Polygon

Healthy Whole-house
Fresh Air System

AKAN ENTERPRISE GROUP (ZHEJIANG) CO., LTD.

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Polygon

Healthy Whole-house Fresh Air System

Brand Introduction

Polygon Pipe is a well-known plastic piping system solution provider, specializing in the R&D, production and sales of plastic products of piping system, with leading technology production equipment. The products cover water supply and drainage, ground-source heat pumps, co-layered drainage, siphon rainwater, municipal engineering, HVAC systems and other fields.

1700000	3000	500	20000+	330+	30+
Factory Scale	Group Employees	Key Technical Personnel	Marketing Network	City Coverage	Countries and Areas of Production and Sales

• Baodi, Tianjin City【100,002m²】

• Huzhou, Zhejiang Province【193,000m²】

• Heyuan, Guangdong Province[20,000m²]

• Xinxiang, Henan Province【99,733m²】

• Jiangjin, Chongqing City【80,000m²】

• Liuyang, Hunan Province【110,000m²】

Development History
SINCE 2000

DEVELOPMENT HISTORY

2000
Shanghai AKAN New Building Materials Co., Ltd. was established.

2002
The company entered the international PPR market, becoming a major global PPR production base with annual output value exceeding RMB 100 million.

2003
The company pioneered the “Dual 50-Year Warranty for Product & Installation” service in Shanghai, becoming one of the first companies in the industry to offer such protection.

2004
Developed and launched PPR Stabilized Pipes, expanding product diversification.

2005
Successfully acquired the U.S. “Polygon” brand and Mailefer production line, entering the HVAC piping system market at a high starting point.

2006
Became one of the first recommended brands by the Floor Heating Committee.

2007
Awarded multiple honors including “Shanghai Brand,” “Shanghai High-Tech Enterprise,” “Patent Cultivation Enterprise,” and “Top Ten Plastic Piping System Brands in China.”

2008
Participated in the drafting of national standards for PE and PERT pipes.

2009
The company was renamed AKAN Enterprise Group, expanding into PE ground-source heat pump systems and PVC drainage piping systems, becoming a comprehensive pipeline enterprise in the industry.

2010
The Group obtained Environmental Labeling Certification and Xinhua Water-Saving Certification, and established the Pudong R&D Center.

2011
Entered new fields including same-floor drainage systems and water-based air conditioning systems.

2012
Successfully developed PB pipes.

2013
The Kaiyuan Water Purification brand was launched.

2014
The Group established the HVAC Division, beginning the transition from a materials supplier to a system integration solutions provider.

2015
The Xinxiang production base in Henan was put into operation.
The Polygon brand was launched, marking the Group’ s entry into the HVAC system industry.

2016
The Liuyang production base in Hunan began operation.
Introduced KraussMaffei PE production lines.
Polygon participated in the ISH Exhibition, bringing complete fresh air systems to the public eye.
The Group pioneered the industry concept: “No System, No Renovation.”

2017
The Group obtained national CNAS laboratory accreditation.
The Polygon Waterproofing brand was launched, expanding into the home waterproofing sector.

2018
The Tianjin production base was put into operation.
The Group exclusively sponsored major programs such as “China HVAC Professionals” and “China Has Design,” advocating comfort-oriented residential design.

2019
The Huzhou production base was completed and put into operation.

2020
Polygon fresh air ducts were included in the standardized components catalog by the Ministry of Industry and Information Technology.
The Group also participated in drafting the Construction and Acceptance Code for Fresh Air Purification Systems.

2021
The Group’ s fresh air laboratory was awarded the title of “Demonstration Laboratory for Enthalpy Difference Testing in Fresh Air Systems.”

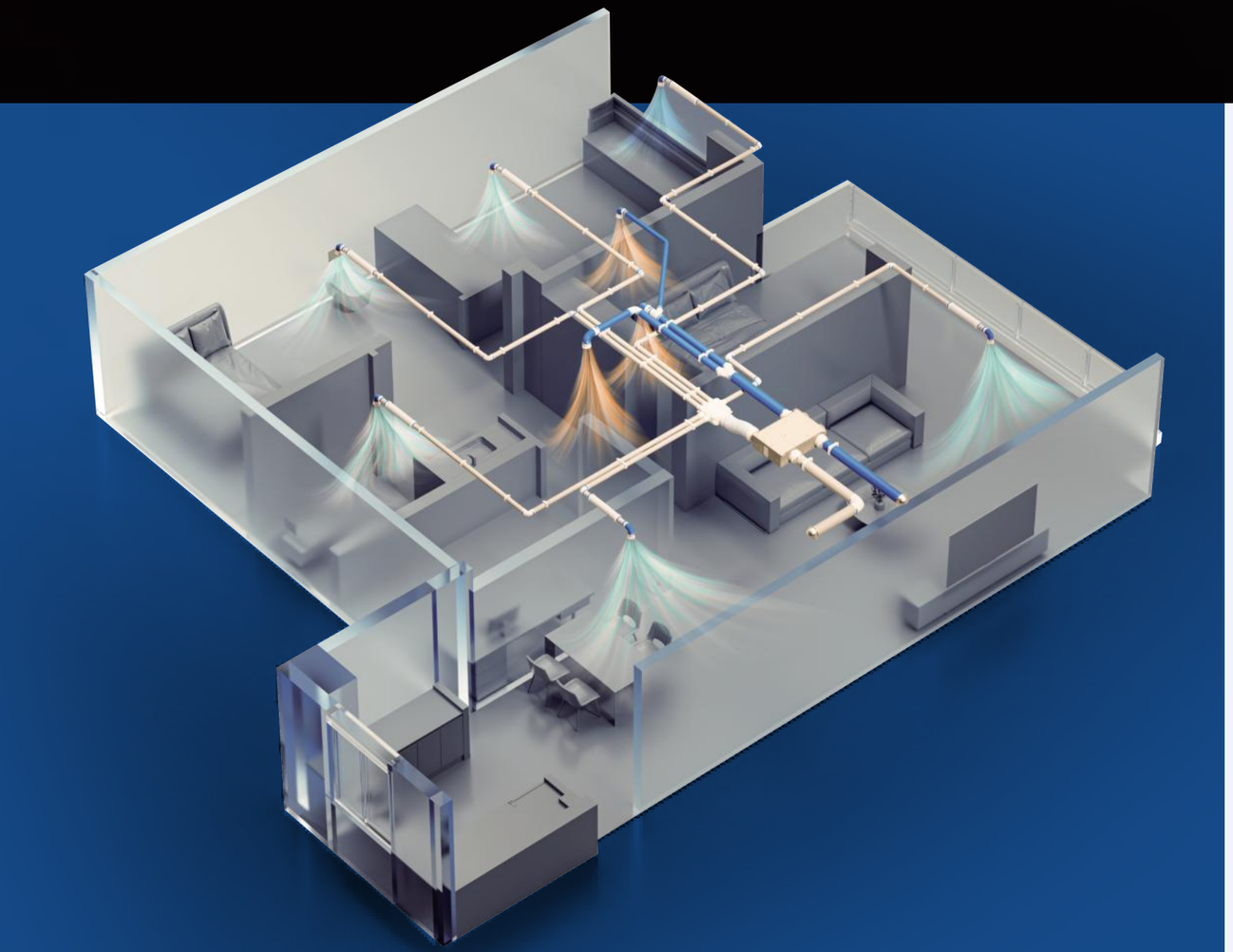
2022
The patented product Iris Air Damper was awarded “Innovative Product in the HVAC Industry.”
Polygon was also honored as one of the “Top Ten Trusted Comfort Living Brands by Consumers.”

2023
The Heyuan production base in Guangdong was officially signed and established.

Polygon

Polygon is a dedicated supplier of comfortable systems and a guide for a comfortable lifestyle that focuses on creating a healthy indoor environment quality (temperature and humidity, air cleanliness, oxygen content, and quietness). In 2015, the group established a heating, ventilation, and air conditioning (HVAC) division, dedicated to the research and development of HVAC system products, and officially launched the "POLYGON" brand in 2016, participating in the ISH exhibition and entering the market.

The company has a professional ventilation laboratory that ensures the operational effectiveness of the entire system from the main unit, distribution, to control, aiding in product innovation, research and development, and implementation. POLYGON Ventilation has now become a leader in domestic healthy whole-house ventilation systems, and its product are widely used in various places such as residences, apartments, office buildings, hotels, and schools.



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Seven Major Production Bases

Shanghai, Zhejiang, Chongqing, Henan, Hunan, Tianjin, Guangdong

Efficient Production

Automated production lines; digital managementand logistics; currently the only manufacturer in China with a shield tunnel pipe production line.

Stringent Testing

"Three inspections" system for raw materials, in-process, and finished products; passed ISO management system certification.

VIP

Association Membership

Member units of the Comfortable Home Division and Fresh Air and Water Purification Division of the China Metal Structure Association.

Effect Assurance

Equipped with a professional fresh air laboratory, capable of testing air volume, fresh air rate, static pressure, heat exchange efficiency, noise, PM2.5 filtration efficiency, and other factors to ensure the effectiveness of the system.

System Advantages

One-stop provision of fresh air system products, convenient, reliable, and guaranteed.

Industry Honors

Top ten trusted brands by consumers, outstanding contribution awards, social responsibility practice awards, etc.

CNAS

CNAS Laboratory

Internationally recognized, quality assurance.

patented product:

Polygon Fresh Air Lab

Enthalpy Difference Laboratory

The laboratory comprises the Enthalpy Difference Control Room, the Enthalpy Difference Laboratory (outdoor side), and the Enthalpy Difference Laboratory (indoor side). The entire laboratory can test airflow up to a maximum of 3500m^3/h. Its main function is to test five parameters of the fresh air system: airflow, static pressure, heat exchange efficiency, effective ventilation rate, and input power.

Semi-anechoic Chamber

This chamber is designed to test the noise generated by the fresh air main unit during operation. The room-in-room structure and walls utilizing special sound-absorbing structures create a quiet environment, eliminating external noise interference. During experiments, the setup simulates real-life conditions to ensure the test results are accurate and reliable.

Primary Filtration Laboratory

This laboratory tests the PM2.5 filtration efficiency of the fresh air main unit. It features an extended testing table with auxiliary fans, a dust generation section, a pre-sampling section, the fresh air main unit, and a post-sampling section. By simulating high-pressure dust generation, it recreates outdoor haze scenarios. A dust particle counter measures six sets of data before and after filtration by the fresh air unit, allowing for a comparison to calculate the filtration efficiency.

Sources of Indoor Air Pollution

Outdoor Gaseous Pollution

Common outdoor gaseous pollutants such as vehicle exhaust and garbage incineration, including ozone, are also exacerbating indoor pollution

Outdoor Solid Pollutants

Solid pollutants such as haze and dust enter the indoor environment and are extremely difficult to clean.

Formaldehyde and Benzene from Decoration

Formaldehyde and benzene from home renovations can linger for up to 15 years, making them hidden health hazards in the home.

Carbon Dioxide

A lack of air circulation or a large number of people can easily lead to excessive levels of carbon dioxide, which is the main culprit for lethargy, dizziness, drowsiness, and stuffiness.

Secondhand Smoke and Kitchen Fumes

Smoking and cooking at home generate high levels of secondhand smoke and fumes, which are harmful to health.

Various Odors

Common areas such as kitchens and bathrooms often produce various pollutants that affect the quality of life.

Pollen and Dust Mites

Flowers and plants release tiny pollen into the air, and a large amount of dust mites exist deep in beds and sofas. These can easily trigger allergic symptoms such as rhinitis.

Bacteria and Viruses

These are significant but often neglected pollutants. Damp environments are prone to breeding bacteria, and air conditioners that are not cleaned for a long time become breeding grounds for bacteria and viruses.

Polygon Main Engine Series Overview

AIR LITE Series

EPP Ceiling-mounted Fresh Air Unit

- EPP Advantages
- Powerful Performance
- Flexible Design
- Energy Saving & Durable
- Smart Control

AIR SLIM Series

Wall-mounted Central Fresh Air Unit

- Wall-mounted Design
- Strong Airflow
- Double Filtration
- Energy Saving & Durable
- Smart Control

AIR FORCE Series

Sheet Metal Ceiling-mounted Fresh Air Unit

- Safe & Solid Structure
- High Efficiency Ventilation
- Multi-stage Filtration
- High Quality Motor
- User-friendly Design
- Various Models Available

AIR DRY Series

Ceiling-mounted Central Dehumidifier

- Powerful Dehumidification
- Double Filtration
- Quiet Operation
- Intelligent Protection
- Multiple Models Available

Close to Nature
Enjoy the Quiet Comfort

AIR LITE Series | Residential Ceiling-mounted Fresh Air Unit

Your Space,Your Choice

◉ AIR LITE Series——Features:

EPP Advantages: made of one-piece molded EPP structure. Weight reduced by over 50%. Shock absorption, thermal insulation, anti-condensation, and easy installation.

Powerful Performance: equipped with EBM fan. High static pressure, large airflow, quiet and long-lasting operation.

Flexible Design: six-port design. Flexible installation and low air resistance.

Energy Saving & Durable: HTR total heat recovery core. High efficiency and energy saving. Anti-mold and antibacterial core. Washable and easy to maintain.

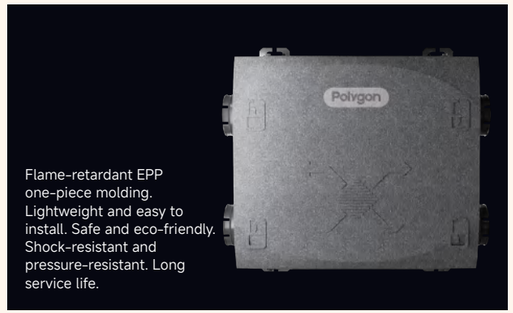
Smart Control: detecting indoor air quality and automatically adjusts airflow. Can connect to smart home system and support remote control. Easy and convenient.

◉ Application Scenarios:

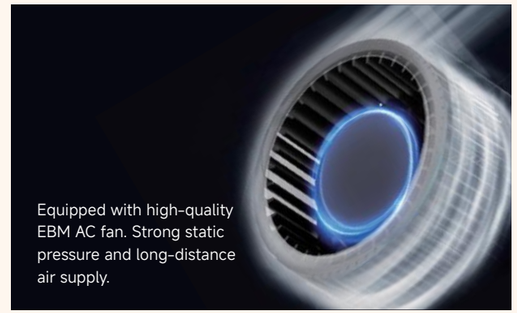
Suitable for villas, apartments, large flats, lofts and small residential units.

AIR LITE-THR 180

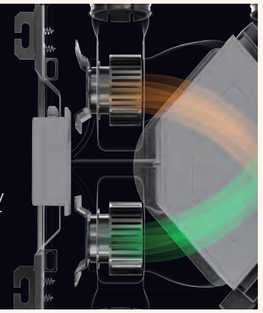
Airflow (m³/h) Airflow	Heat Recovery	Motor
180	THR Efficiency up to 78% washable core	EBM Brand AC Fan
PM2.5 Filtration Eff.	**Sensors**	**Fresh Air Rate**
> 95%	Temperature and Humidity	97%



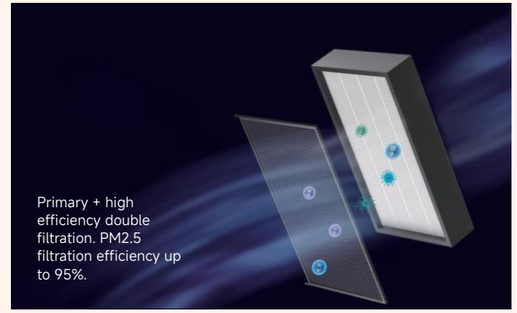
Flame-retardant EPP one-piece molding. Lightweight and easy to install. Safe and eco-friendly. Shock-resistant and pressure-resistant. Long service life.



Equipped with high-quality EBM AC fan. Strong static pressure and long-distance air supply.



High-efficiency total heat recovery core. Balances indoor and outdoor temperature difference to keep indoor temperature and humidity stable.



Primary + high efficiency double filtration. PM2.5 filtration efficiency up to 95%.

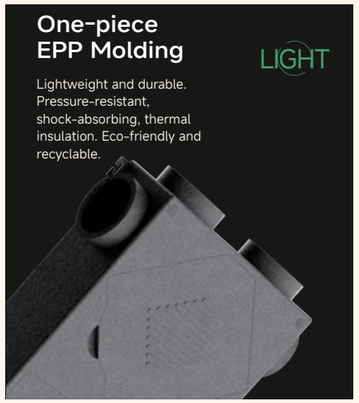
◉ Technical Specifications

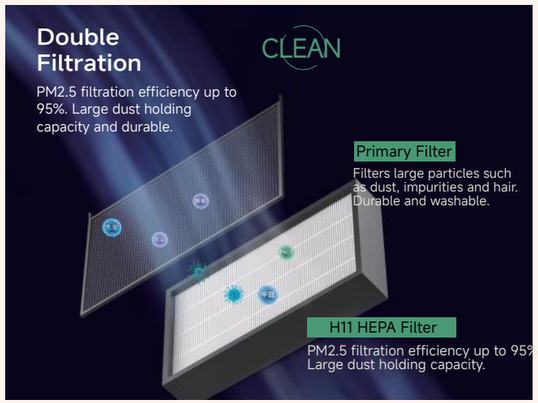
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR LITE-THR 180	FRF-180A/N	Speed 1 100	80	78 68	36	>95	92	12	660*580*262
		Speed 2 125	100	76 66	38		98		
		Speed 3 180	100	72 63	40		115		

Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

AIR LITE-THR 250

Airflow (m³/h)	Heat Recovery	Motor	Weight
250	THR Efficiency up to 69%	EBM Brand AC Fan	18kg
PM2.5 Filtration Eff	**Sensors**	**Noise Level**	**Fresh Air Rate**
> 95%	Standard Version: Temperature, Humidity Color Display Version: Temperature, Humidity TVOC, CO2, PM2.5	As low as 32dB(A)	97%





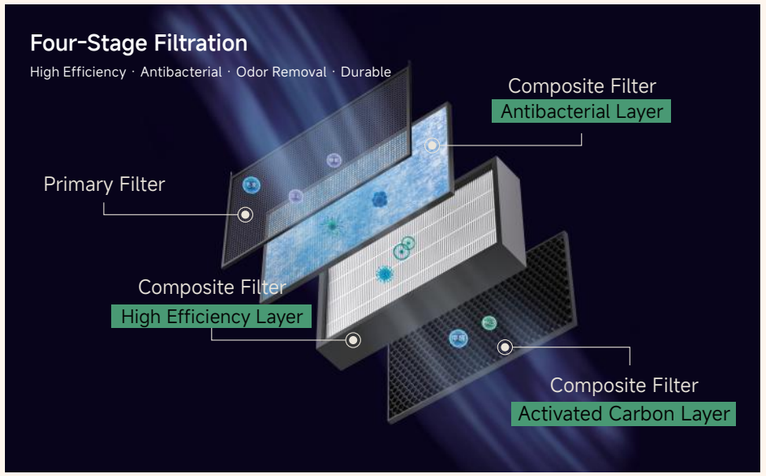
Technical Specifications

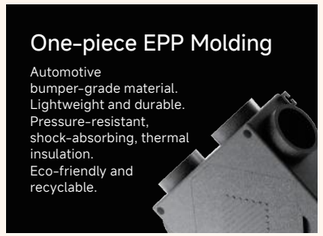
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR LITE THR 250	FRF-250A/N	Speed 1 140	80	69 59	32	>95	106	18	706*942*240
		Speed 2 170	100	66 57	34		116		
		Speed 3 250	100	64 55	37		138		

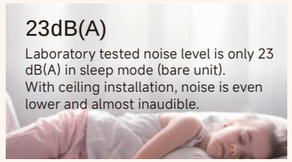
Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

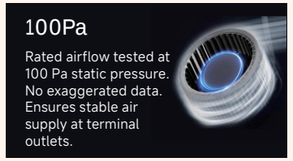
AIR LITE-THR 250 Pro

Airflow (m³/h)	Heat Recovery	Motor	Weight
250	THR Efficiency up to 78%	EBM Brand EC Fan	18kg
PM2.5 Filtration Efficiency	**Sensors**	**Noise**	**Fresh Air Rate**
> 95%	Temperature, Humidity TVOC, CO2, PM2.5	As low as 23 dB(A)	97%









Technical Specifications

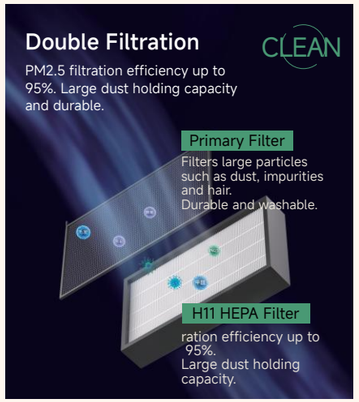
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR LITE-THR 250 Pro	FRF-250+E/S	Sleep 100	70	78 67	23	>95	23	18	706*942*240
		Low 150	80	73 63	29		35		
		Medium 200	100	69 60	34		50		
		High 250	100	67 58	36		65		
		Boost 300	100	65 56	39		93		

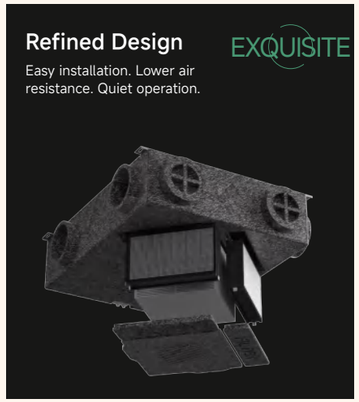
Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

AIR LITE-THR 350

Airflow (m³/h)	Heat Recovery	Motor	Weight
350	Total heat recovery efficiency up to 74%	EBM Brand AC Fan	27kg

PM2.5 Filtration Eff	Sensors	Noise Level	Fresh Air Rate
> 95%	Standard Version: Temperature, Humidity Color Display Version: Temperature, Humidity TVOC, CO2, PM2.5	As low as 35dB(A)	97%





Technical Specifications

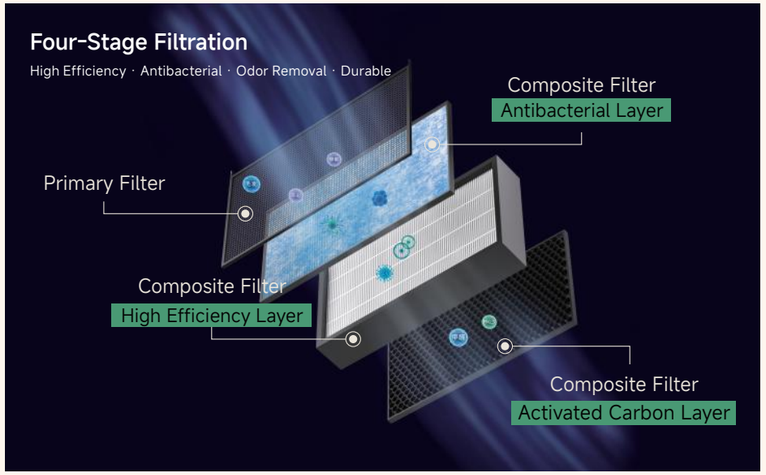
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR LITE THR 350	FRF-350A/N	Speed 1 215	80	74 62	35	>95	152	27	866*1012*250
		Speed 2 277	100	69 59	37		162		
		Speed 3 350	100	64 55	41		182		

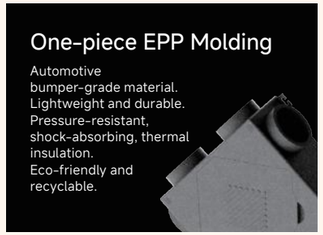
Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

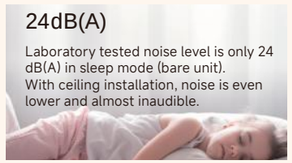
AIR LITE-THR 350 Pro

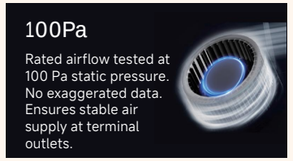
Airflow (m³/h)	Heat Recovery	Motor	Weight
350	THR Efficiency up to 78%	EBM Brand EC Fan	27kg

PM2.5 Filtration Efficiency	Sensors	Noise	Fresh Air Rate
> 95%	Temperature, Humidity TVOC, CO2, PM2.5	As low as 24 dB(A)	97%









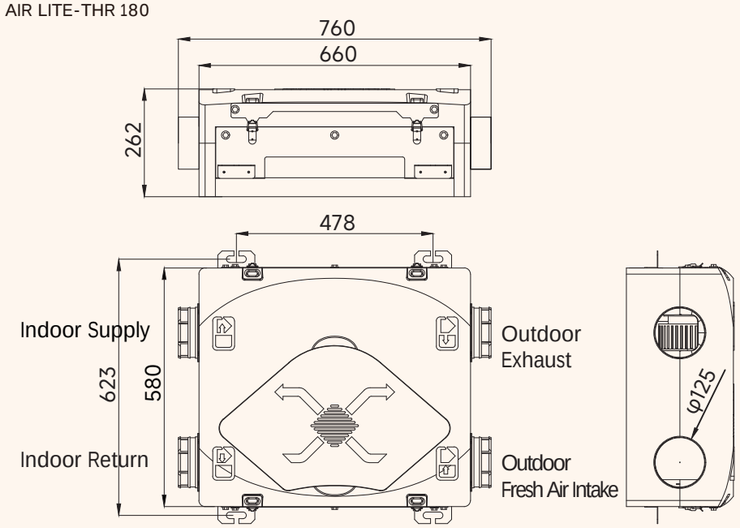
Technical Specifications

Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR LITE THR 350 Pro	FRF-250+E/S	Sleep 100	70	78 67	23	>95	23	18	706*942*240
		Low 150	80	73 63	29		35		
		Medium 200	100	69 60	34		50		
		High 250	100	67 58	36		65		
		Boost 300	100	65 56	39		93		

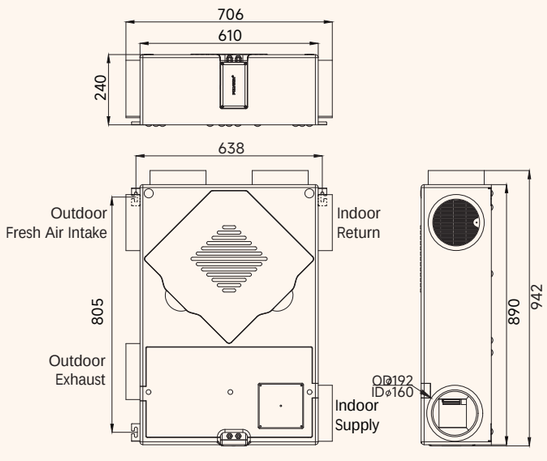
Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

Three-View Drawing (AIR LITE)

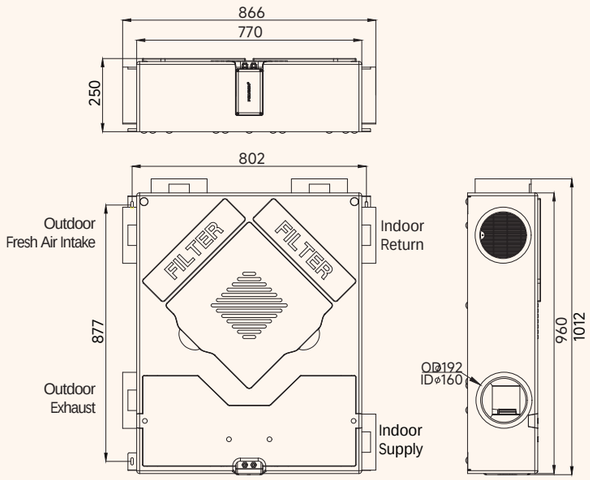
AIR LITE-THR 180



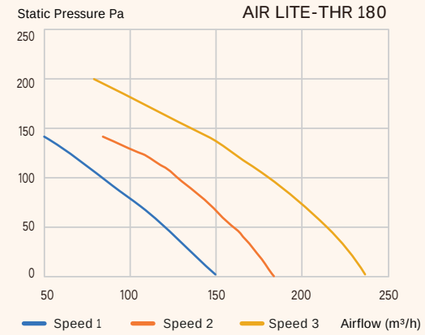
AIR LITE-THR 250
AIR LITE-THR 250 Pro

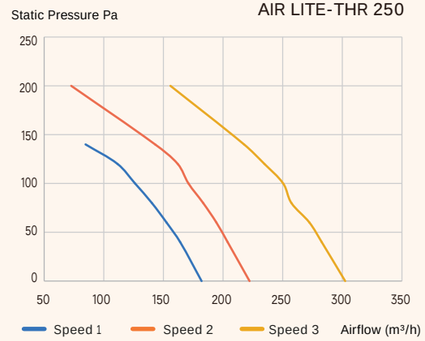


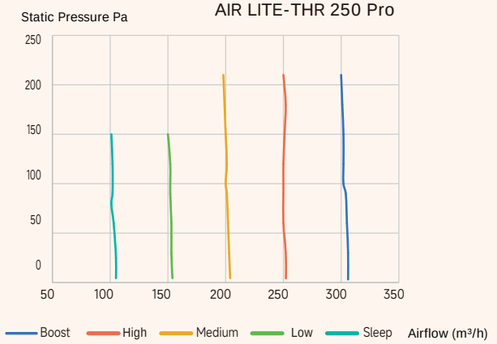
AIR LITE-THR 350
AIR LITE-THR 350 Pro

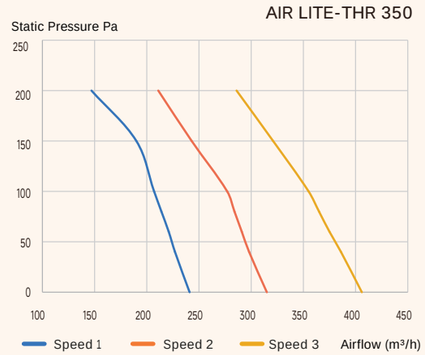


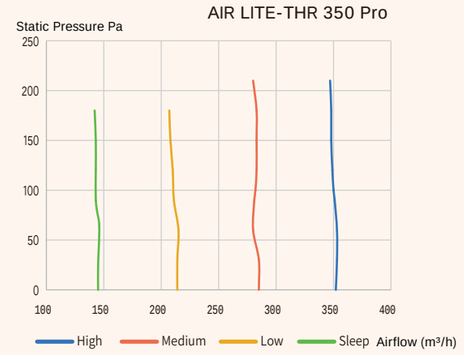
Air Performance Curve











◉AIR SLIM – Features:

Wall-mounted Design: Lightweight and easy installation. Suitable for complex layouts. Convenient service opening for easy maintenance.

Powerful Airflow: Large airflow with low noise.Strong and even air distribution.

Double Filtration: Primary + high efficiency filtration. PM2.5 filtration efficiency over 95%. Large dust holding capacity.

Energy Saving & Durable: Equipped with HTR total heat recovery core. Energy saving and low power consumption. Anti-mold and antibacterial core. Washable and easy to maintain.

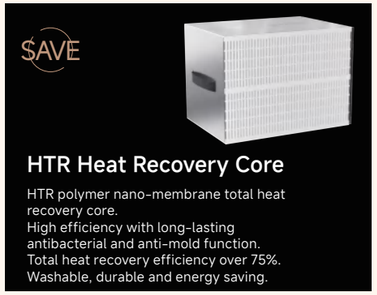
Smart Control: Monitors indoor air quality. Automatically adjusts airflow. Supports smart home connection and remote control.

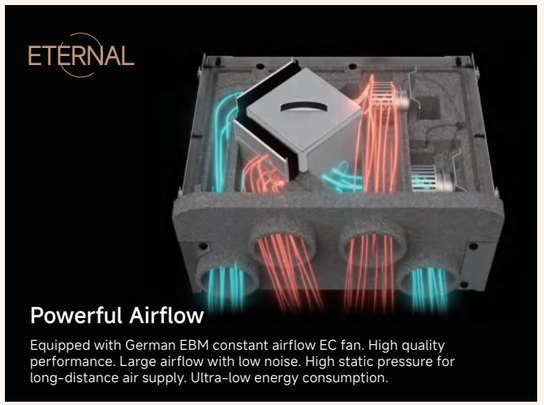
◉ Application Scenarios:

Suitable for villas, apartments, large flats, lofts and small residential units.

AIR SLIM-THR 200/300 Pro

Airflow (m³/h)	Heat Recovery	Motor
200、300	Total heat recovery efficiency up to 78%	EBM Brand AC Fan
PM2.5 Filtration Eff	**Sensors**	**Noise Level**
> 95%	Temperature, Humidity TVOC, CO2, PM2.5	As low as 25dB(A)





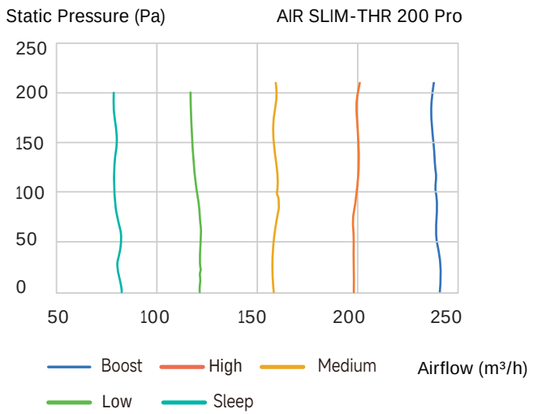
Technical Specifications

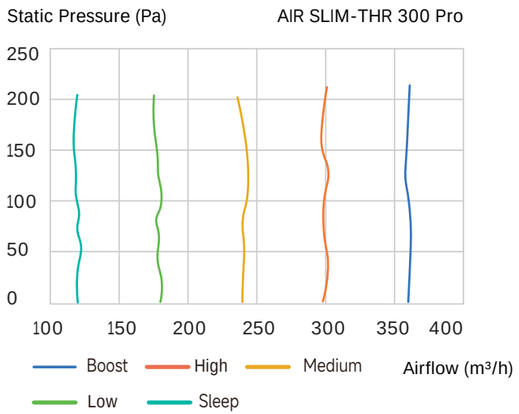
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air		Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling		Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR SLIM THR 200 Pro	WRF 200+E/S	Sleep	80	70	78	66	25	>95	28	20	723*616*361
		Low	120	80	74	63	29		41		
		Medium	160	90	72	60	33		58		
		High	200	100	69	58	36		82		
		Boost	240	100	67	56	38		115		

Unit Name	Model	Airflow (m³/h) Indoor Fresh Air		Ext. Static Pressure (Pa)– Fresh Air	Heating / Cooling		Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR SLIM THR 300 Pro	WRF 300+E/S	Sleep	120	80	76	65	29	>95	38	20	723*616*361
		Low	180	100	73	62	34		69		
		Medium	240	100	69	59	38		112		
		High	300	100	67	57	41		158		
		Boost	360	100	65	55	43		174		

*Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

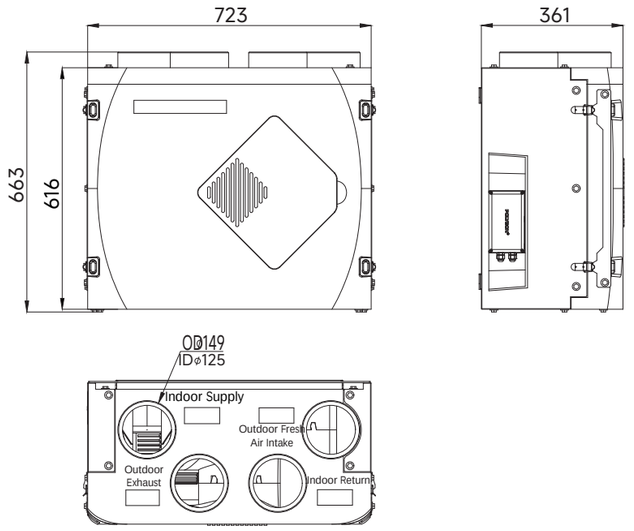
Air Performance Curve



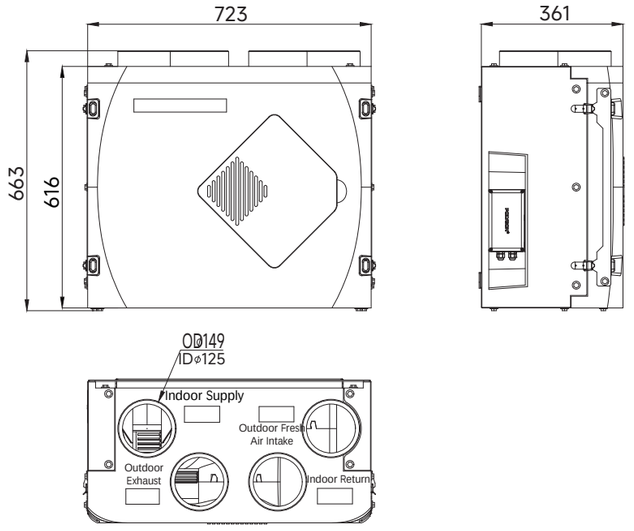


Three-View Drawing (AIR SLIM)

AIR SLIM–THR 200 Pro



AIR SLIM–THR 300 Pro



AIR FORCE SERIES | SHEET METAL CEILING-MOUNTED FRESH AIR UNIT

POWER IN EVERY BREATH

PERSISTENCE LEADS TO SUCCESS

◉AIR FORCE Series——Features

Durable & Safe:High-quality metal housing with moisture-proof and fire-resistant properties. Built-in insulation cotton prevents heat loss and condensation.

Efficient Air Exchange:Large airflow creates slight positive indoor pressure, preventing polluted air from entering through door and window gaps while efficiently replacing indoor air.

Dual Filtration System:Pre-filter + H11 high-efficiency filter with PM2.5 filtration efficiency up to 97%.

High-Performance Motor:Premium fan motor with strong airflow and high static pressure.

User-Friendly Design:Convenient service port design for easy maintenance.

Multiple Models Available:Various functional models available to meet different customer needs.

◉ Application Scenarios:

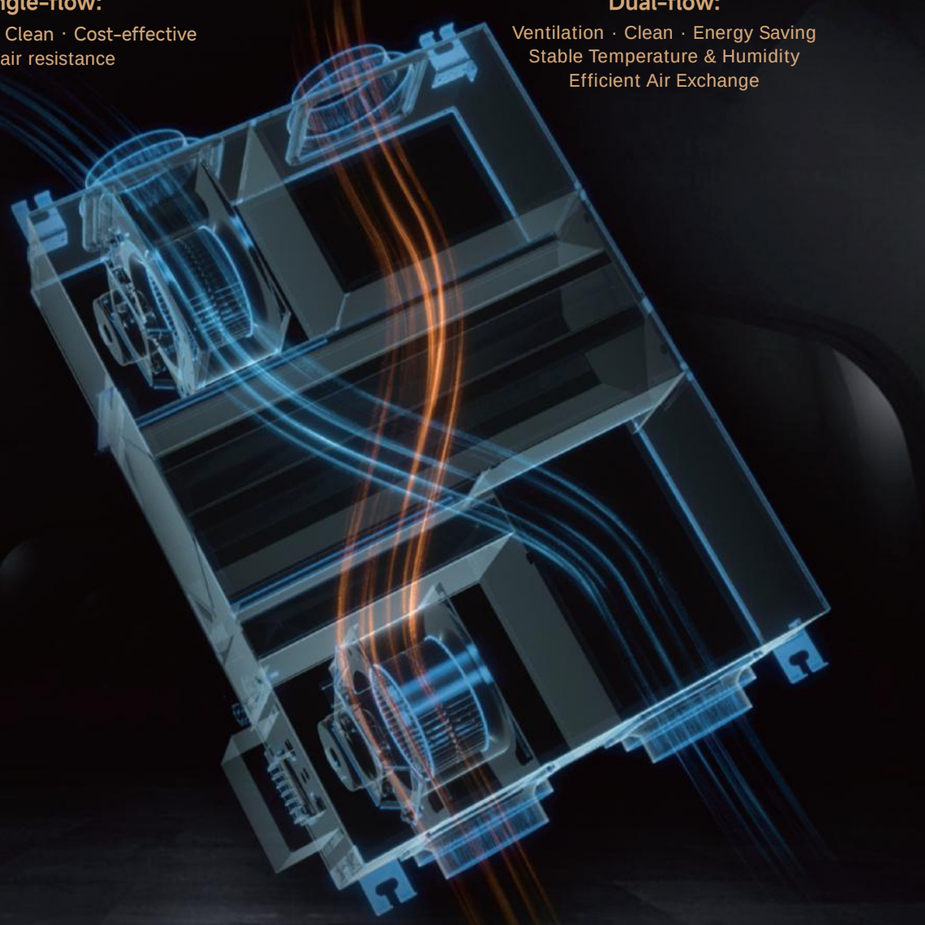
Villas, Apartments / Residential buildings, Large flat units, LOFT apartments, Small residential units;

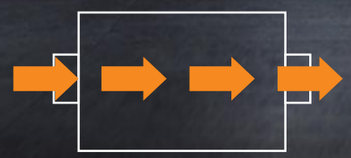
Also ideal for light commercial spaces such as:Bars, KTV, Restaurants, Billiard halls.

Single-flow Fresh Air Unit VS Dual-flow Fresh Air Unit

Single-flow:
Oxygen-rich · Clean · Cost-effective
Low air resistance

Dual-flow:
Ventilation · Clean · Energy Saving
Stable Temperature & Humidity
Efficient Air Exchange





Single-flow Fresh Air Unit

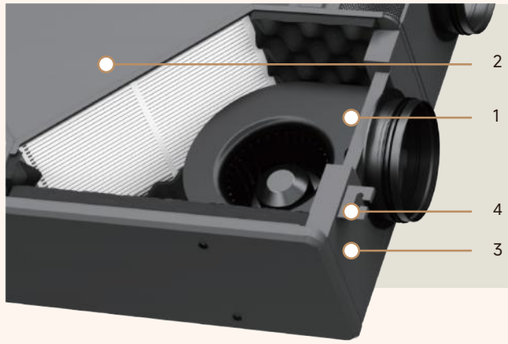
Suitable for areas with small temperature differences.
No heat recovery required.
Constantvides clean ventilation only.
More economical.

Dual-flow Fresh Air Unit

Suitable for areas with large temperature or humidity differences.
Heat recovery required.
Prevents direct cold or hot air discomfort.
Reduces energy consumption.

AIR FORCE – Silent THR

Airflow (m³/h)	Heat Recovery	Motor
250、350	THR Efficiency up to 80%	DC Fan
PM2.5 Filtration Eff	**Sensors**	**Noise Level**
> 99%	Temperature, Humidity TVOC, CO2, PM2.5	As low as 25dB(A)



Multi-layer Noise Reduction

First: Low-noise variable frequency fan to control noise at the source.

Second: 3 cm sound-absorbing material for strong noise reduction.

Third: High-strength sheet metal structure with full welding and strong sealing.

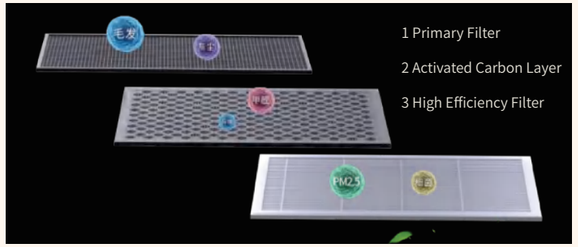
Fourth: Suspension bracket with thickened anti-vibration pads.

Three-stage Filtration

Primary Filter: Removes large particles, dust, pollen and insects.

Activated Carbon Layer: Adsorbs formaldehyde and removes odors.

High Efficiency Filter: PM2.5 filtration efficiency up to 99%. Large dust capacity.

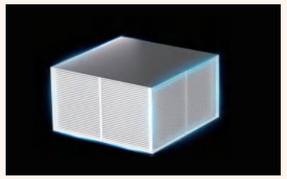


Energy Saving

- DC inverter fan with strong power and low energy consumption.
- Equipped with Polygon HTR membrane total heat recovery core.

Significantly reduces cooling/heating energy consumption when indoor and outdoor temperature or humidity difference is large.

Washable core, highly durable.



Be the Master of Your Air

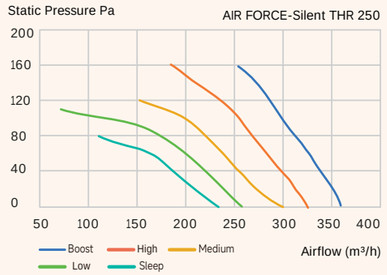
Smart fresh air controller + mobile remote control.
Meets airflow needs under different scenarios.
Timer, filter replacement reminder and fault alarm functions.
Ensures long-term stable operation.
Fresh oxygen anytime, no need to adjust manually.

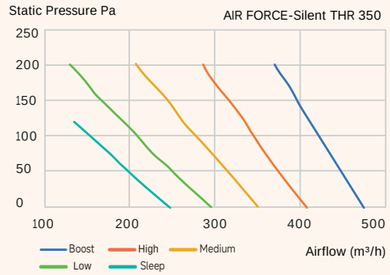
Technical Specifications

Unit Name	Model	Airflow (m³/h) Indoor Fresh Air		Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating	Heat Recovery Eff. (%) Cooling	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR FORCE Silent THR	FRF-250D/S- I	Sleep	100	90	78	65	27	>99	21	31	840*690*228
		Low	150	100	73	62	28		32		
		Medium	200	100	68	59	30		46		
		High	250	100	65	57	32		68		
		Boost	300	100	62	55	35		102		
AIR FORCE Silent THR	FRF-350D/S- I	Sleep	140	100	80	68	25	>99	37	40	1000*750*248
		Low	210	100	76	65	28		46		
		Medium	280	100	71	61	32		67		
		High	350	100	67	58	35		92		
		Boost	420	100	63	55	38		128		

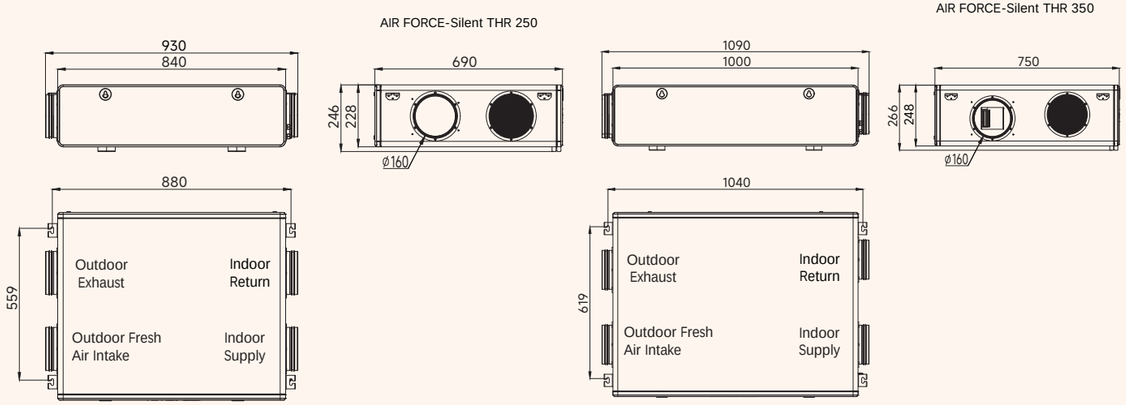
*Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

Air Performance Curve



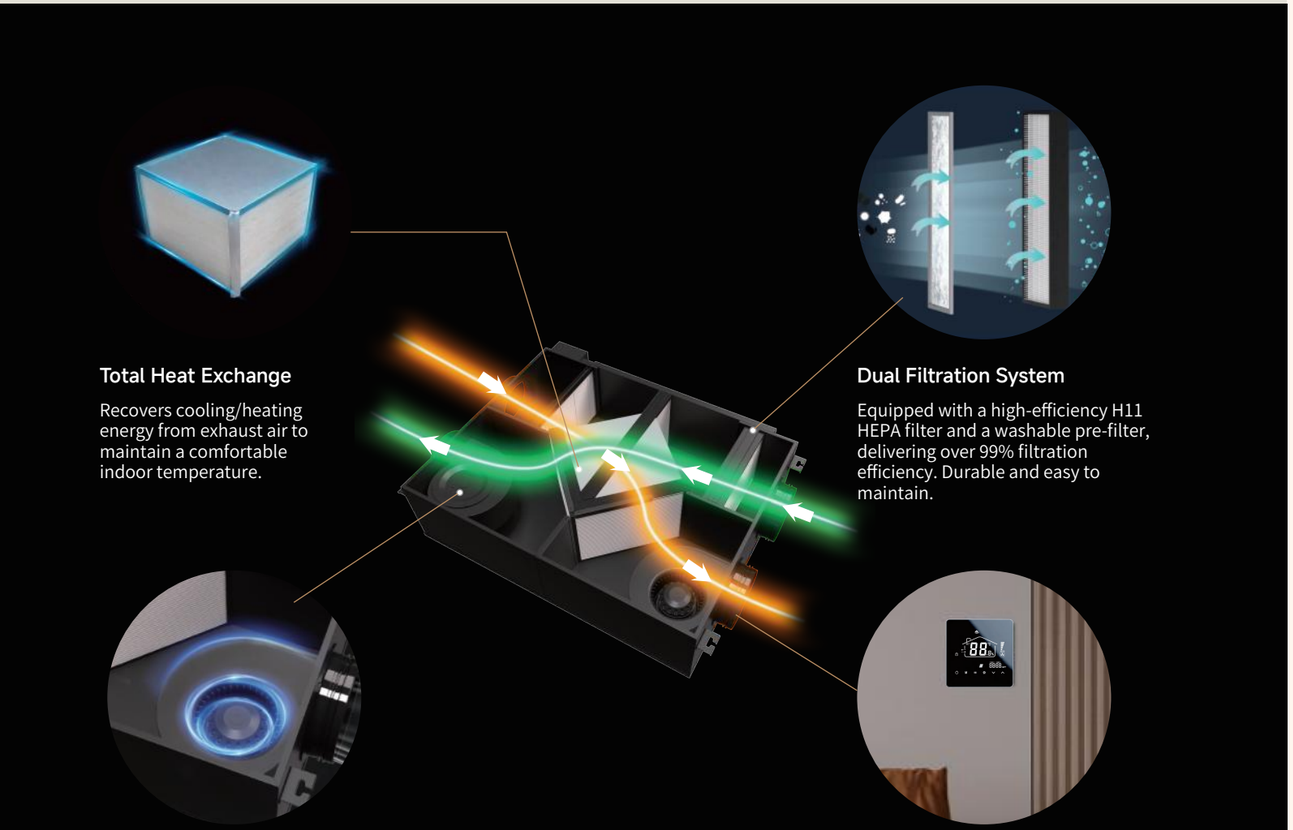


Three-View Drawing (AIR FORCE-Silent THR)



AIR FORCE-THR-III

Airflow (m³/h)	Heat Recovery	Motor
150/250/350	THR Efficiency up to 83%	High-efficiency AC Fan
PM2.5 Filtration Eff	**Sensors**	**Noise Level**
> 99%	Temperature Humidity	As low as 21dB(A)



Total Heat Exchange

Recovers cooling/heating energy from exhaust air to maintain a comfortable indoor temperature.

Dual Filtration System

Equipped with a high-efficiency H11 HEPA filter and a washable pre-filter, delivering over 99% filtration efficiency. Durable and easy to maintain.

Premium Motor

High-efficiency centrifugal fan with strong airflow and low energy consumption. Continuous operation consumes as low as 1.8 kWh per day.

3-Speed Airflow Adjustment

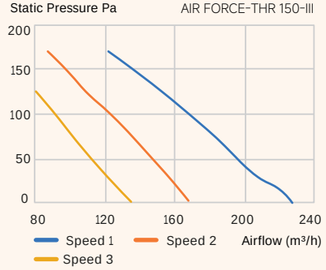
Air quality monitoring keeps indoor conditions visible at all times. Simple operation with a clean, modern interface.
Supply and exhaust fans can be controlled independently to suit different scenarios.

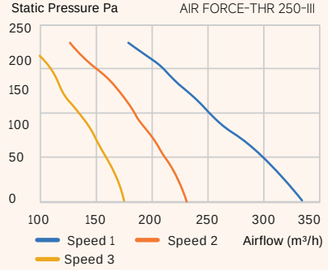
Technical Specifications

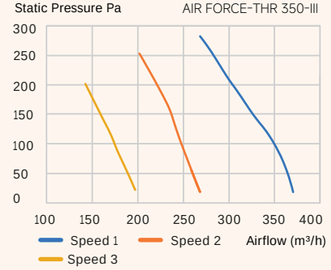
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air		Ext. Static Pressure (Pa)– Fresh Air	Heat Recovery Eff. (%) Heating / Cooling		Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
AIR FORCE THR 150-III	FRF-150A/N—III	Low Medium High	100 125 150	80 100 130	78 75 73	64 62 60	21 25 29	>99	75 85 96	24	742*600*228
AIR FORCE THR 250-III	FRF-250A/N—III	Low Medium High	150 190 250	70 90 100	81 78 75	62 60 58	26 30 35	>99	97 113 156	28	842*650*228
AIR FORCE THR 350-III	FRF-350A/N—III	Low Medium High	180 250 350	80 90 100	83 78 75	62 58 56	25 29 36	>99	135 155 198	30	842*650*248

*Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

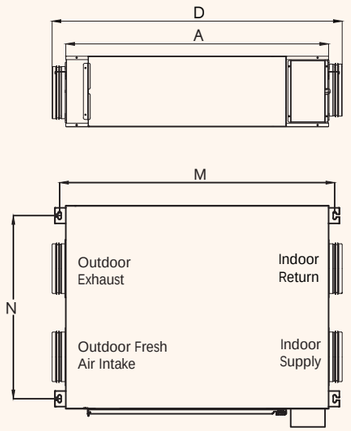
Air Performance Curve







Three-View Drawing (AIR FORCE-THR-III)



Unit:mm

model	A	B	C	D	E	M	N
FRF-150	742	600	228	830	658	782	537
FRF-250	842	650	228	929	708	881	587
FRF-350	842	650	248	929	708	881	587

Air Force Anti-Haze

Airflow (m³/h)	Motor
150/250/350	EBM Brand AC Fan
PM2.5 Filtration Eff.	**Noise Level**
> 97%	As low as 33 dB(A)

Ultra-Silent Operation

Multi-layer noise reduction ensures a peaceful and comfortable sleeping environment.

Positive Pressure Fresh Air

Large airflow creates slight indoor positive pressure to prevent outdoor polluted air from entering.

Reliable Protection

High-quality metal housing with fire-resistant durability and internal insulation to prevent condensation.

Premium Fan System

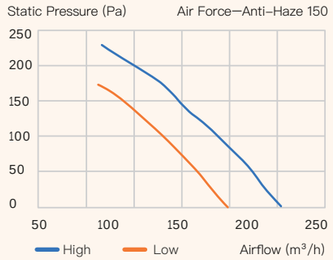
Equipped with German EBM fan providing powerful airflow and high static pressure for long-distance air supply.

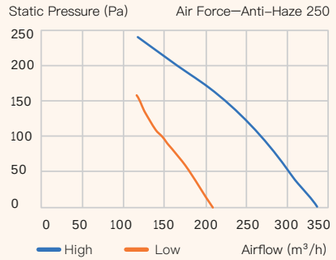
Technical Specifications

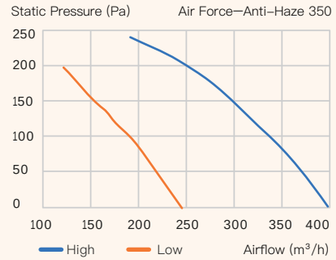
Unit Name	Model	Airflow (m³/h) Indoor Fresh Air	Ext. Static Pressure (Pa)–Fresh Air	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
Air Force-Anti-Haze 150	FNF-150A/N/M/B1	150	144	33	97	57	11	518*464*232
Air Force-Anti-Haze 250	FNF-250A/N/M/B1	250	120	34	97	81	11	518*464*232
Air Force-Anti-Haze 350	FNF-350A/N/M/B1	350	80	37	97	105	12	518*514*232

*Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

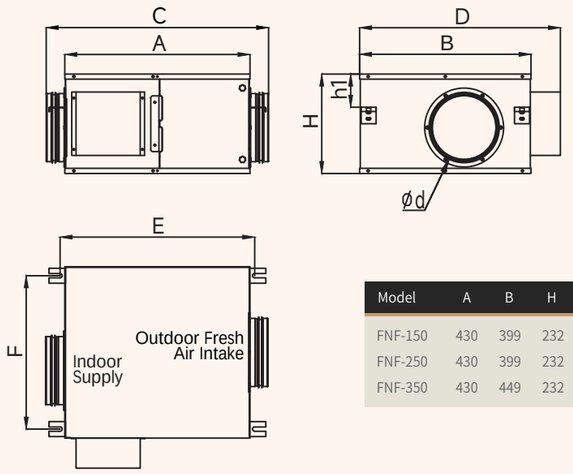
Air Performance Curve







Three-View Drawing (Air Force–Anti-Haze)



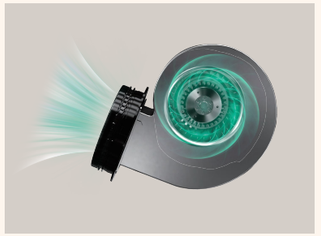
Unit:mm

Model	A	B	H	C	D	E	F	h	ϕd
FNF-150	430	399	232	518	464	478	351	78	160
FNF-250	430	399	232	518	464	478	351	78	160
FNF-350	430	449	232	518	514	478	401	78	160

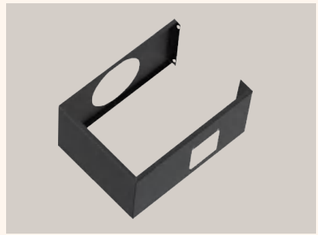
Air Force Negative Pressure

Airflow (m³/h)	Motor	Noise
300/500	EBM Brand AC Fan	As low as 35 dB(A)

◉ Performance Features



Equipped with a German EBM fan featuring high static pressure and high-speed airflow for powerful and long-distance air supply.



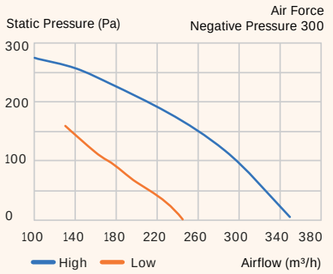
Premium Sheet Metal Housing, Fire-resistant, anti-rust, and corrosion-resistant steel housing with internal insulation cotton for thermal insulation and anti-condensation.

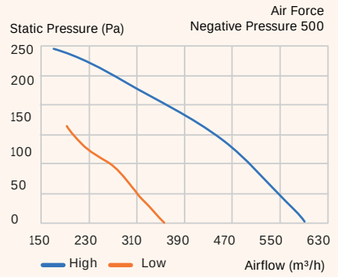
Compact Design, Slim and lightweight structure for easy installation. Service port allows quick disassembly, saving time and labor.

◉ Technical Specifications

Unit Name	Model	Airflow (m³/h)	Ext. Static Pressure (Pa)–	Noise Level dB(A)	PM2.5 Filtration Efficiency(%)	Input Power (W)	Weight (kg)	Unit Dimensions (mm)
Air Force Negative Pressure 300	FN—300A/N— II	300	90	35	/	85	8	400*290*212
Air Force Negative Pressure 500	FN—500A/N— II	500	100	38	/	120	10	400*290*212

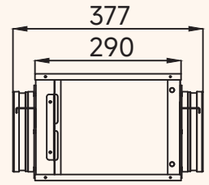
◉ Air Performance Curve

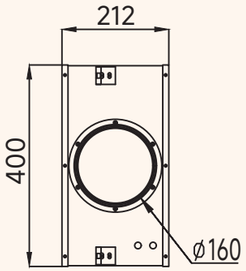


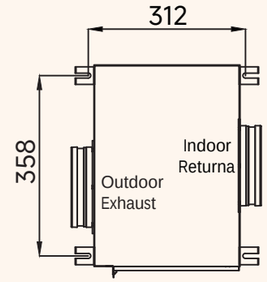


◉ Three-View Drawing (Air Force – Negative Pressure)

Air Force–Negative Pressure 500







◉AIR DRY Series——Features

Powerful Dehumidification
Refrigeration-based dehumidification with strong and efficient performance. High static pressure airflow for fast and effective moisture removal.

Dual Purification
Dual filtration system with PM2.5 filtration efficiency exceeding 95%.

Ultra-Quiet Comfort
Six-layer noise reduction design:
Silent fan + compressor dual vibration isolation + sound-absorbing cotton + optimized piping + vibration damping pads + high-strength housing.

Intelligent Protection
Multiple protection mechanisms ensure long-term stable system operation.

Multiple Models Available
Fresh air dehumidifier models available for simultaneous fresh air and dehumidification.

◉Application Scenarios

Residential spaces in high-humidity regions, activity and storage areas (such as:basements, collection rooms, storage rooms)

AIR DRY-Fresh Air Dehumidifier

Dehumidification Capacity	Airflow (m³/h)	Static Pressure
28L、38L、58L	300、400、500	up to 110Pa

PM2.5 Filtration Eff.	Noise Level
> 95%	As low as 37 dB(A)

Four Operating Modes
One Unit, Triple Functions

Internal Dehumidification Mode: Refrigeration-based dehumidification for fast and efficient moisture removal.
Fresh Air Mode: Introduces oxygen-rich outdoor air to keep indoor spaces fresh and comfortable.
Fresh Air Dehumidification Mode: Fresh air supply and dehumidification combined in one step.
Internal Ventilation Mode: Promotes indoor air circulation while helping remove dust and bacteria.

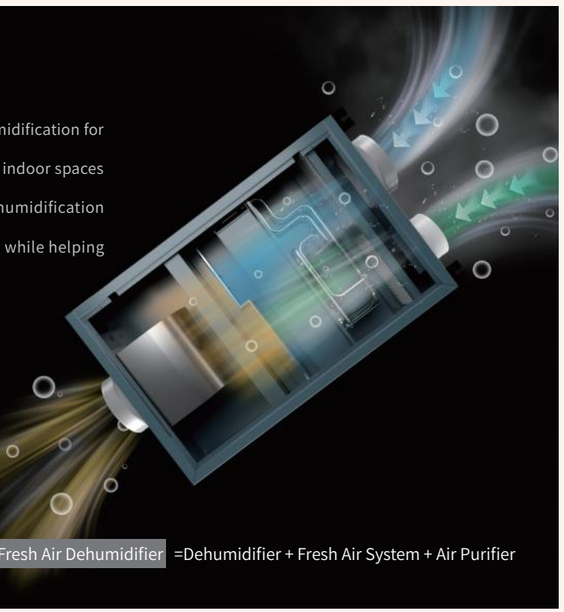
Ultra-Quiet Operation
Multi-layer noise reduction, as low as 37 dB(A).

Dual Filtration
PM2.5 filtration efficiency up to 95%.

Remote Control
Monitor and control humidity anytime via mobile app.

Fresh Oxygen-Rich Air
Fresh air mode easily creates a clean indoor environment.

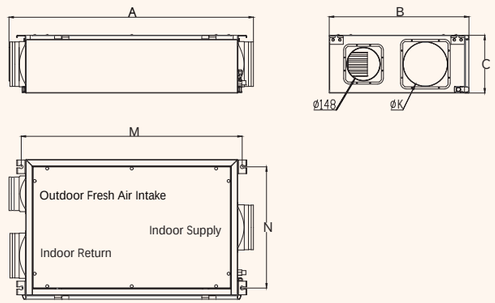
Powerful Performance
High static pressure fan with large dehumidification capacity.



One Polygon Fresh Air Dehumidifier =Dehumidifier + Fresh Air System + Air Purifier

◉ Technical Specifications

Unit Name	Model	Dehumidification Capacity (L/D)	Supply Airflow (m³/h)	Fresh Airflow (m³/h)	External Static Pressure (Pa)	Input Power (W)	Noise Level dB(A)	Weight (kg)	PM2.5 Filtration Efficiency (%)	Unit Dimensions (mm)
AIR DRY-Fresh Air Dehumidifier	PMFEF-28L	28	300	0-150	80	410	37	42	>95	1086*518*280
	PMFEF-38L	38	400	0-200	90	610	41	53	>95	1080*618*255
	PMFEF-58L	58	500	0-250	110	940	41	61	>95	1080*618*280



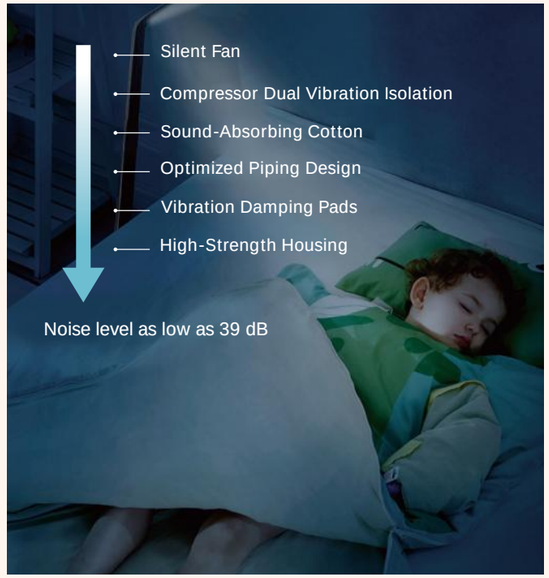
Unit: mm

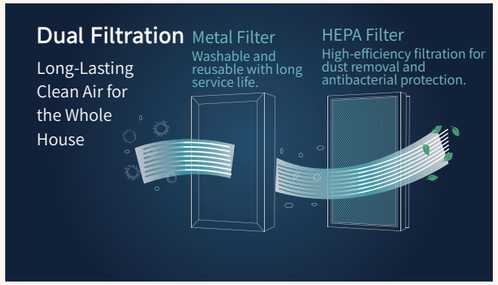
Model	A	B	C	M	N	ϕK
PMFEF-28L	1086	518	280	977	438	148
PMFEF-38L	1080	618	255	977	538	197
PMFEF-58L	1080	618	280	977	538	197

AIR DRY-Single-flow Dehumidifier

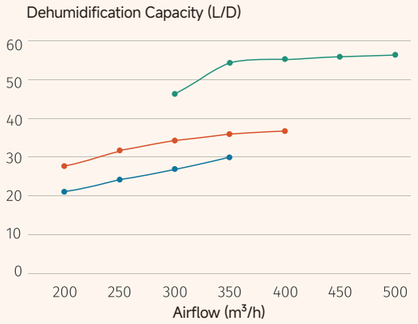
Dehumidification Capacity	Airflow (m³/h)	Static Pressure
30L、38L、58L	360、400、500	up to 110Pa

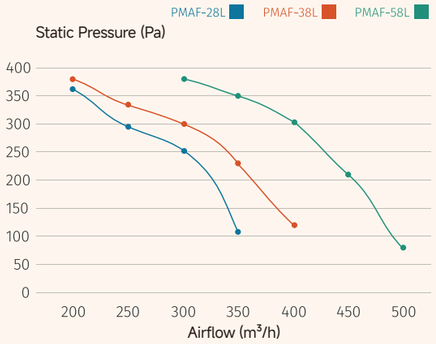
PM2.5 Filtration Eff.	Noise Level
> 95%	As low as 39 dB(A)

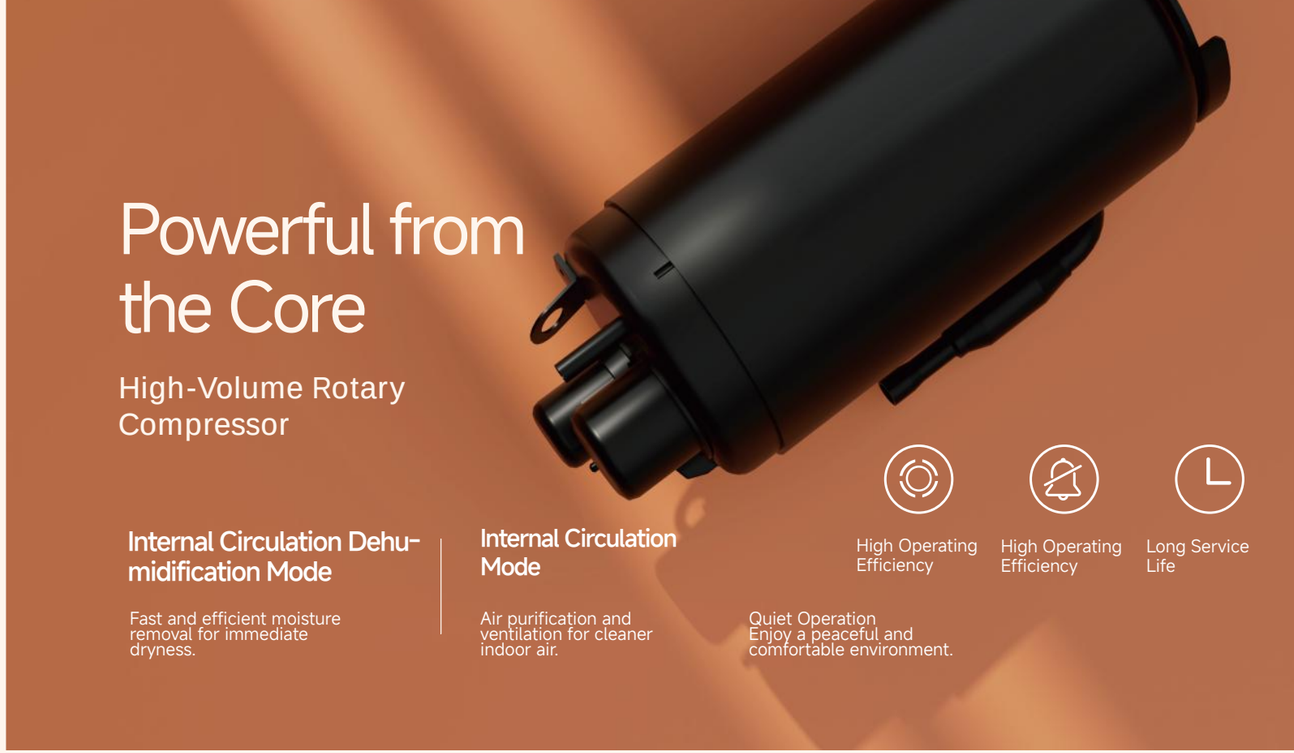




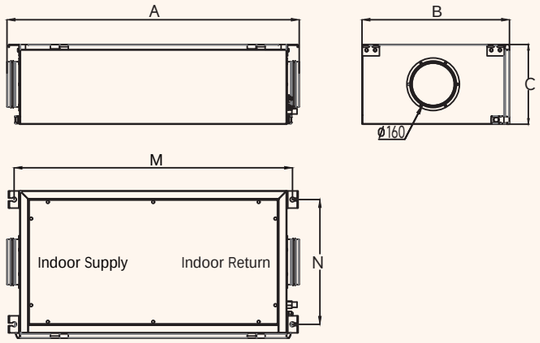
◉ Performance Curves







◉ Three-View Drawing (Single-flow Dehumidifier)



Unit: mm

Model	A	B	C	M	N
PMAF-28L	1025	518	280	977	438
PMAF-38L	1025	618	255	977	538
PMAF-58L	1025	618	280	977	538

◉ Technical Specifications

Unit Name	Model	Dehumidification Capacity (L/D)	Airflow (m³/h)	Input Power (W)	External Static Pressure (Pa)	Noise Level dB(A)	Weight (kg)	PM2.5 Filtration Efficiency (%)	Unit Dimensions (mm)
AIR DRY-Single-flow Dehumidifier	PMAF-28L	30	360	480	110	39	42	>95	1025*518*280
	PMAF-38L	38	400	720	110	41	53	>95	1025*618*255
	PMAF-58L	58	500	1030	80	41	61	>95	1025*618*280

Power supply: 220V/50Hz. All technical data are laboratory results. Actual performance may vary depending on installation conditions and site environment.

Easy Operation, Smart Living

Take Control,
Stay in Control

Smart Fresh Air **Fresh Air Controller Series**

AC Fresh Air Controller – Full Function

Power Supply	Housing	Temperature Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C
Power Consumption	**Mounting Hole Distance**	**Dimensions**
<1W	60mm	86×86×12.1mm

Real-Time Monitoring

Optional 3-in-1 air quality sensor provides real-time display of indoor PM2.5, CO_2, and TVOC levels, making air quality visible at a glance.

Real-Time Monitoring

Switch freely between High / Medium / Low airflow for flexible and comfortable control.

Positive Pressure Environment

Controls supply airflow to be higher than exhaust airflow, maintaining slight indoor positive pressure and preventing polluted air from entering through door and window gaps.

Non-Polar Wiring

Only two wires required, no need to distinguish polarity for quick and easy installation.

Compatible Units:AIR LITE-THR180, AIR LITE-THR 250(standard), AIR LITE-THR 350(standard)

DC Fresh Air Controller – Color Screen

Power Supply	Housing	Temperature Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C
Power Consumption	**Mounting Hole Distance**	**Dimensions**
<1W	60mm	86×86×16.8mm

Full Touchscreen

Full-screen touch interface with smooth and responsive control.

Real-Time Monitoring

Displays indoor temperature, humidity, TVOC concentration, PM2.5 level, and CO_2 concentration for real-time environmental awareness.

Smart Settings

Filter replacement reminder, system fault alerts, backlight brightness adjustment, and auto screen-off timer for enhanced user experience.

Five Operating Modes

Manual Mode – Flexible manual control
Auto Mode – Automatically adjusts based on indoor air quality
Sleep Mode – Ultra-quiet operation
Boost Mode – Powerful performance for heavily polluted environments
Professional Mode – Adjustable supply/return air ratio for complex environments

Compatible Units:Air Force-Silent Series, AIR LITE- THR 250 Constant, AIR LITE-THR 350 Constant, AIR SLIM Series

AC Fresh Air Controller – Color Screen

Power Supply	Housing	Temperature Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C
Power Consumption	**Mounting Hole Distance**	**Dimensions**
<1W	60mm	86×86×16.8mm

Full Touchscreen

Full-screen touch interface with smooth and responsive control.

Scene Modes

Six preset modes available with one-touch operation:Manual Mode, Auto Mode, Professional Mode, Bypass Mode, Auxiliary Heating Mode, Sterilization Mode.

Real-Time Monitoring

Displays indoor temperature, humidity, TVOC concentration, PM2.5 level, and CO_2 concentration for real-time environmental awareness.

Compatible Units:AIR LITE- THR 250(Color Screen), AIR LITE-THR 350(Color Screen)

AC Fresh Air Controller – LCD Version

Power Supply	Housing	Temperature Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C
Power Consumption	**Mounting Hole Distance**	**Dimensions**
<1W	60mm	86×86×15mm

Elegant Design

Mirror-finish surface with smooth touch response and a minimalist interface for a premium visual experience.

Three-Speed Adjustment

Switch between High / Medium / Low speeds.
Supply and exhaust fans can be controlled independently to suit different scenarios.

Smart Settings

Timer function, filter replacement reminder, backlight brightness adjustment, and child lock for improved usability.

High-Power Control

Direct high-power control reduces external interference and ensures stable operation.

Smart Connectivity

Standard RS485 interface supports connection to smart voice systems and remote control devices.

Compatible Unit:AIR FORCE-THR III

EC Dehumidification Controller – Color Screen

Power Supply	Housing	Temperature Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C
Power Consumption	**Mounting Hole Distance**	**Dimensions**
<1W	60mm	86×86×16.8mm

Real-Time Monitoring

Displays indoor temperature, humidity, and PM2.5 concentration, allowing users to monitor indoor environmental conditions at any time.

Smart Settings

Includes timer settings, filter replacement reminder, child lock, system fault alerts, and backlight brightness adjustment for enhanced user experience.
In Fresh Air Mode, the fresh air operation interval and duration can also be configured for more flexible control.

Four Operating Modes

Internal Dehumidification Mode / Fresh Air Dehumidification Mode / Fresh Air Mode / Internal Ventilation Mode
The system can switch modes according to different indoor and outdoor conditions, integrating the functions of a dehumidifier, air purifier, and fresh air system in one unit.

Compatible Unit: AIR DRY-Fresh Air Dehumidifier

AC Dehumidification Controller– Color Screen

Power Supply	Housing	Temperature Display Accuracy	Humidity Display Accuracy
DC12V	PC + ABS flame-retardant material	±0.5°C	±2%RH
Power Consumption	**Mounting Hole Distance**	**Dimensions**	
<1W	60mm	86×86×15mm	

Mode Switching

Freely switch between operating modes:Dehumidification Mode, Internal Circulation Mode.

Multiple Protection Functions

Includes defrost function, child lock, power-off memory, and filter replacement reminder, ensuring stable operation and a consistently dry indoor environment.

Smart Touch Control

Equipped with intelligent control mode. In smart mode, the system automatically adjusts fan speed and controls the compressor start/stop for optimal performance.

Compatible Unit: AIR DRY-Single-flow Dehumidifier

Fresh Air System Guide

Easy to Understand, Easy to Choose

What's the Difference Between a Fresh Air System and Central Air Conditioning?

The primary function of a fresh air system is ventilation and air exchange. It exhausts stale indoor air while introducing fresh outdoor air into the room.
The main function of central air conditioning is cooling and heating indoor air, regulating the indoor temperature to maintain a comfortable environment.

A fresh air system also provides air purification and heat recovery.
When the central air conditioner is running, the fresh air system can supply clean, oxygen-rich air while reducing energy loss compared to opening windows.

How to Choose the Right Airflow Capacity?

The selection of a residential fresh air system is mainly determined by two parameters:

1. Based on Number of Occupants
Fresh air volume = 30 m^3/h × number of occupants
Current national standard: ⩾ 30 m^3/h per person
2. Based on Air Change Rate
Fresh air volume = Required air changes per hour × Room volume (m^3)

Fresh Air Air Change Rate Reference Table

Non-Smoking Environment	Light Smoking Environment	
Apartments / Villas	Apartments / Villas	Restaurants
0.45-0.7	0.5-1.0	1.3-3.1

How to Choose the Air Supply Method?

Two common air supply methods in residential installations: Ceiling Supply, Floor Supply

Ceiling Supply & Ceiling Return

Ceiling Supply & Ceiling Return
1. Multi-Point Supply (Octopus Type) + Central Return (Branch Type)
Multi-point supply ensures sufficient fresh air delivery to each room, while centralized return air reduces material costs.
With Polygon iris-type air volume control dampers, airflow imbalance in branch pipe systems can be effectively reduced.
2. Full Octopus System
Ensures efficient air exchange in every room.
Commonly used in villas and large apartments.
3. Full Branch pipe System
A more cost-effective option. With Polygon iris-type dampers, airflow imbalance can be minimized.
pipe length should be limited, making it suitable for smaller apartments.

Floor/Wall Supply & Ceiling Return

When ceiling height is limited, or when beams should be avoided, floor air supply is a suitable option.
This method provides more efficient and thorough air circulation while occupying less ceiling space compared to round pipe routing around beams.
It is also suitable for top-floor attic spaces or small loft areas.

Project Cases

Over 1,000 Premium Projects

Polygon Fresh Air Systems deliver efficient, reliable, and cost-effective solutions, providing millions of households with high-quality and comprehensive system products and services.

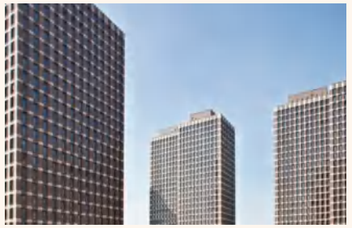
Our mission:
To create healthy, safe, comfortable, and energy-efficient living environments for families worldwide.

Huishan District, Wuxi City

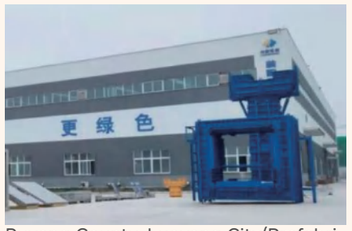
Hanjiang District, Yangzhou City

Lishui District,Nanjing City

Wujiang District, Suzhou City



Jinyuan District, Taiyuan City



Ruyang County, Luoyang City(Prefabricated Building)

UXuhui District, Shanghai City(Ultra-low Energy Consumption Building)

Zhongwei City, Ningxia Hui Autonomous Region

Liandu District, Lishui City

Qixia District, Nanjing City

Kunshan City

Qixia District,Nanjing City

Gusu District,Suzhou City

Cangzhou City

Wuzhong District, Suzhou City

Xiangcheng District,Suzhou City

Changshu City

Gaochun District, Nanjing City

Shuangliu District, Chengdu City

Chenghua District, Chengdu City

Tianfu New Area, Chengdu City

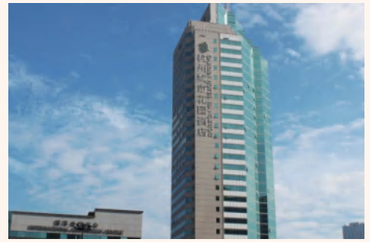
Chengdu Hi-tech Zone

Yuhuatai District, Nanjing City

Jinyuan District, Taiyuan City

Jiaocheng District, Ningde City

Jian'an District, Xuchang City



Linping District, Hangzhou City

Chengbei District, Xining City

Jingxiu District, Baoding City

Xiangcheng District, Xiangyang City

Qiantang District, Hangzhou City

Jinxian County, Nanchang City

Fucheng District, Mianyang City

Shuangliu District, Chengdu City