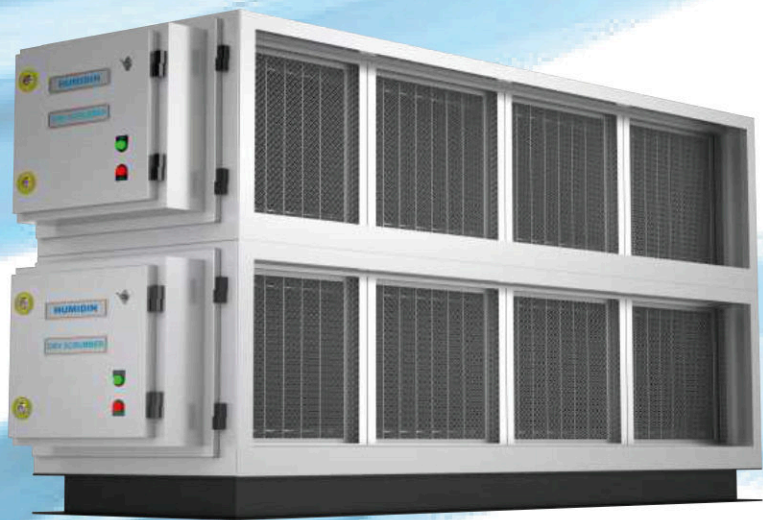


# ECOLOGY UNIT



**Quality Speaks For Itself**



## DRY SCRUBBER MANUAL

### HUMIDIN DRY SCRUBBER

DRY SCRUBBER is an advanced pollution control device used in industrial processes to remove pollutants such as sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), particulate matter (PM), and volatile organic compounds (VOCs) from exhaust gases.

### FEATURES

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#### 1. Manual Cleaning System:

Designed for easy operation, the scrubber features filters and adsorbent media that can be manually cleaned or replaced without the use of special tools. This reduces dependency on automated systems, lowers maintenance costs, and ensures quick serviceability, making it a reliable solution for all HVAC applications.

#### 2. High Dust Removal Efficiency:

Engineered to capture fine particulate matter and harmful gases, the scrubber significantly improves indoor air quality. It ensures that pollutants such as dust, fumes, and odors are effectively removed from the airflow, making the environment cleaner and safer for both industrial and commercial HVAC installations.

#### 3. Robust and Compact Design:

Constructed with strong materials like galvanized steel or stainless steel, the scrubber ensures durability and long service life even in harsh conditions. Its compact design saves valuable space in HVAC systems while maintaining high performance, making it ideal for industrial, commercial, and process ventilation systems.

#### 4. Corrosion Resistance:

All components are coated with anti-corrosion finishes or made from stainless steel to withstand chemical fumes and moisture-laden air. This feature ensures long-lasting performance in demanding environments such as chemical plants, kitchens, and industrial facilities where exposure to corrosive gases is common.

#### 5. Customizable Media Options:

The scrubber can be equipped with different adsorbent media such as activated carbon, alumina, or specialized chemicals to remove specific gases and odors. This customization allows the unit to handle a wide range of contaminants, offering flexibility for various industrial and commercial HVAC applications.

#### 6. Energy Efficient:

With no requirement for water pumps or chemical dosing systems, the scrubber operates with minimal energy consumption. Its simple design reduces power requirements while maintaining effective air cleaning performance, resulting in lower energy costs and making it an economical choice for long-term use.

#### 7. Easy Installation and Maintenance:

The unit is designed for quick and simple installation into existing HVAC lines. Access panels allow easy filter and media replacement without specialized tools, reducing downtime during servicing. This user-friendly design minimizes labor costs and ensures smooth operation with minimal disruption to the system.

#### 8. Cost-Effective:

The manual dry scrubber provides a highly economical air cleaning solution with a lower initial investment and operating costs compared to automated systems or wet scrubbers. Its minimal maintenance requirements and long lifespan further enhance its cost-effectiveness, delivering excellent value for HVAC projects.

#### 9. Reliable Performance Under Continuous Operation

The scrubber is designed for continuous and long-duration operation in demanding industrial environments. Its stable performance ensures consistent pollutant removal without frequent breakdowns or performance degradation.

#### 11. Wide Compatibility with HVAC and Process Systems

The Humidin Dry Scrubber is compatible with a wide range of HVAC and industrial exhaust systems. It can be used in commercial buildings, manufacturing units, laboratories, kitchens, and process industries, providing versatile air pollution control across multiple applications.

### APPLICATIONS:

- **Industrial HVAC Systems**

Used in factories, workshops, and manufacturing units to effectively remove dust, smoke, fumes, and harmful gases from return air and exhaust air streams. The dry scrubber helps maintain clean air circulation and protects HVAC equipment from contamination.

- **Commercial Kitchens and Restaurants**

Applied in kitchen exhaust systems to control smoke, grease vapors, oil fumes, and unpleasant odors generated during cooking operations. This ensures a clean, safe, and hygienic environment while improving indoor air quality and meeting ventilation standards.

- **Chemical and Pharmaceutical Plants**

Designed to remove corrosive gases, chemical fumes, and fine particulate matter from process exhaust air before it is released into the atmosphere or recirculated through HVAC systems. This helps ensure compliance with safety, health, and environmental regulations.

- **Paint Booths and Coating Units**

Used to capture paint overspray, solvent vapors, and volatile organic compounds (VOCs) from exhaust air. The system supports safe working conditions, enhances product quality, and assists in meeting environmental and emission control standards.

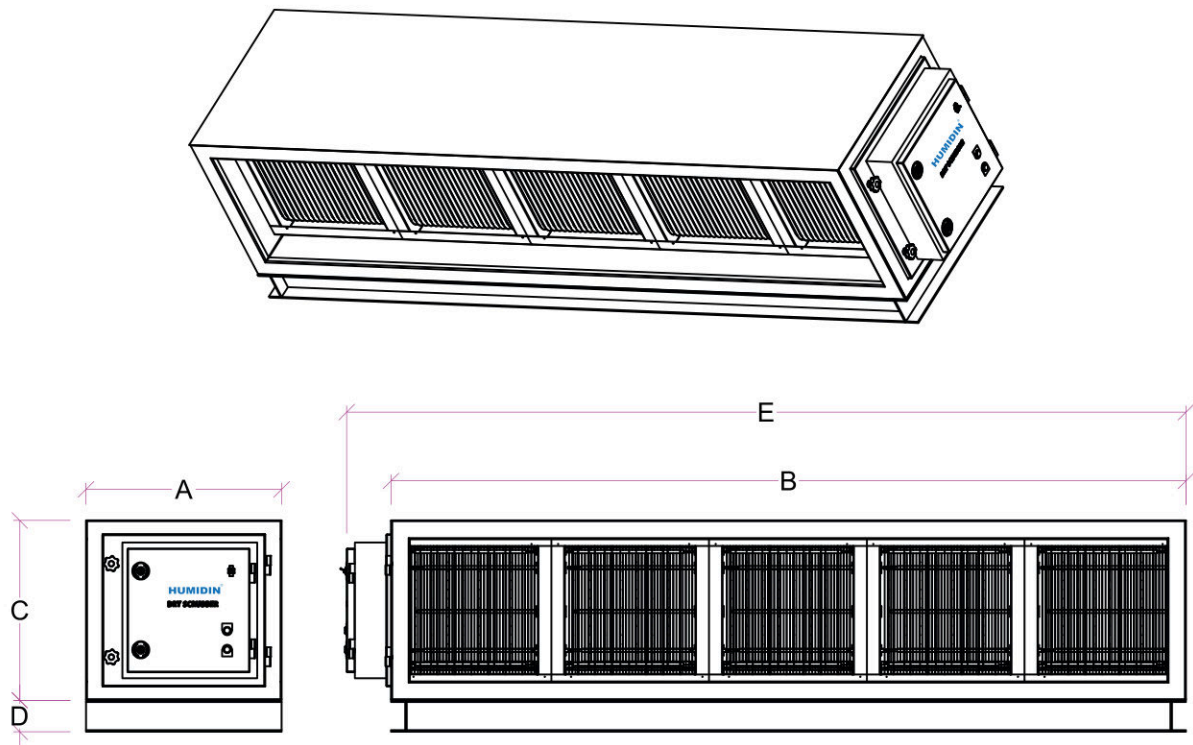
- **Food Processing Units**

Installed in food processing and packaging areas to control odors, airborne particles, and contaminants. The scrubber helps maintain hygienic working conditions and supports food safety and quality requirements.

- **Textile and Garment Industries**

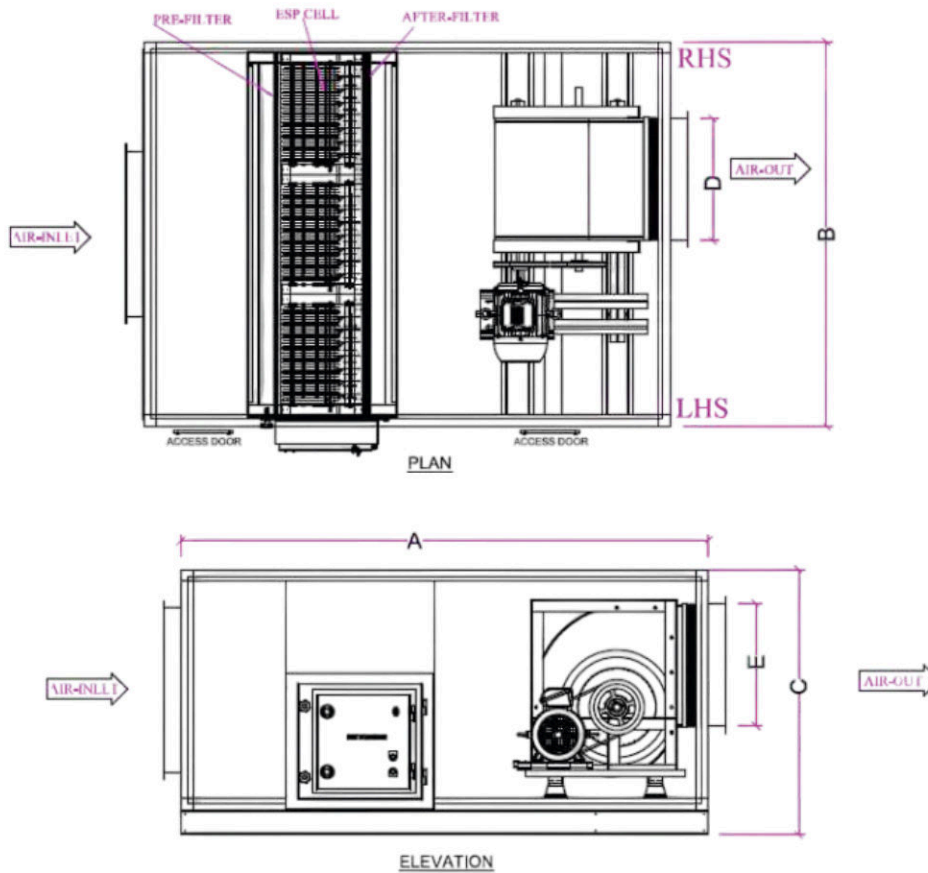
Effectively removes lint, fiber dust, and chemical fumes generated during textile and garment manufacturing processes. This improves air quality, enhances worker comfort, and reduces the risk of equipment fouling.

## DIMENSIONS TABLE OF HDS SERIES



DRY SCRUBBER DIMENSION TABLE									
S. No.	Quantity CFMMin.	Ma	Model	No. Of Cell	A	B	C	D	E
1	1500	2000	HDS-1FX1C	1	620	520	570	100	660
2	3000	4000	HDS-1FX2C	2	620	1020	570	100	1160
3	4500	6000	HDS-1FX3C	3	620	1520	570	100	1660
4	6000	8000	HDS-1FX4C	4	620	2020	570	100	2160
5	7500	10000	HDS-1FX5C	5	620	2520	570	100	2660
6	9000	12000	HDS-2FX3C	6	620	1520	1140	100	1660
7	12000	16000	HDS-2FX4C	8	620	2020	1140	100	2160
8	15000	20000	HDS-2FX5C	10	620	2520	1140	100	2660
9	18000	24000	HDS-3FX4C	12	620	2020	1710	100	2160
10	22500	30000	HDS-3FX5C	15	620	2520	1710	100	2660
11	24000	32000	HDS-4FX4C	16	620	2020	2280	100	2160
12	30000	40000	HDS-4FX5C	20	620	2520	2280	100	2660
Note: All Dimensions are only for reference									
All Dimensions are in (mm)									

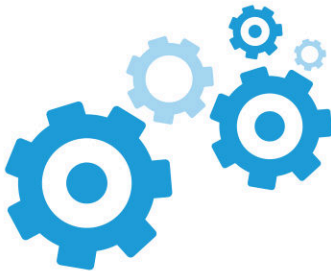
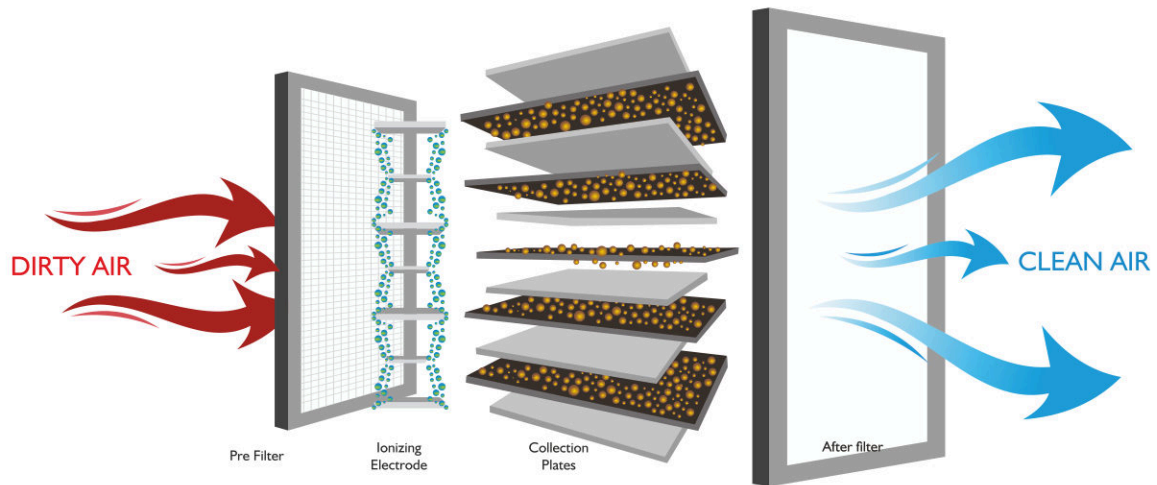
## DIMENSIONS TABLE OF MANUAL DRY SCRUBBER WITH ( BACKWARD CURVED - FAN SECTION )



**MANUAL DRY SCRUBBER WITH ( BACKWARD CURVED-FAN SECTION)**

S. No.	Air Quantity CFM		Static Pressure (mmwg)	Model	Outlet Vel. (m/s)	Fan Dia (mm)	Motor (HP)	Total Efficiency (%)	dB at 3mtr	RPM	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
	Min.	Max.													
1	1500	2000	80	HDSFS-1FX1C	7.26	280	2	72.4	65	2648	2100	800	850	360	360
2	3000	4000	80	HDSFS-1FX2C	9.26	355	5	71.3	69	2232	2200	1150	1000	452	452
3	4500	6000	80	HDSFS-1FX3C	8.77	450	5	72.3	69	1718	2450	1600	1200	568	568
4	6000	8000	80	HDSFS-1FX4C	9.4	500	7.5	71.3	71	1589	2450	2100	1300	634	634
5	7500	10000	80	HDSFS-1FX5C	9.37	560	10	71.3	71	1417	2550	2600	1450	710	710
6	9000	12000	80	HDSFS-2FX3C	8.85	630	10	72	71	1236	2700	1600	1550	800	800
7	12000	16000	80	HDSFS-2FX4C	9.37	710	15	71.4	72	1116	2850	2100	1700	898	898
8	15000	20000	80	HDSFS-2FX5C	9.33	800	20	75.8	72	965	3000	2600	1900	1006	1006
9	18000	24000	80	HDSFS-3FX4C	8.84	900	20	76.7	71	841	3250	2100	2100	1132	1132
10	22500	30000	80	HDSFS-3FX5C	8.84	1000	25	76.4	72	760	3350	2600	2250	1266	1266
11	24000	32000	80	HDSFS-4FX4C	9.43	1000	25	75.1	73	780	3350	2400	2500	1266	1266
12	30000	40000	80	HDSFS-4FX5C	9.34	1120	40	75.1	73	695	3700	2600	2650	1422	1422

NOTE: ALL TECHNICAL & DIMENSIONS ARE ONLY FOR REFERENCE



## HOW IT WORKS?

- The technology is based on the principle of two stage electrostatic air filtration.
- Fine sub-micron suspended particles are electrostatically charged using high-voltage electric field.
- These charged particles get attracted and precipitated on opposite charged electrode plates.

## DRY SCRUBBER SPECIFICATION

DESCRIPTION	SPECIFICATION	REMARK
Equipment Description	HE 95%+/-2% as per ASHRAE Test Modules 1800-2400 CFM	
Unit Housing	standard construction 16G CRCA powder coated sheets Single door access with safety interlocks Bottom sheet with slope of 1/4" per foot for easy drainage 3 " drain nipple	16G zinc coated sheet can be offered on demand
Base Construction	C Channel for easy monting with lifting lugs	
Surface Finish	standard is powder coating in case of CRCA sheets	
Cell Wash Module	Normal practice is to offer standby Humidin make modules instead of auto-washing system and the later is not found very effective after 2-3 cycles	Auto-wash system having the chamber with metal mesh prefilters, wash manifolds and header can be offered on demand
Electrostatic Precipitator Module	Two stage dual voltage plate type. HE 93-97% as per ASHRAE test for dry particulates. Single pass arrangement.	
Ionizing-collecting Cells	One piece construction 13.58" deep. All support framing, end plates & ionizer ground electrodes in 16G th Al. Repelling & Collector plates 22G th Al & 9.5" deep in direction of air flow. Spacing between plates 0.23". Ionizing electrodes 16G Stainless steel spiked type. Support insulators Teflon. High voltage connection between cells to be automatically made when cells are installed.	

DESCRIPTION	SPECIFICATION	REMARK
Ionizing-collecting Cells	100% solid state. 200-240V AC 50 Hz, I phase input. Output(+) 12 to 13 KV DC for ionizer and (+) 6 to 6.5KV DC for collector. Out put of 5 mA/20mA to be ensured for optimum performance. Electrical safety interlock to prevent access to high voltage components. can operate from -32Deg to 140 Deg, self-protecting, LED indicator for performance status. Bleed resistance to remove stored charge. Module capacity above 3000 CFM to be equipped with CVT to maintain constant charge even in case of fluctuations in input supply. Power consumption 50W per cell (max). High volatge power cabbles to be continuous w/o any splicing	
System Controls	In case of standby cell type arrangement, these controls are not needed. Only replacing standby clean cells with saturated once and then cleaning those outside.	Auto-washing system Consist of Sequential timer to take care of detergent wash, rinse, dry & back to normal operation. Manual/timer control provided for the cycle. Remote Reset to resume normal operation provided.
Automatic Timer clock	In case of auto-wash system only, it is provided.	
Water wash/ Detergent System	Detergent wash & Rinse through manifolds located on air entering as well as air leaving side of cells (Optional or as specified in BOQ). Humidin make Spray nozzles with cone shape pattern. Pre-package of detergent reservoir, motor, pump with adjustable detergent volume setting. Pump 0.75KW, self priming, positive dispalcement, min 6GPM @ min 50 PSIG output pressure. Main line strainer & solenoid valves are included. 30 Gallon detergent tank for remote mounting. Consumption per cell-2GPM and avg. 3.5 min wash cycle.	Offered on demand as optional system
Static Pressure Drops	Total drop 10 mm WG maximum including pre & after filters in clean condition	
Adsorber module	UV light/Carbon Filter system for odor absorpion as extra accessory	
Fan	The fan has to be highly efficient able to perform at high pressures, non-overloading type Aerofoil Plug connected with a VFD or Centrifugal Backward DIDW/SISW type attached to the Scrubber Module.	

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The intention of this brochure is to introduce you to, and acquaint you with the capabilities of the HUMIDIN organization in the offered product areas. It will not answer all your immediate questions, and indeed, it will no doubt raise others. We welcome your interest in our products and shall be very pleased to provide further information.

## GUARANTEES

HUMIDIN guarantees its products to be free of defects in materials and workmanship for a period of one year from the date of delivery from the factory, provided motors are properly installed with overload protector. Humidin agrees to repair or replace defective parts or part to be returned to the factory, all transportation charges prepaid. Humidin does not guarantee against abrasion, corrosion or erosion. Humidin shall not be held responsible for any charges in connection with the removal or replacement of alleged defective equipment nor for incidental consequential damages

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