

Air cooled Refrigerant dryer



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Equipment data brief description					
type	Freeze dryer		model	SLT - 1.2 - 1.6	
Application medium	Compressed air		Pressure loss	≤20Kpa	
Intake parameters			Exhaust parameters		
Rated flow	1.2	Nm ³ /min	Exhaust flow	1.2	Nm ³ /min
Rated inlet pressure	7	Bar	Maximum intake pressure	16	Bar
Rated intake air temperature	45	°C	Maximum intake air temperature	60	°C
Relative humidity	100%		Pressure dew point	2-10	°C
Refrigeration system overview					
Refrigeration compressor	Fully enclosed rotor compressor		Heat exchanger type		
refrigerant	R134A		Evaporator	Aluminum plate fin heat exchanger	
Host model	STK012WHP01900BSX		Heat Exchanger		
Refrigerant charge	0.55	kg	Air condenser		
Host power	0.53	kW	Precooler	/	
Host cooling capacity	1430	W	Heat exchanger material	Aluminum-magnesium alloy	
Electrical control system			Common basic conditions (based on equipment reference)		
Machine power	0.6	kW	Ambient temperature	1 -38	°C
Start-stop mode	On-site		Cooling air volume	900	M ³ /h

Fault alarm	On-site		Fan power	0.7	kW
Communication Protocol	RS-485 MODBUS		Installation location	indoor	
Power Specifications	220V/1PH/50HZ		Dangerous nature	Not dangerous	
Mechanical data			Air network requirements		
Nozzle size	G1 "		Inlet oil content	3	mg
Discharge size	Ø 8mm hose		Inlet particles	1	ppm
Type of sewage	automatic		Condensate treatment	On-site collection	
Main Materials	Aluminum-magnesium alloy		Refrigeration system operating status		
Equipment Installation	No basic installation		Evaporation pressure	2.2	Bar
Shipping method	Forklift		Condensing pressure	8.2~10	Bar
Dimensions	618mm×560mm×860mm		Low voltage protection	0.2	Bar
weight	35	kg	High voltage protection	18	Bar

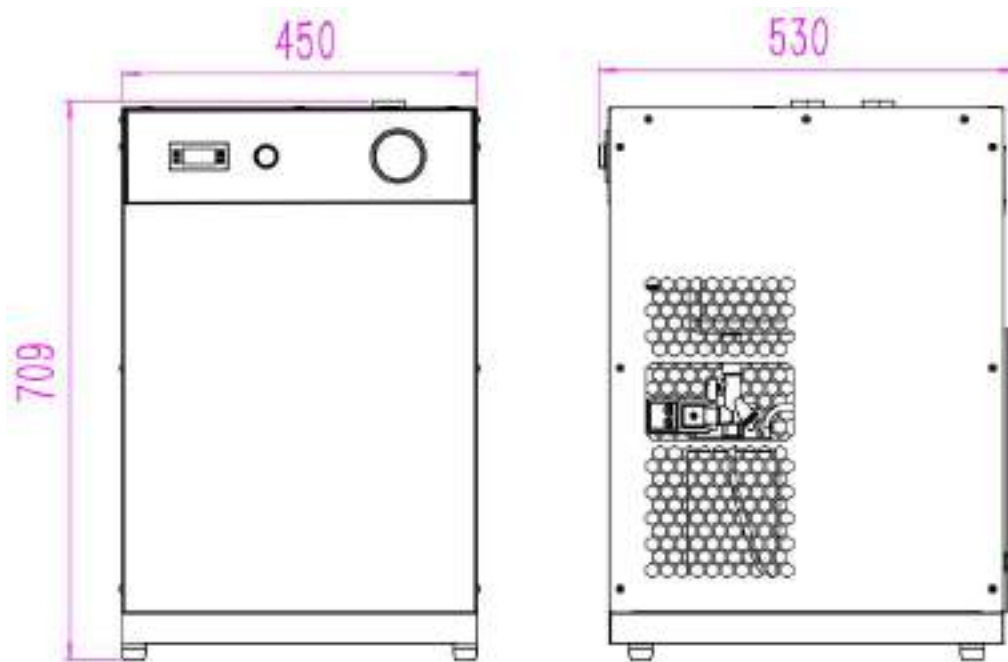
2. List of main equipment configurations

Serial number	name	Specification	brand
1	Refrigeration compressor	WHP01900BSX	Highly
2	Air condenser	SLT -1 . 6-7	custom made
3	Plate Heat Exchanger	SLT -1 . 6-7	custom made
4	Expansion valve	CBX-02Z	Shangheng

5	Refrigerant filter	LDL - 032S	Lindi
6	External rotor fan	YZF-18-30	Shimmer
7	Electronic drain	MIC-A	Thoughts
8	Intelligent Controller	CT8893	Roman
9	High voltage protection switch	WQM- 3.5/2.8	Manqiwei
10	Low voltage protection switch	YK- 0.15/0.35	Manqiwei

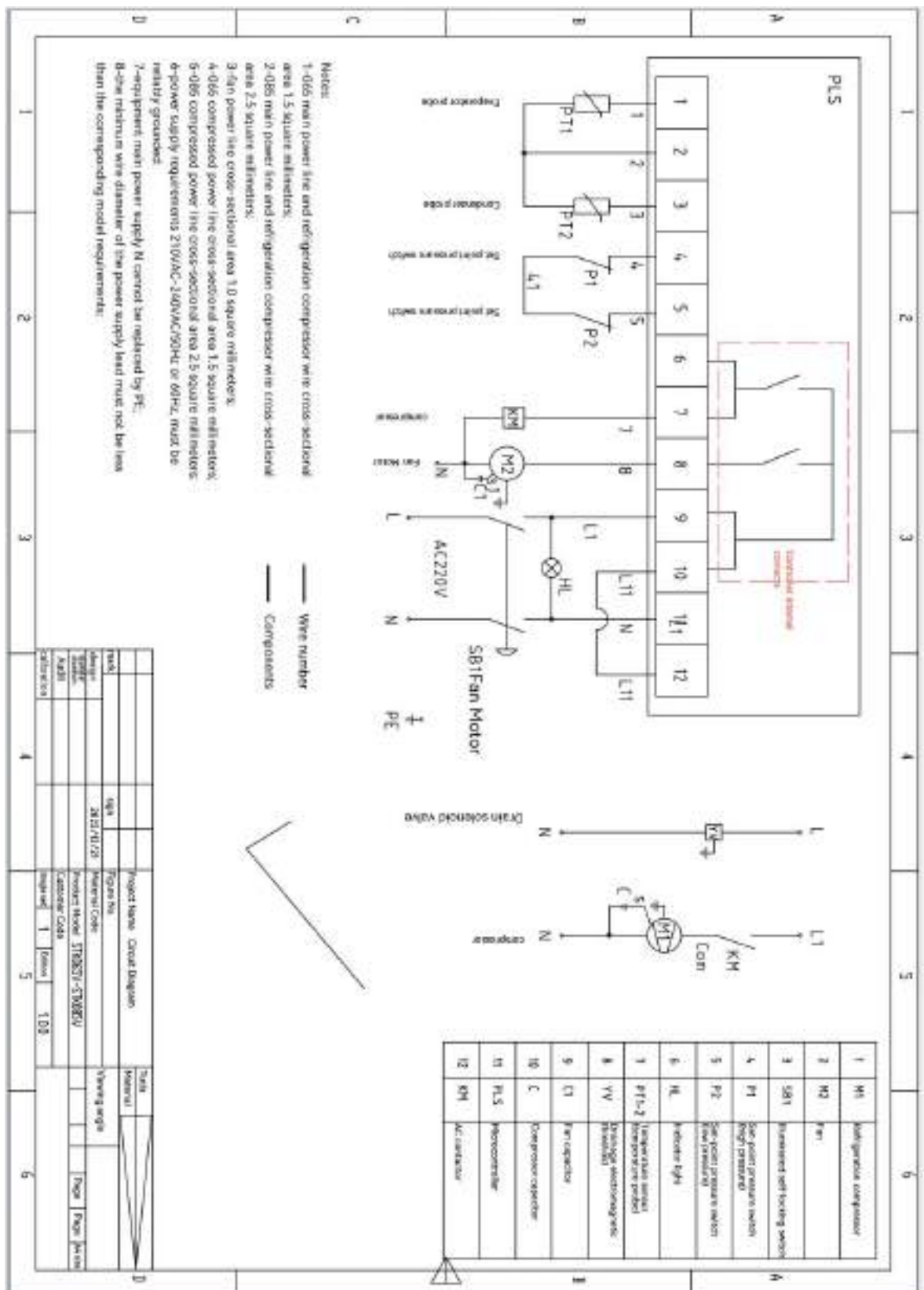
Note: The above spare parts are for reference only. Our company will carry out actual production according to different customer needs.

3. Equipment Dimensions



(Length: 530mm Width: 450mm Height: 709mm)

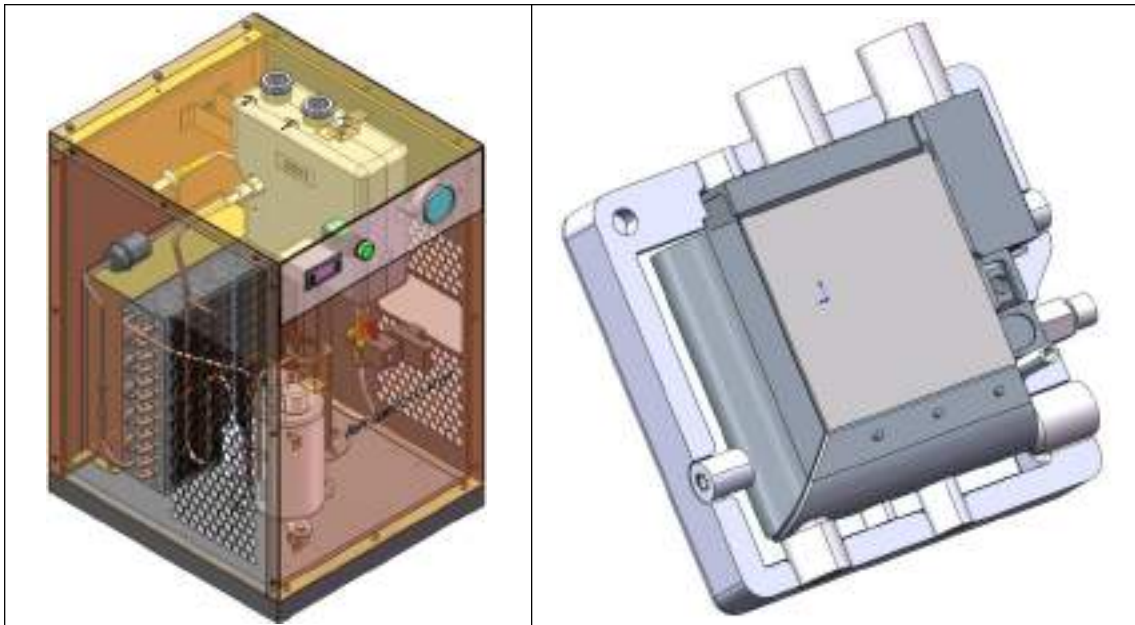
4. Circuit Diagram



5. Introduction of Aluminum Plate Fin Refrigerated Dryer

◆ The aluminum plate-fin heat exchanger is designed and processed with aluminum-magnesium alloy materials. Due to its superior heat exchange efficiency, it only needs a smaller cooling capacity to meet the design requirements when applied to the refrigerated dryer. Compared with the shell and tube refrigerated dryer, its cooling capacity requirement is about 25% less. After the overall heat exchanger is processed, a helium leak test will be carried out. Its process can control the leakage rate to the lowest.

◆ The heat exchanger is made of aluminum-magnesium alloy, so it will not cause rust or corrosion on the inner wall of the pipe, avoiding secondary pollution of the compressed air.



◆ Under the high working efficiency of aluminum plate-fin heat exchanger, the maximum design temperature difference of air inlet and outlet can reach 3°C. The original cooling capacity with the cooling of outlet air can avoid loss, so the cooling demand is smaller than that of shell and tube heat exchanger. Therefore, the electric energy consumption required for the plate-fin heat exchanger is small, and the energy consumption can be saved by 25% compared with shell and tube cold dryer.

◆ The high-power model is designed by assembling multiple heat exchangers

in parallel. Since standard identical components are used, installation and maintenance are more convenient, thereby reducing equipment maintenance costs.

- ◆ The heat dissipation design of small models is a rear external rotor fan suction type, which better caters to the user's on-site heat dissipation device installation and high temperature problem in the on-site environment.

- ◆ The whole machine seal adopts thickened sheet metal to ensure the beautiful appearance , firmness and reliability of long-distance transportation . The sheet metal has been processed by pickling, degreasing, phosphating, high-temperature baking paint, etc. to ensure the service life of the equipment.

6. Core advantages of products

- ◆ Good heat exchange performance and saving energy consumption required for refrigeration . The heat exchange performance of aluminum plate-fin heat exchanger is much greater than that of conventional shell and tube heat exchanger. The maximum temperature difference between the inlet and outlet of air can reach 20 °C , which reduces the required cooling capacity and thus saves energy consumption of the dryer.

Heat exchanger series	Inlet and outlet temperature difference °C	Save energy
High-end small flow heat exchanger	5-7	20%
Conventional tube-fin heat exchanger	15~20	High energy consumption
Large flow heat exchanger	3-5	30%

- ◆ Larger heat exchange area : Aluminum plate-fin heat exchangers are

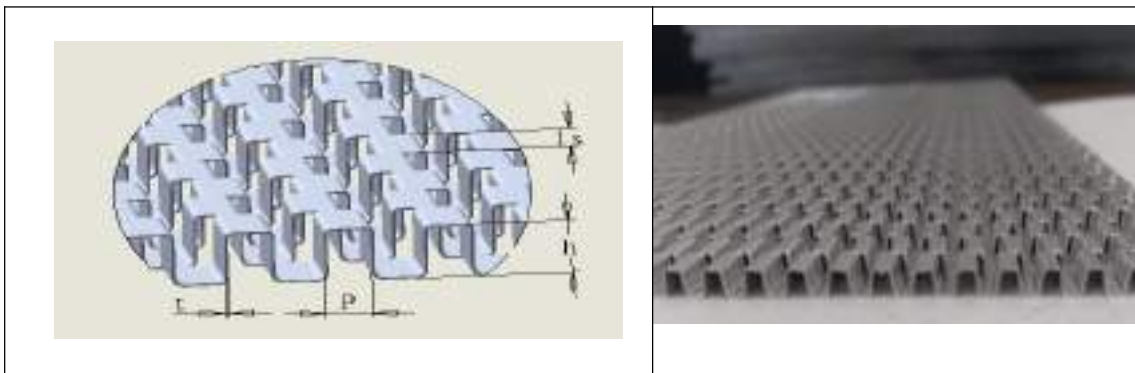
composed of multiple layers of corrugated fins and partitions. The fin spacing is very small and the number of layers is large, so the heat exchange area is large and the heat exchanger structure is compact ;







◆ Stainless steel wire mesh filtration separation

The air-water separation of aluminum plate-fin heat exchangers is mostly done by stainless steel wire mesh filtration separation, which has the advantages of simple structure and high air-water separation efficiency. The stainless steel wire mesh is generally made of SST304 material, which is strong and corrosion-resistant.

◆ The condensers all use internally threaded copper tubes, which increase the heat exchange efficiency by about 20% compared to the bare tubes used by other brands;

◆ High-end and efficient refrigeration accessories : Models with a processing flow rate $\geq 11.5 \text{ Nm}^3/\text{min}$ adopt a constant pressure expansion valve design , and the equipment is equipped with a defrost valve to ensure that the equipment will not have ice blockage in the compressed air path . It has strong reliability and uses Shanghai Shangheng /Denmark Danfoss/US Emerson hot gas bypass valves to ensure that there is no ice in the system.



Heat exchanger fin structure	Heat exchanger fins real shot
	
Stainless steel wire mesh real shot	Condenser copper tube real shot
	
Refrigeration parts real shot	Condenser real shot
	
Other brands of electrical boxes and control circuits	Real shot of the electrical box, which fully complies with EU CE standards and is safer and more reliable

- ◆ Three-dimensional optimized design reduces welding points in refrigerant pipelines

As shown in the three-dimensional diagram below, the refrigerant inlet and outlet evaporator interfaces have been replaced by a locking process instead of welding. After years of optimized design, the number of welding points in the refrigerant external circulation pipeline has been reduced to 5. Compared with the shell and tube refrigerated dryer, which has more than a dozen welding points, the probability of refrigerant leakage is extremely low.