

INDUSTRIAL AIR HANDLING UNIT

Make Air Treatment More Healthy And Energy Saving

HOLTOP

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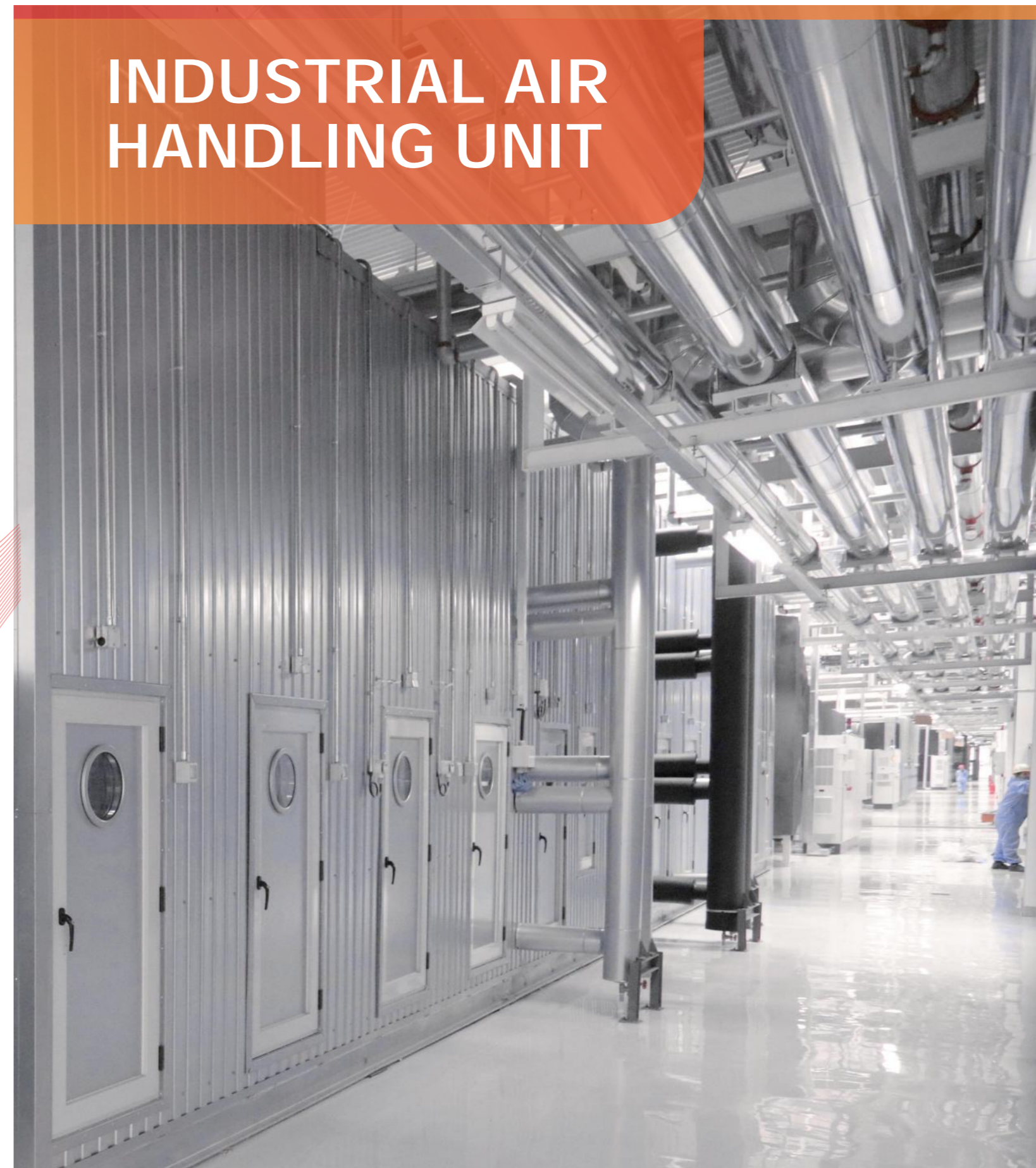
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* Data is subject to changes without notification due to product improvement.



MAKE AIR TREATMENT MORE HEALTHY AND ENERGY SAVING

Everyone needs to breathe 25,000 times per day, fresh and clean air is essential.

The ultimate pursuit of details, strict requirements for quality.

Pragmatism, Responsibility, Collaboration, Innovation.

Holtop keeps working on providing you with fresh air, clean, intelligent control, comfortable, convenience - integrated clean air solutions. Holtop delivers fresh and clean air, just for you healthy breath!

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ABOUT HOLTOP

2002

Well-known domestic manufacturer of healthy, comfortable and energy-saving air handling unit equipment.

Annual output of 200,000 units of fresh air, air conditioning and environmental protection equipment.

Won the title of “Zhongguancun and National High-tech Enterprises” and “Specialized, Special, New and Small Giant Enterprises” Accredited for participating in the compilation of many national standards, with nearly 100 patent certifications.

Obtained ISO9001, ISO14001, ISO45001 management system certification.

Set up sales and service agencies in major cities across the domestic, and won the five-star service certification.

Products are sold to more than 100 countries and regions, bringing high-quality product experience to hundreds of millions of users.



CRAFTSMANSHIP

ANNUAL OUTPUT OF 200,000 SETS OF AIR HANDLING UNIT

Holtop Badaling manufacturing base is located in Yanqing Park, Zhongguancun.

Has international advanced production lines and modern intelligent manufacturing equipment.

Details determine quality, Holtop strive for perfection in every detail, and produce excellent products that meet the quality of Holtop.



Sheet metal workshop



Assembly line for standard ventilation unit



Assembly line of ceiling type air handling unit



Assembly area of combined air handling unit



Air conditioning main machine production line



National certified enthalpy laboratory



Manufacturing base assembly workshop

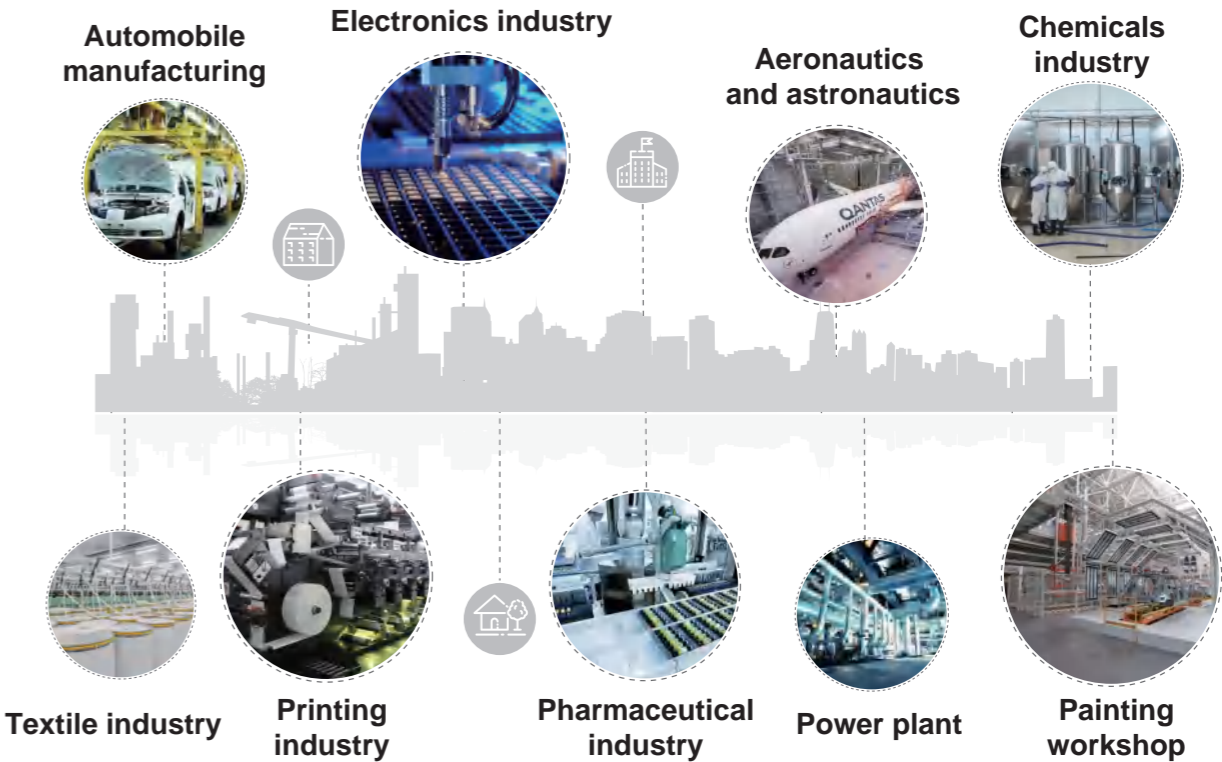


PRODUCT OVERVIEW

HGK Series Industrial Air Handling Unit

The large industrial plant requires the industrial air handling unit has large air volume, high wind pressure, high strength, aesthetic appearance, and realizes the precise temperature and humidity control of the industrial plant. In order to respond to the market demand, the Holtop industrial air conditioning unit came into being, the unit can realize precise temperature and humidity system in the industrial plant, heavy corrosive air recycling such as high paint concentration, and improve the efficiency of energy use by direct combustion heating. Providing enough fresh air for the workshop, it can reduce the content of various harmful substances in the indoor air, purify the air to the greatest extent, realize the function of energy collection, supply fresh air and extract dirty air at the same time. It effectively solves the problem of air pollution, makes air treatment in line with the national demand for energy conservation and environmental protection.

APPLICATION SCENARIOS



It is for industrial air condition control field like humidity, cleanliness, fresh air exchange, noise, toxic and harmful gas control, with requirements on energy saving and environmental protection.

Item\Series	50B series	80B series	80C series
AHU Structure	Aluminum alloy frame beam, built-in square steel tube to strengthen the plug connection for frame and occlusal.	Frame and plate structure, the inner and outer plates are high-strength compression-formed metal plate.	Aluminum alloy frame beam, built-in square steel tube to strengthen the plug connection for frame and occlusal.
Connection method	Occlusal insertion	Bolted connection	Occlusal insertion
Panel insulation material	PU/Rockwool	Rockwool	PU/Rockwool
Panel insulation thickness (mm)	50	80	80
Thermal insulation and flame retardant performance (grade)	B1	B1/A	B1/A
Air volume range (m³/h)	100000-280000	100000-320000	100000-280000
Total pressure	≤2600	≤3200	≤3200



2mm thick steel frame

Cooling coil/humidifier valves

Rock wool insulation

Service ladder

Casing structure

- Mechanical strength reaches European standard EN1886 D1 class
- Thermal insulation performance reaches European standard EN1886 T2 class
- Filter bypass air leakage rate reaches European standard EN1886 F9 class
- The air leakage rate of the unit reaches European standard EN1886 L1 class
- The cold bridge factor reaches European standard EN1886 TB2 class
- Flame retardant grade up to A class non - combustible

Internal components

- Varies of functional section configuration
- Natural gas direct/indirect heating system
- Spray humidification system
- Cooling coil / heating coil valve bank

Natural gas heating system

FILTER SECTION

■ Metal mesh filter



Metal mesh filter is composed of multi-level cross corrugated aluminum mesh or stainless steel mesh, with large air volume applicable, small resistance, repeatable cleaning use, long service life. It is widely used in special acid, alkali or high-temperature environment ventilation filtration system.

■ Auto-rolling filter



Auto-rolling filter is a breakthrough in the field of traditional filters. It is an air dust removal equipment that automatically replaces the filter material in time and accordingly, by converting the differential pressure before and after the filter into sensing electrical signal. The auto-rolling filter is made of multi-layer special mesh filter material, and the structure form is density gradient arrangement and combination, with excellent ventilation and dust removal ability, low resistance, high strength, stable chemical performance, high temperature resistance, and non-toxic, tasteless, non-volatile, easy to operate.

■ Chemical filter



Chemical filters can remove chemical pollutants in the air, such as odor, ammonia, sulfur dioxide, VOCs (volatile organic compounds), etc., to meet the requirements of industrial environment, environmental protection and civil. There are many kinds of adsorption materials optional for chemical filters, among which the most popular is granular activated carbon.

■ Self-cleaning and high-efficiency cartridge filter



The dust capacity of self-cleaning and high-efficiency filter cartridge filter is extremely large. When the dust on the filter cartridge reaches a certain degree, compressed air back flushing can be carried out, and the dust will be blown and collected at the bottom plate of the air handling unit for regular cleaning. It cuts the frequency of filter replacement, greatly reduce the operation cost and manpower, very suitable for cigarette factories and other occasions with heavy dust generation.

■ Paint mist filter



The paint is atomized into particles under high pressure action, but it can not all reach the surface of sprayed substance. Some of them will get into the surrounding air and return to AHU by indoor circulation. Spray filters are used to filtrate and capture the liquid and powder coatings over sprayed during the process of industrial spray painting. The filter material is made of glass fiber multi-layer composite, the capture efficiency of small particle over 10 microns can reach 99.8%, 5 times higher than that of labyrinth filter paper and glass fiber spray felt. It has the characteristics of high efficiency, large capacity, low operating cost and flame retardant, which makes it widely used in coating industrial workshop and other applications.

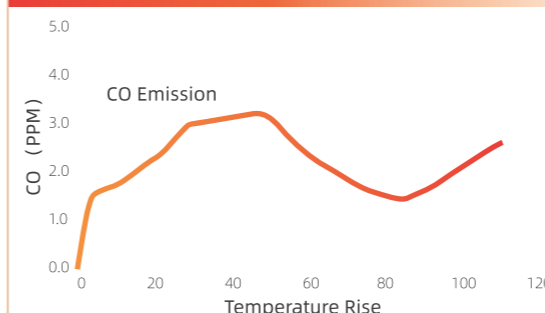
GAS HEATING SECTION

■ Gas direct combustion heating

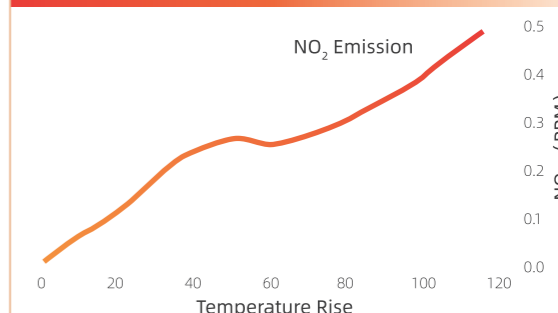
- There is no need to provide additional combustion-supporting air. When the inlet air passes through the mixing plate of the burner, it is fully mixed with the gas injected from the collector pipe of the burner to achieve clean combustion.
- The adjustment ratio can reach 30:1, which effectively meets the strict requirements on temperature control accuracy and a wider range of applicability.
- The emission standards of NOX, CO and other harmful gases after combustion fully meet the requirements of the latest emission standards of the US Environmental Protection Agency in 2002.
- Design and manufacture of combustion system complies to European EN746 standard.
- Gas direct combustion heater safety combustion temperature control system and safety protection devices include: safety interlock detection, automatic purging, automatically ignite low flame, full flame monitoring, automatically transfer to large fire, proportional combustion, constant temperature control, and fault cut-off alarm.



CO concentration - combustion time curve



NO2 concentration - combustion time curve



■ Gas indirect combustion heating

- It is mainly composed of burner, heat exchanger, exhaust machine, electrical control and other parts, combustion air under ordinary atmospheric pressure can directly participate in the combustion process, no need compression, which is suitable for indoor and outdoor AHU. Combustion air can be taken from the indoor space where the unit is located, or introduced from outdoor, and the flue gas is exhausted to outdoor. When the air to be heated passes through the outer surface of the high-temperature heat exchanger, it conducts indirect heat exchange with the high-temperature flue gas produced by the combustion of natural gas.



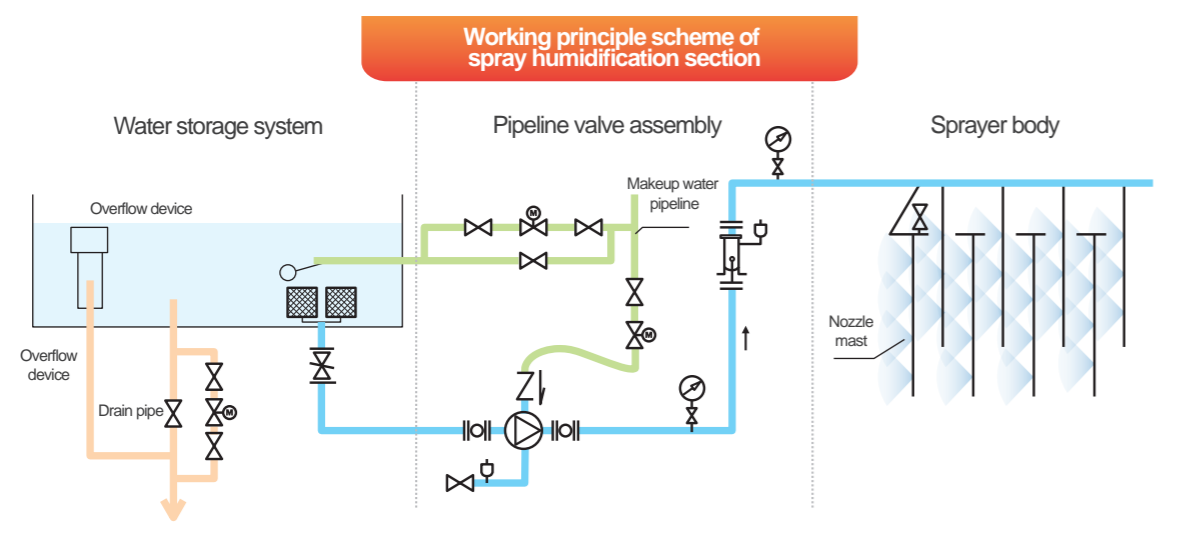
HUMIDIFIER SECTION

Traditional humidification type

Constant enthalpy humidification: spray humidification, spray humidification, wet film humidification, ultrasonic humidification
Isothermal humidification: dry steam humidification, electrode humidification, electric heating humidification
For different environments, we have different humidification methods, but the most frequently used one is the wet film humidification.

Spray humidification

- High-pressure spray system is adopted in the humidification section of the fresh air handling unit in the spray booth and the air supply air handling unit in the clean room. It mainly includes circulating water pump, pipeline system, stainless steel nozzle, water tank, water tank makeup and drainage system, air equalizing plate, aluminum alloy water baffle, liquid level gauge, humidity detection element and electric control system, other pipelines and valves, etc.
- The spray circulation pipeline is made of SS304 stainless steel, the globe valve, non-return valve, pressure gauge, flange, elbow and other accessories are all made of SS304 stainless steel, the nozzles are arranged in double rows, and the circulating water tank is made of SS304 stainless steel (3mm thick). Equipped with water inlet solenoid valve, liquid level sensor and drainage solenoid valve, automatic water replenishment can be realized. All materials are made of SS304 stainless steel. The bottom of the water tank must have a certain inclination angle to facilitate tilting the water tank.
- The humidification section is equipped with an electronic control system for automatic humidity control, showing the measured value. Through various electrical interfaces to achieve humidity sensor, controller, inverter, liquid level sensor, pump station system communication and control, and the internal program to achieve humidification control.



AHU internal spray system



Spray valve group

FAN SECTION

Double inlet belt-drive fan



Structural features

- The impeller adopts backward inclined blades or airfoil blades, and the fan with the optimal configuration can be selected accordingly, to meet the different needs of customers such as high efficiency, high pressure and low noise;
- The shell is made of high-quality galvanized steel plate, and the surface of the product is treated by spraying or baking;
- The main shaft is made of 45 # high-class carbon steel;
- The fan is equipped with all high-quality cast iron cone sleeve pulleys, and the belt can be domestic or international brands as required;

Plug fan



Structural features

- Less space occupation, cutting down the overall size and weight of the AHU;
- More flexible on AHU structural design, higher flexibility on unit and air duct connection; air discharge can be any direction, no need to consider the fan transmission direction, which reduces its occupation in the machine room and cut unnecessary ducting;
- Easier to clean and maintain, no belt wear pollution under direct transmission, suitable for purification air conditioning occasions;
- Lower sound level. Normally the noise of plug fan will be less than the volute fan, it is easier to paste some sound absorption materials on the inner wall of the casing to reduce noise.

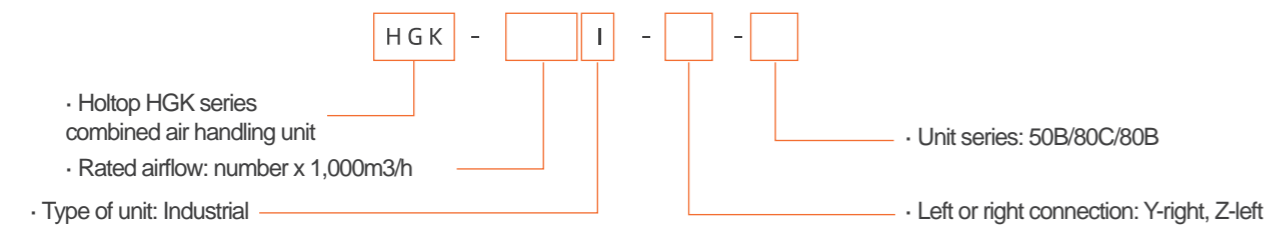
EC plug fan



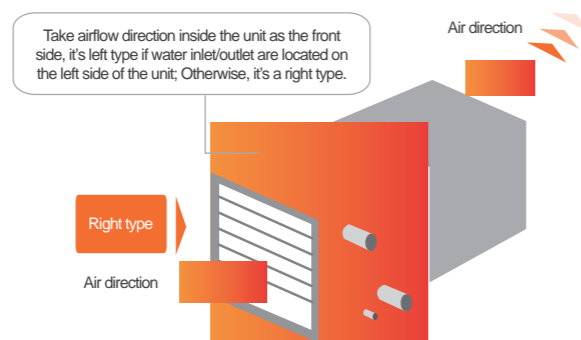
Structural features

- The impeller adopts backward inclined twisted blade, welded by steel plate, which has the advantages of high efficiency and low noise.
- The shells are log spiral structure, made of high-class steel plate welding, surface treated by pickling phosphating or shot peening. The shell can be easily connected or disassembled with the insulation cover through screw holes;
- The transmission part is composed of patented Huff type bearing seat, bearing, triangle belt, mesh cover and transmission frame. The spindle is made of 45 # high-class carbon steel precision machined after tempering and precision machining, which has full consideration on installation and fatigue resistance in the design.

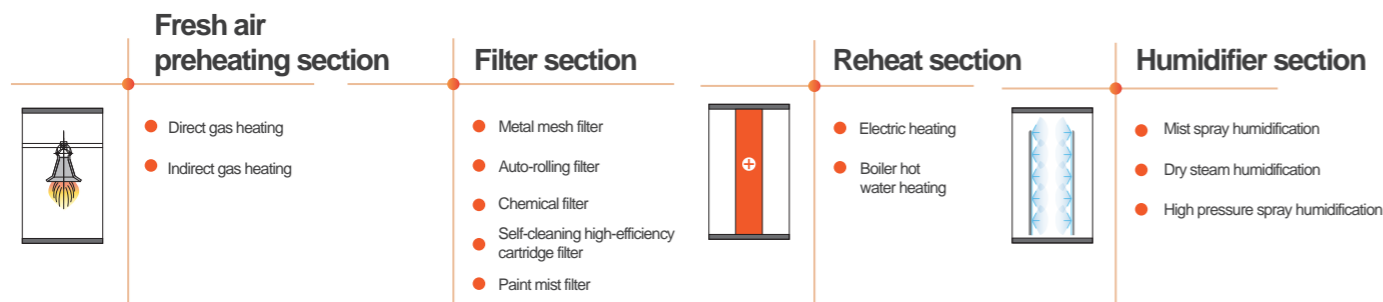
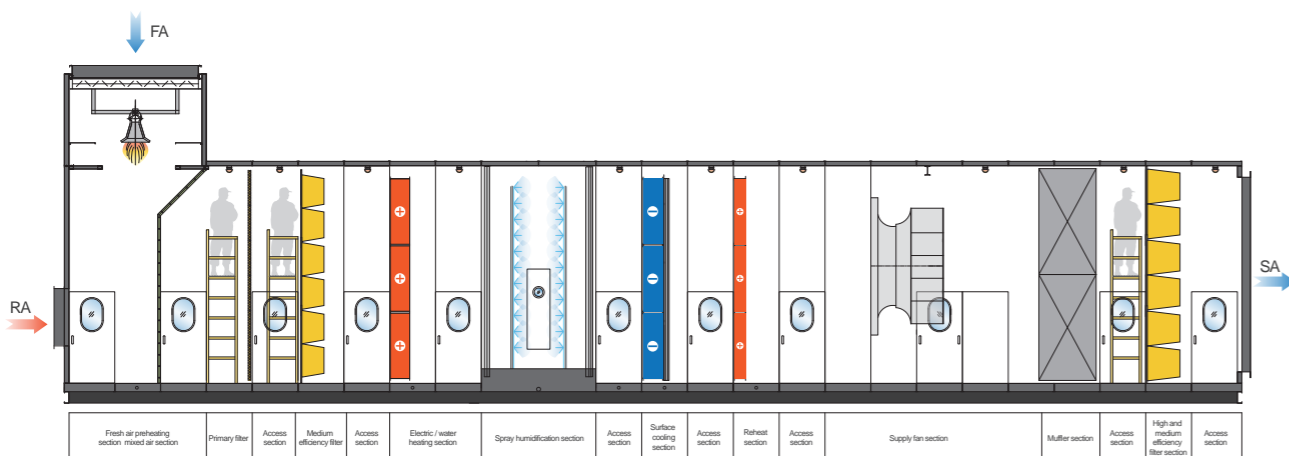
AHU MODEL NAMING



Example: A 160,000m³/h airflow combined air handling unit, industrial air conditioning, right type, 80B structure. Model name is HGK-160I-Y-80B.



Functional Sections Diagram



QUICK SELECTION TABLE

Model	Airflow m ³ /h	TSP Pa	Cooling capacity kW			Chilled water volume m ³ /h			Water pressure drop kPa			Heating capacity kW		Hot water volume m ³ /h		Motor power kW
			4 rows	6 rows	8 rows	4 rows	6 rows	8 rows	4 rows	6 rows	8 rows	Hot water	Steam	2 rows	4 rows	
HGK-10I	10,000	790	57.8	78.5	88.1	10.0	13.5	15.2	11.1	10.6	13.4	87.2	20.7	106.0	7.47	5.5
HGK-12I	12,000	800	71.2	87.6	98.3	12.3	15.1	16.9	5.9	12.1	15.1	97.7	141.2	120.0	8.37	7.5
HGK-15I	15,000	700	93.3	114.3	128.7	16.1	19.7	22.2	6.9	14.1	17.5	128.2	186.7	159.3	10.99	7.5
HGK-20I	20,000	825	118.0	144.2	162.3	20.3	24.8	27.9	8.0	16.0	19.6	162.4	238.3	204.7	13.92	11
HGK-25I	25,000	800	144.8	187.7	210.9	24.9	32.3	36.3	9.0	11.8	14.8	200.2	295.7	255.7	17.16	11
HGK-30I	30,000	700	175.3	227.2	255.3	30.2	39.1	44.0	9.0	11.8	14.8	242.3	358.0	309.6	20.77	15
HGK-35I	35,000	890	204.7	268.2	301.3	35.3	46.2	51.9	11.0	14.4	17.8	308.6	427.5	374.9	26.45	18.5
HGK-40I	40,000	820	222.5	291.5	327.5	38.4	50.2	56.4	11.0	14.4	17.8	335.4	464.7	407.5	28.75	22
HGK-50I	50,000	1,170	283.5	333.5	391.5	48.8	57.4	67.3	7.4	17.0	15.7	388.5	562.8	478.5	33.30	30
HGK-60I	60,000	1,030	340.2	400.2	469.8	58.5	68.8	80.8	7.5	17.0	15.7	466.2	675.4	574.2	39.96	30
HGK-70I	70,000	1,160	409.6	476.8	564.5	70.6	82.1	97.2	7.2	19.5	17.9	563.3	821.8	702.7	48.28	37
HGK-80I	80,000	1,300	448.0	521.5	617.4	77.1	89.7	106.2	8.5	19.5	17.9	616.1	898.8	768.6	52.81	45
HGK-100I	100,000	1,150	588.8	685.4	811.4	101.3	117.9	139.6	8.5	19.5	17.9	809.8	1182.3	1010.2	69.41	55
HGK-120I	120,000	1,380	691.2	804.6	952.6	118.9	138.4	163.8	8.5	19.5	17.9	950.6	1386.7	1185.8	81.48	75
HGK-140I	140,000	1,350	725.1	827.2	1025.2	124.7	142.3	176.3	10.0	25.9	24.5	1530.9	2364.7	1384.1	131.22	75
HGK-160I	160,000	1,450	887.1	1000.5	1231.4	152.6	172.1	211.8	10.4	26.6	24.9	1798.8	2738.7	1658.8	154.18	90
HGK-180I	180,000	1,180	955.4	1077.4	1326.1	164.3	185.3	228.1	10.4	26.6	24.9	1937.1	2949.4	1786.5	166.04	90
HGK-200I	200,000	1,330	985.6	1333.2	1526.8	169.5	229.3	262.6	11.1	15.1	18.9	2086.4	3250.6	1921.1	178.83	110
HGK-240I	240,000	1,150	1142.4	1531.2	1737.6	196.5	263.4	298.9	13.1	16.1	19.8	2554.3	3586.5	2202.4	218.94	132
HGK-270I	270,000	1,500	1269.6	1737.6	1982.4	218.4	298.9	340.9	13.8	18.8	22.9	3048.2	4316.3	2621.5	261.27	160
HGK-300I	300,000	1,780	1311.4	1826.3	2018.2	221.8	312.2	346.0	14.3	21.5	24.2	3455.2	5012.6	3015.2	296.16	186

Remark - Notes about the performance parameter table:

- The total pressure and power of the fan of the unit vary according to the design of the AHU functional section and the external pressure.
- Face Velocity: $V_f=2.5\text{m/s}$ (HGK-10I - HGK-80I) $V_f=3.0\text{m/s}$ (HGK-100I - HGK-270I)
- Refrigeration conditions: Air inlet DB temperature is 27°C, the WB temperature is 19.5°C, the Chilled water inlet temperature is 7°C, $\Delta t=5^\circ\text{C}$; otherwise, it can be corrected according to the following table.

Cooling capacity = cooling capacity in table x working condition coefficient.

Air inlet DB temperature°C	19.5	21	22	23	24	25	26	27	28
Working condition coefficient	1.00	1.15	1.25	1.36	1.47	1.58	1.70	1.82	1.94

4. Heating condition:

Hot water heating: Inlet air temperature 15°C, inlet water temperature 60°C, water velocity 1.0m/s, if this is not the case, it can be corrected according to the following formula.

Heat = heat in the table x [inlet water temperature (°C) - inlet air temperature (°C)] - 45 (75 for HGK100 and above)

Steam heating: the air inlet temperature is 15°C, and the steam pressure is 0.1Mpa; if this is not the case, it can be corrected according to the following formula.

Heat = heat in the table x [steam temperature (°C) - inlet air temperature (°C)] ÷ 105

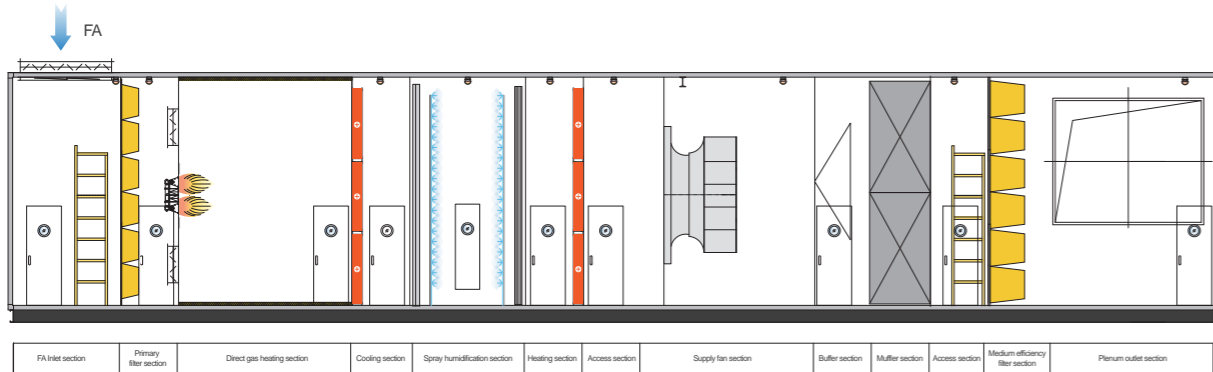
5. Air pressure drop of cooling coil:

Cooling: The air pressure drop of 4-rows is 145Pa, 6-rows is 213Pa, 8-rows is 241Pa.

Heating: the air pressure drop of the 1-row is 20Pa, 2- rows is 40Pa.

6. The above performance parameters are only for engineering design reference, and need to be designed according to actual requirements.

50B AHU DETAILED SIZE SHEET



Units: mm

Model	Unit Width	Unit Height	Return fan section	Splite-flow section	Mixed flow section	Indirect gas heating section	Direct gas heating section	Spray humidification section	Supply fan section	Other functional sections
HGK-10I-50B	1500	1320	1500	1000	1000	2000	-	-	1500	1000
HGK-12I-50B	1500	1620	1500	1000	1000	2000	3000	-	1500	1000
HGK-15I-50B	1810	1620	2000	1000	1000	2000	3000	-	2000	1000
HGK-20I-50B	2110	1620	2000	1000	1000	2000	3000	-	2000	1000
HGK-25I-50B	2110	2230	2000	1000	1000	2000	3000	2000	2000	1000
HGK-30I-50B	2110	2230	2000	1000	1000	2000	3000	2000	2000	1000
HGK-35I-50B	2720	2230	2000	1000	1000	2000	3000	2000	2000	1000
HGK-40I-50B	2720	2230	2000	1000	1000	2000	3000	2000	2000	1000
HGK-50I-50B	2720	2840	2000	1000	1000	2000	3000	2000	2000	1000
HGK-60I-50B	3330	2840	3000	2000	2000	2000	3000	2000	3000	1000
HGK-70I-50B	3330	2840	3000	2000	2000	2000	3000	2000	3000	1000
HGK-80I-50B	3400	3450	3000	2000	2000	2000	3000	2000	3000	1000
HGK-100I-50B	4000	3510	3000	2000	2000	2000	3000	2000	3000	1000
HGK-120I-50B	4000	4150	3000	2000	2000	2000	3000	2000	3000	1000
HGK-140I-50B	4600	4150	4000	3000	3000	2000	3000	2000	4000	1000
HGK-160I-50B	5150	4150	4000	3000	3000	2000	3000	2000	4000	1000
HGK-180I-50B	5150	4700	4000	3000	3000	2000	3000	2000	4000	1000
HGJK-200I-50B	5780	4700	4800	3000	3000	2000	3000	2000	4800	1000
HGK-240I-50B	5780	5320	4800	3000	3000	2000	3000	2000	4800	1000

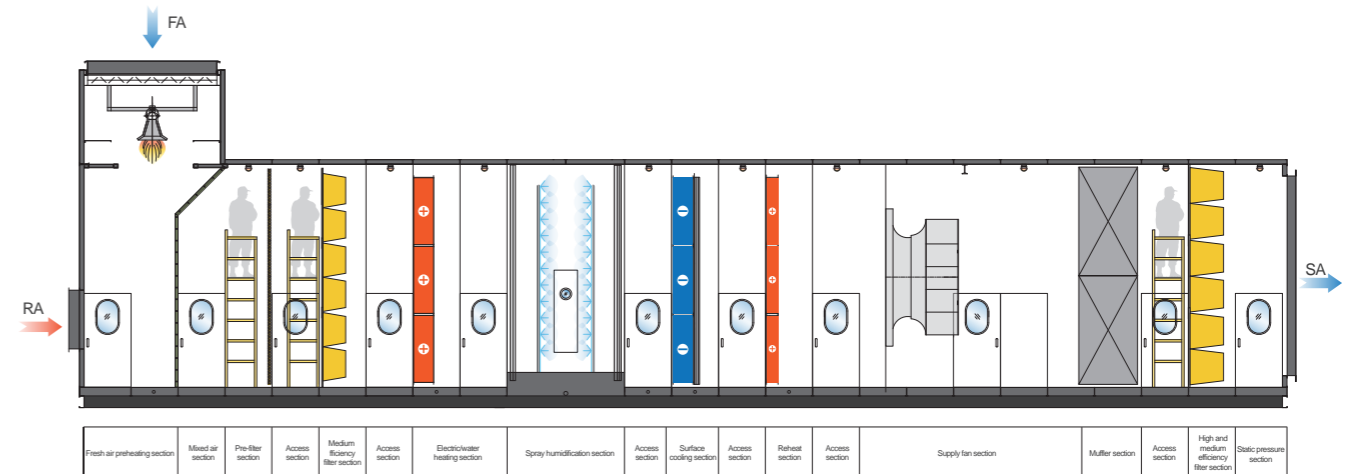
Remarks: 1. Total unit length: L= sum of the number of AHU modules (M) ×1000+140. Unit size, and specification can be customized according to the site condition;

2 Each shipping segment is an independent frame in structure, and a shipping segment can contain several functional sections, according to the condition of transportation, installation and the size of the site carrying route, each functional section can be combined into a shipping segment.

3. When the face velocity of the cooling coil exceeds 2.7m/s, a water baffle should be installed.

4. Other functional sections in the table include: pre-filter section, cooling section, Medium efficiency filter section, steam heating section, electric heating section, water heating section, high-pressure spray humidification section, Wet-film humidification section, steam humidification section, access section, muffler section.

80B AHU DETAILED SIZE SHEET



Units: mm

Model	Unit Width	Unit Height	Return fan section	Splite-flow section	Mixed flow section	Indirect gas heating section	Direct gas heating section	High-pressure water humidification section	Wet film humidification section	Spray humidification section	Steam humidification section	Muffler section	Maintenance section	Supply fan section	Other functional sections
HGK-10I-80B	1560	1550	1200	800	800	1600	-	600	400	-	400	1200	800	1600	200-600
HGK-12I-80B	1560	1500	1400	800	800	1600	-	600	400	-	400	1200	800	1600	200-600
HGK-15I-80B	1870	1840	1400	800	800	1600	3200	800	400	-	400	1200	800	1600	200-600
HGK-20I-80B	2170	2150	1400	800	800	1600	3200	800	400	2000	400	1200	800	1600	800
HGK-25I-80B	2170	2150	1400	1000	1000	1600	3200	800	400	2000	400	1200	800	1800	800
HGK-30I-80B	2170	2150	2000	1000	1000	1600	3200	800	400	2000	400	1200	800	2400	800
HGK-35I-80B	2780	2760	2000	1000	1000	1600	3200	800	400	2000	400	1200	800	2400	800
HGK-40I-80B	2780	2760	2000	1000	1000	1600	3200	800	800	2000	800	1200	800	2400	800
HGK-50I-80B	2780	2760	2400	1000	1000	1600	3200	800	800	2000	800	1200	800	2800	800
HGK-60I-80B	3390	3370	2600	1200	1200	1600	3200	800	800	2000	800	1200	800	2800	800
HGK-70I-80B	3390	3370	2800	1200	1200	1600	3200	800	800	2000	800	1200	800	2800	800
HGK-80I-80B	3460	3430	2800	1200	1200	1600	3200	800	800	2000	800	1200	800	3200	800
HGK-100I-80B	4060	4040	2800	1400	1400	1600	3200	800	800	2000	800	1200	800	3200	800
HGK-120I-80B	4060	4040	2800	1600	1600	1600	3200	800	800	2000	800	1200	800	3200	800
HGK-140I-80B	4660	4660	3200	2200	2200	1600	3200	800	800	2000	800	1200	800	4000	800
HGK-160I-80B	5210	5270	3200	2400	2400	1600	3200	800	800	2000	800	1200	800	4000	800
HGK-180I-80B	5210	5270	3200	2600	2600	1600	3200	800	800	2000	800	1200	800	4000	800
HGK-200I-80B	5840	5880	4000	2600	2600	1600	3200	800	800	2000	800	1200	800	4800	800
HGK-240I-80B	5840	5880	4400	2800	2800	1600	3200	800	800	2000	800	1200	800	4800	800
HGK-270I-80B	6550	6490	4400	2800	2800	1600	3200	800	800	2000	800	1200	800	4800	800
HGK-300I-80B	6550	6490	4400	2800	2800	1600	3200	800	800	2000	800	1200	800	4800	800

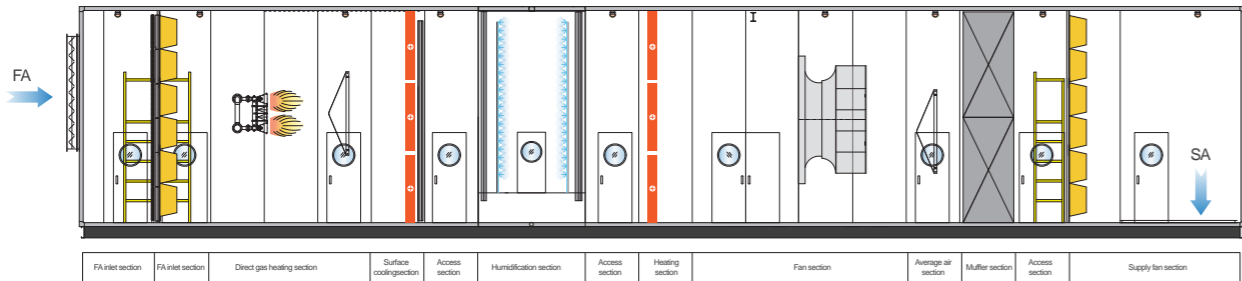
Remarks: 1. Total unit length: L= sum of the number of AHU modules (M) ×800+160. Unit size, and specification can be customized according to the site condition;

2 Each shipping segment is an independent frame in structure, and a shipping segment can contain several functional sections, according to the condition of transportation, installation and the size of the site carrying route, each functional section can be combined into a shipping segment.

3. When the wind speed of the cooling coil exceeds 2.7m/s, a water baffle should be installed.

4. Other functional sections in the table include: pre-filter section, cooling section, Medium efficiency filter section, steam heating section, electric heating section, water heating section.

80C AHU DETAILED SIZE SHEET



Units: mm

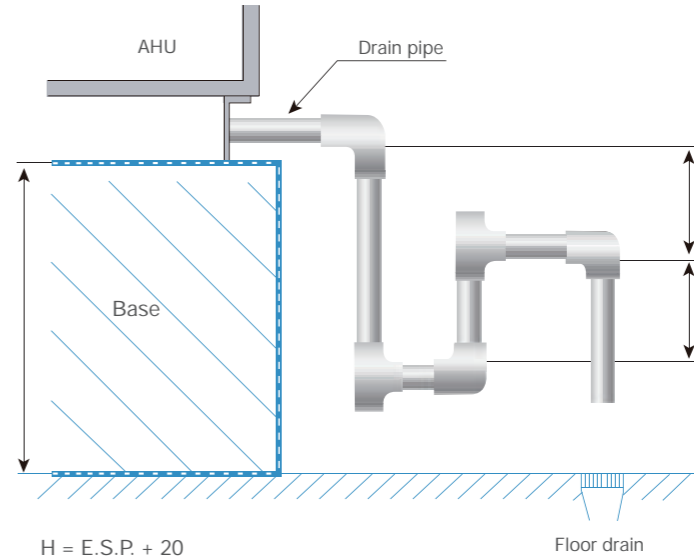
Model	Unit Width	Unit Height	Return fan section	Split-flow section	Mixed flow section	Indirect gas heating section	Direct gas heating section	High-pressure water humidification section	Wet film humidification section	Spray humidification section	Steam humidification section	Muffler section	Supply fan section	Other functional sections
HGK-10I-80C	1560	1380	1500	1000	1000	2000	-	600	400	-	400	1200	1500	1000
HGK-12I-80C	1560	1680	1500	1000	1000	2000	3000	600	400	-	400	1200	1500	1000
HGK-15I-80C	1870	1680	2000	1000	1000	2000	3000	800	400	-	400	1200	2000	1000
HGK-20I-80C	2170	1680	2000	1000	1000	2000	3000	800	400	-	400	1200	2000	1000
HGK-25I-80C	2170	2290	2000	1000	1000	2000	3000	800	400	2000	400	1200	2000	1000
HGK-30I-80C	2170	2290	2000	1000	1000	2000	3000	800	400	2000	400	1200	2000	1000
HGK-35I-80C	2780	2290	2000	1000	1000	2000	3000	800	400	2000	400	1200	2000	1000
HGK-40I-80C	2780	2290	2000	1000	1000	2000	3000	800	800	2000	800	1200	2000	1000
HGK-50I-80C	2780	2900	2000	1000	1000	2000	3000	800	800	2000	800	1200	2000	1000
HGK-60I-80C	3390	2900	3000	2000	2000	2000	3000	800	800	2000	800	1200	3000	1000
HGK-70I-80C	3390	2900	3000	2000	2000	2000	3000	800	800	2000	800	1200	3000	1000
HGK-80I-80C	3460	3510	3000	2000	2000	2000	3000	800	800	2000	800	1200	3000	1000
HGK-100I-80C	4060	3570	3000	2000	2000	2000	3000	800	800	2000	800	1200	3000	1000
HGK-120I-80C	4060	4210	3000	2000	2000	2000	3000	800	800	2000	800	1200	3000	1000
HGK-140I-80C	4660	4210	4000	3000	3000	2000	3000	800	800	2000	800	1200	4000	1000
HGK-160I-80C	5210	4210	4000	3000	3000	2000	3000	800	800	2000	800	1200	4000	1000
HGK-180I-80C	5210	4760	4000	3000	3000	2000	3000	800	800	2000	800	1200	4000	1000
HGK-200I-80C	5840	4760	4800	3000	3000	2000	3000	800	800	2000	800	1200	4800	1000
HGK-240I-80C	5840	5380	4800	3000	3000	2000	3000	800	800	2000	800	1200	4800	1000
HGK-270I-80C	6550	5425	4800	3000	3000	2000	3000	800	800	2000	800	1200	4800	1000
HGK-300I-80C	6550	6035	4800	3000	3000	2000	3000	800	800	2000	800	1200	4800	1000

Remarks: 1. Total unit length: L= sum of the number of air conditioning modules (M) ×1000+200. Unit size, and specification can be customized according to the site condition;
2 Each shipping segment is an independent frame in structure, and a shipping segment can contain several functional sections, according to the condition of transportation, installation and the size of the site carrying route, each functional section can be combined into a shipping segment.
3. When the wind speed of the cooling coil exceeds 2.7m/s, a water baffle should be installed.
4. Other functional sections in the table include: pre-filter section, cooling section, medium efficiency filter section, steam heating section, electric heating section, water heating section, high-pressure water humidification section, Wet film humidification section, steam humidification section, maintenance section, muffler section.

Installation And Maintenance

Installation

- 1) For maintenance purpose, enough space should be left for the AHU, especially the side of service door and water inlet/outlet.
- 2) The base should be designed according to the length and width of AHU and must kept flat and level.
- 3) Base should be higher than the ground to make it easy to set up trap for condensation water. As shown in figure.
- 4) Connect the water inlet/outlet to the external water pipe after cleaning. The weight of external connection of valve, pipe and others shall not burden on the machine unit.
- 5) Use soft fittings to connect the air inlet/outlet of unit and air ducts.
- 6) The machine casing should connect to ground. For motor bigger than 15Kw, it's suggested to use step-down start.



Operation and Maintenance

- 1) Air handling unit is supplied by TN-S power system, AC3-380 V + N + PE.
- 2) Before running the AHU, the fan vibration locking devices shall be removed.
- 3) Before starting, please check if the fan impellers rotate flexible or not. And do the commissioning to check the fan rotating direction. Run the machine after all mechanical and electric equipments were checked by professional personnel without fault.
- 4) Before running the unit, please do the debugging and control the motor running under the rated current to prevent the motor from overload and burn out. All air valves of the air inlet should not be closed, in case of damage and deformation of the unit.
- 5) The heat and cold media of heat exchanger are clean demineralized water. The working pressure shall not be larger than 1.6 MPa. steam supply pressure ranges from 0.2 to 0.4 MPa.
- 6) In winter, please drain out all the inside water and blow away all water in the cooling coil. If the water can't blow out completely, antifreeze liquid should be charged into the coils.
- 7) Examine the filters regularly. When reaches the value of end resistance, the filter should be cleaned or replaced.
- 8) Check the belt looseness and wear conditions regularly. If too loose, please adjust the screw under the base to tight the belt. And check the bearing lubricated condition and add lubricating grease regularly.

ALL-ROUND CONTROL SYSTEM

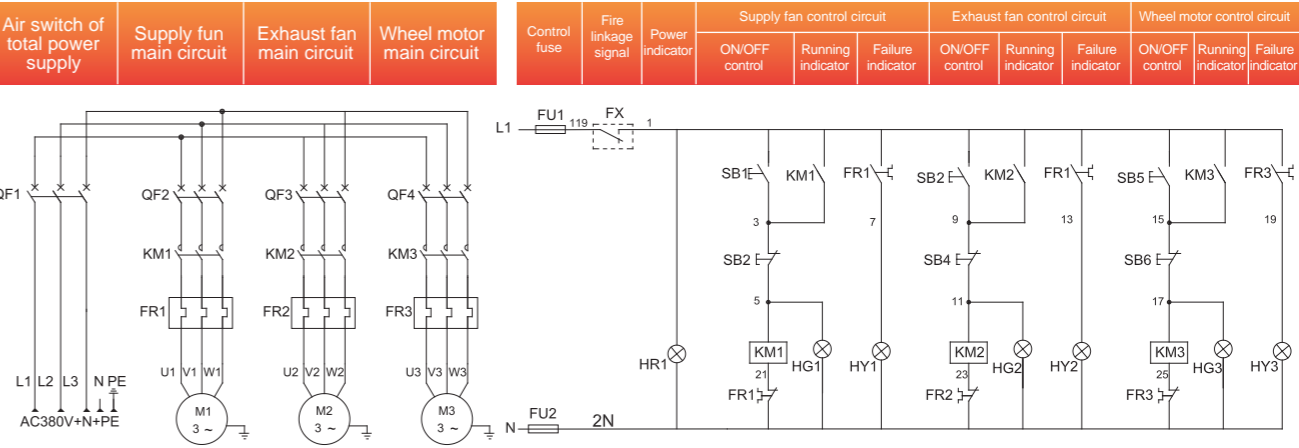
Control and Protection Functions

Constant temperature and humidity solutions

The automatic control system of Holtop combined air handling unit realizes the simplification of professional ventilation or air system regulation. The best air conditioning control scheme is achieved by using three control strategies: annual multi-condition energy saving control, supply air state control for cooling/heat comfort of human body or specific process requirements, and on-line energy saving control of air conditioning and chillers or building control systems.

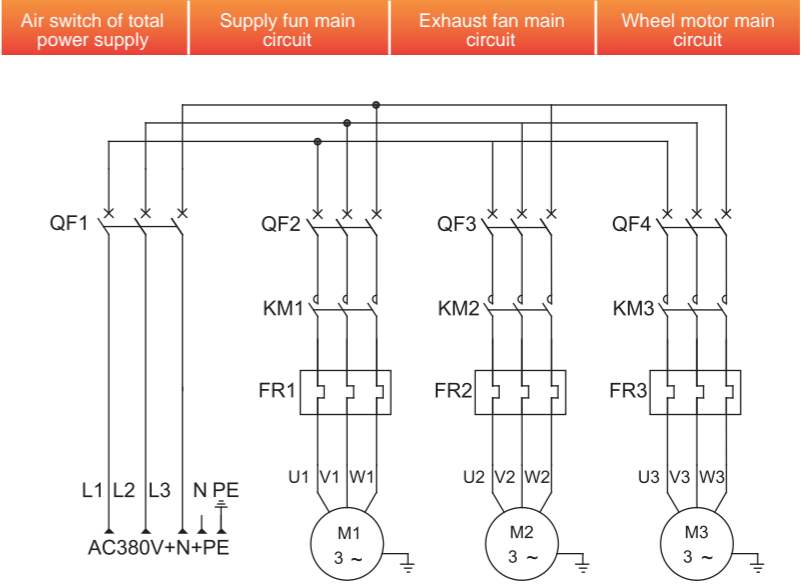
Common ON/OFF control scheme (take the direct driven way as an example), the functions are as follows:

- Control box is supplied by AC380V power, including overload, over current, short circuit protection functions, installed independently indoor.
- Supply fan, exhaust fan, wheel motor are manual control (also called local control). Starting mode could be direct start (11 kw and below) and star triangle step down starting way (15 kw and above).
- Supply fan, exhaust fan, wheel motor have individual ON/OFF control function with light touch buttons. Operation is convenient, quick and safe. There are power indicator, running indicator and fault indicator.
- Fire linkage function is included, reserving a fire signal terminal Fx (normally closed). If Fx disconnected, the fans stop running.



Reserved building control BA interface control scheme (take the direct driven way as an example), the functions are as follows:

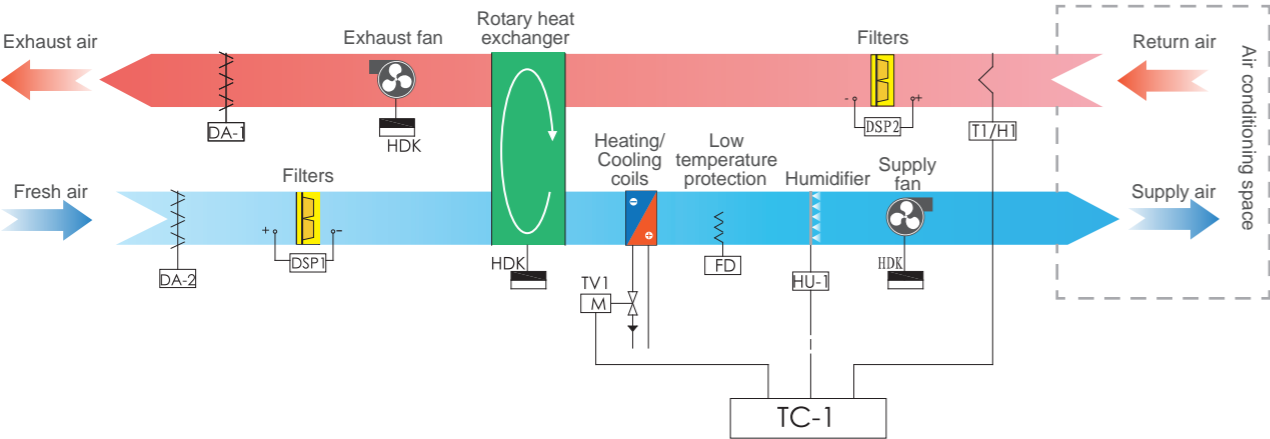
- Control box is supplied by AC380V power, including overload, over current, short circuit protection functions, installed independently indoor.
- Supply fan, exhaust fan, wheel motor are manual control (also called local control) or automatic control (also called remote control). Driven mode can be divided into direct start(11 Kw and below) and star triangle step-down starting way (15 Kw and above).
- Supply fan, exhaust fan, wheel motor control have individual ON/OFF control function. Under manual control, ON/OFF both use light touch buttons, operation is convenient, fast and safe. Under automatic control, through the reserved BA interfaces (dry contact) remote ON/OFF control could be realized. Reversed interfaces include fan ON/OFF control signal, automatic state signal, running state signal and fault state signal. For more details, please refer to the table of reserved control interfaces.
- Control box has power indicator, running indicator, fault indicator and remote status indicator.
- Fire linkage function is included, reserving a fire signal terminal Fx (normally closed). If Fx disconnected, the fans stop running.



AHU CONTROLLER

↑ Analog Instrument Control Scheme, The Functions Are As Follows:

- Control box is supplied by AC380V power, including overload, over current, short circuit protection functions, installed independently indoor. Supply fan, exhaust fan and wheel motor are manually controlled (also called local control).Driven mode can be divided into direct start(11 Kw and below) and star triangle step-down starting way (15 Kw and above).
- Supply fan, exhaust fan, wheel motor have individual ON/OFF control function by pressing buttons. Operation is convenient, fast and safe. It includes power indication, running indication, failure indication and fire linkage function, reserving a fire linkage signal terminal Fx (normally closed). If Fx disconnected, the fans stop running.
- Imported Swaziland brand intelligent controller, performance is stable and reliable. Winter and summer working condition conversion, temperature and humidity setting values could be changed by parameters setting. No communication interface and no network control function.
- Air damper and fan can be interlocked. When the fan starts, the air damper opens; when the fan stops running , air damper closes.
- Air duct type temperature and humidity sensor inspects the RA temperature and sends signal to the intelligent thermostat to compare with setting values. According to the calculation results, the controller outputs signal to control the opening degree of electric control valve on cooling/heating coil and the start/stop of humidifier, so as to keep the RA temperature and humidity within the scope of requirements.
- Filter blockage alarm function. Installing differential pressure switch beside the filter to inspect the pressure difference on both sides of the filter. When inspected value is larger than the setting value, the filter blocking alarm lights to remind maintenance persons to clean or replace the filters.
- Low temperature protection function is realized by installing antifreeze protection switch (setting value is 5 °C). When the temperature of heating coil is below the setting value, the machine stops and at the same time low temperature protection alarm lights. (this function is optional)



↑ Component Descriptions

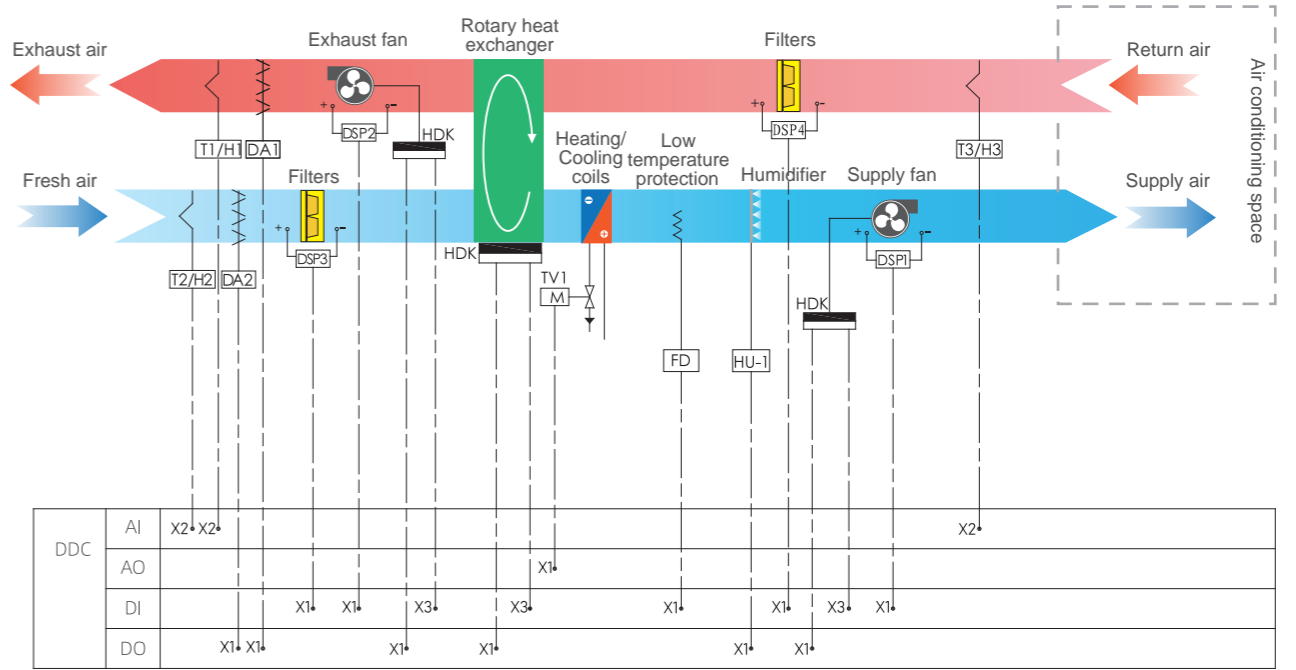
Component code	Component name	Remarks
DA-1/2	Damper actuator	
T1/H1	Temperature and humidity sensor	
DSP1/2	Differential pressure switch	
TV1	Electric two - way regulating valve	Temperature control
FD	Antifreeze protection switch	Cooling coil antifreezing protection
HU-1	Humidification control	
TC-1	Intelligent controller	With AO/DO outlets

Remarks: The above is for reference only, the number of components is based on specific project requirements and needs to be configured.

AHU CONTROLLER

↑ DDC / PLC Control System, The Functions Are As Follows:

- The standard configuration of AHU automatic control system adopt uses Siemens POL series DDC/PLC controllers, which are of advanced technology and stable performance. The controller can satisfy the requirement of independent working and net working control.
- System terminal control components such as temperature and humidity sensors, water valve are supplied by the world famous brand to provide users with high reliable and high precision products.
- According to the real-time parameter monitoring of fan operation state, differential pressure and fault state, temperature and humidity parameters, air damper opening degree, water valve opening degree, DDC/PLC control system works based on various combination functions of AHU, seeking the best air heat and humidity treatment scheme under different working conditions so as to satisfy the processing or comfortable requirement while achieving low energy consumption and thus create economic benefits for customers.



↑ Component Descriptions

Component code	Component name	Remarks
DDC/PLC	Controller and extended module	
DA1/2	Damper executor	
T1/H1~T3/H3	Temperature and humidity sensor	Temperature control check
DSP1/2	Differential pressure switch	Supply/exhaust fan protection
DSP3/4	Differential pressure switch	Filter blockage alarm
TV1	Proportional electric two-way control valve	Valve body and Actuator
FD	Antifreeze protection switch	Cooling coil antifreezing protection
HU-1	Humidification control	

Remarks: The above is for reference only, the number and configurations of components are based on specific project requirements.