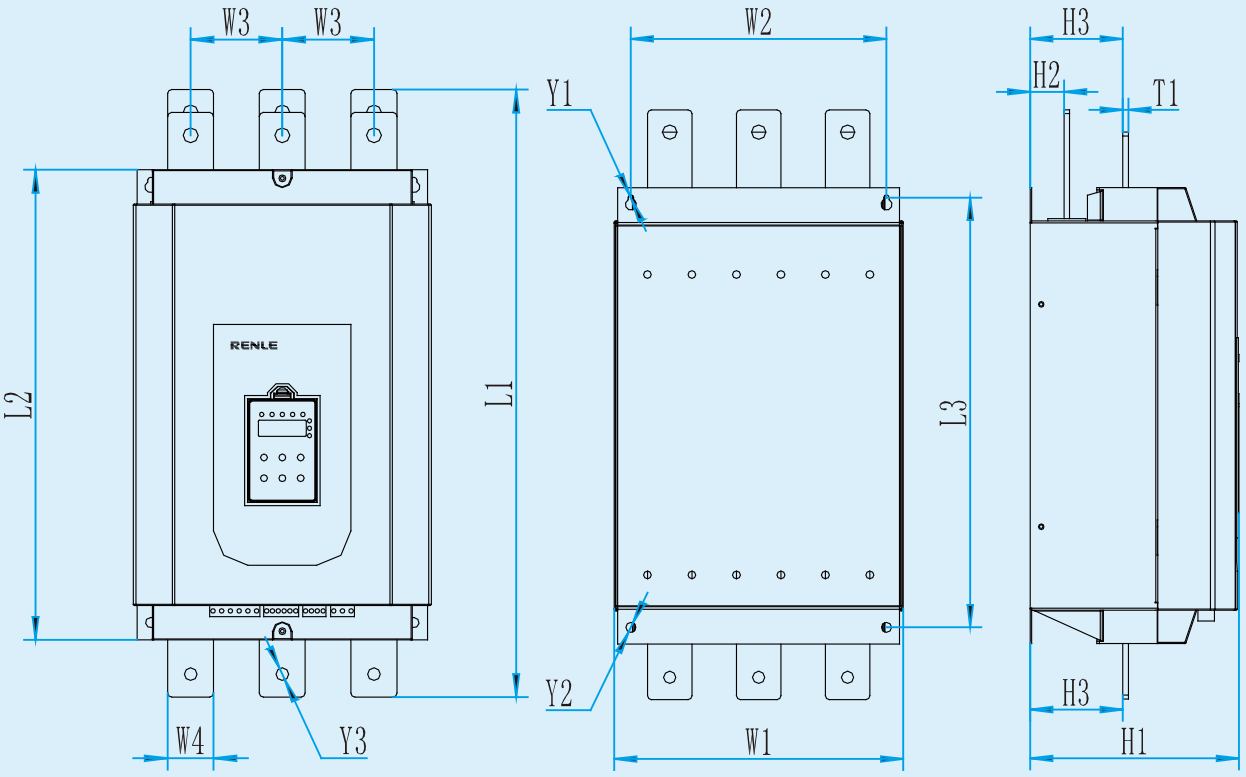
M1 Outline Dimension



Please check the parament in accordance with the above picture.

Mode	Dimension (mm)											
	L1	L2	W1	W2	W3	W4	W5	W6	H1	H2	H3	Y1
M1	260	243.5	159	150	30.5	25	28.5	19.5	178	70.5	14	Φ6*2.5

M2/M3/M4 Outline Dimension



Please check the parament in accordance with the above picture.

Model	Dimension (mm)													
	L1	L2	L3	W1	W2	W3	W4	H1	H2	H3	T1	Y1	Y2	Y3
M2	530	410	380	260	230	80	40	188	30	84	4	Φ9	Φ9	Φ11
M3	565	440	410	290	260	90	40	190	30	84	6	Φ9	Φ9	Φ13
M4	665	544	519	438	375	135	50	264	40	92	8	Φ9	Φ9	Φ13

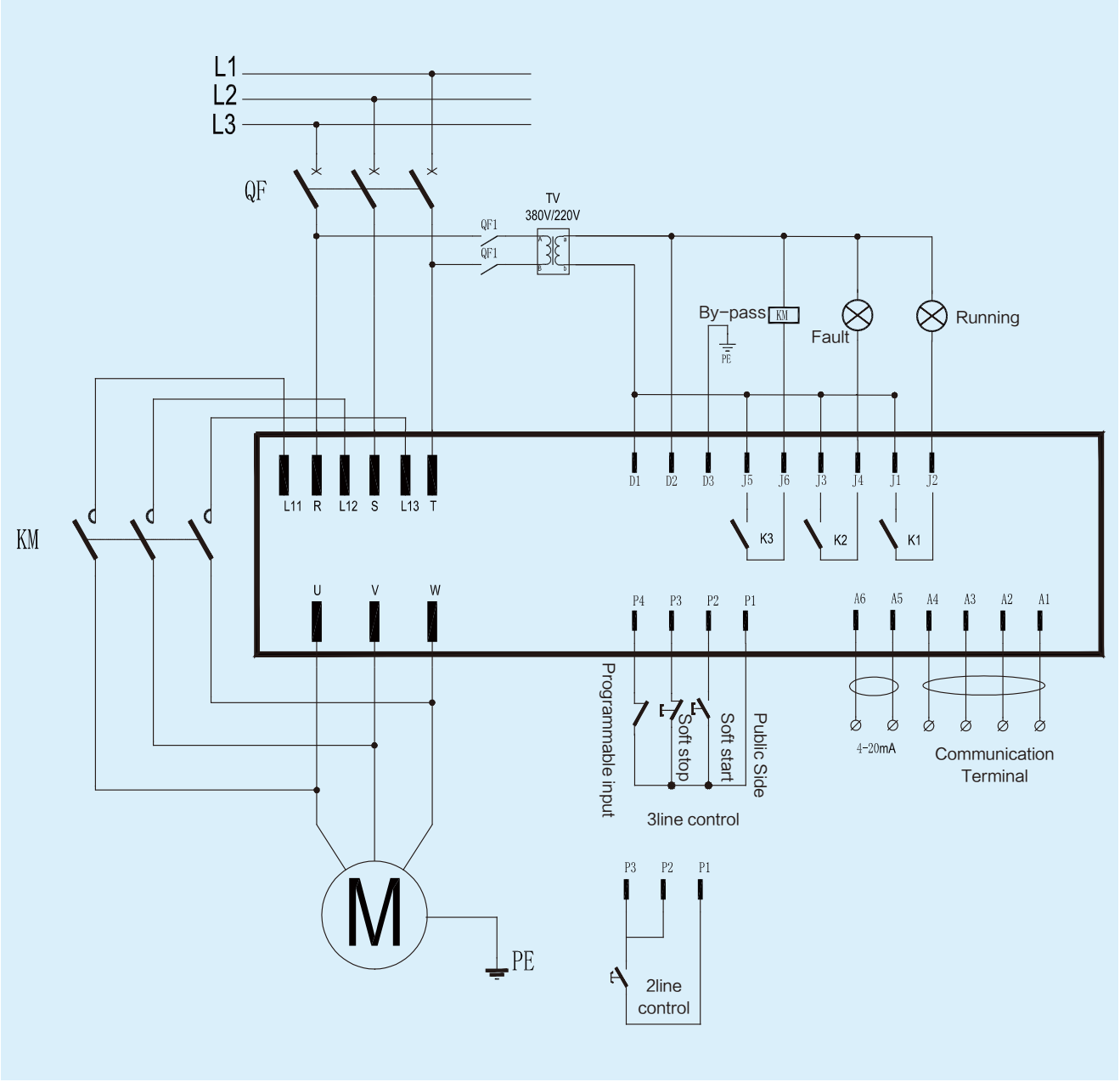
Product Specification

SSD1 Soft Starter 380V(+10%~15%)50/60Hz(±2%)			
Structural model	Product Model	Rated Current Ie(A)	Applicable Motor Rated Power(kW)
M1	SSD1-40-E/C	40	22
	SSD1-54-E/C	54	30
	SSD1-68-E/C	68	37
	SSD1-80-E/C	80	45
	SSD1-100-E/C	100	55
M2	SSD1-135-E/C	135	75
	SSD1-160-E/C	160	90
	SSD1-200-E/C	200	115
	SSD1-250-E/C	250	132
	SSD1-300-E/C	300	160
M3	SSD1-360-E/C	360	200
	SSD1-500-E/C	500	250
	SSD1-640-E/C	640	320
M4	SSD1-800-E/C	800	400
	SSD1-1000-E/C	1000	500
	SSD1-1200-E/C	1200	600

Notice for Model Selection:

1. Soft starter must supply bigger torque than load resistance torque to complete start of related equipments such as pump, centrifugal pump.
2. Single start constant load: permitted 40s for startup under 3 times limited current; permitted 25s for startup under 4 times limited current.
3. Recycle start: if starting motor 10 times every hour, permitted 25s for startup under 3 times limited current; and per-mitted 15s for startup under 4 times limited current. Now the correspondent heat protection level is class 10.
4. Permit to start heavy load motor such as ball mill, fan 5 times every hour. If limited current value is as above, the pro-tection level is class 20. If increasing startup frequency, we have to adopt bigger power level product.

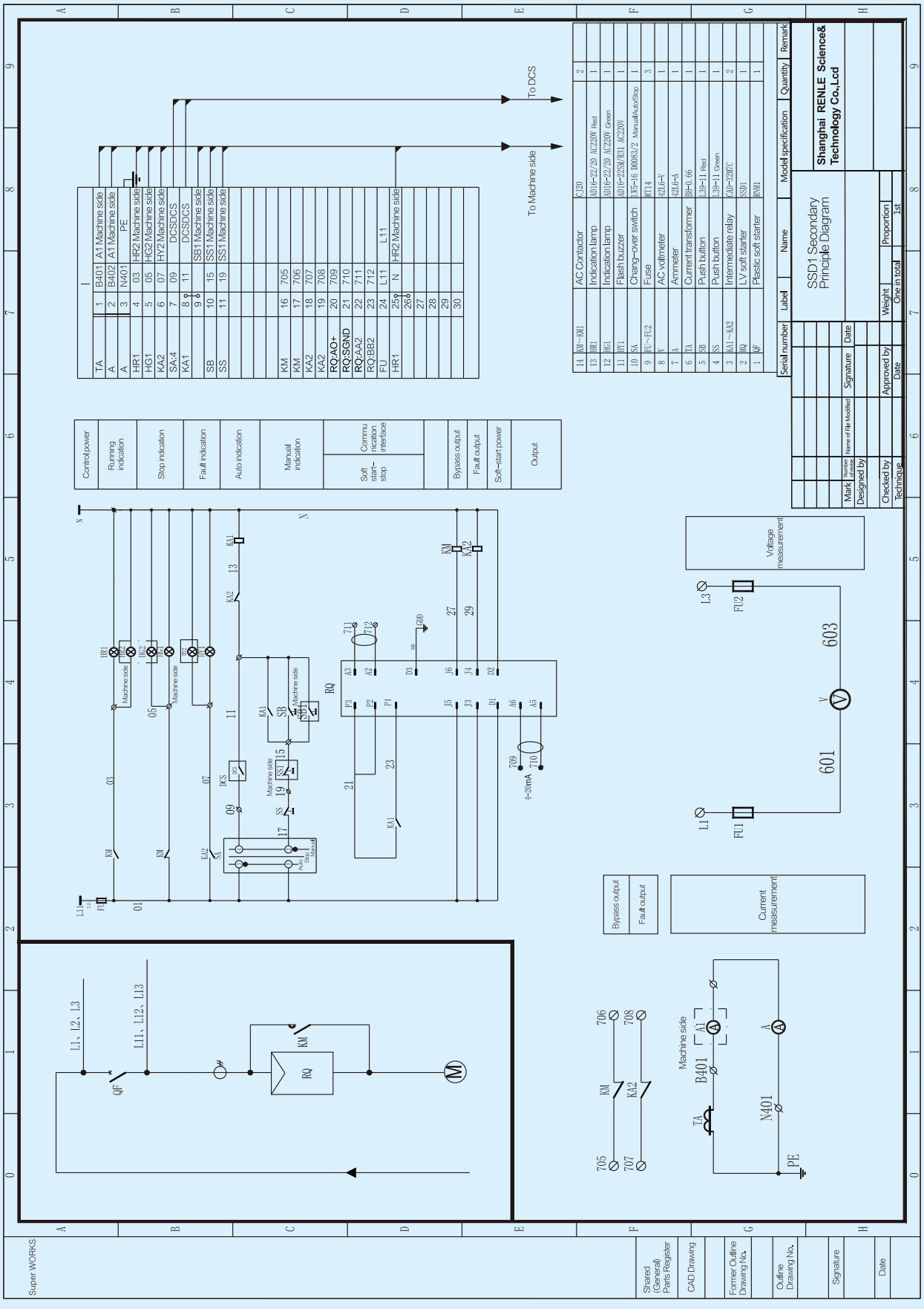
Outside Wiring Drawing



Instruction:

1. Main loop wiring: Terminal R-S-T connect power supply; Terminal U-V-W connect motor
2. Control power supply wiring: it connects control power supply terminal D1 and D2.
3. Ground wiring: it connects power supply terminal D3.
4. K3 controls bypass contactor. K2 is for fault output, K1 is for running output. They are pass contacts.
5. Start and stop loop wiring: Follow circuit diagram to connect control loop terminals P1, P2, P3.
6. P4 is programmable input terminal.
7. A5 and A6 are 4-20mA analogue signal output terminals.
8. A1, A2, A3, and A4 are RS485 communication terminals.

Secondary Wiring Drawing



National Key Projects

Three Gorges Project
Beijing Olympic Rowing-Canoeing Park
Beijing Olympic Games Supporting Projects
Beijing Wukesong Gymnasium
Government Offices Administration of the State Council
CCTV, China
Beijing Capital International Airport
South-to-North Water Diversion Project
Huangshan-Quzhou-Nanping Expressway
West-to-East Electricity Transmission Project
West-to-East Natural Gas Transmission Project
Stations of Shanghai Magnetic Levitation Rail Transportation
Expo 2010 Shanghai China Supporting Projects
Shanghai Pudong Airport
Shanghai International Automobile Museum
Shanghai Hongqiao Airport Extension Project
Terminal of Inner Mongolian Hohhot Baita InternationalAirport
Extension Project
Shenyang Olympic Center
Qingdao Olympic Center
Jinan Olympic Center
Chengdu Shuangliu International Airport Extension Project
Chongqing Yuanjiagang Olympic Sports Center
Guangzhou New Baiyun International Airport
Wuhan Tianhe Airport
Shanghai Metro Line 3
Shanxi Wanjiazhai Yellow River Diversion Project
Qinghai Xiaoyou Mountain Ecological Engineering
Tianjin Eight Large Regions Heating Engineering
Shandong Heze City Yellow River Diversion Project
Guangxi Longtan Hydroelectric Project
Gansu Satellite Launching Center

National Key Projects

Yangshan Deepwater Port Project of Shanghai International Shipping Center
Sichuan Xichang Satellite Launching Center
Taizhou Petrochemical Co., LTD
Anshan Iron and Steel Group Corporation
Jilin Petrochemical Company
Wuhan Iron and Steel (Group) Corp.
Liuzhou Chemical Industry Co., Ltd, Guangxi
Beijing Shougang Company Limited
SINOPEC Cangzhou Company
China Great Wall Aluminum Corporation
SINOPEC Luoyang Company
Guangxi Pingguo Aluminium Company
Yueyang Petrochemical Factory
Liuzhou Iron and Steel Co., Ltd
Sinopec Nanjing Chemical Industry Co., Ltd
Magang (Group) Holding Company Ltd
SINOPEC Beijing Yanshan Company
Shanxi Zhongyang Iron and Steel Co., Ltd.
PetroChina Urumqi Petrochemical Company
Daqing Oilfield Limited Company
PetroChina Jinxi Petrochemical Company
SINOPEC Shenli Oilfield
CNPC Dushanzi Petrochemical Company
PetroChina Liaohe Oilfield
Beijing Financial Street
PetroChina Tarim Oilfield
Panda Museum of Chengdu Panda Ecological Park
Karamay Oilfield
Qingdao Beihai Shipyard
PetroChina Changqing oilfield
Inner Mongolian Shenhua Group Corporation Limited
Shanghai Petrochemical Company Limited
Baosteel Group Corporation in Shanghai
Chongqing International Convention & Exhibition Center
Yunnan Honghe River Nansha Hydropower Station
Datang International Power Generation Co., Ltd.