SEHD

Energy-efficient Hopper Dryer

(Poland)

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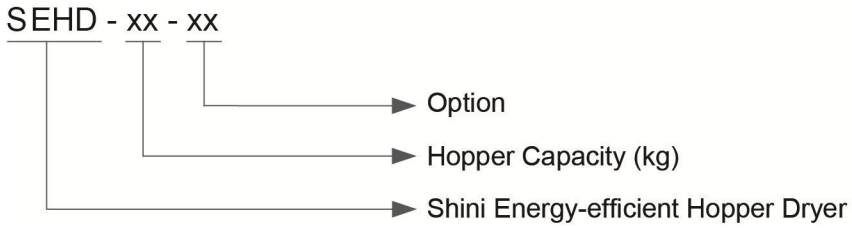
1. General Description

Please read through this operation manual before using the machine to prevent damages of the machine or personal injuries.

SEHD-25(Poland)

1.1 Coding Principle



1.2 Feature

Optimal structure

- Down-blowing structure design reduces the different between inlet air temperature and heater temperature to ensure stable inlet air temperature.
- Adopt heat-insulated blower to prolong blower lifespan.
- The heating tank adopts double-layer insulation structure which not only can reduce the power consumption but also can avoid too high of the ambient temperature.
- All material contact surfaces are made of stainless steel to eliminate material contamination.
- Hopper separated from its base with cleaning door (except SEHD-12&25) for easy cleanliness.
- Models above SEHD-200 are equipped with the magnetic base.

User-friendly design

- SEHD-25-150 pipe heater with lead sheet connected and all series are equipped with the temperature protector as to prevent the pipe heater from dry burning.
- With overheat release function, when the drying temperature exceeds the set deviation value, the main power supply will be automatically cut off.
- All series are standard equipped with the one-week timer and intermittent operation function.
- All series are equipped with microcomputer control and RS485 communication interface.
- The max. drying temperature can reach 160˚C.

Energy efficient

- Compared with the test of standard SHD hopper dryer, the drying effect of SEHD increased by 60% on average, while the power consumption decreased by 40%.

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 5, 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.

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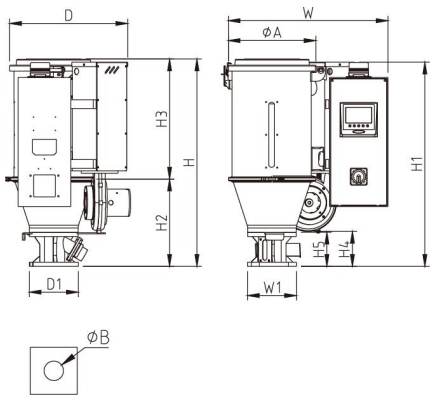
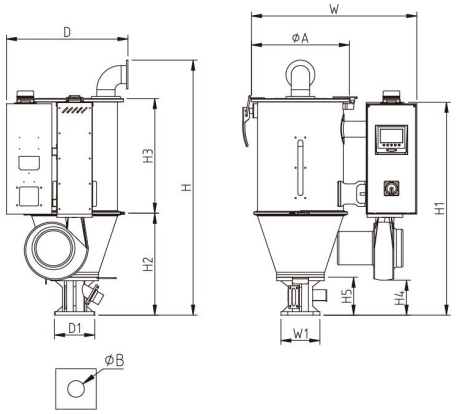
1.3 Technical Specifications

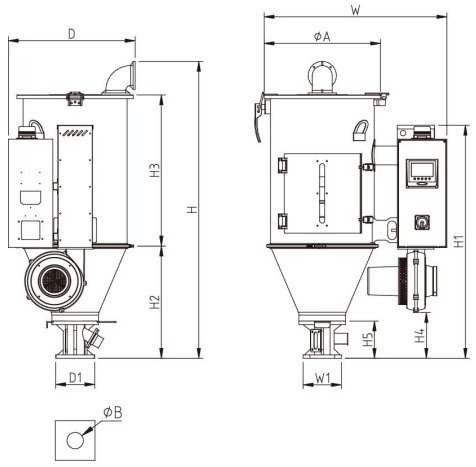
1.3.1 External Dimensions



SEHD-12



SEHD-25



SEHD-50~600

Picture 1-1: External Dimensions

1.3.2 Specification

Table 1-1: Specification

Model(Poland) SEHD-	12	25	50	75	100	150	200	300	400	500	600
Ver.	B	A	A	A	A	A	A	A	A	A	A
Heater(kW)	2.2	3	3.9	4.2	6	6.6	8.4	9.6	18	19.2	21
Blower(kW)	0.1	0.12	0.12	0.12	0.12	0.12	0.18	0.18	0.55	0.55	0.55
Loading Capacity (kg)	12	25	50	75	100	150	200	300	400	500	600
H(mm)	702	1010	1196	1476	1441	1781	1674	2038	2205	2377	2581
H1(mm)	691	843	939	939	1200	1200	1363	1363	1619	1619	1619
H2(mm)	294	403	453	453	522	522	617	617	846	846	846
H3(mm)	408	454	609	899	778	1118	820	1183	1121	1300	1504
H4(mm)	119	128	136	136	234	234	280	280	497	497	497
H5(mm)	115	150	150	150	157	157	231	231	283	283	283
W(mm)	545	654	738	738	915	915	1029	986	1262	1262	1262
D(mm)	402	481	512	512	623	623	762	762	935	935	935
D1(mm)	130	158	158	158	238	238	240	240	345	345	345
W1(mm)	130	148	148	148	238	238	240	240	345	345	345
ΦA(mm)	299	387	470	470	594	594	750	750	910	910	910
ΦB(mm)	52	53	53	53	90	90	90	90	116	116	116
Weight (kg)	35	40	55	75	85	95	100	120	165	170	240

Note: 1) Above loading capacity is based on pellet material of 0.65kg/L in bulk density and 3~5mm in diameter.

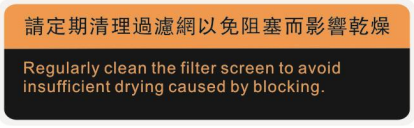
2) Power: 3Φ, 230/400/460/575VAC, 50/60Hz.

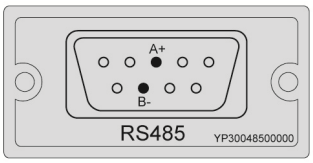
1.4 Safety Regulations

1.4.1 Safety Signs and Labels

Note!

Electrical installation should be done by qualified electrician only.
Before connecting to AC Power Source, turn power switch to OFF position. While AC power source is connected, make sure specifications and overload protection rating of the power switch are suitable and reliable. When the machine is under care or maintenance, turn off both power switch and automatic operation switch.

	Danger! High presscure! It is attached to the control box.
	Warning! High temperature surface may burn hands! It is attached on the cover of pipe heater.
	Attention! This mark reminds you to be more careful!
	Warning! High temperature surface may burn hands! This label should be stick to the shell of electric heating box.
	Protection device activates when overheat occurs；after faults are discharged,press blue key to reset and turn on the switch to Restart operation.
	Push-and-pull switch for shut-off plate: I: Means "Pull" O: Means "Push"
	Regularly clean the filter screen to avoid insufficient drying caused by blocking

	Communication interface RS485

1.5 Exemption Clause

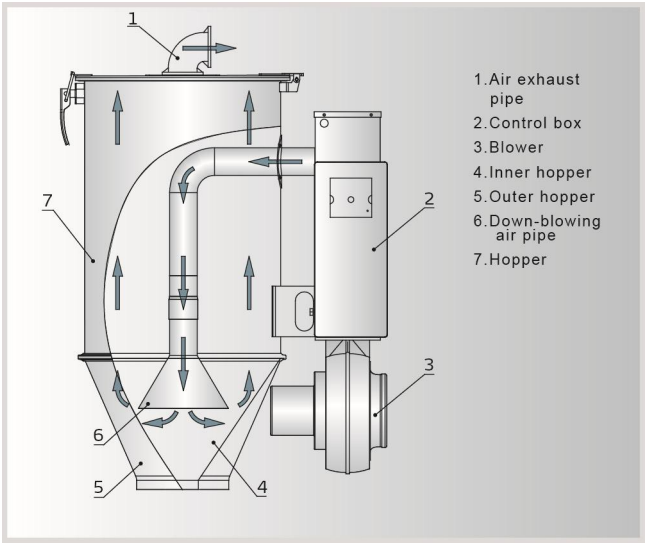
The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

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



Picture 2-1: Working Principle

The air blown out by the blower is heated by electric heating to form the high-temperature dry hot air. Through down-blowing air pipe and hopper bell, the hot air can be evenly blown upward from the hopper bottom. The plastic materials absorb the heat in the air, and the drying air temperature gradually decreases, so the temperature of materials at lower part of the drying hopper is higher than that in the upper part. The material enters the drying hopper from the upper part and is excluded from the bottom as to ensure the drying effect.

2.2 Options

2.2.1 Air Filter

Model	Diameter(mm)	Height(mm)	Applied to
ADC-1	145	656	SEHD-12
ADC-2	205	728	SEHD-25~150
ADC-3	246	1024	SEHD-200~1000

Effectively filter 99% of dust-contain air discharged from dryer to avoid air pollution.

2.2.2 Blower Inlet Filter

Model	Diameter(mm)	Height(mm)	Applied to
AIF-12	157	195	SEHD-12
AIF-25	157	195	SEHD-25
AIF-50	177	201	SEHD-50/75
AIF-100	219	191	SEHD-100/150
AIF-200	249	268	SEHD-200~300
AIF-600	221	380	SEHD-400~600
AIF-800	221	380	SEHD-800~1000

Notes: refill air input of the blower is adjustable.

2.2.3 Magnetic Base

Model	Applied to	Magnetic Frame	Height (mm)	Aluminum Holder×2
MB-12	SEHD-12	MR-3	193	88.5 × 78 × 2.3
MB-50	SEHD-25~75		231	
MB-100	SEHD-100~150		193	118.5 × 105 × 2.3

Made of aluminum with built-in hopper magnet, can effectively separate metal scraps out to avoid material contamination. (The SEHD-200 and above models are equipped with the standard magnetic base.)

2.2.4 Hot Air Recycler

Model	Filtering Barrel Dia. (mm)	Inlet Air Pipe Dia. (inch)	Flange of Air Outlet (inch)	Applied to
HAR-12	157	2		SEHD-12
HAR-25EH	157	2.5		SEHD-25
HAR-50 EH	175	3		SEHD-50/75
HAR-100 EH	219	3		SEHD-100/150
HAR-200 EH	245	4		SEHD-200~300
HAR-600 EH	245	4		SEHD-400~600
HAR-800	245	4		SEHD-800~1000

Work with hopper dryer to make the hot air form a semi-closed circulated loop and has features as follows：

Hot air recycling and circulating avoids indoor temperature rising up.

Keep air in factory clean and ensure good product quality.

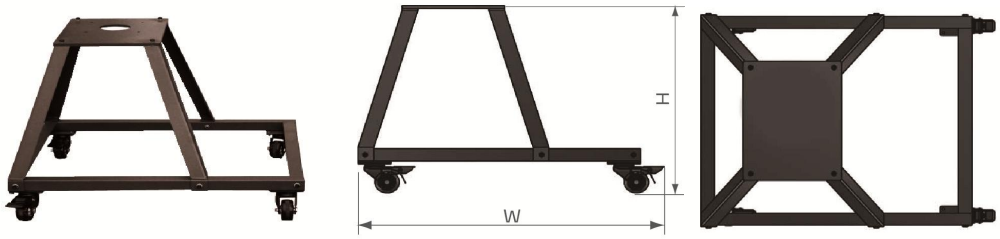
Heating by fast hot air circulation can lower energy consumption by 40%.

2.2.5 Hopper Magnet

Attract metal fragment in the material to avoid damaging the equipment.

Model	Applied to	Aluminum Holder ×2 (mm)
MR-3	SEHD-50~75	147×130×2.3
MR-7	SEHD-100~150	190×80×2.3

2.2.6 N-Type Floor Stand



Model	Applied to	Dimension (mm) H×W×D	A / B / C (mm)
FSN-50	SEHD-12~75	600 × 700 × 640	140/54/ 9
FSN-100	SEHD-100/150	615 × 800 × 710	210/90/11
FSN-200	SEHD-200/300	680 × 1000 × 840	210/90/11
FSN-400	SEHD-400~600	700 × 1200 × 1010	260/116 /13
FSN-800	SEHD-800/1000	700 × 1600 × 1180	260/116/13

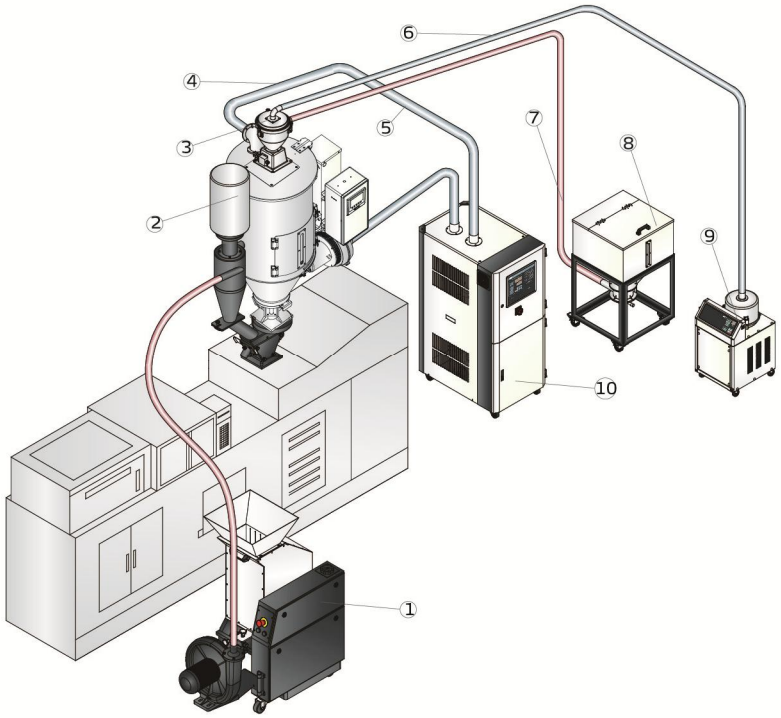
With which machines can be easily moved out of workplace which is suitable for the factories with height limited workshops, also it can make operations more convenient.

3. Installation and Debugging

Notes for Installation and Positioning：

1) Machine just can be mounted in vertical position. Make sure there's no pipe, fixed structure or other objects above the installing location and around the machine which may block machine's installation, hit objects or injure human person.
2) In order to maintain convenient operation, it's suggested to keep 1m space around the machine. Please keep at least 2m distance between the device and the inflammable goods.
3) This series of models only could be applied in working environment with good ventilation.

3.1 Direct Installation



1. Low-speed granulator
2. 30-sec instant recycle
3. Vacuum hopper
4. Return air
5. Dehumidifying air
6. Vacuum pipe
7. Material pipe
8. Material tank
9. Auto loader
10. Honeycomb dehumidifier

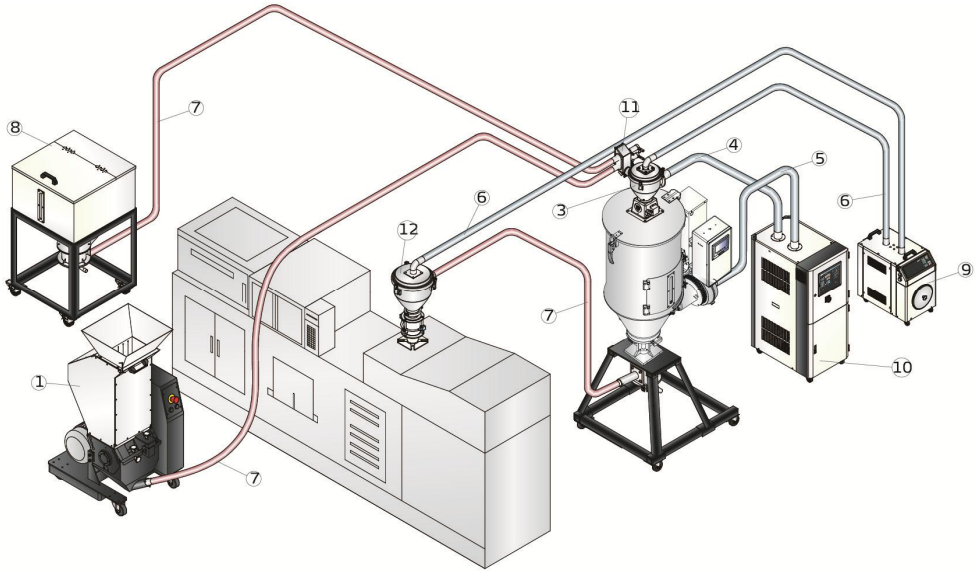
Picture 3-1: Direct Installation

Direct installation type is to mount the hopper dryer directly on the molding machine via a standard base. SEHD-12~300 is suitable for this mounting method

as well as floor stand installation type; SEHD-400 and models above should adopt floor stand installation type.

When using the method to mount the dryer, the equipped standard base must according to material inlet diameter of the molding machine mounting drill holes. Then use the screw to fasten the base and the molding machine inlet.

3.2 Floor Stand Installation



1. Low-speed granulator	2. 30-sec instant recycle	3. Vacuum hopper
4. Return air	5. Dehumidifying air	6. Vacuum pipe
7. Material pipe	8. Material tank	9. Auto loader
10. Honeycomb dehumidifier	11. Proportional valve	12. Photosensor hopper

Picture 3-2: Floor Stand Installation

Floor stand installation type is to mount dryer on a floor stand, then via a photo-sensor hopper receiver to convey the material to the feed port of a molding machine. SHD-400 and above models should adopt floor stand installation type.

Machine should be placed on water-level floor to keep balance. If it is to be mounted on a high surface(e.g. on a scaffold or a interlayer), should ensure its structure and sizes can bear the weight and size of the machine.

3.3 Connecting the Power Source

According to circuit diagram of each machine to connect the power source. Notice should be taken concerning if the power voltage is in compliance with the required specifications, also if the switch and load are proper and safe.

Notes: Before connecting, the main switch should be off.

3.4 The Hopper Dryer Test

After ensuring all the circuits have been connected firmly, turn on the main switch to"ON" status and pressing the "RUN/STOP" button on control panel. Then blower runs, observe whether the rotating derection of the blower is same as the arrow indicated direction. If it is not, randomly exchange two of the three power firing lines and connect them firmly.

Picture 3-3: Blower

4. Application and Operation

4.1 Control Panel

Picture 4-1：Control Panel

4.1.1 Panel Operation

1) Turn on main power switch of control box.
2) Press “ON/OFF” key, it starts drying process, indicator turns green;
3) Press “ON/OFF” key, it stops drying process, indicator turns yellow.

4.1.2 Temperature Setting

1) The SV (Set valve) will flash after pressing "Menu" key, increase or decrease temperature by pressing“Up”or “Down”key.
2) Press "Enter" key again to confirm the input value.

4.1.3 Temperature Lock

1) Press “Menu” key for 2 seconds, it displays “TIME”.
2) Press “Up” key repeatly, till it display “LOCK”;
3) Press “Enter” key, the set value will flash, press “Up”or “Down” key to select “YES”(lock temperature setting) and “NO” (Unlock).
4) Press “Enter” key to confirm the input value.
5) Press “Menu” key to return operation menu.

Notes: When “LOCK” is set as “YES, temperature setting value will be locked which not accessible to change.

4.1.4 PID Setting

1) Press both “Menu” and “Down” keys for 3 seconds, it shows “P” (proportion) setting;

2) Press "Enter" key, the set value will flash, then press “Up”or “Down” key to increase or decrease the value.
3) Press "Enter" key to confirm the input value.
4) Press “Up” key again and again, it displays “I” (integral time) and “D” (differential time) setting accordingly.
5) Repeat above step 2 and step 3, input and confirm related parameters.
6) Press “Menu” key, it returns operation menu.

Notes: The PID parameter will directly influence the effect of temperature control, please be careful to set the value!

Parameters	Codes	Factory Default
Proportion	P	40
Integral time	I	120
Differential time	D	20
Over-temp alarm	OTP	15℃
Control cycle	HCLE	15

Blower delay	FDLY	180
Temp. unit	UNIT	℃

4.1.5 Intermittent Operation Setting

1) Hold “Menu” for about 2 secs. to set current time and week. Press “Up” or “Down” key to set start/stop function of AUTO timer, the time for RONE intermittent operation, the OFF time of ROFF intermittent operation, the ON time of RON intermittent operation.

4.1.6 One-week Timing Setting

1) After current time is set, hold “menu” for about 5 secs, press “Up” or “Down” key to set OFF1 (Mon. off time), OFF2(Tues. off time), OFF3 (Wed. off time), OFF4(Thur. off time), OFF 5(Fri. off time), OFF6(Sat. off time), OFF7(Sun.off time).
2) Hold “Menu” for about 7S, press “Up” or “Down” key to set ON1.(Mon. start time), ON2(Tues. start time), ON3(Wed. start time), NO4(Thur. start time), ON5(Fri. start time), ON6(Sat. start time), ON7(Sun. start time).hhhhh

4.1.7 Communication Setting (optional functions)

1) Press both “Menu” and “Up” for 3 seconds, it displays “PRO” (communication protocol) setting.

Notes: communication protocol is fixed to Modbus RTU protocol—“RTU”.

2) Press “Up” key to enter “ID” (communication address) setting;

Notes: The communication address of every controller in the same system must be the only one, no repeat use. In principle:

communication address of hopper 1 is 1, communication address of hopper 1 is 2, and so on.

3) Press “Setup” key, the set value flickers, then press “Up” or “Down” key to increase or decrease the value.
4) Press "Enter" key to confirm the input value;
5) Press “Up” key again and again, it displays “Baud” and “PAR” settings, (as below)
6) Repeat step 3 and step 4, then confirm the related input parameters.
7) Press “Menu” key to return operation menu.

Table 4-1: Comm. Parameter

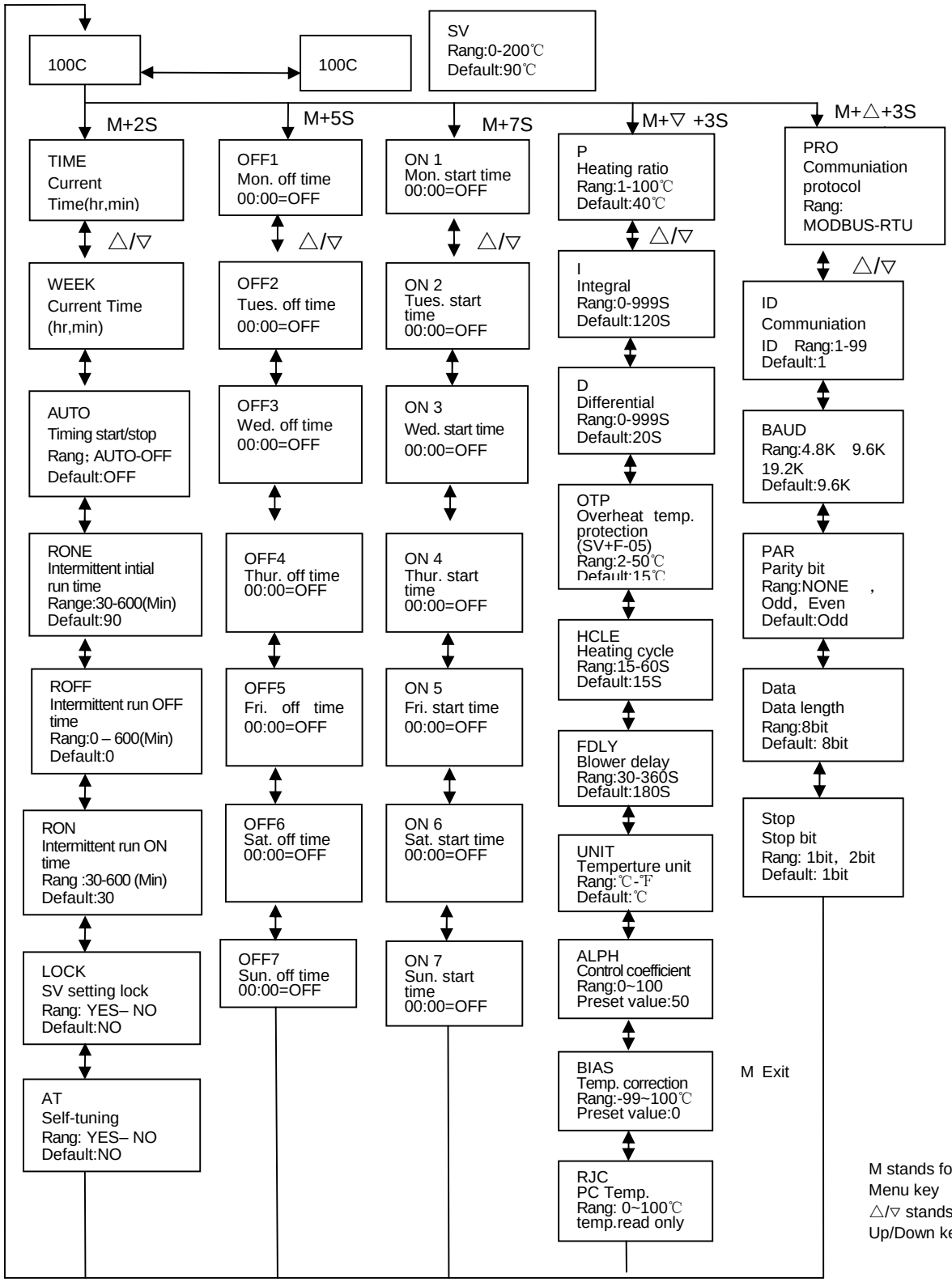
Communication Parameters	Communication Codes	Factory Default
Communication Protocol	PRO	RTU
Communication Address	Id	1(current address)
Baud Rate	Baud	19.2K
PAR	PAR	none
Data Length	Data	8
Stop Bit	Stop	1

4.1.8 Alarm Light Status

Table 4-1：Alarm Light Instruction

No.	Items	Instruction
1	Yel. light	Standby status（It means the machine is powered on, please be noted!）
2	Gre. light	Running status（It means the machine starts, and is running.）
3	Red light	Alarm status (It means that the machine has fault alarm. For specific fault information, please refer to corresponding alarm text or code. Notes: Some models have mute function, and click the mute button on the controller screen. At this time, only red light of the machine is on. After clicking the mute button again, the machine will resume the buzzer output.)
4	Buzzer	

4.1.9 Operation Flow



4.1.10 Wrong Codes Remark

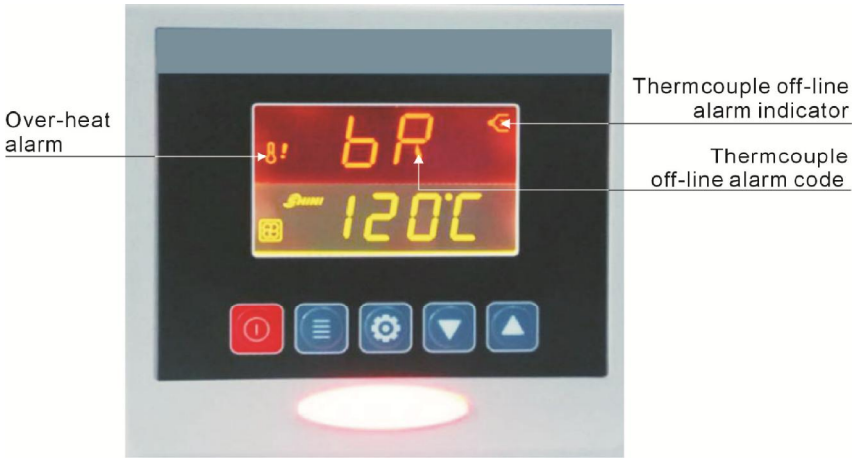


Table 4-2:：Error Code

Wrong Codes	Remark
bR	Thermocouple off-line alarm
oH	Over-heat alarm
REV	Temperature sensor reversely connected
oL	Overload alarm
bAT	Battery error alarm
EGO	EGO over-temperature alarm
xATx	Auto-turning error
LT	Low temperature alarm
HT	Heater alarm

5. Trouble-shooting

Symptom	Possible causes	Actions Taken
The rotating direction of blower fan is not as indicated.	1. Blower phase-reversal	1. Exchange two of the electrical wires
Blower can not be started.	1. Motor failures	1. Repair or replace
	2. Solenoid switch contact open circuit.	2. Check and repair or replace
The blower and heater can not work.	1. Tripping of overload relay	1. Check or replace
	2. Problems of transformer	2. Check or replace
	3. Fuse melted	3. Check or replace
	4. Troubles of power	4. Check whether there's phase shortage.
The blower can work, but heater can not.	1. Pipe heater lead melted	1. Check or replace
	2. Solenoid switch failure	2. Check and repair or replace
	3. Pipe heater failure	3. Check or replace
	4. Temp. controller problems(No output)	4. Replace the temp. controller
	5. Thermocouple problems	5. Replace thermocouple
The blower is working, but drying temperature will not increase.	1. Pipe heater or lead sheet defects	1. Check or replace
	2. Short circuit of overheat protector or tripping off	2. Check or replace
	3. Phase shortage of contactor	3. Check or replace
	4. Temp. controller damaged.	4. Replace temp. controller
The blower can work, but the temp. Is too high.	1. Hot air pipe jammed	1. Cleaning
	2. Temp. controller failure or large erros	2. Replace temp. controller or adjust the knob
	3. Solenoid switch contact bonding	3. Replace

Note: Main switch must be turned "OFF" when checking or replacing the components of the machine.

6. Maintenance and Repair

6.1 Blower

1) Clean inner and outer parts (especially at blower inlet) of the blower periodically.
2) Remove the dusts on leaves of the fan for protection.

6.2 Maintenance Schedule

6.2.1 General Machine Information

Model _____ SN _____ Manufacture date _____

Voltage_____Φ_____V Frequency _____ Hz Power _____ kW

6.2.2 Installation & Inspection

☐ Check if the pipe joint is tightly locked by clips or not.

☐ Check that the material clearance door is firmly closed.

☐ Check that the piping system is correctly connected.

Electrical Installation

☐ Voltage _____ V _____Hz

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

☐ Check phase sequence of the power supply.

☐ Check the rotating direction of the blower.

6.2.3 Daily Checking

☐ Check the switches of the machine.

☐ Check auto-start function of the machine.

6.2.4 Weekly Checking

☐ Check all the electrical cables of the machine.

☐ Check if there are loose electrical connections.

6.2.5 Monthly Checking

☐ Check that the pipe heater is working properly.

☐ Check the performance of blower.

☐ Check the functions of electrical components.

6.2.6 Half-yearly Checking

- [ ] Check if there are damages of heat-resistant hose or not.
- [ ] Check the process heater.
- [ ] Check the blower.