SCM

Volumetric Doser

Date: Oct. 2013

Version: Ver.B (English)

Contents

Table Index

Picture Index

1. General Description

Please read this manual carefully before installation and using of the machine to prevent damage or personal injury.

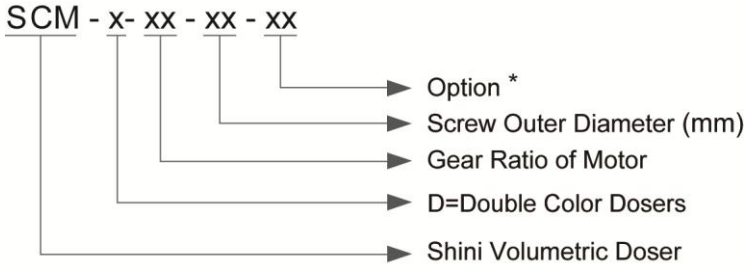
The SCM series volumetric dosers are suitable for auto-proportional mixing of new materials, regrinds, master batch and additives. A gear motor with deceleration ratio of 38:1 or 75:1 is coupled to a dosing screw of 12, 14, 16, 20, and 30mm diameter to offer ten models with different output ranging from 0.1 to 123kg/hr to clients. Double color doser can be assembled from any two single color doser according to clients' requirements. Five components automatic mixing can be realized if clients adopt four color doser.

Model: Single Color Doser SCM

Model: Double Color Doser SCM-D

High Temp. Doser SCM-H

1.1 Coding Principle



Notes: *
MS=Equipped with Mixer
CE=CE Conformity

1.2 Features

1) Standard configuration

- Dosing screws are chrome plated for durability.
- With modular structure, it is easy to disassemble, clean and interchange.
- Hopper magnets are equipped to standard base to avoid damage of molding machine screw.
- External signals can be directly input to control box.
- The current mode can be recorded without interrupted by power failure.
- Compulsory material cleaning makes it easier to replace master batch.
- Suitable for extrusion machines, just need to make replacements of a few wires.
- Rotating speed can be automatically adjusted according to extruder processing speed, which keeps the fixed proportion of master batch.
- 50 recipes are available for permanent recording of material discharging time and finished products weight (for extruder, it is max. throughput per minute).

- Use brushless DC motor and free from maintenance.
- Both master batch blockage and overload can be detected. The machine will halt and sound an alarm automatically.
- Based on customers demand, mold cycles can be set to add additives periodically so that micro-metering can be achieved.

2) Accessory option

- For collocating with SHD-100 or SHD-160U and above dryers, heavy base should be selected.
- High temperature doser SCM-H are available in PET application.
- Blender is available for customers to make materials evenly mixed.
- Main material hopper is optional for customers to feed main material conveniently.
- Low level sensor is optional for sounding an alarm when master batch is insufficient.
- Screws with diameter of 20mm or 30mm can meet customers, requirements of large output.
- Base of 100kg is optional.
- Simplified control cabinet is optional. Compared with standard control cabinet, the simplified one is much easier to operate. It features adjustable motor rotation speed and plasticizing time; high and low potential starts can be selected for IMM connecting signal.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Headquarter and Taipei factory：

Tel: (886) 2 2680 9119

Shini Plastics Technologies (Dongguan), Inc：

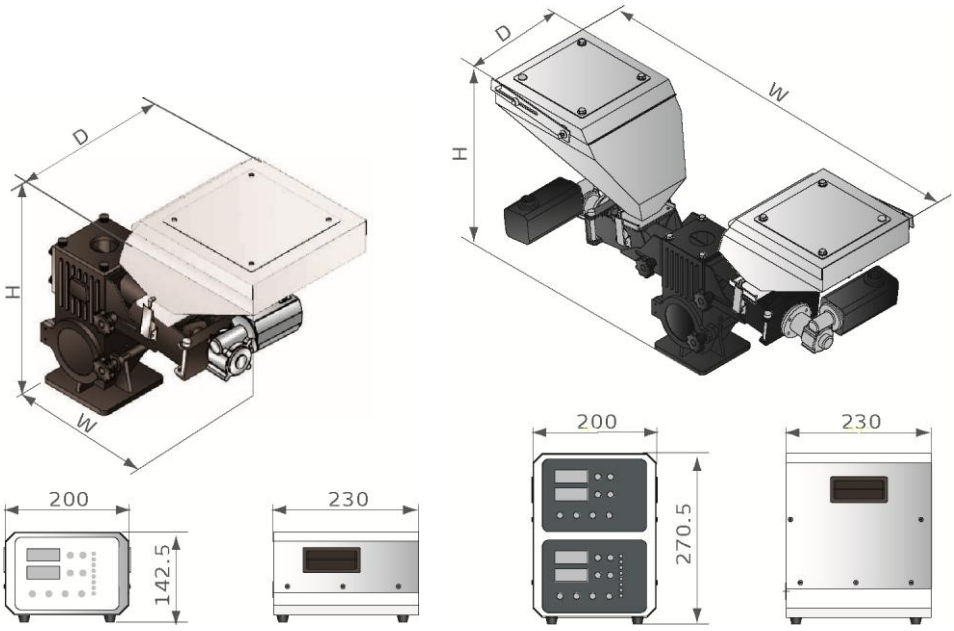
Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.：

Tel: (91) 250 3021 166

1.3 Machine Specifications

1.3.1 Dimensions of Doser



Single Color Doser

Double Color Doser

Picture 1-1: Dimensions of Doser

1.3.2 Specification List

Table 1-1: Specification List

Model	Single Color Doser SCM										Single Color Doser SCM-D		
	38-30	38-20	38-16	38-14	38-12	75-30	75-20	75-16	75-14	75-12	38/38	38/75	75/75
Motor Power (kW)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06×2	0.06×2	0.06×2
Mixer Power (kW)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Screw External Dia. (mm)	30	20	16	14	12	30	20	16	14	12	**	**	**
Output Capacity (kg/hr)	14~123	7~60	1.1~32	0.6~20	0.3~10	6~62	4.4~34	0.5~15	0.2~8	0.1~4	*	*	*
Storage Bin (L)	10	10	10	10	10	10	10	10	10	10	10	10	10
Gear Ratio	38:1	38:1	38:1	38:1	38:1	75:1	75:1	75:1	75:1	75:1	38:1/38:1	38:1/75:1	75:1/75:1
Main Material Hopper (L)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)	Optional (15)
Mixer	Optional	Optional	Optional	optional	optional	optional	optional	optional	optional	optional	标准	标准	标准
Floor Stand	optional	optional	optional	optional	optional	optional	optional	optional	optional	optional	optional	optional	optional
Dimensions													
H (mm)	520	520	520	520	520	520	520	520	520	520	615	615	615
W (mm)	610	610	610	610	610	610	610	610	610	610	1045	1045	1045
D (mm)	335	335	335	335	335	335	335	335	335	335	335	335	335
Weight (kg)	29	29	29	29	29	29	29	29	29	29	50	50	50

Note: 1) *means the output capacity is depended on model that clients choose, data of single color doser can be a reference. For example: For SCM-E-D-38-16/38-14, output capacity is 1.7~52 kg/hr.

2) **stands for the external dia. of the screw is up to client's model choice.

3) If Mount mixer for single color doser, add "MS" to model number.

4) All the output capacity of models above is based on the data from a test of continuous running of master batch whose density is 1.2kg/L ,dia. is 2~3mm.

5) Power supply: 1Φ, 230VAC, 50Hz.

1.4 Safety Regulations

Strictly abide by the following safety guide to prevent damage of the machine or personal injuries.

1.4.1 Safety Signs and Labels

All the electrical components should be installed by qualified electricians. Turn off the main switch and control switch during maintenance or repair.

Warning! High voltage!

This sign is attached on the cover of control box!

Warning! Be careful!

Be more careful at the place where this sign appears!

Attention!

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

Attention!

For high temp. doser SCM-H, it must be room temp. water that goes into the cooling part.

Warning!

Watch you hand!

The label sticks to the husing of the hopper!

Warning!

Be careful of scratch!

The label sticks to the coupling place of the screw and the measurement motor!

1.5 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

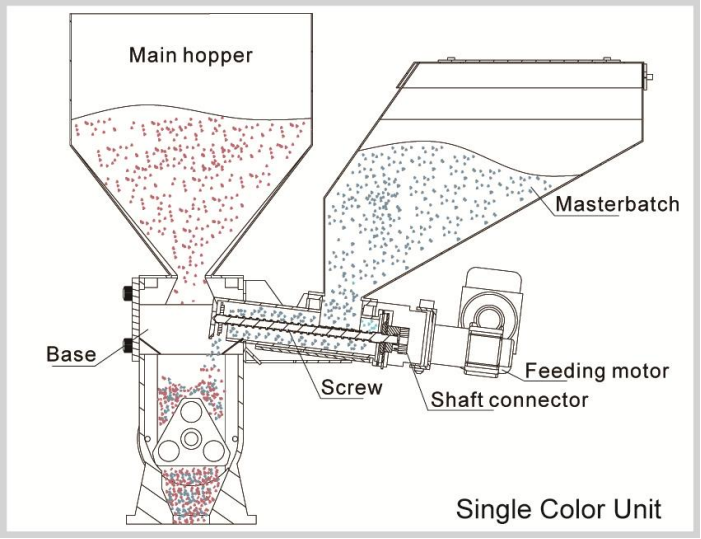
Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3. Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4. Employing consumables or oil media that are not appointed by Shini.

2. Structure Characteristics and Working Principle

2.1 Working Principle

2.1.1 Working Principle of Single-color Doser

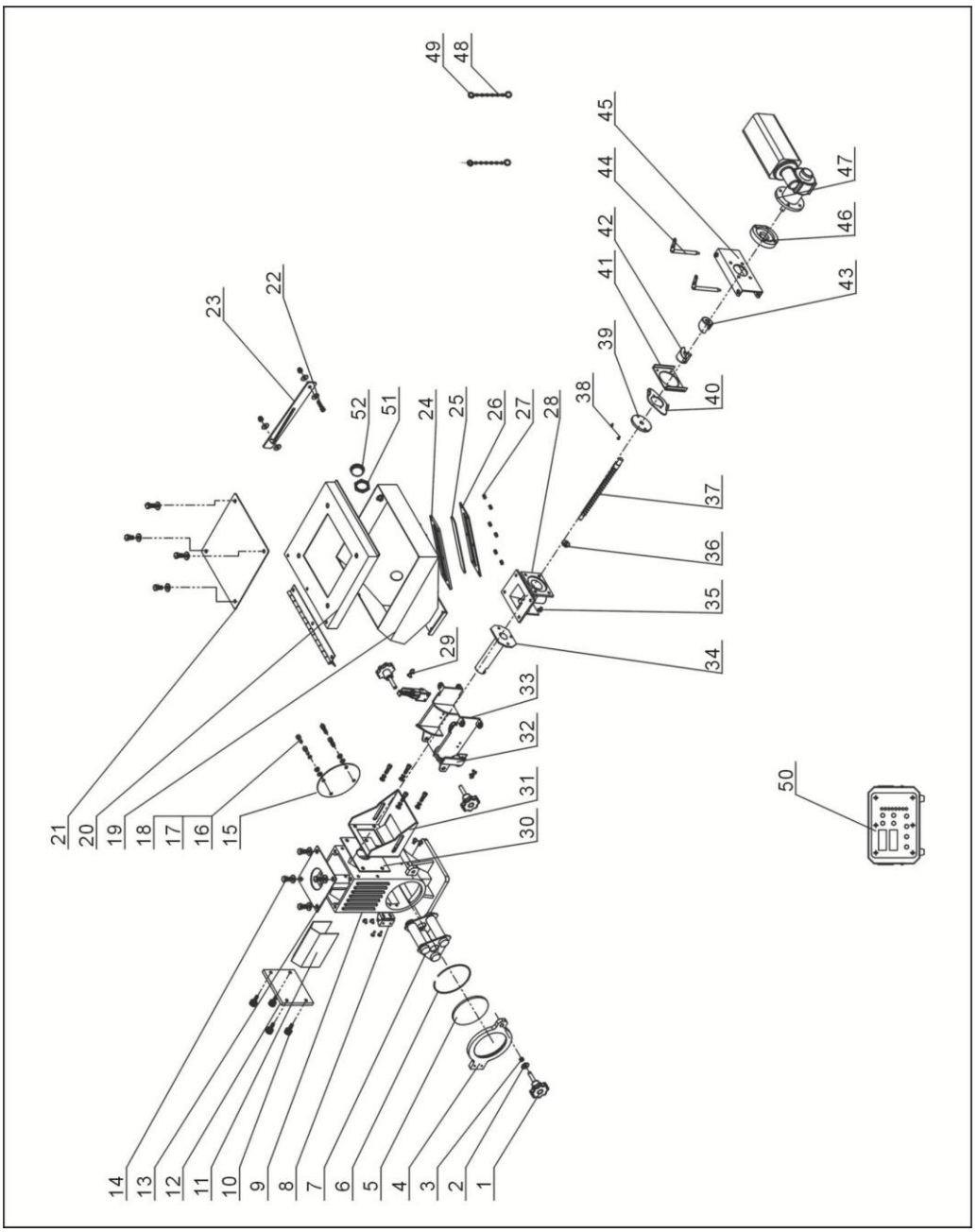


Picture 2-1: Working Principle of Single-color Doser

Signals from control cabinet will be sent to motor. Then motor begins to work. The rotary force is transferred to the dosing screw through shaft connector. Color additives in hopper will fall into the groove of conveying screw then be taken to hopper base by rotating action of the screw to achieve accurately meter and convey master batch.

2.2 Assembly Drawing and Parts List

2.2.1 Assembly Drawing of Single-color Doser



Note: Please refer to material List 2.3.2 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-3：Assembly Drawing of Single-color Doser

2.2.2 Parts List of Single-color Doser

Table 2-1：Parts List of Single-color Doser (SCM-E-38-16/14/12)

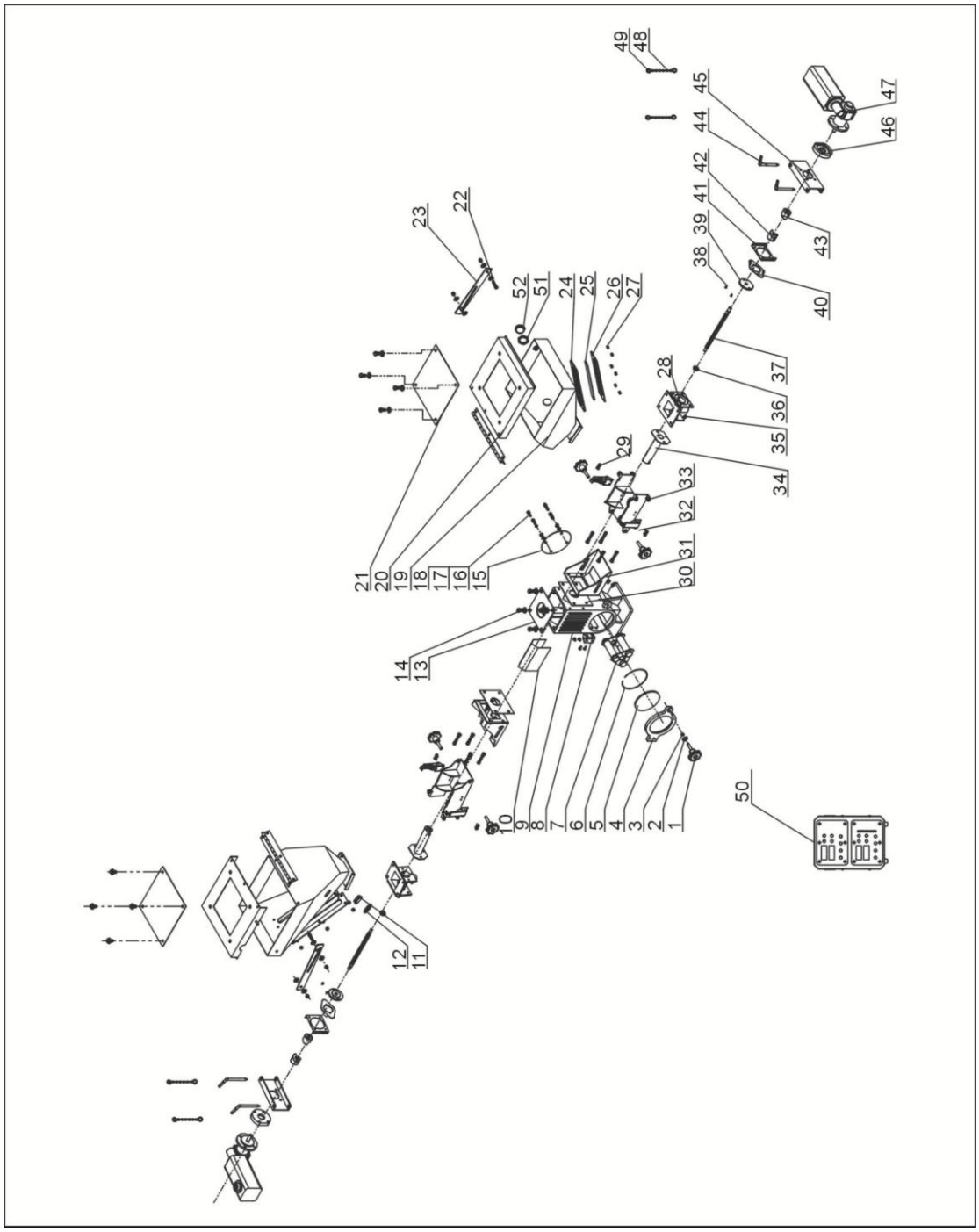
No.	Name	Part number	No.	Name	Part number
1	Knob B type M8×35	YR40083500000	27	Cross socket head cap screw M5×10	YW62051000100
2	Flat gasket 8	YW66081900000	28	Convey pipeline	-
3	Hex screw M8	YW64000800100	29	Cross socket head cap screw M4×10	YW62041000100
4	Base door	-	30	Material shutter	-
5	Tempered glass	YW70125000000	31	Side fixed housing	-
6	Elastic ring for hole use	YW69869800000	32	New adjustable snap hook	YW02003000400
7	Three-tube magnetic frame	BY10500010050	33	Body fixed bracket 1	-
8	Hinge of magnetic base	BL01005020020	34	Doser screw Φ12 sleeve	-
9	Base	-	35	Flat internal hex screw M5×10	YW61051000100
10	Manual tighten up screw M6×6×16	YW69616100000	36	Screw accessory 2	-
11	Striker plate	-	37	Screw Φ12	-
12	End plate of doser	-	38	Flat cross head cap screw M3×6	YW61030600100
13	Base cover	-	39	Screw accessory 3	-
14	External hex screw M8×16	YW60081600100	40	Screw connection	-
15	Rear cover	-	41	Conveying connection board	-
16	Internal hex screw M6×20	YW61062000200	42	Shaft coupler 1	YW61030600100
17	Flat gasket 6	YW66061200000	43	Shaft coupler 2	YW61030600100
18	Spring gasket 6	YW65006000100	44	Motor fixed rotation pin 2	-
19	Storage hopper	-	45	Body fixed bracket 2	-
20	Storage hopper lid	-	46	Feeding motor flange	-
21	Storage hopper lid plate	BW09202000000	47	Gear motor	-
22	internal hex screw M6×25	YW61062500000	48	1.2 hinge	YW90120000000
23	Hopper connection plate	-	49	Stainless steel key ring 1.2×16	YW00151300000
24	Six-way acryl stringency	YR40000600000	50	control box combination	-
25	Six-way acryl	YR40001200000	51	Choke plug screw of level sensor M30×1.5	YR30301500000
26	Six-way acryl iron sheet	YW09000600000	52	Choke plug of level sensor	BR30008400050

* means possible broken parts.

** means easily broken part and spare a backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare parts is in accordance with the real object.

2.2.3 Assembly Drawing of Double Color Doser



Notes: Please refer to material List 2.3.4 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-3：Assembly Drawing of Double Color Doser

2.2.4 Parts List of Double Color Doser

Table 2-2：Parts List of Double Color Doser

No.	Name	Part number	No.	Name	Part number
1	Knob B type M8×35	YR40083500000	26	Six-way acryl iron sheet	YW09000600000
2	Flat gasket 8	YW66081900000	27	Cross socket head cap screw M5×10	YW62051000100
3	Hex screw M8	YW64000800100	28	Convey pipeline	-
4	Base door	-	29	Cross socket head cap screw M4×10	YW62041000100
5	Tempered glass	YW70125000000	30	Material shutter	-
6	Elastic ring for hole use	YW69869800000	31	Side fixed housing	-
7	Three-tube magnetic frame	BY10500010050	32	New adjustable snap hook	YW02003000400
8	Hinge of magnetic base	BL010050200200	33	Body fixed bracket 1	-
9	Base	-	34	Screw shaft ϕ12 sleeve	-
10	Striker plate	-	35	Flat internal hex screw M5×10	YW61051000100
11	Choke plug of level sensor	BR30008400050	36	Screw accessory 2	-
12	Choke plug Screw of level sensor M30×1.5	YR30301500000	37	Screw Φ12	-
13	Base cover	-	38	Flat cross head cap screw M3×6	YW61030600100
14	External internal hex screw M8×16	YW60081600100	39	Screw accessory 3	-
15	Rear cover	-	40	Screw connection sheet	-
16	Internal hex screw M6×20	YW61062000200	41	Conveying connection board	-
17	Flat gasket 6	YW66061200000	42	Shaft coupler 1	YW61030600100
18	Spring gasket 6	YW65006000100	43	Shaft coupler 2	YW61030600100
19	Storage hopper	-	44	Motor fixed rotation pin 2	-
20	Storage hopper lid	-	45	Body fixed bracket 2	-
21	Storage hopper lid plate	BW09202000000	46	Feeding motor flange	-
22	Internal hex screw M6×25	YW61062500000	47	Gear motor	-
23	Hopper connection plate	-	48	1.2 hinge	YW90120000000
24	Six-way acryl stringency	YR40000600000	49	Stainless steel key ring 1.2×16	YW00151300000
25	Six-way acryl	YR40001200000	50	Control box combination	-

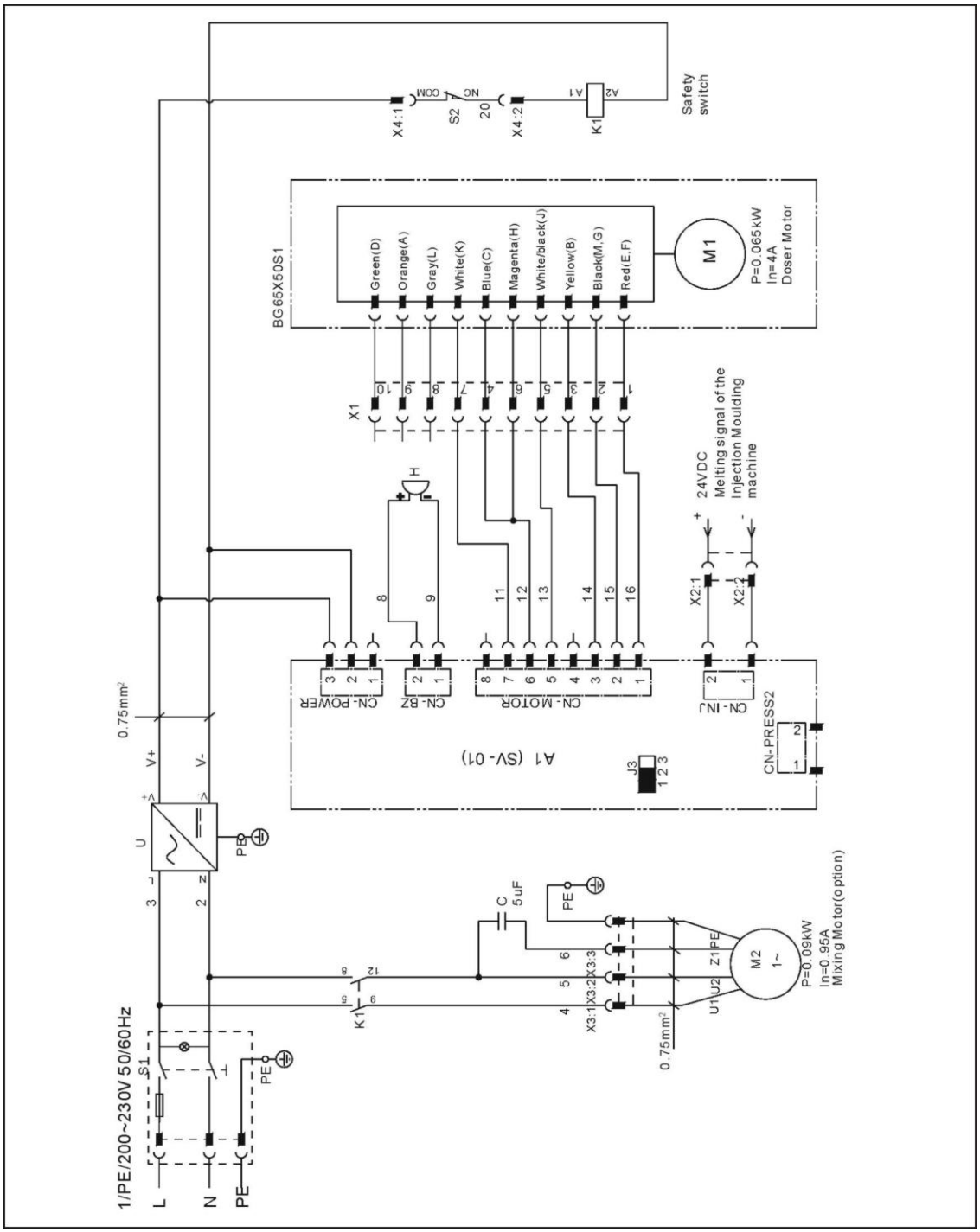
* means possible broken parts.

** means easily broken part and spare a backup is suggested.

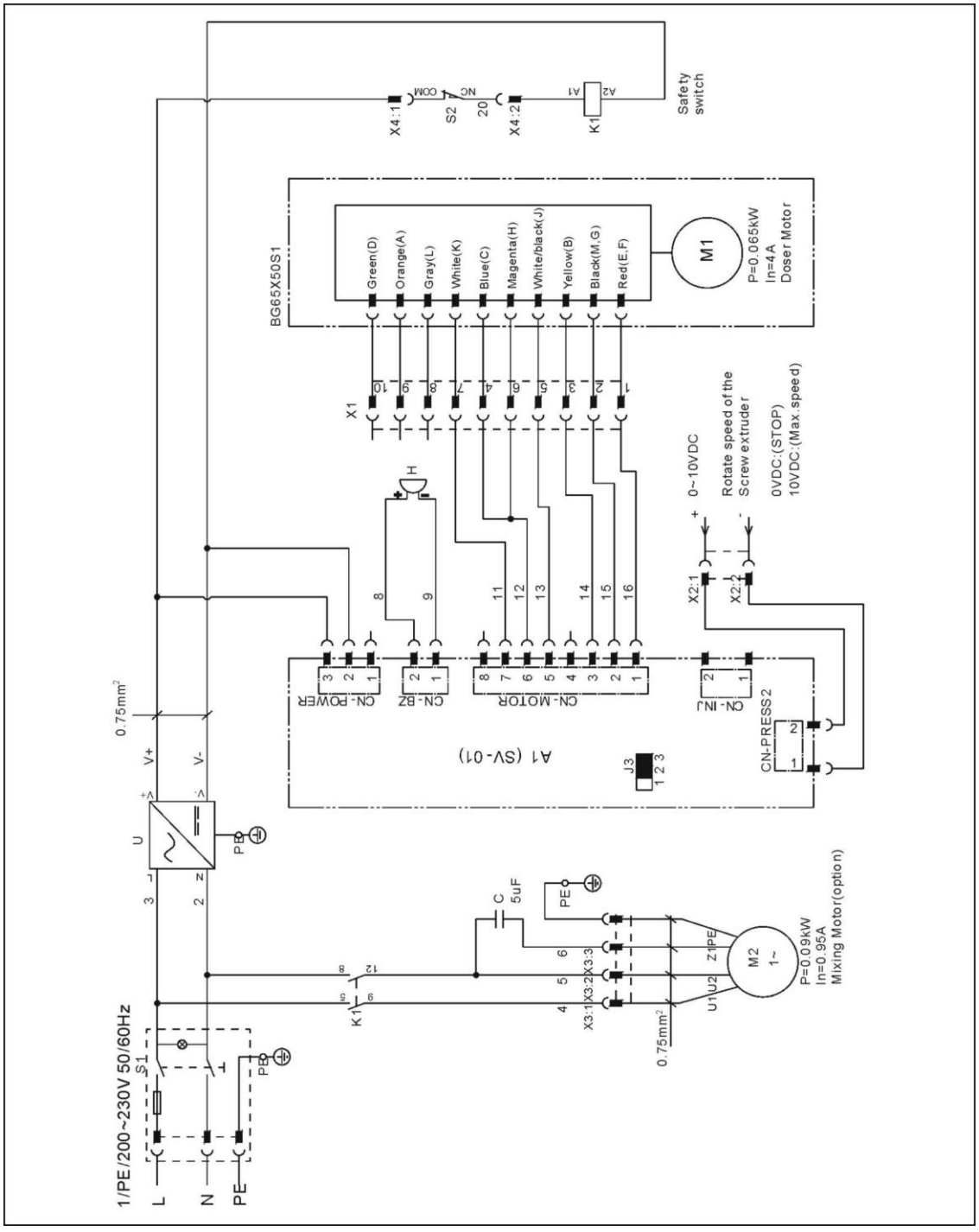
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare parts is in accordance with the real object.

2.3 Electrical Circuit Descriptions

2.3.1 Electrical Descriptions (SCM)

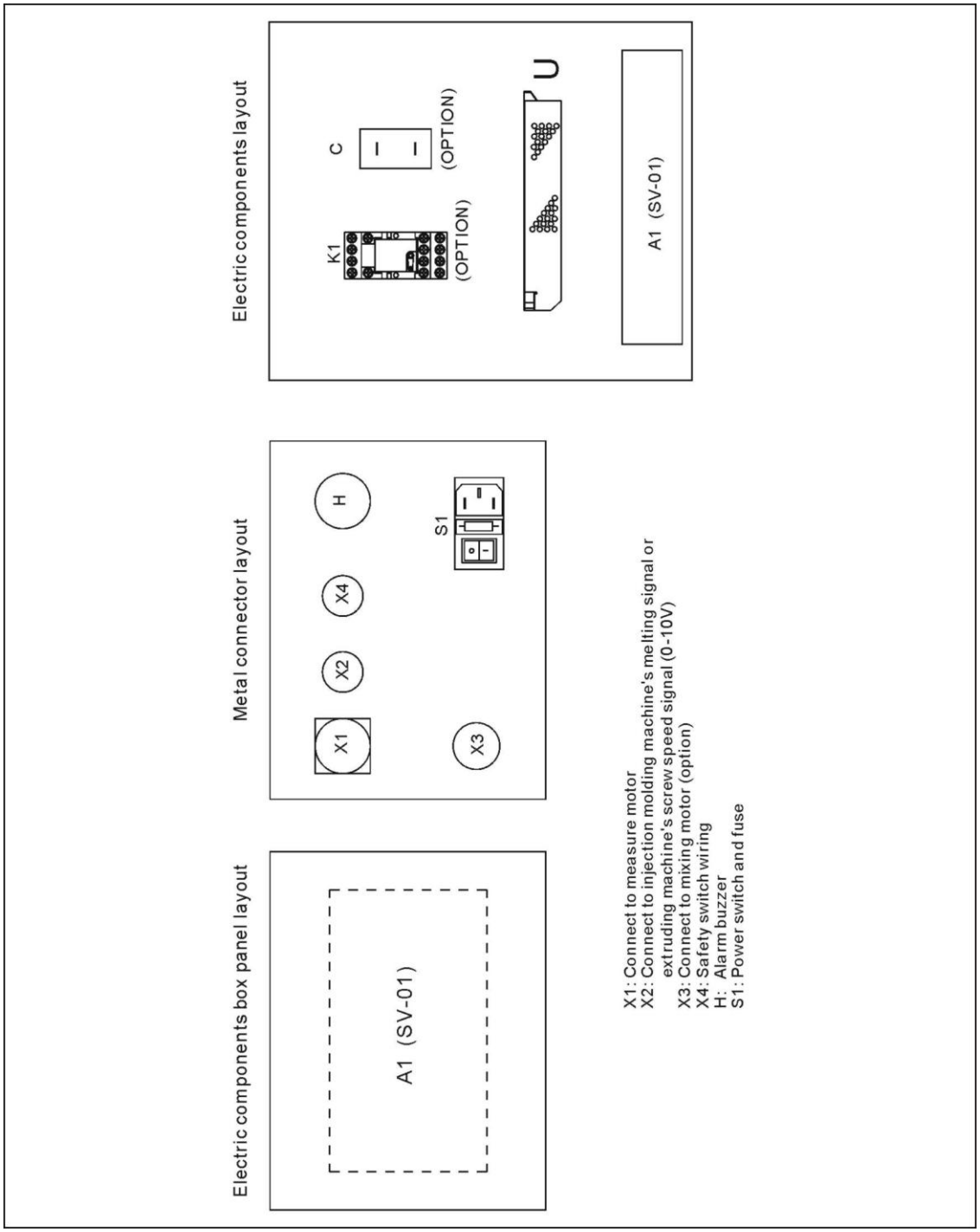


Picture 2-2：Electrical Descriptions (SCM Apply on Injection Mode)



Picture 2-3：Electrical Descriptions (SCM Apply on Extrudder Mode)

2.3.2 Electrical Components Layout (SCM)



Picture 2-4： Electrical Components Layout (SCM)

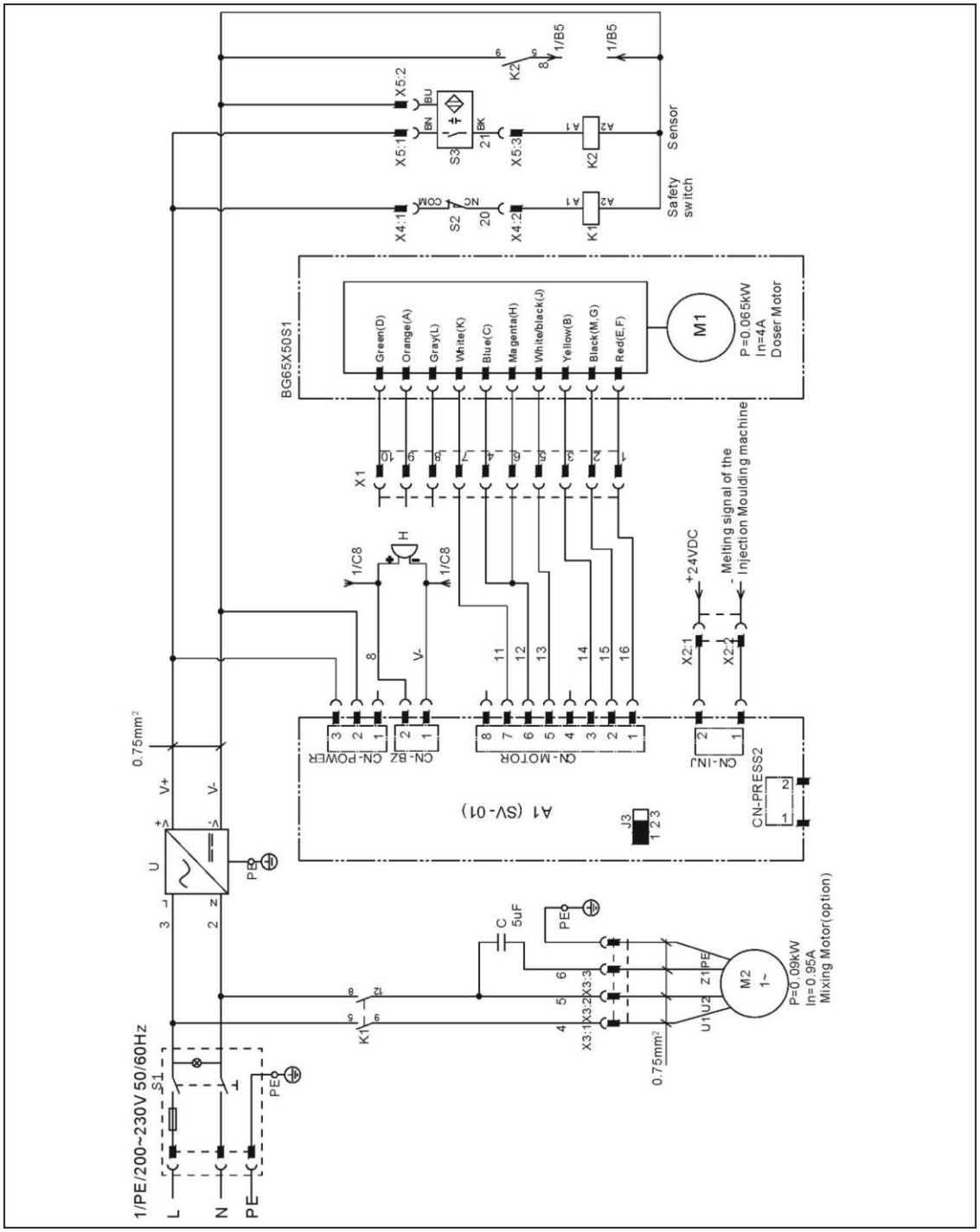
2.3.3 Bill of Electrical Components (SCM)

Table 2-3：Bill of Electrical Components (SCM)

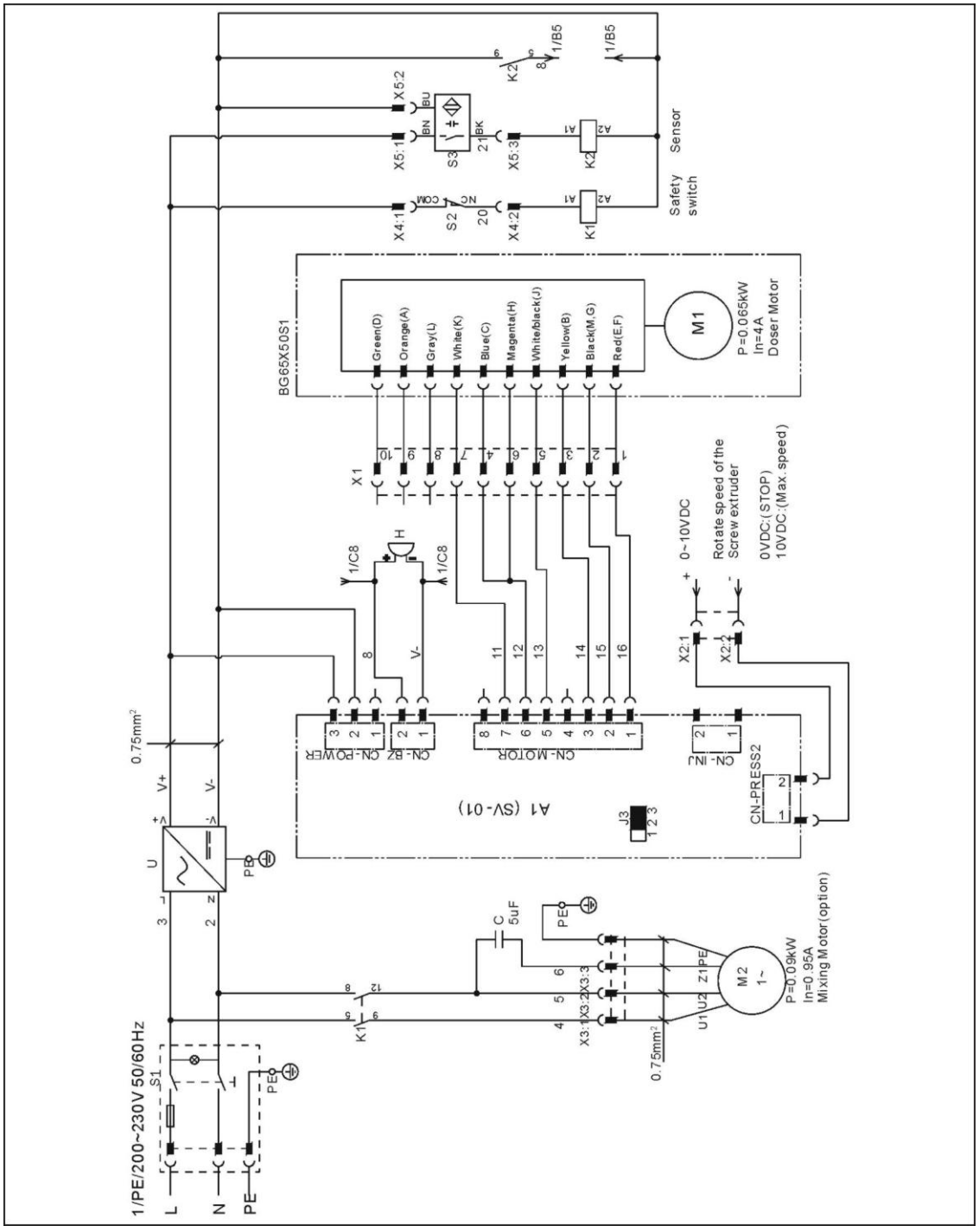
No.	Symbol	Name	Specifications	Part number
1	A1	PCB*	24VDC	YE80112200000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	5A 250V	YE46055000000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	H	Buzzer	24VDC	YE84002700000
7	U	DC power	IN=115/230V OUT=24VDC 4.5A	YE71102400000
8	X1	Socket	10P	YE62241040000
9	X2	Socket	2P	YE68016200100 YE68016200000
10	X3	Socket	4P	YE68025400000
11	-	-	4P	YE68025400100
12	K1	Relay*	24VDC	YE03272400000
13	S2	Limit switch	250V-5(4)A	YE16310200000
14	M1	Motor	65W 24VDC	YM50652500100
15	-	-	65W 24VDC	YM50652500000
16	M2	Motor	0.09kW 1/230V 50/60Hz	-

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3.4 Electrical Descriptions (SCM+Material Level Sensor)



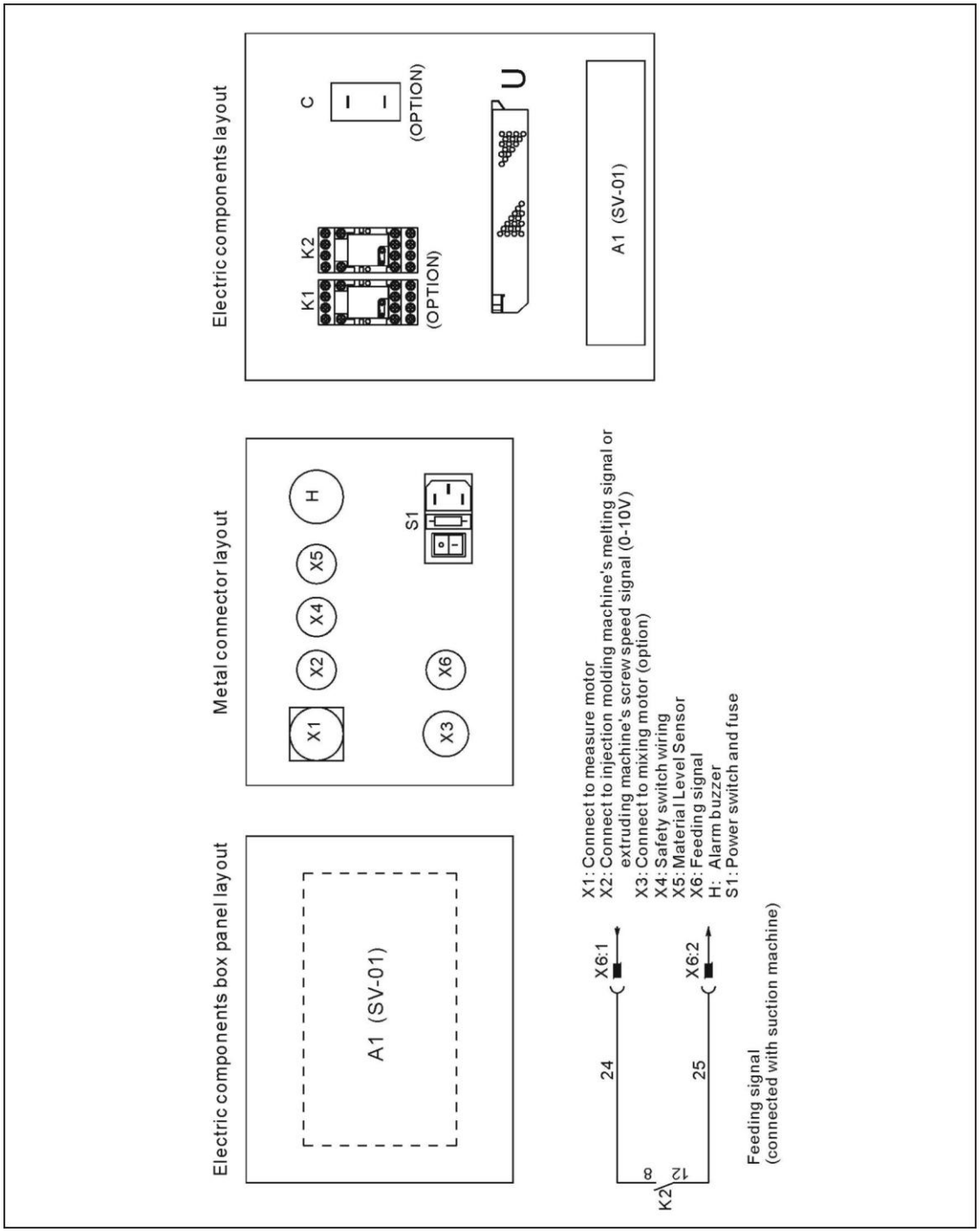
Picture 2-5: Electrical Descriptions (SCM+Material Level Sensor) (Apply on Injection Mode)



Picture 2-6：Electrical Descriptions (SCM+Material Level Sensor) (Apply on

Extrudder Mode)

2.3.5 Electrical Components Layout (SCM+Material Level Sensor)



Picture 2-7： Electrical Components Layout (SCM+Material Level Sensor)

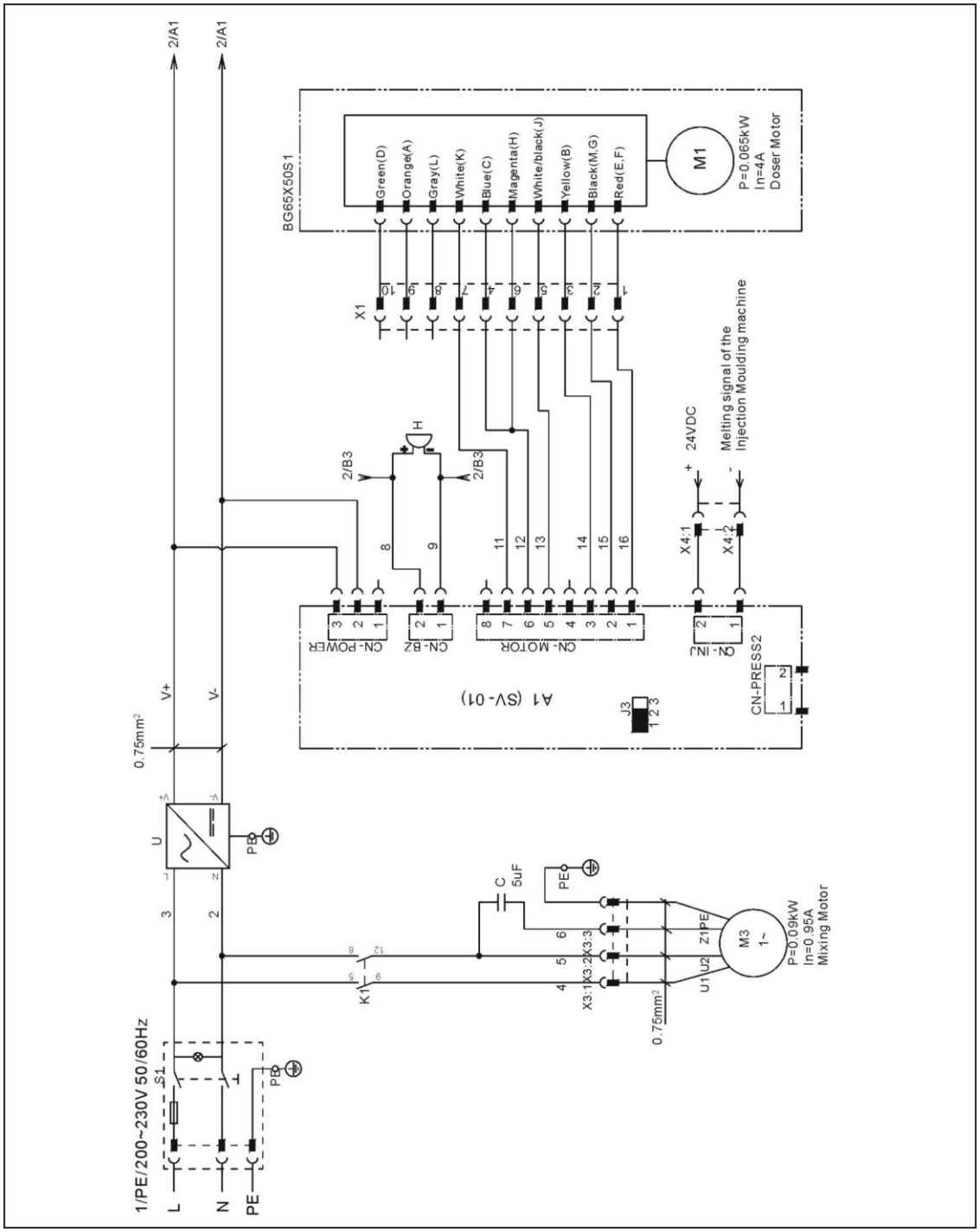
2.3.6 Bill of Electrical Components (SCM+Material Level Sensor)

Table 2-4：Bill of Electrical Components (SCM+Material Level Sensor)

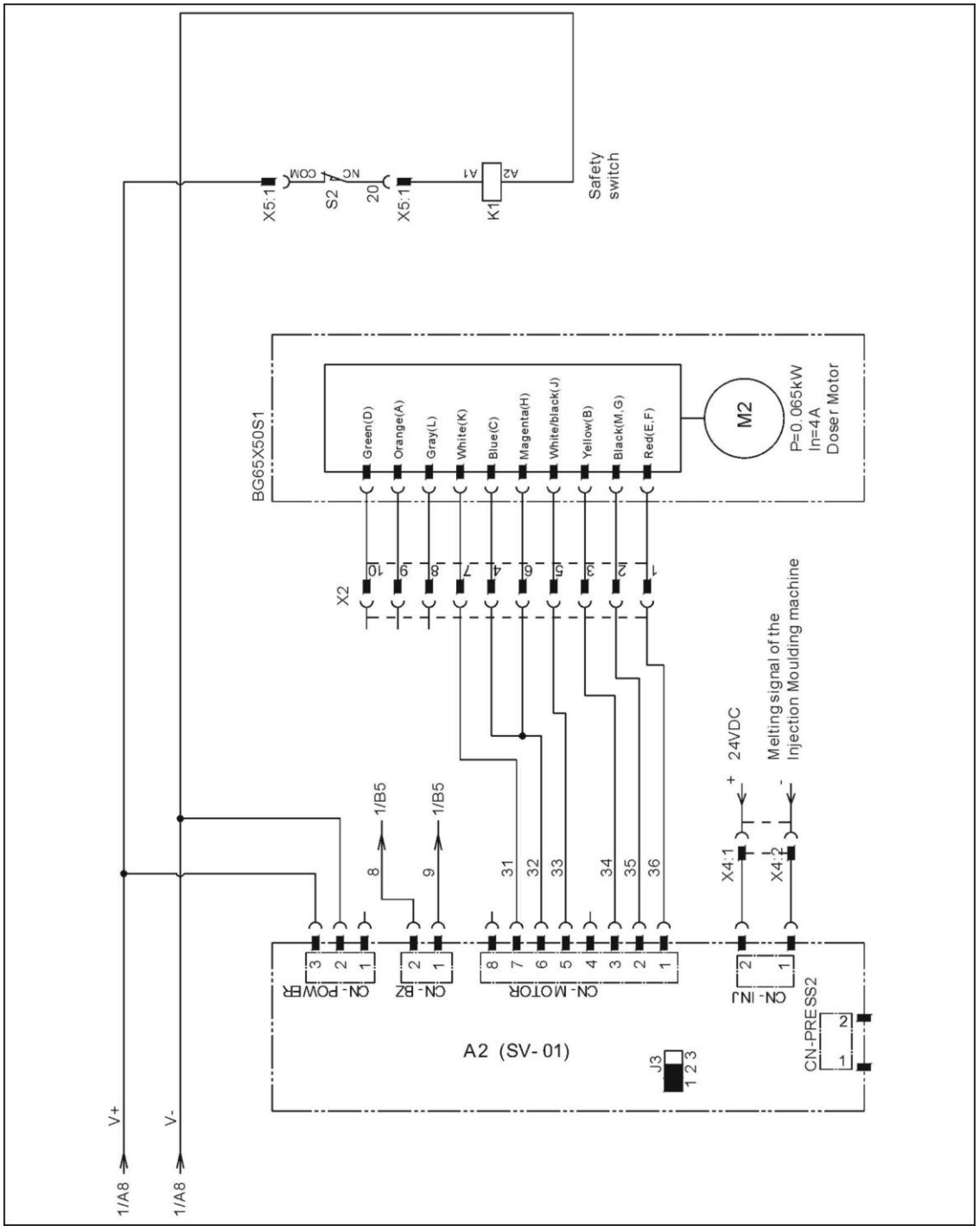
No.	Symbol	Name	Specifications	Part number
1	A1	PCB*	24VDC	YE80112200000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	5A 250V	YE46055000000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	H	Buzzer	24VDC	YE84002700000
7	U	DC power	IN=115/230V OUT=24VDC 4.5A	YE71102400000
8	X1	Socket	10P	YE62241040000
9	X2	Socket	2P	YE68016200100 YE68016200000
10	X3	Socket	4P	YE68025400000
11	-	-	4P	YE68025400100
12	X4 X6	Socket	2P	YE68016200100 YE68016200000
13	X5	Socket	3P	YE62163040000 YE62163000100
14	K1	Relay*	24VDC	YE03272400000
15	K2	Relay*	24VDC	YE03272400000
16	S2	Limit switch	250V-5(4)A	YE16310200000
17	S3	Capacitor switch	10~36VDC	YE15508200000
18	M1	Motor	65W 24VDC	YM50652500100
19	-	-	65W 24VDC	YM50652500000
20	M2	Motor	0.09kW 1/230V 50/60Hz	-

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

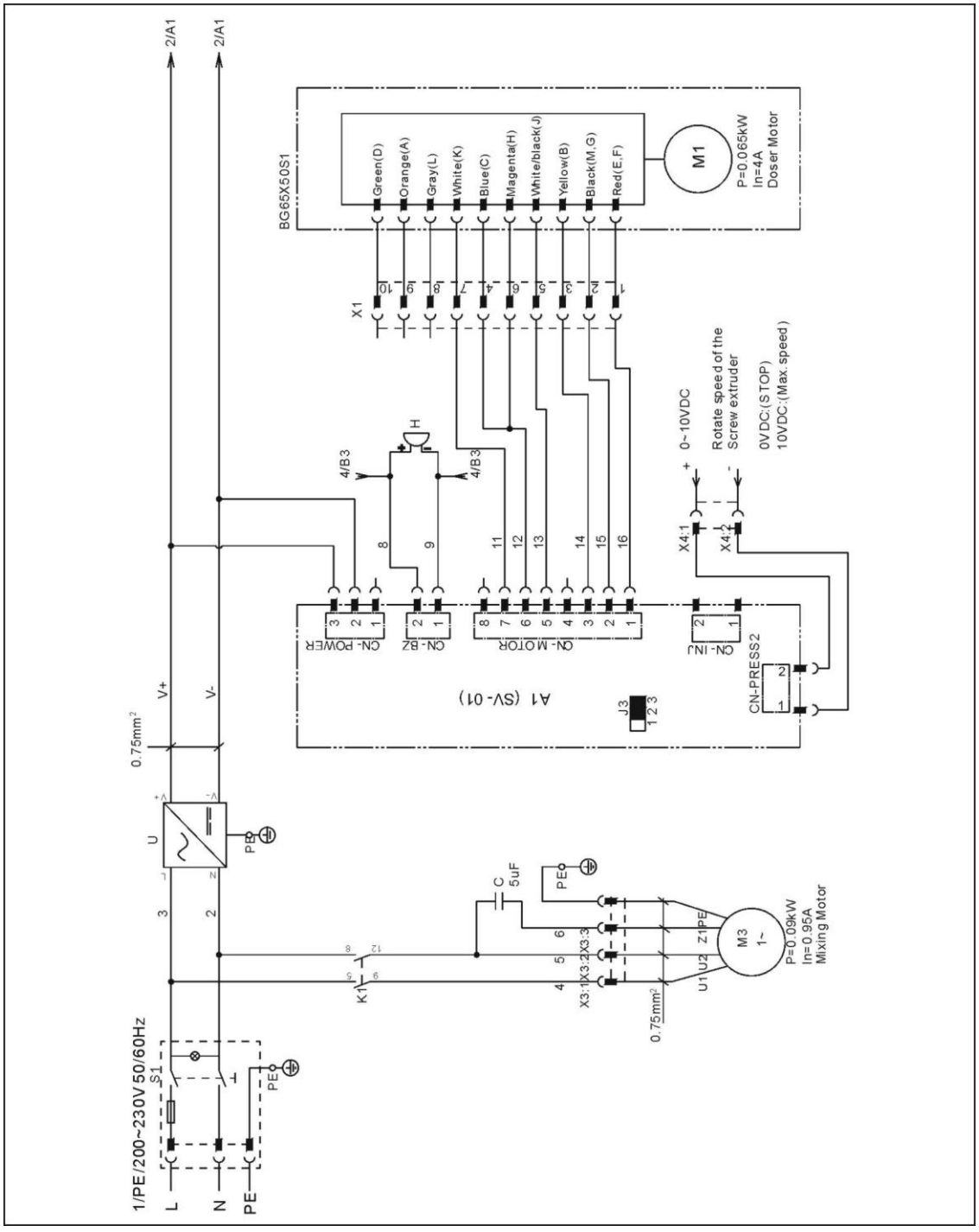
2.3.7 Electrical Descriptions (SCM-D)



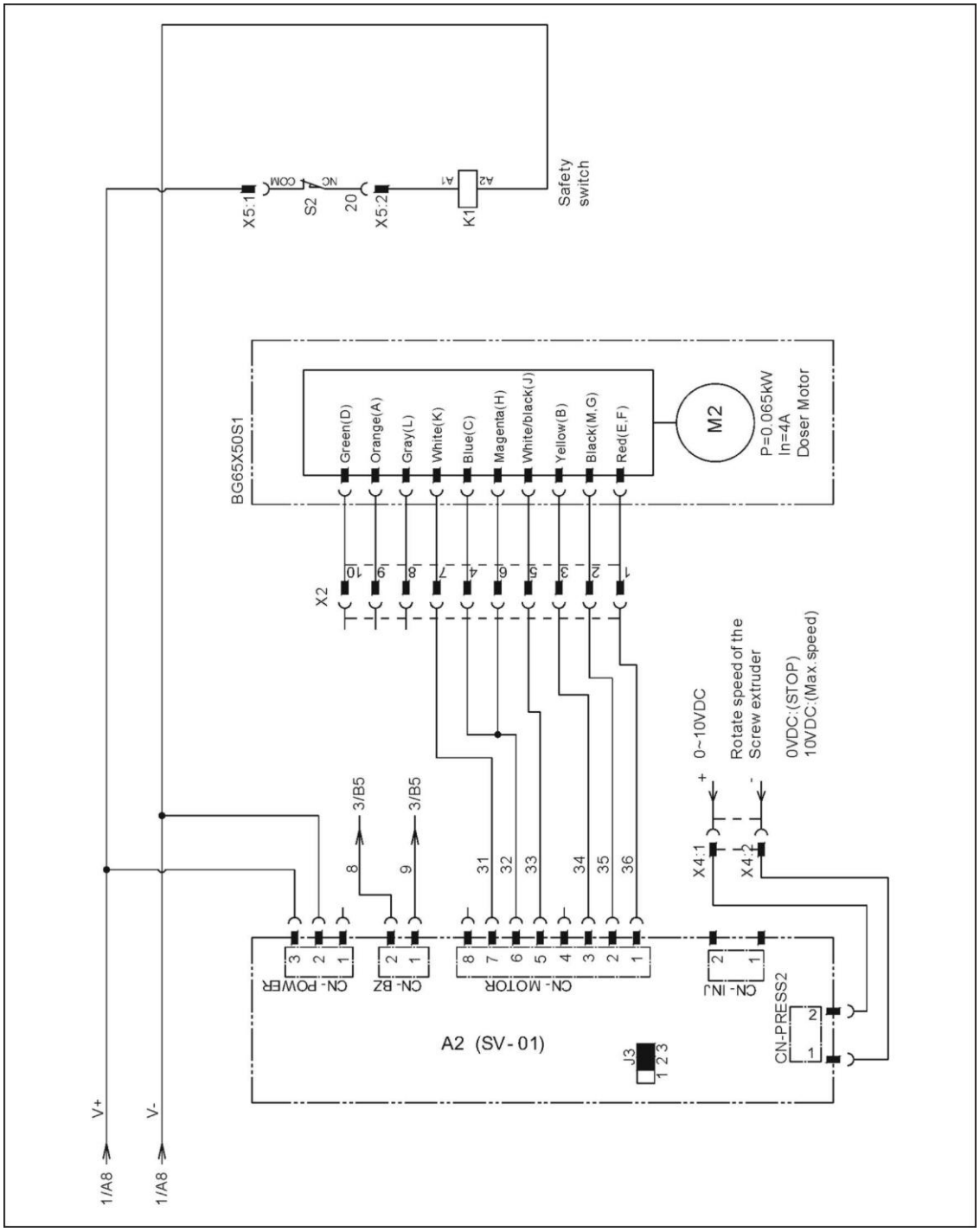
Picture 2-8：Electrical Descriptions (SCM-D Apply on Injection Mode)



Picture 2-9：Electrical Descriptions (SCM-D Apply on Injection Mode)

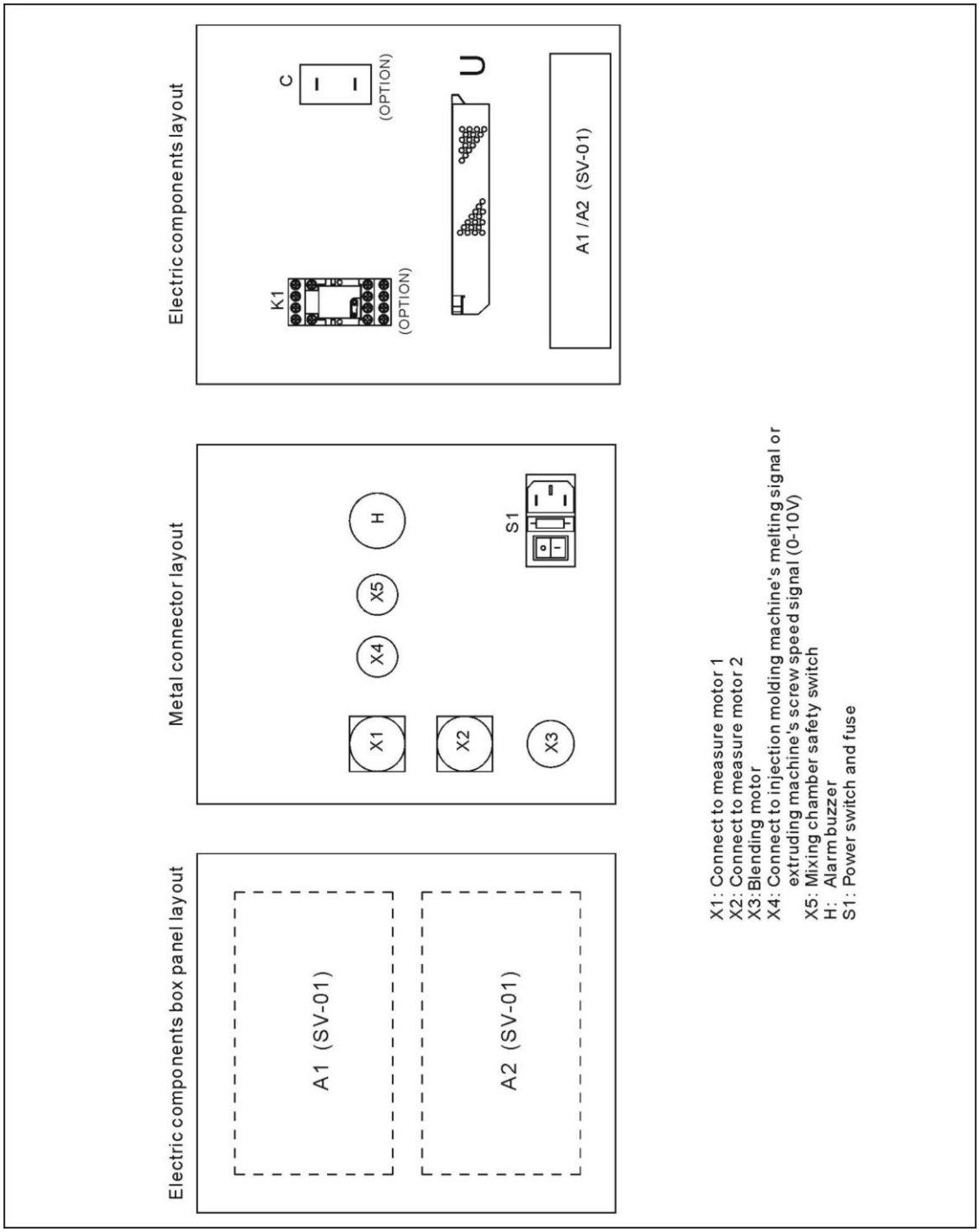


Picture 2-10：Electrical Descriptions (SCM-D Apply on Extrudder Mode)



Picture 2-11： Electrical Descriptions (SCM-D Apply on Extrudder Mode)

2.3.8 Electrical Components Layout (SCM-D)



Picture 2-12: Electrical Components Layout (SCM-D)

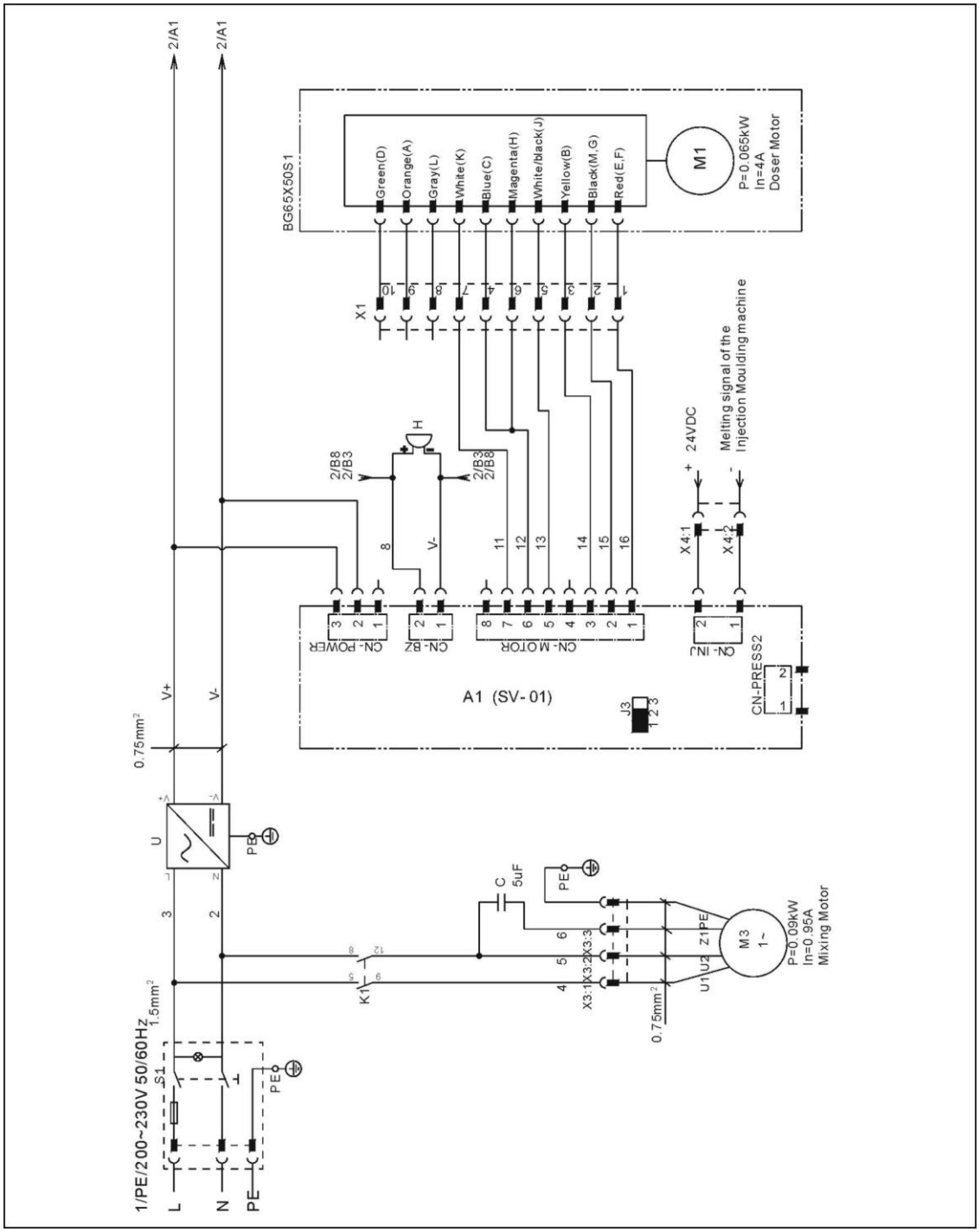
2.3.9 Bill of Electrical Components (SCM-D)

Table 2-5：Bill of Electrical Components (SCM-D)

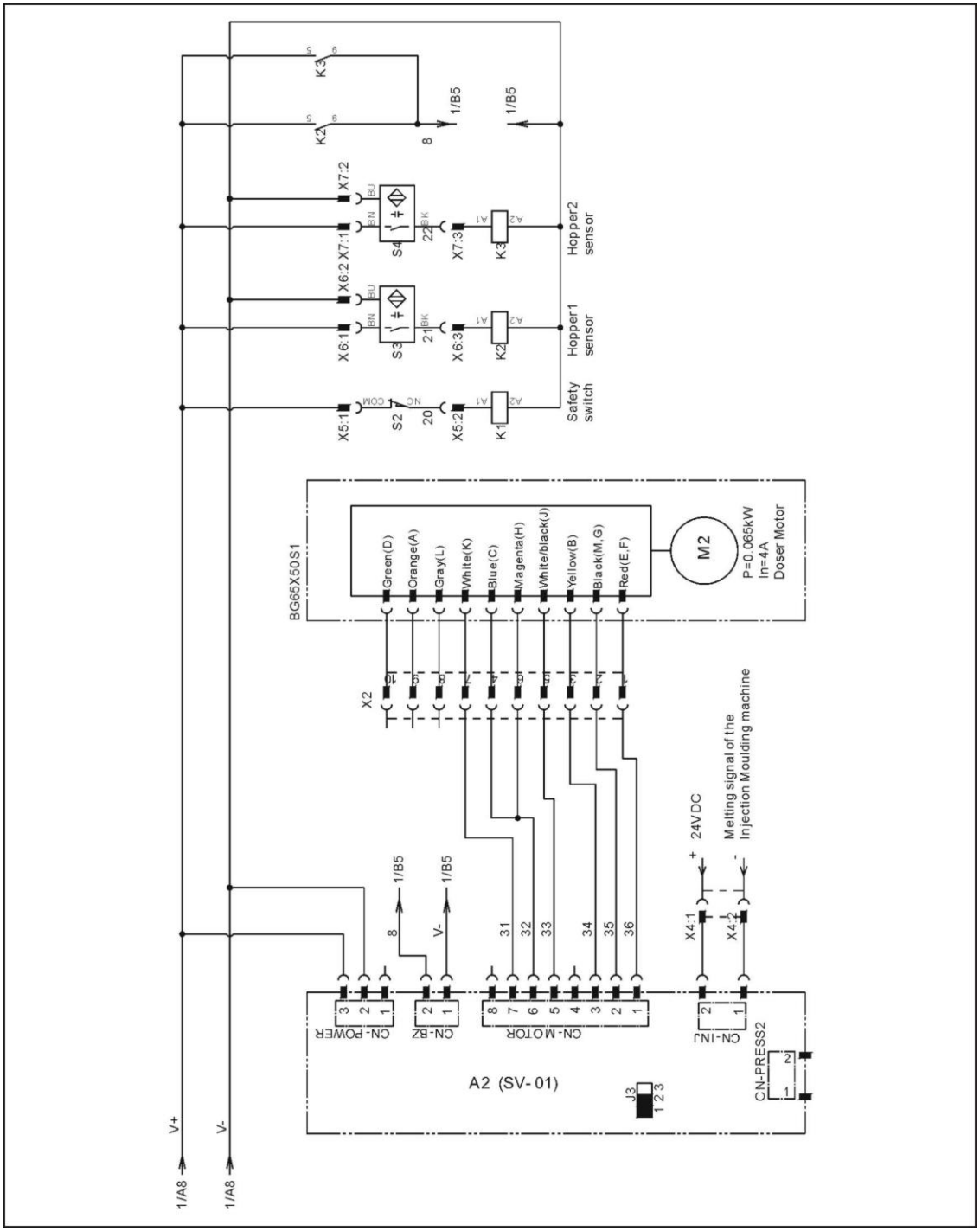
No.	Symbol	Name	Specifications	Part number
1	A1 A2	PCB*	24VDC	YE80112200000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	10A 250V	YE46010250000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	H	Buzzer	24VDC	YE84002700000
7	U	DC power	IN=115/230V OUT=24VDC 6.5A	YE71246500000
8	X1 X2	Socket	10P	YE62241040000
9	X3	Socket	4P	YE68025400000
10	-	-	4P	YE68025400100
11	X4	Socket	2P	YE68016200100 YE68016200000
12	X5	Socket	2P	YE68016200100 YE68016200000
13	K1	Relay*	24VDC	YE03272400000
14	S2	Limit switch	250V-5(4)A	YE16310200000
15	M1 M2	Motor	65W 24VDC	YM50652500100
16	-	-	65W 24VDC	YM50652500000
17	M3	Motor	0.09kW 1/230V 50/60Hz	-

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3.10 Electrical Descriptions (SCM-D+Material Level Sensor)

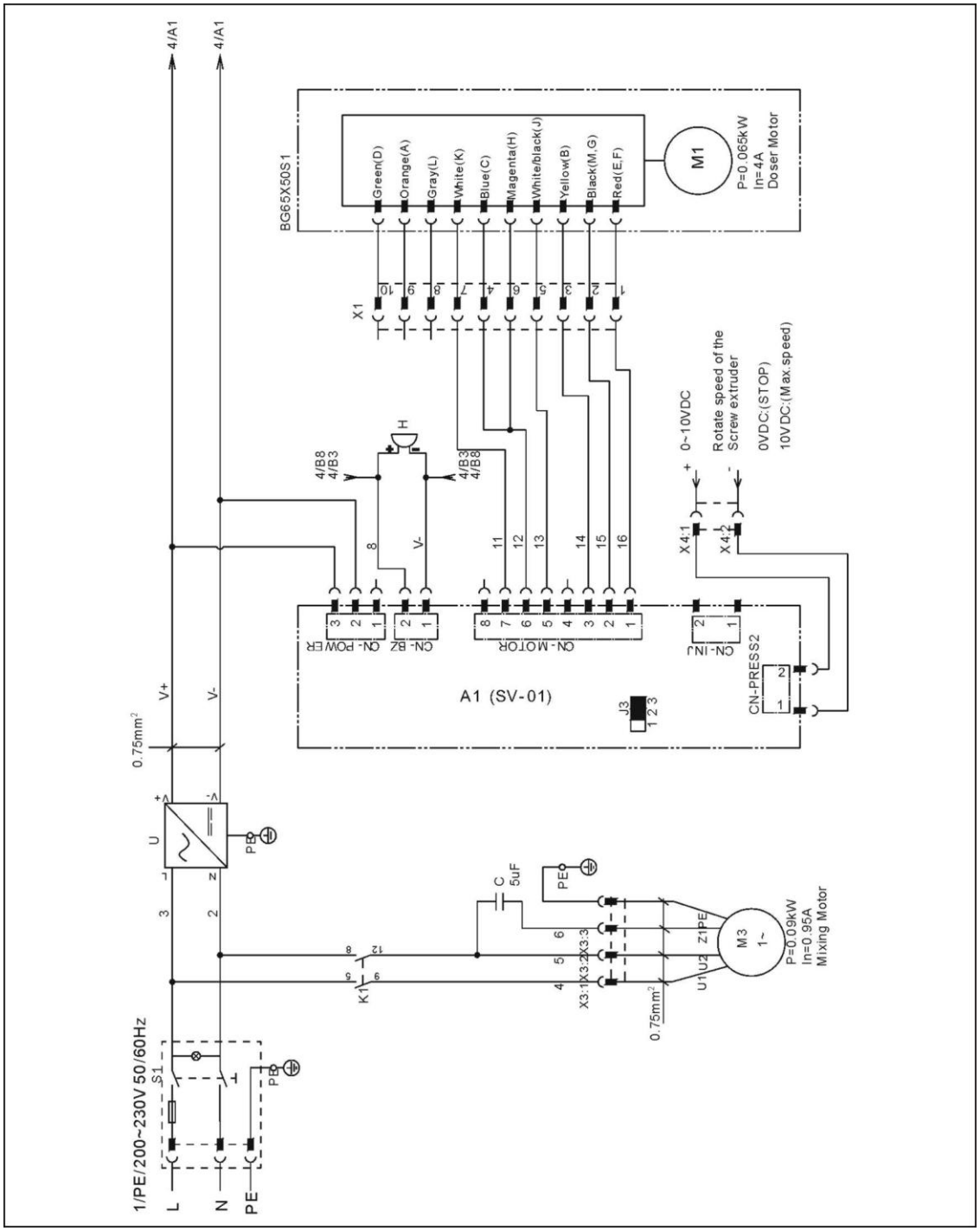


Picture 2-13：Electrical Descriptions (SCM-D+Material Level Sensor) (Apply on Injection Mode)



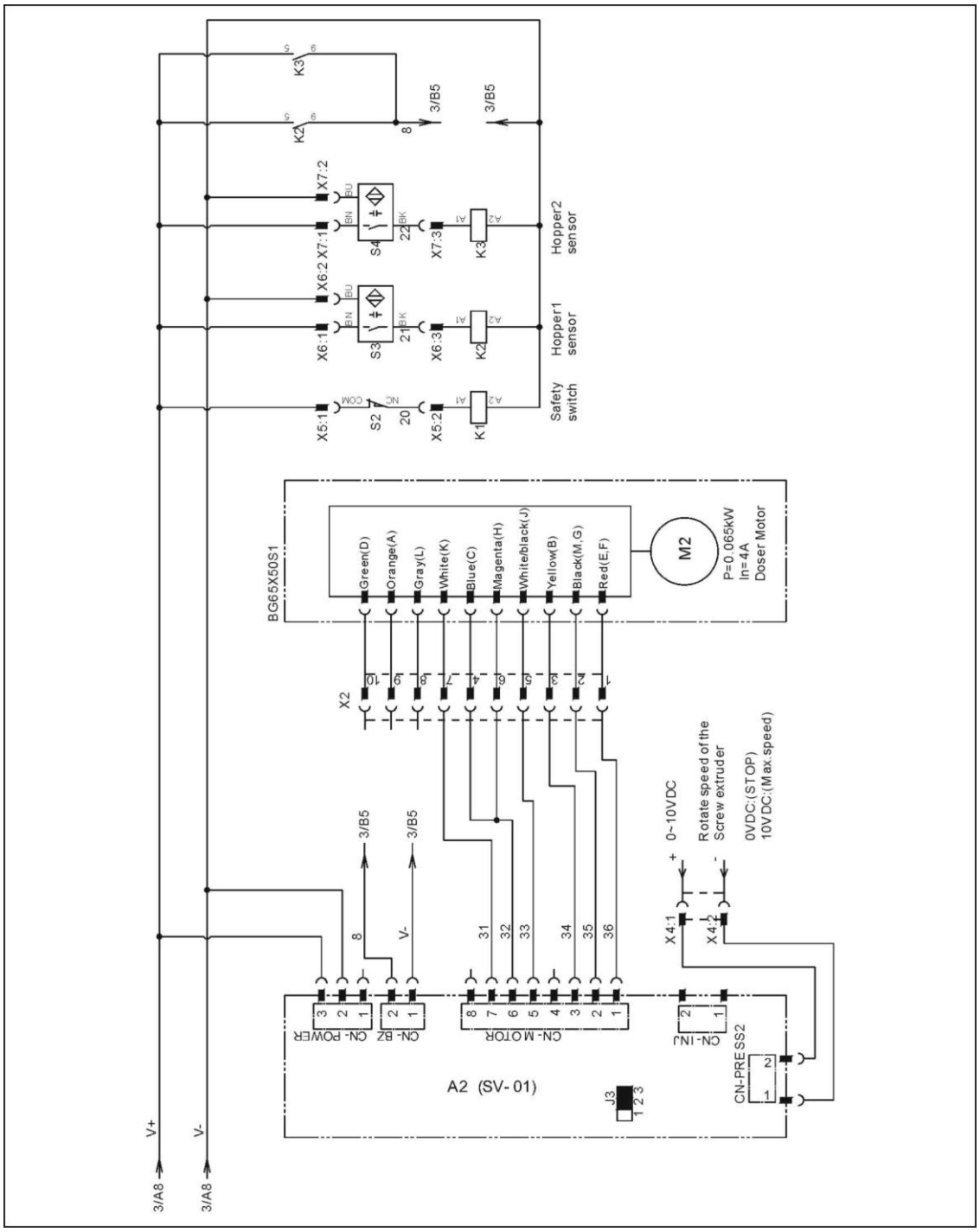
Picture 2-14：Electrical Descriptions (SCM-D+Material Level Sensor) (Apply on

Injection Mode)



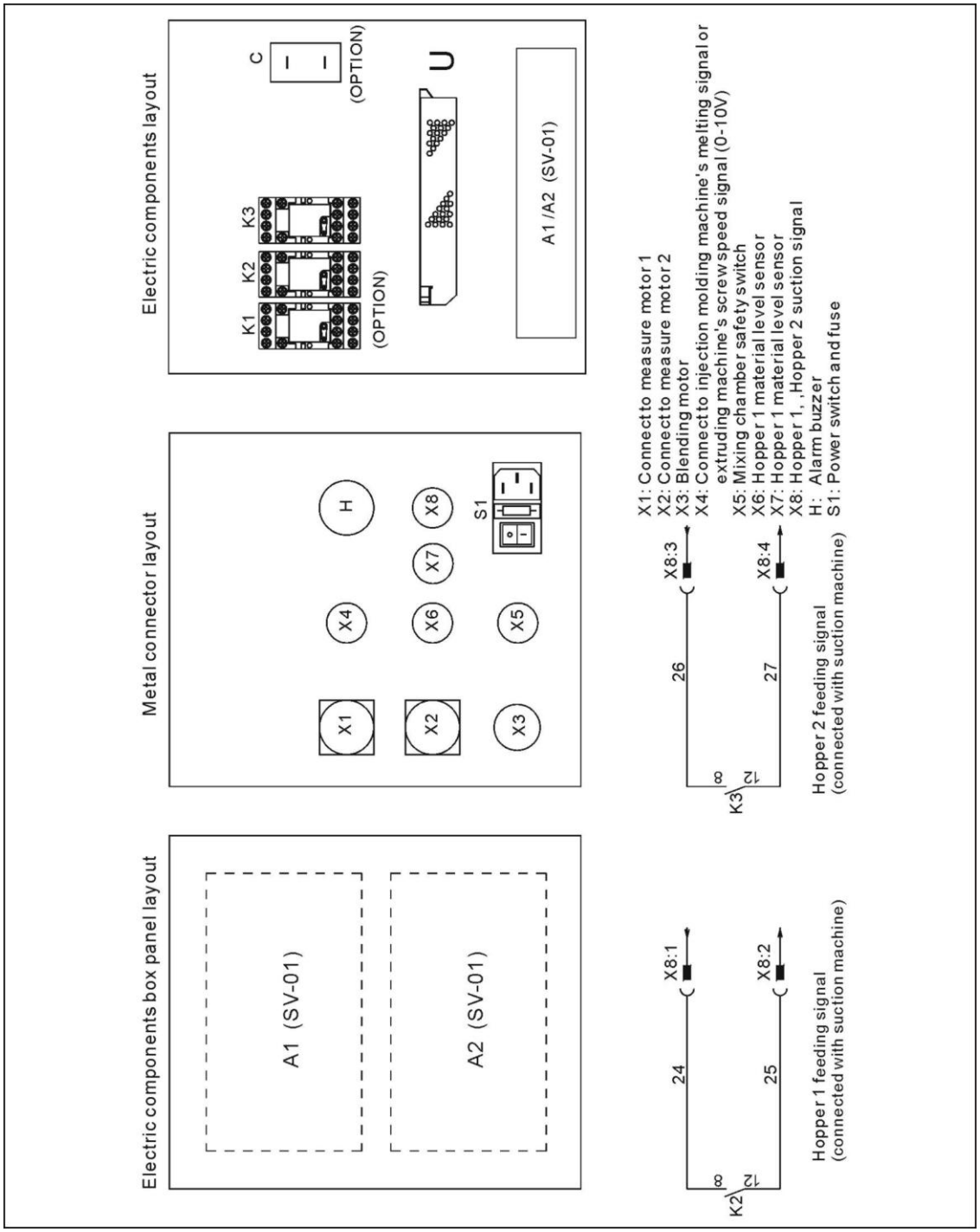
Picture 2-15：Electrical Descriptions (SCM-D+Material Level Sensor) (Apply on

Extrudder Mode)



Picture 2-16：Electrical Descriptions (SCM-D+Material Level Sensor) (Apply on Extrudder Mode)

2.3.11 Electrical Components Layout (SCM-D+Material Level Sensor)



Picture 2-17： Electrical Components Layout (SCM-D+Material Level Sensor)

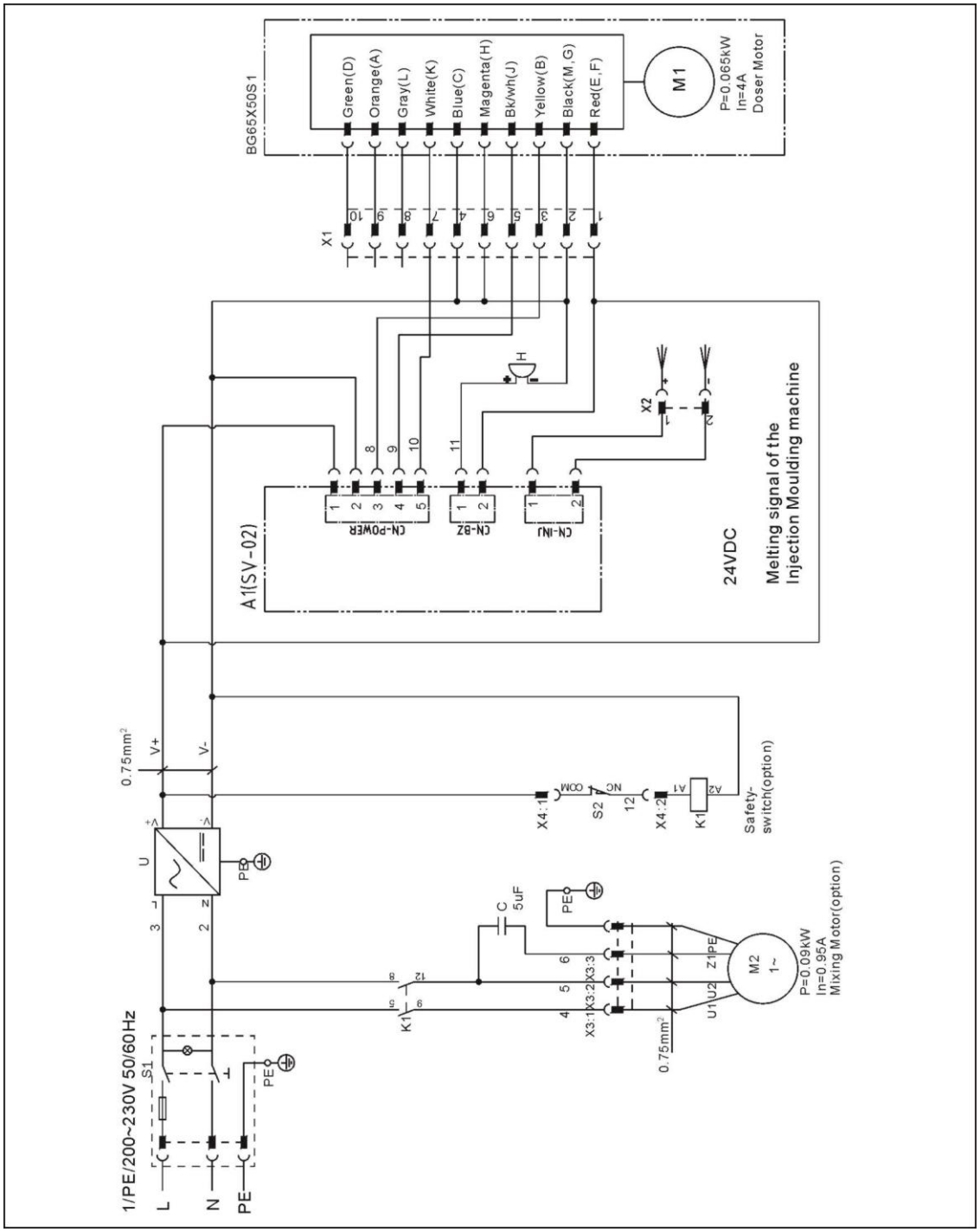
2.3.12 Bill of Electrical Components (SCM-D+Material Level Sensor)

Table 2-6: Bill of Electrical Components (SCM-D+Material Level Sensor)

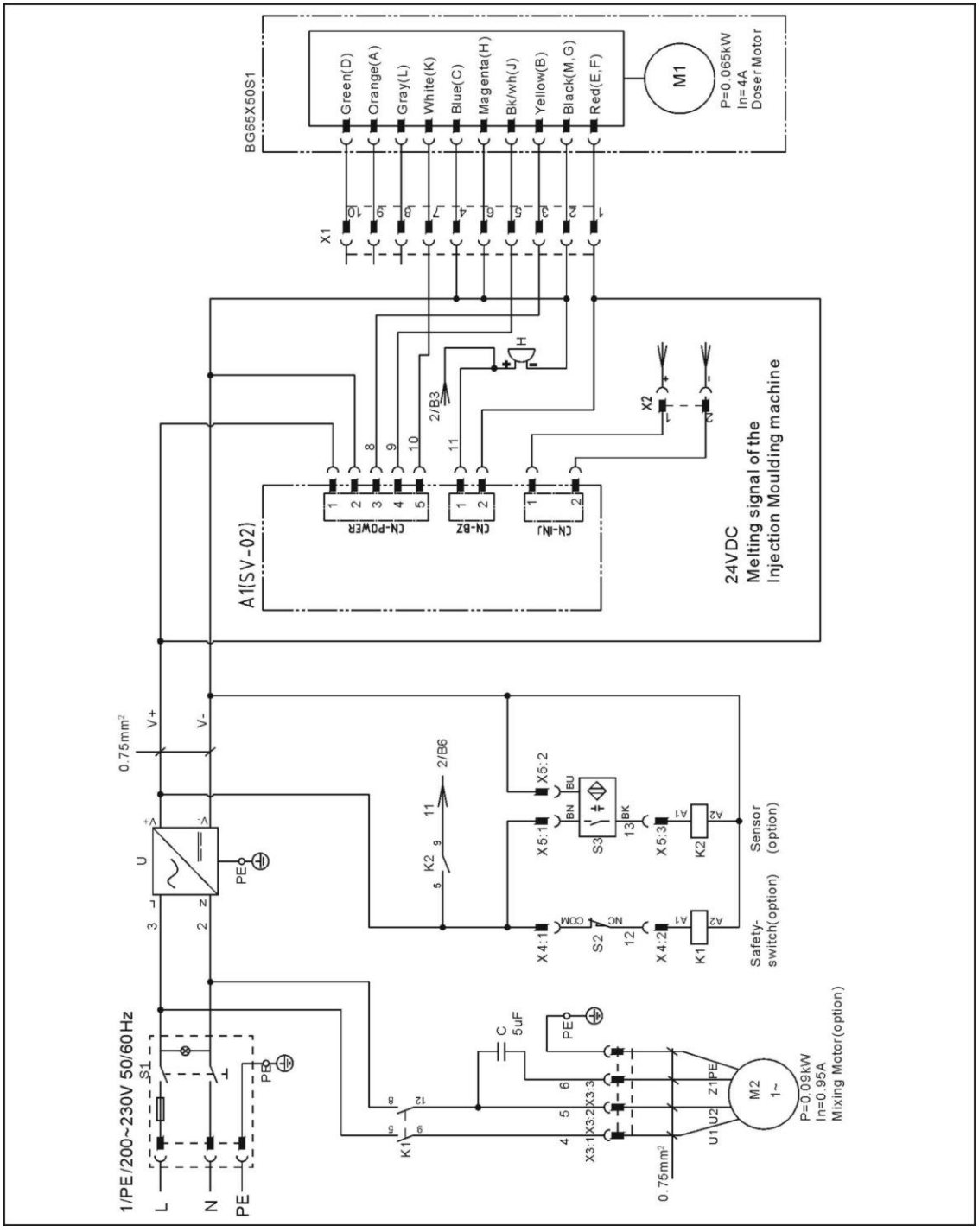
No.	Symbol	Name	Specifications	Part number
1	A1	PCB*	24VDC	YE80112200000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	10A 250V	YE46010250000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	H	Buzzer	24VDC	YE84002700000
7	U	DC power	IN=115/230V OUT=24VDC 6.5A	YE71246500000
8	X1 X2	Socket	10P	YE62241040000
9	X3	Socket	4P	YE68025400000
10	-	-	4P	YE68025400100
11	X4	Socket	2P	YE68016200100 YE68016200000
12	X5	Socket	2P	YE62163040000 YE62163000100
13	X6 X7		3P	YE62163040000 YE62163000100
14	X8		4P	YE68025400000
15	-		4P	YE68025400100
16	K1	Relay*	24VDC	YE03272400000
17	K2 K3	Relay*	24VDC	YE03272400000
18	S2	Limit switch	250V-5(4)A	YE16310200000
19	S3 S4	Capacitor switch	10~36VDC	YE15508200000
20	M1 M2	Motor	65W 24VDC	YM50652500100
21	-	-	65W 24VDC	YM50652500000
22	M3	Motor	0.09kW 1/230V 50/60Hz	-

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3.13 Electrical Descriptions (SCM-E)

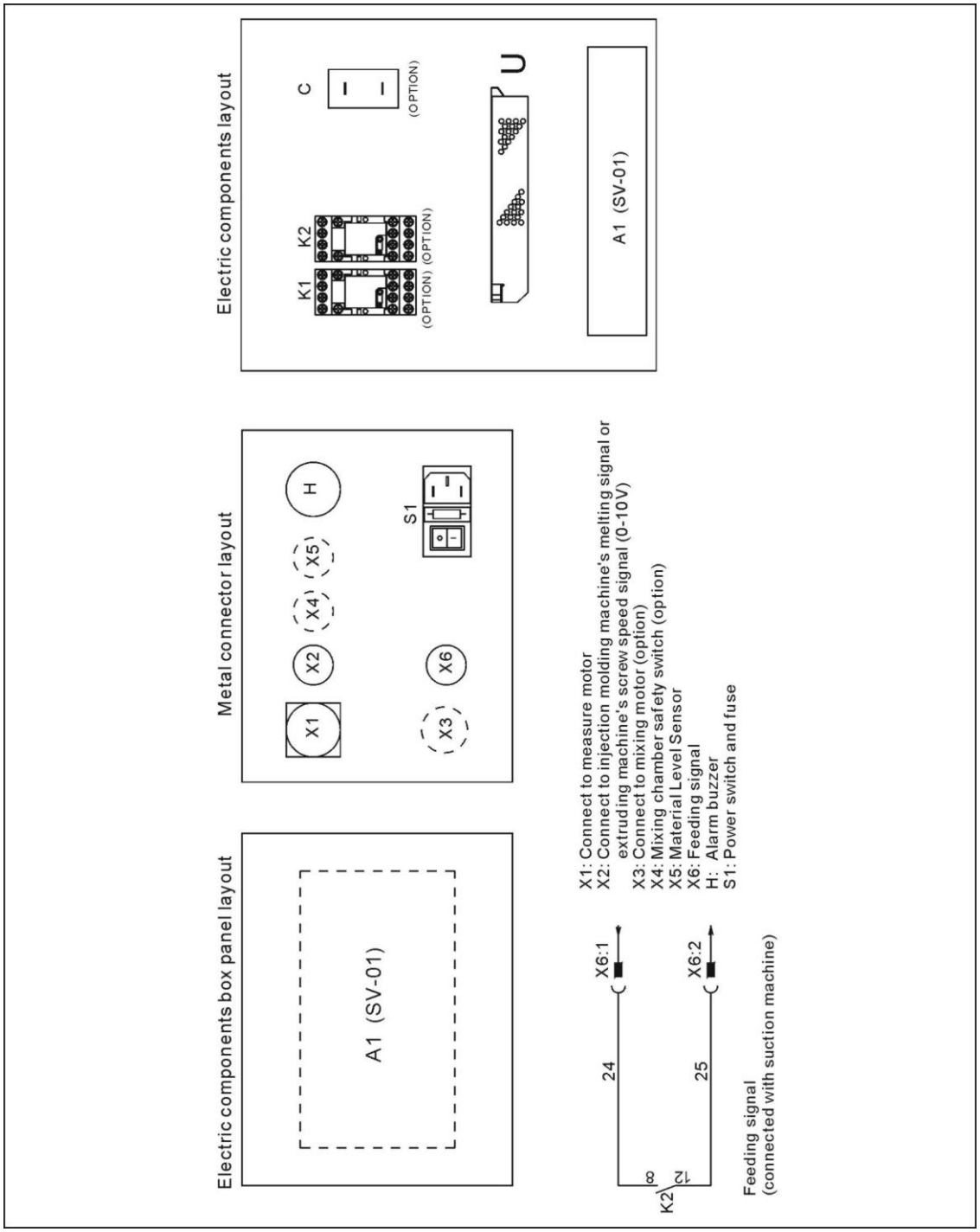


Picture 2-18：Electrical Descriptions (SCM-E)



Picture 2-19：Electrical Descriptions (SCM-E+Material Level Sensor)

2.3.14 Electrical Components Layout (SCM-E)



Picture 2-20：Electrical Components Layout (SCM-E)

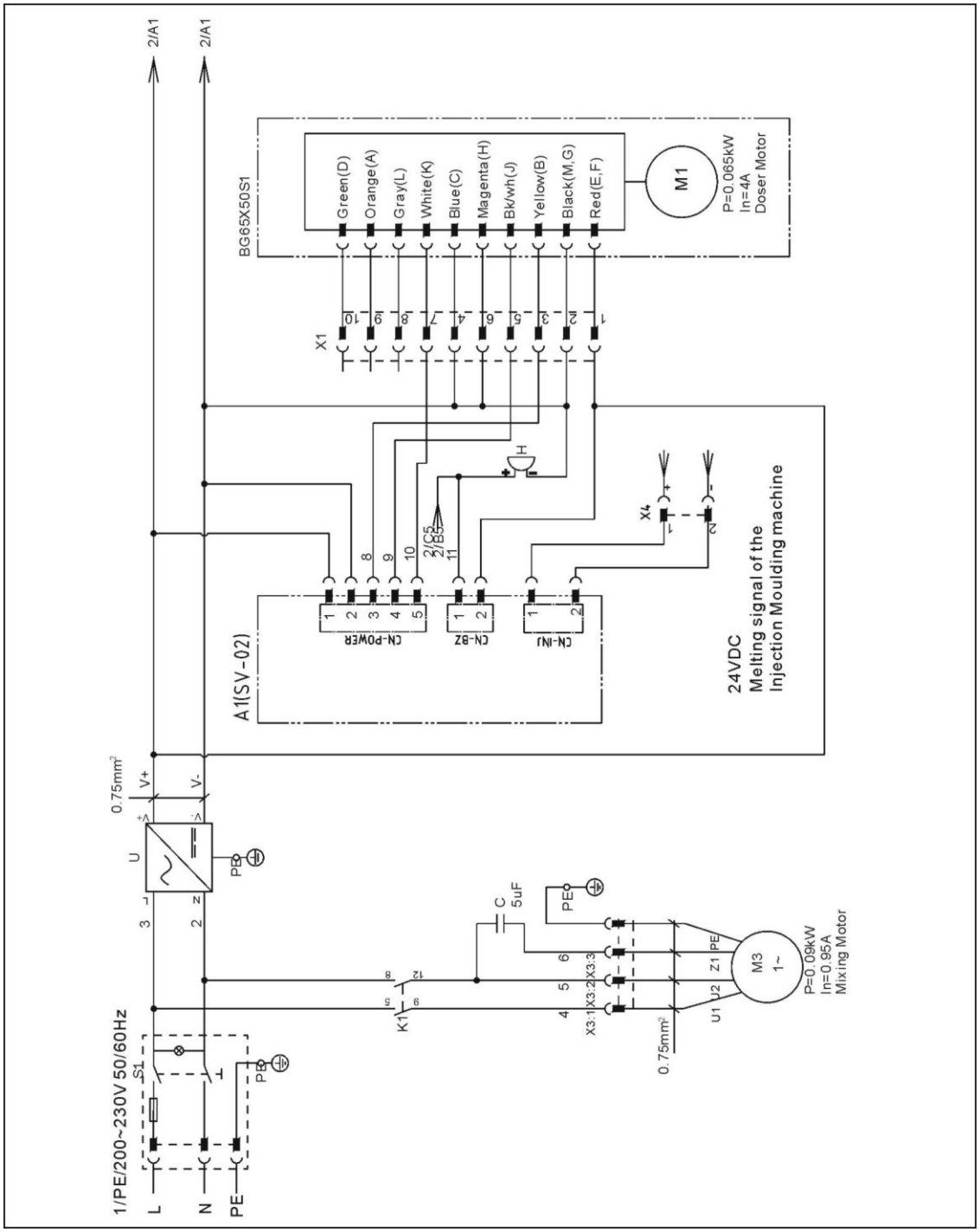
2.3.15 Bill of Electrical Components (SCM-E)

Table 2-7：Bill of Electrical Components (SCM-E)

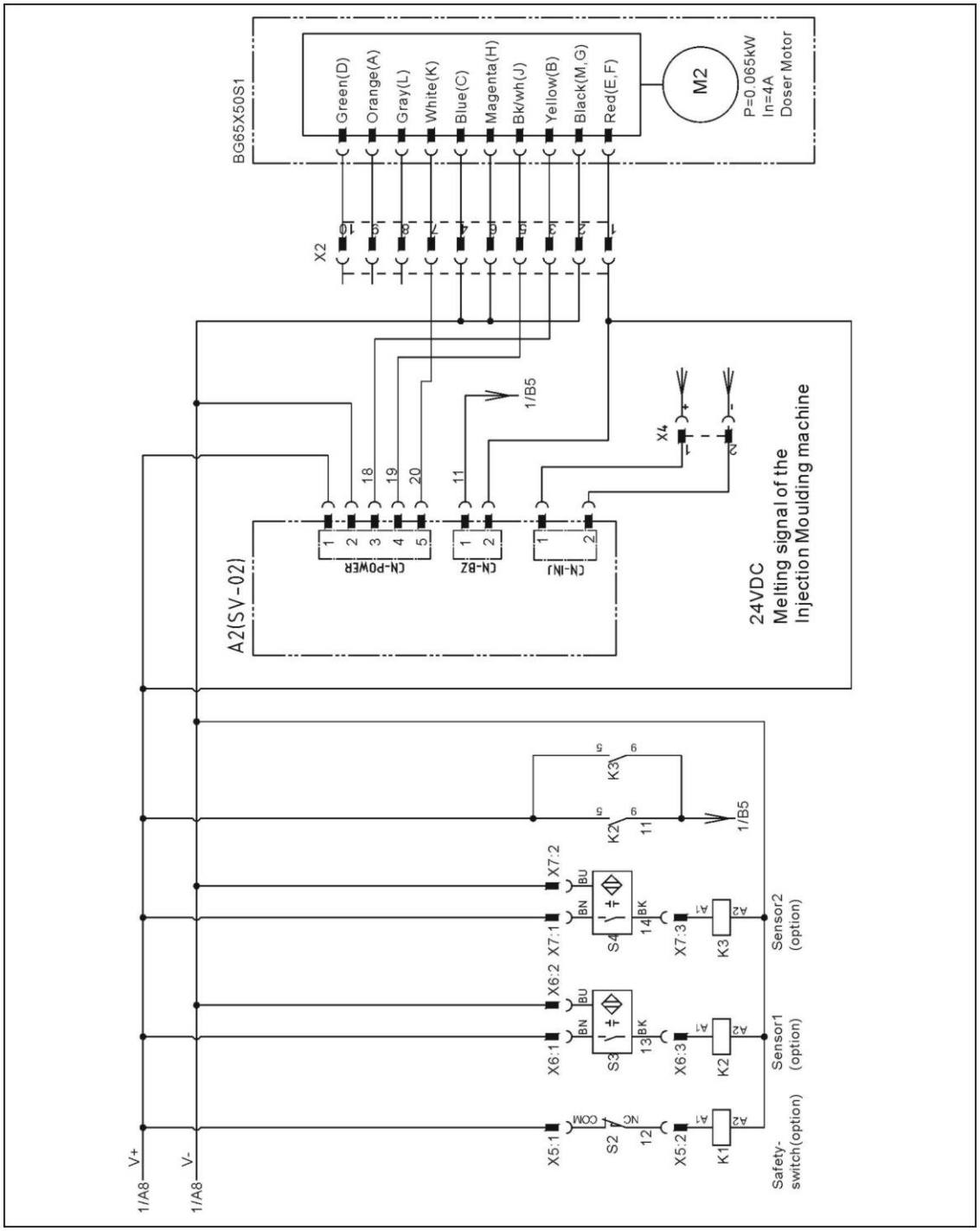
No.	Symbol	Name	Specifications	Part number
1	A1	PCB*	24VDC	YE80202400000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	5A 250V	YE46055000000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	S2	Limit switch	250V-5(4)A	YE16310200000
7	S3	Capacitive proximity switch	10~36VDC	YE15508200000
8	H	Buzzer	24VDC	YE84002700000
9	U	DC power	IN=230V OUT=24VDC 4.5A	YE71102400000
10	X1	Socket	10P	YE62241040000
11	X2	Socket	2P	YE68016200100 YE68016200000
12	X3	Socket	4P	YE68025400000
13	-	-	4P	YE68025400100
14	X4 X6	Socket	2P	YE68016200100 YE68016200000
15	X5	Socket	3P	YE62163000100
16	K1	Relay*	24VDC	YE03272400000
17	K2 K3	Relay*	24VDC	YE03272400000
18	M1	Motor	65W 24VDC	YM50652500100
19	-	-	65W 24VDC	YM50652500000
20	M2	Motor	0.09kW 1/230V 50/60Hz	-

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.3.16 Electrical Descriptions (SCM-E-D)

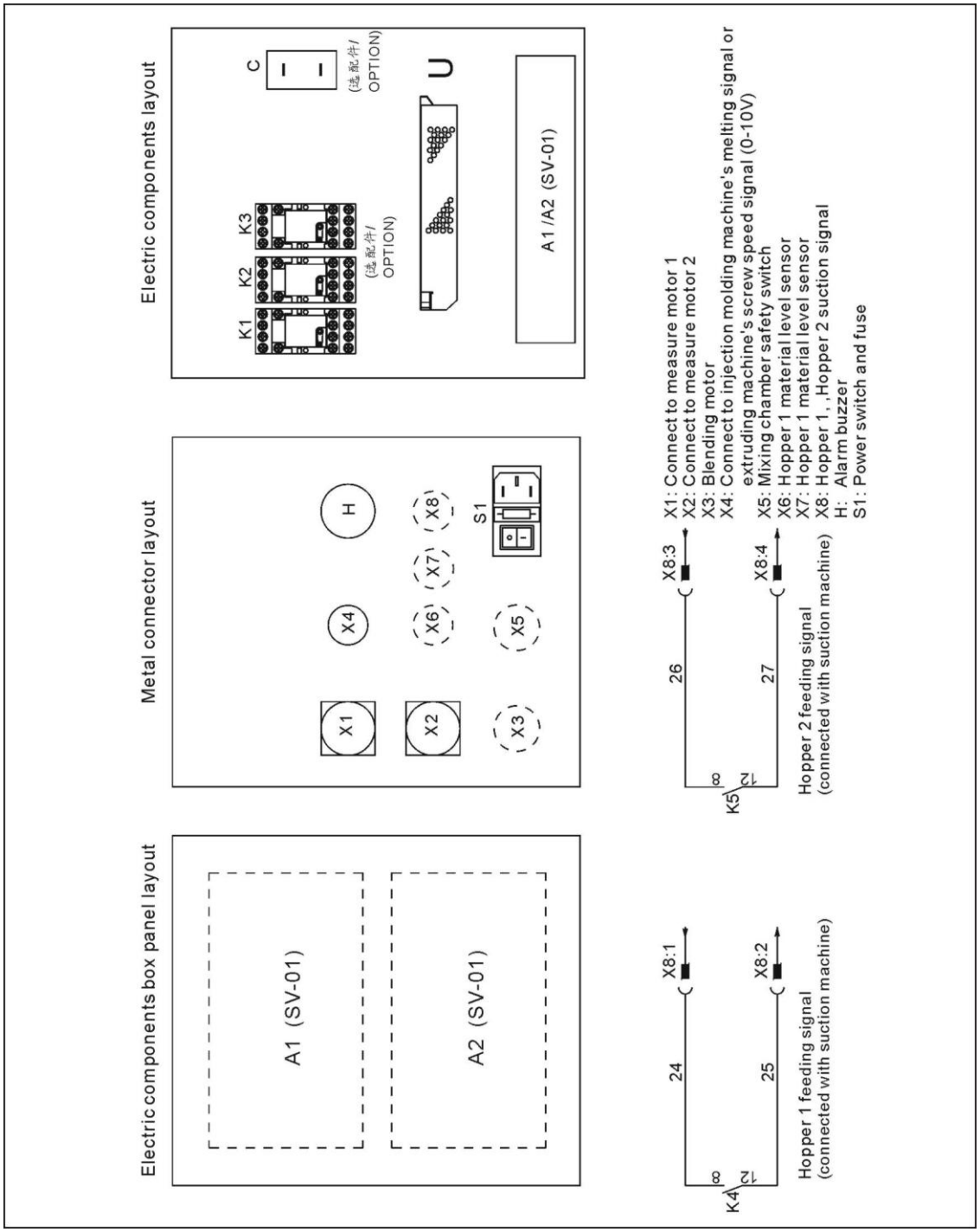


Picture 2-21： Electrical Descriptions (SCM-E-D)



Picture 2-22：Electrical Descriptions (SCM-E-D+Material Level Sensor)

2.3.17 Electrical Components Layout (SCM-E-D)



Picture 2-23：Electrical Components Layout (SCM-E-D)

2.3.18 Bill of Electrical Components (SCM-E-D)

Table 2-8: Bill of Electrical Components (SCM-E-D)

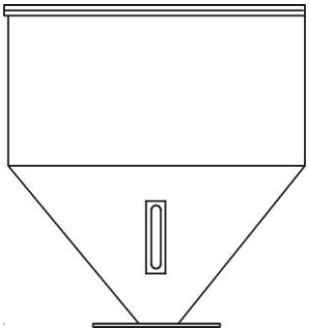
No.	Symbol	Name	Specifications	Part number
1	A1	PCB*	24VDC	YE80202400000
2	S1	Power line	-	YE15111300000
3	-	Fuse**	5A 250V	YE46055000000
4	-	Power line	10A	YE50122500000
5	-	Power line	10A	YE50316300000
6	S2	Limit switch	250V-5(4)A	YE16310200000
7	S3	Capacitive proximity switch	10~36VDC	YE15508200000
8	H	Buzzer	24VDC	YE84002700000
9	U	DC power	IN=230V OUT=24VDC 6.5A	YE71246500000
10	X1 X2	Socket	10P	YE62241040000
11	X3	Socket	4P	YE68025400000
12	-	Socket	4P	YE68025400100
13	X4 X5	-	2P	YE68016200100 YE68016200000
14	X8	Socket	4P	YE68025400000
15	-	Socket	4P	YE68025400100
16	X6 X7	-	3P	YE62163000100
17	K1	Socket	24VDC	YE03272400000
18	K2 K3	Relay*	24VDC	YE03272400000
19	M1 M2	Relay*	65W 24VDC	YM50652500100
20	-	Motor	65W 24VDC	YM50652500000
21	M3	-	0.09kW 1/230V 50/60Hz	-
1	A1	Motor	24VDC	YE80202400000

* means possible broken parts.
** means easy broken part. and spare a backup is suggested.
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.4 Optional Accessories

2.4.1 Main hopper

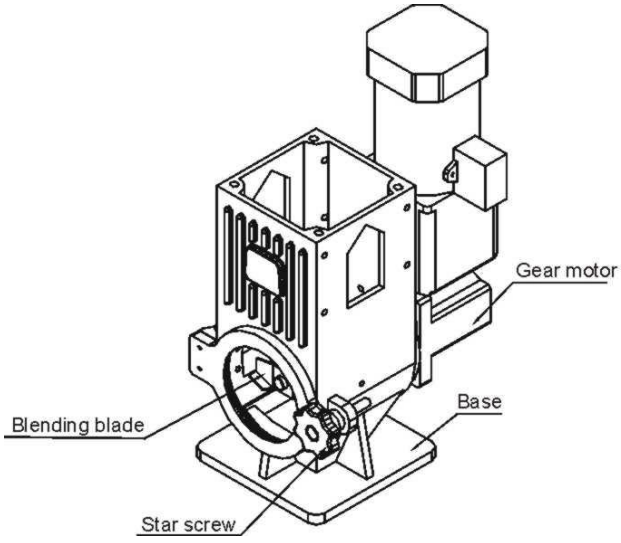
The main material hopper is optional for both single and double color doser basing on customer demand.



Picture 2-24：Main hopper

2.4.2 Mixing System

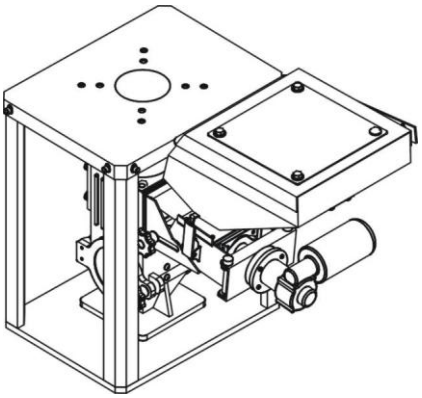
The mixing system is optional for both single and double color doser basing on customer demand.



Picture 2-25：Mixing System

2.4.3 Floor Stand

When customer requires SHD-100~300kg or SHD-16OU~450U dryer, this floor stand is necessary.



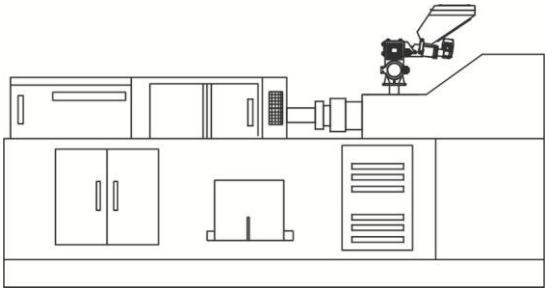
Picture 2-26：Floor Stand

3. Installation and Debugging

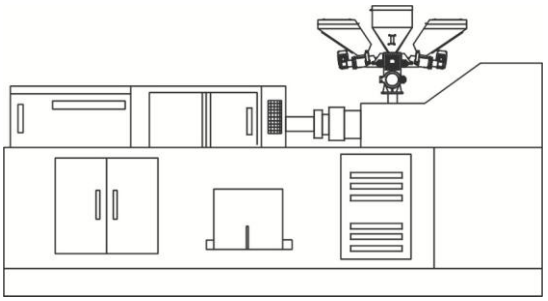
Read this chapter carefully before installation. Install the machine by following steps.

Power supply of the machine should be done by qualified electricians!

3.1 Install on Extrusion or Injection Molding Machine



Picture 3-1：Installation of Single Color Doser



Picture 3-2：Installation of Double Color Doser

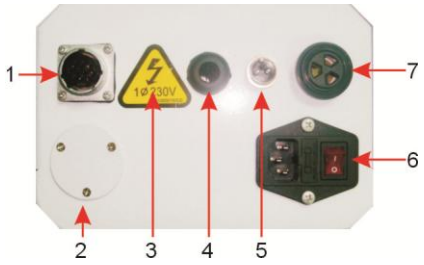
According to the specifications of mounting holes on the extruder or injection molding machine, drill 4 screw holes on the base of SCM machine. Install the whole machine on the extruder or injection molding machine by locking the 4 screw holes of mounting base.

3.2 Power Supply Wiring

Connect the control box to 1ΦAC230V power supply and earth wire.

3.3 Sockets and Connecting Wires at the Back of Control Box

3.3.1 Control Box of Single Color Doser

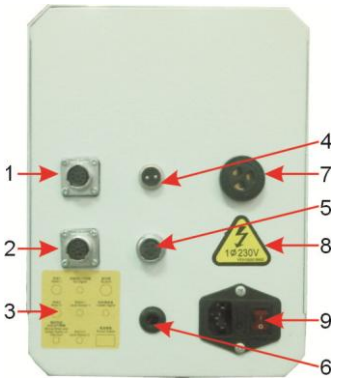


Name of parts:

1. Motor wire socket 2. Connect to mixing motor and safety switch (optional)
3. Suction Signal wire (optional) 4. Material level meter socket (optional)
5. Signal wire socket 6.Power switch 7. Buzzer

Picture 3-3: Control Box of Single Color Doser

3.3.2 Control Box of Double Color Doser



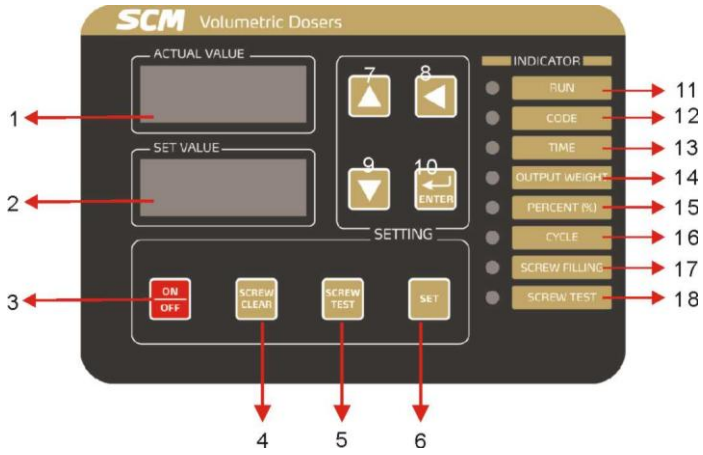
Name of parts:

1. Motor wire socket 1 2. Motor wire socket 2
3. Wire of mixer motor and safety switch (optional)
4. Signal wire 5. Material level meter socket 1 (optional)
6. Material level meter socket 2 (optional)
7. Buzzer 8. Suction Signal wire (optional) 9. Power switch

Picture 3-4: Control Box of Double Color Doser

4. Application and Operation

4.1 Control Panel



Picture 4-1: Control Panel

4.2 Descriptions of Control Panel

NO.	Item	Functions	Notes and cautions
1	Actual value/PV	Actual value display area.	When setting parameters, it displays function code. When the machine is working, it displays plasticizing time.
2	Setting value/SV	Setting value display area.	When setting parameters, it displays parameters of function. When the machine is working, it displays the moving ratio of screw.
3	Control switch	Switch of machine control panel.	
4	Screw clear	Force to clear materials in screw groove.	It is used to clear the remained master batch. The buzzer sounds when this function is in operation.
5	Screw test	For filling materials into screw groove for 50 sec. test.	
6	Set	Press this key to enter into setting mode.	Press this key when doing 50 sec. test.
7	Increase	It is used to increase setting value.	Also can be used to choose a parameter.

NO.	Item	Functions	Notes and cautions
8	To left	It is used to move the cursor to the left.	Also can be used to choose a parameter.
9	Decrease	It is used to decrease setting value.	Also can be used to choose a parameter.
10	Enter	It is used to confirm parameters and values.	
11	Running	This indicator shines when the machine is working.	
12	Code	This indicator shines when choosing the group of parameters.	There are Group 0~49 to choose from. Choose it by pressing “Increase”,” To left”, “Decrease” The setting groups of parameters can be memorized and saved forever.
13	Time	Set the value of plasticizing time as o when used for extrusion machine. (F-02)	Use “Increase”,” To left”, “Decrease” to set a time within 0~999.9 sec.
14	Output weight	Each mold’s output weight of injection molding machine or extruding weight per minute of extruder. (F-03)	Use “Increase”,” To left”, “Decrease” to input the output weight (0~999.9g).
15	Percentage	The proportion of master batch and raw materials.(F-04)	Use “Increase”,” To left”, “Decrease” to adjust value (0~99.99%).
16	Feeding cycle setting	Under injection mode, screw feeding cycle is controlled by times of plasticizing signal (F-05).	F-05=1 indicates when each plasticizing is finished by injection molding machine (every mold), the screw will meter the master batch once according to setting value. F-05=2 indicates when every two plasticizing are finished by injection molding machine (every two molds), the screw will meter the master batch once according to setting value (metering time is the same while the rotation speed increases). F-05=3 indicates when every three plasticizing are finished by injection molding machine (every 3 molds), the screw will meter the master batch once according to setting value (metering time is the same while the rotation speed increases). Note: When F-05 is set to be 2,3,4,5 (Applied for micro metering). The value of F-02 (plasticizing time) must be set smaller than that of extruder’s plasticizing signal, since the next plasticizing signal is only effective after each time of F-02 finishing counting.

NO.	Item	Functions	Notes and cautions
17	Screw filling	Fill the screw with materials before doing 50 sec. test (F-07).	The screw groove should be fully filled with materials until the master batch is forcing out from the screw.
18	Test	It is used to test the screw's output capacity of 50 seconds. (F-08)	

4.3 Start/Stop of the Machine

1) Check whether the power is turned on.
2) Turn on the main switch at the back of control box.
3) Press the control switch on the panel, the RUN indicator will be turned on.
4) After the setting of parameters is finished, machine will operate automatically if Extruder start to run and signals get into the doser.
5) Follow the reverse order to turn off.

4.4 Operation Guide

1) After starting the machine, press SET for 3 seconds.

2) For choosing GROUP/CODE, press△▽ to adjust the value of F-01 and then press SET to confirm it and move on to next step. The value of F-01 can be of any number from 0 to 49. Set the value of F-02 to F-06 according to the relative requirements in each recipe.
3) For choosing SETTING TIME/ TIME (plasticizing time), press △▽ to set the value of F-02 and then press SET to move on to next step.

Note: Set its value to be 0 and then press SET to move on to next step when used with extruder.

4) "For choosing SHOT W. /OUT.W., press △▽ to adjust the value of F-03 and then press SET to confirm and move on to next step.

Note: When used with extruders, set the unit of output weight of each minute to be g/mi. This is the weight when the signal voltage is 10V.

However, when used with injection machine, set the unit to be g/cycle.

5) For choosing PERCENT, press ▲▼ to adjust the value of F-04 which stands for the percentage of color additive and then press SET to move on to next step.

6) "For choosing FEEDING CYCLE/CYCLE, press ▲▼ to choose different feeding cycles (F-05), then press SET to move on to next step.

7) SCREW FILLING/ FILLING is used to test the highest output weight of 50 seconds. If you don't need to test the screw's output, press SET to turn back to step 2 and press ENTER to complete parameter setting. If you need to test it, do it as the following steps.

Note: For accurate control of output capacity, it is strongly recommended to do the 50 seconds test.

8) When in the mode of F-06, keep pressing "SCREW TEST" (for more than 3 seconds) to enter into screw filling mode (F-07) until the screw is full filled. Then press SET to move on to next step.

9) F-08 stands that after the screw keep rotating for 50 seconds (use a container to collect the additives), the machine will enter into mode of F-09 automatically.

10) When in the mode of F-09, weigh the materials collected in the last step and put the value into F-09 by pressing▲▼. Then press ENTER to complete the test.

Note: The unit of input weight should be the same with that used in step 4. For example, if the input unit in F-03 is g(10g,100g, kg...), then input g(10g,100g, kg...) when in mode of F-09. Press ENTER at any step to finish the setting.

Note: Before using SCM series, please set well the parameters of F-01~F-05 (For more details of 50 seconds test, please see 6.3. It's suggested to repeat the step of F-08 to get the more accurate average value. The percentage of color additives (the value of F-04) or the value

of 50 seconds test (the value of F09) can be adjusted according to the color of products.) If it's not convenient to do the 50 seconds test, you may refer to the following data and set a proper value in F-09 according to the bulk density and shape of materials.

Table 4-1: 50 Seconds Test for the Screw

50 seconds test for the screw **of SCM38**		
Type of Color additives	Screw diameter (mm)	Weight (g)
White color additives 7028B, bulk density about 1.6. Φ2~3mm particles, well-proportioned.	Φ12	131.6
	Φ14	228.2
	Φ16	456.3
White color additives 7018, bulk density about 1.4, Φ2~3mm particles, well-proportioned.	Φ12	113
	Φ14	205
	Φ16	442.2
Black color additives 2018B, bulk density about 1.2, Φ2~3mm particles, well-proportioned.	Φ12	78.1
	Φ14	138.9
	Φ16	228.9
50 seconds test for the screw of SCM75		
Type of Color additives	Screw diameter (mm)	Weight (g)
White color additives 7028B, bulk density about 1.6, Φ2~3mm particles, well-proportioned.	Φ12	54.1
	Φ14	94.4
	Φ16	192.4
White color additives 7018, bulk density about 1.4, Φ2~3mm particles, well-proportioned.	Φ12	44.7
	Φ14	81.8
	Φ16	172.9
Black color additives 2018B, bulk density about 1.2, Φ2~3mm particles, well-proportioned.	Φ12	32.5
	Φ14	56.4
	Φ16	104.9

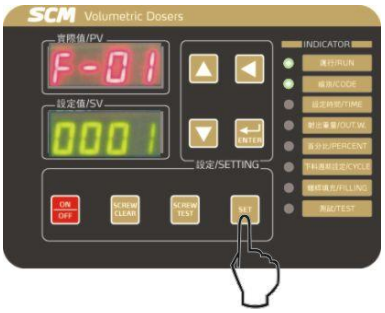
Note: the above data is the average value of 5 repeated tests.

4.5 Steps of Setting

1) Enter into setting

Keep Pressing for 3 Seconds

2) Recipes setting (F-01): There are 50 recipes ranging from 0 to 49 in F-01. Press ▲▼ to choose the value of F-01. Then press SET to confirm it and move on to next step.



3) Time setting (F-02): It's the time for plasticizing. Set the value to be "0" when in extruding mode. Press ▲▼ to choose the value of F-02. Then press SET to confirm it and move on to next step

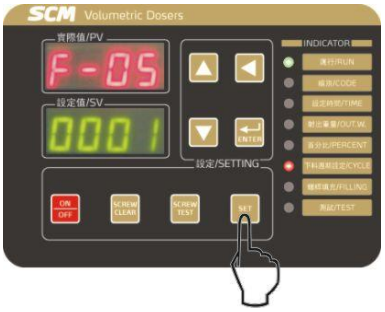
4) Shot weight setting (F-03): Press ▲▼ to choose the value of F-03. Then press SET to confirm it and move on to next step.

Injection machine: Set the weight for each mould (g/cycle)

Extruder: Set the shot weight for each minute (g/min).

5) Percentage setting (F-04): Press ▲▼ to choose the value of F-04. Then press SET to confirm it and move on to next step.

6) Feeding cycle setting (F-05): Press ▲▼ to choose the value of F-05. Then press SET to confirm it and move on to next step.



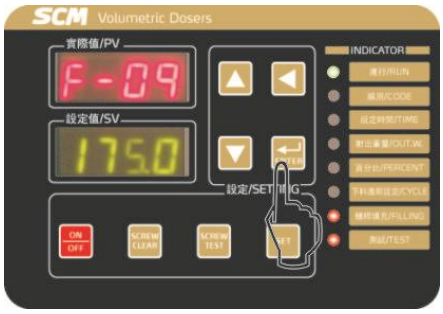
7) Enter into F-06. Keep pressing SCREW TEST for 3 seconds. Then the machine will turn to F-07 (screw feeding) automatically. If no need to test the output weight of screw, press SET to turn back to step 2 and then press ENTER to end this step.

8) Screw filling (F-07): Keep pressing SCREW TEST until the screw is fully filled (When there are some color additives coming out from the screw, it means the screw is fully filled.) When using the new machine or after changing the materials, please do this step.

9) Screw test (F-08).

Press SET to enter into screw test. The screw will automatically keep running for 50 seconds. The color additives will fall off well-proportioned. Use a container to collect the additives for 50 seconds and then weigh the additives. It is recommended that you do this test 3 times to get average value.

10) Input of Weight: The machine enter into F-09 automatically after finishing step F-08 and use ▲▼ to input the weigh got in the last step as the value of F-09.



Note: The unit of input weight should be the same with that used in step 4. For example, if “g” (10g, 100g, or kg...) is used as the unit of F-03, then use a corresponding unit in F-09.

4.6 Adjustment and Special Functions of Screw

4.6.1 Parameter Description

Symbol	Description	Range	Default
F-23*	CYCLE input signal mode.	0: INPUT＆TIMER SYNC 1: INPUT ONLY 2: TIMER ONLY	0

Note*:

0---External signals & plasticizing time

1--- External signals: The machine works according to external signals

2---Plasticizing time：The machine works according to the set plasticizing time.

Default value is 0. The time of conveying materials will come to an end when either the external signal or the set plasticizing time is over. For example: When the action signal of molding machine is over and the set plasticizing time is still on, the screw will stop conveying; however, when the set plasticizing time is over and the action signal of molding machine is still on, the screw also will stop conveying.

4.6.2 Setting Mode

1) Enter into F-06 like the way in 4.3.

2) Enter into F-07 by pressing "SCREW TEST" for 3 seconds.

3) Press + at the same time for 3 seconds to enter into F-23. Press ENTER to confirm it and then press ON/OFF to return.

4.6.3 Reset the Machine

1) Like the step in 1.2 of 4.5.2.

2) Press + "ON/OFF" at the same time for 3 seconds.

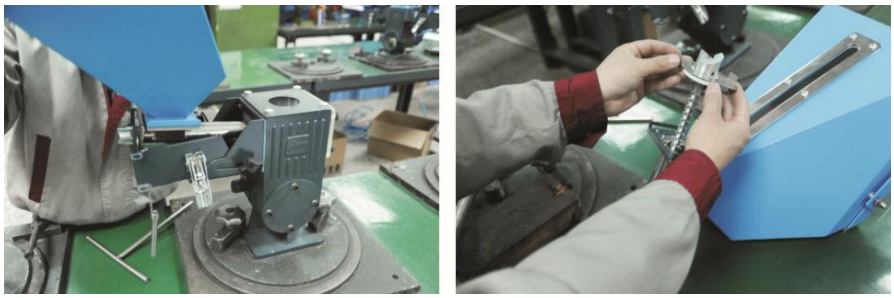
Note: By performing this function, the machine will clear all the set parameters above to turn back to the preset parameters.

4.6.4 Change Color Ratio

1) Press SET to enter into F-04.
2) Press to change color ratio.
3) Press ENTER to confirm it.

4.7 Change Color Additives

1) Press SCREW CLEAN to clear the materials in the screw groove. If there are still some materials remaining, please loosen the snap hook of the hopper and draw out the screw together with the hopper. Then use high pressure air to blow away the remained materials.
2) Add color additives.

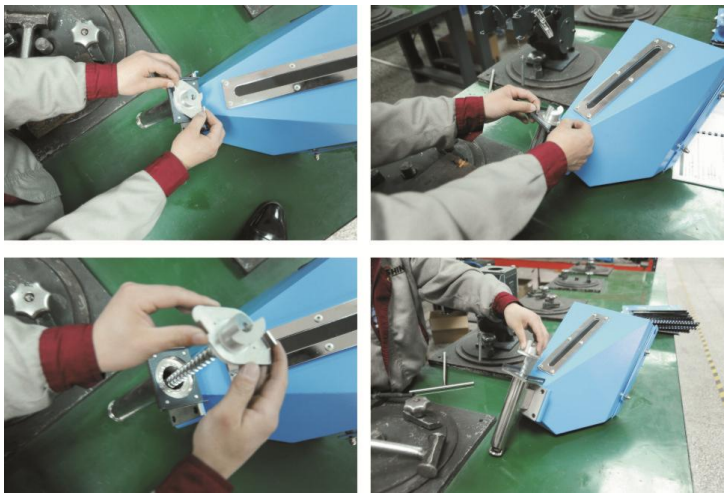


Picture 4-2：Change Color Additives

4.8 Replace Dosing Screws

1) Cut off power supply, loosen snap hook of the hopper, draw out the hopper and screw. Then unlock the screw fastening plate to remove the conveying screw for replacement.
2) Install the screw and hopper back to the machine.

Note: 12/14 screw is supplied with a sleeve.

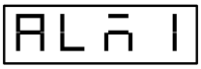
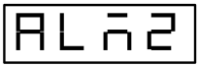
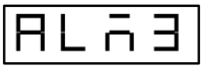


Picture 4-3：Replace Dosing Screws

5. Trouble Shooting

Failures	Possible reasons	Solutions
No indicates on the control cabinet.	1. Power supply not connected.	1. Connect the power supply.
	2. Fuse burnt out or control board problems	2. Replace the fuse or check control board.
Motor does not work.	1. Parameter mistakes.	1. Reset parameters.
	2. Motor overload.	2. Contact the manufacturer or local distributor.
	3. Motor damaged.	3. Replace the motor.
	4. Signal wire broken.	4. Replace motor signal wire.
	5. Signal wire connection wrong	5. Conduct Inspection
The buzzer sounds the alarm.	Parameter setting exceeds the limit.	Reset parameters.

Error Code

Error Code	**meanings**	**Possible reasons**
	1. The required output capacity exceeds the machine's highest output capacity. The required proportion of master batch can't be achieved even when the motor works to its highest speed. 2. Press the SCREW CLEAR button, the screw cleaning action is in the progress.	1. Parameters setting mistake. 2. The machine is too small.
	Motor trouble	1. The screw is jammed, which cause the motor overload. 2. Ambient temperature is too high.
	Too high signal voltage	The signal voltage of the injection machine and extruding machine exceeds 10VDC

6. Maintenance and Repair

6.1 Repair

All the repair work should be done by qualified technicians to prevent personal injuries and damage of the machine.

6.2 Maintenance

Keep the surface of machine clean.

6.3 Maintenance Schedule

6.3.1 About the Machine

Model _____ No. _____ Manufaturing date : _____

Voltage_____Φ_____ V Frequency_____ Hz Total power:_____ kW

6.3.2 Check after Installation

☐Check that dosing screws are fitted correctly.

☐Check the snap hook is tightly locked.

☐Check if the mounting base is firmly locked.

Electrical Installation

☐Voltage: _____ V _____ Hz

☐Fuse melt current: 1 Phase _____ A 3 Phase _____ A

☐Power supply and signal wire of control cabinet are correctly connected.

6.3.3 Daily Checking

☐Check the main switch.

☐Check fastening screws of mounting base.

6.3.4 Weekly Checking

☐Check if there damaged electrical wires.

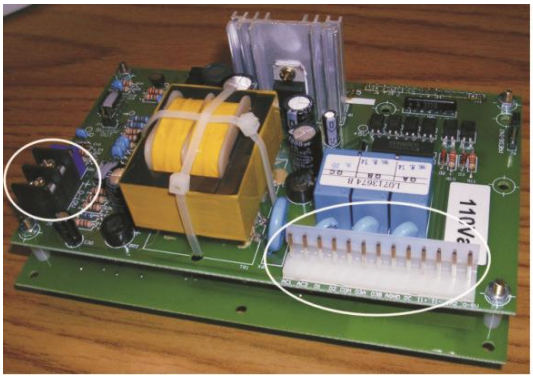
☐Check snap hooks are loose or not.

☐Check if the side holding plate is loose or not.

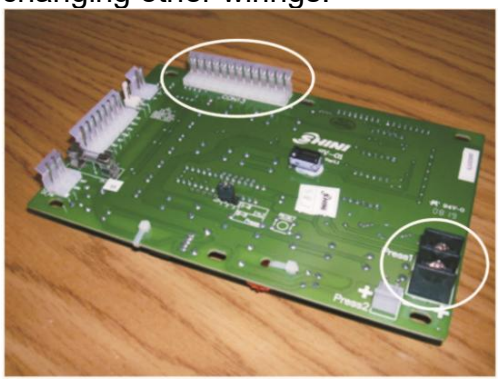
Addenda

1. Difference between two sets of PCB
   New PCB model: SV-01
   Old PCB model: M0334
2. Difference of Wiring

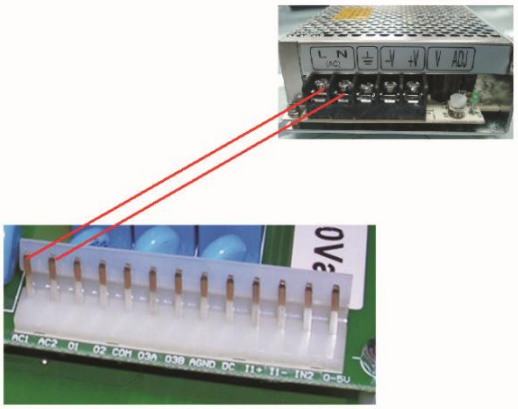
   The new PCB could be compatible with the old one because it reserves the same connecting terminal with the old one (showing in red ellipse in picture). But what matters is that the power specification of the old PCB is 230VAC or 110VAC, but the new one's is 24VDC. Therefore, when changing the old PCB to the new one, it is necessary to connect the power lines of the old PCB to terminals of V+ and V- without changing other wirings.



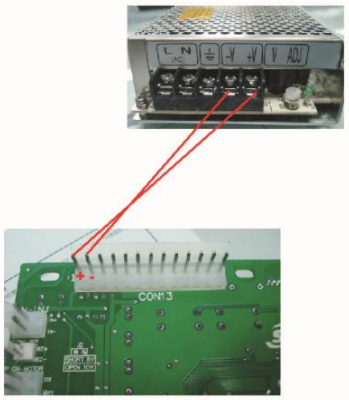
Picture 1: Old PCB of SCM (M0334)



Picture 2: New PCB of SCM (SV-01)



Picture 3: Power Wiring of Old PCB

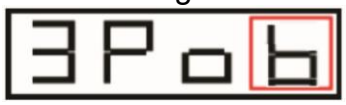


Picture 4: Power Wiring of New PCB

3. Parameter Setting for PCB working with different motors
   The output signal of motor will vary along with the motor model. Therefore, it's necessary to set the working model: mode A and mode B, according to the motor model for the first time to use.

   Be corresponding to WEG motor, the PV column will display 3PoA when starting the machine.

Be corresponding to Dunkermotoren motor, the PV column will display 3Pob when starting the machine.



Steps of switching between Mode A and Mode B:

After turning off the power, press △▽↵ at the same time to turn on the power again. The mode will be switched from mode A (mode B) to mode B (mode A). Once the conversion of the two modes is finished, the buzzer will sound and the mode will be displayed in the PV column.

Note: If mode A or mode B is set incorrectly, the alarm ALA2 will be sounded. The mode A or mode B should be correctly set by following the above steps.