

Table of Contents

1. Introduction
2. Safety Instructions
3. Technical Specifications
4. Installation
5. Operation
6. Maintenance
7. Troubleshooting
8. Annexures

1. Introduction

The Laminar Air Flow Tent (Class 100) is designed to provide a controlled, particle-free environment for critical processes in industries such as pharmaceuticals, biotechnology, and electronics. It features a **PLC controller, touchscreen/Characteristics HMI, velocity sensor (Optional), differential pressure (DP) (Optional) sensor, backward fan**, and **alarm systems** for air flow monitoring. The unit is available in ceiling-mounted or mobile configurations with PVC curtains and customizable sizes.

2. Safety Instructions

- **Read the manual thoroughly** before operating the LAF Tent.
- Ensure the unit is properly grounded to avoid electrical hazards.
- Do not operate the unit if the **air flow alarm** is triggered.
- Use personal protective equipment (PPE) when working inside the tent.
- Only trained personnel should operate or maintain the unit.
- Do not block the air intake or exhaust vents.

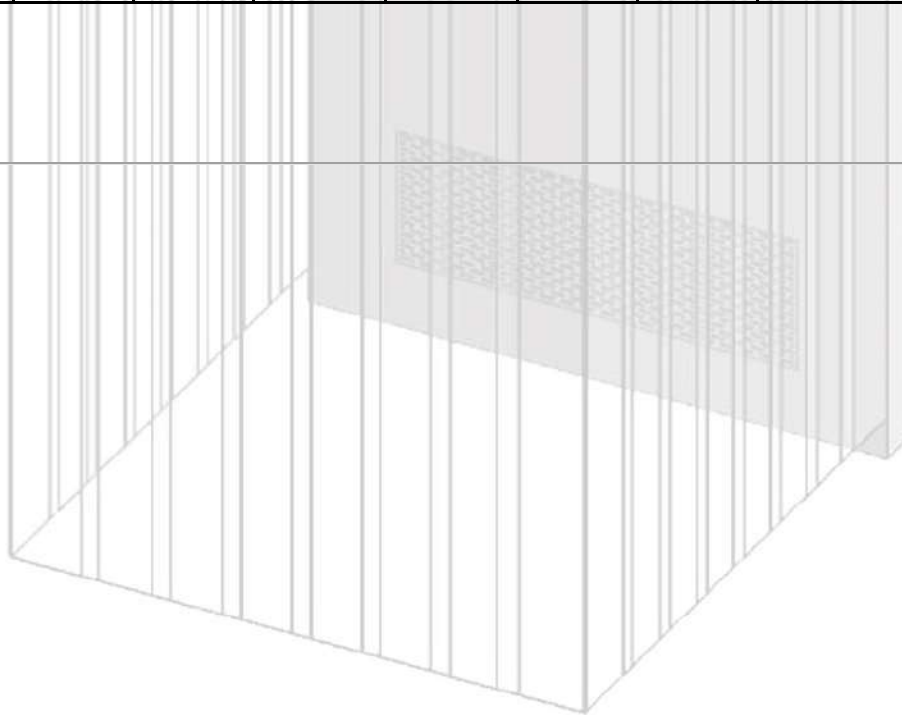
3. Technical Specifications

Parameter	Details
Class	Class 100 (ISO 5)
Dimensions	130x130x59 cm, 260x130x59 cm, or custom sizes
Work area Hight	202 cm
Airflow Velocity	0.45 m/s \pm 20% (adjustable via HMI)
Filter Type	HEPA Filter (99.99% efficiency at 0.3 μ m)
Fan Type	Backward Curved Fan
Control System	PLC Siemens Logo! with Touchscreen HMI Delta at AT Series or PLC DGP with Characteristics LCD,
Sensors	Velocity Sensor, Differential Pressure (DP) Sensor (at AT Series)
Alarms	Air Flow Alarm, DP Alarm, Filter Expire
Power Supply	Single Phase 220-240V, 50/60 Hz, three Phase 400 VAC at large size Laf's. current consumption is different according to number of fans, Each fan current is 2A.
Material	Stainless Steel Frame, PVC Curtains
Weight	Varies by size (for example, 130x130x59 cm: ~120 kg; 260x130x59 cm: ~180 kg)

Here is General Sizes with two different filter sizes:

Row	LAF Tent Dimension			H14 Filter Size and Quantity (CM)			
	W	L	H	W	L	H	Qty.
1	130	70	54-59	122	61	7.8	1
2	130	130					2
3	130	200					3
4	130	270					4
5	130	340					5
6	130	400					6
7	130	470					7
8	260	70					2
9	260	130					4
10	260	200					6
11	260	270					8
12	260	340					10
13	260	400					12
14	260	470					14
15	390	70	3				
16	390	130	6				
17	390	200	9				
18	390	270	12				
19	390	340	15				
20	390	400	18				
21	390	470	21				

Row	LAF Tent Dimension			H14 Filter Size and Quantity (CM)			
	W	L	H	W	L	H	Qty.
1	100	70					1
2	100	130					2
3	100	200					3
4	100	270					4
5	100	340					5
6	100	400					6
7	100	470					7
8	200	70					2
9	200	130					4
10	200	200					6
11	200	270	54-59	90	61	7.8	8
12	200	340					10
13	200	400					12
14	200	470					14
15	300	70					3
16	300	130					6
17	300	200					9
18	300	270					12
19	300	340					15
20	300	400					18
21	300	470					21



4. Installation

4.1. Ceiling-Mounted Installation

1. Ensure the ceiling structure can support the weight of the unit.
2. Mount the unit at the specified height (Work Height under the LAF: 2m). Room Height Requirement Minimum 2.7m.
3. Connect the power supply and ensure proper grounding.
4. Install the PVC curtains and ensure they are sealed properly.

Work Height and Room Height Requirements

- **Work Height Under the LAF Tent:**
The working area under the LAF Tent is designed to provide a comfortable and ergonomic workspace at a height of **2 meters (200 cm)** from the floor. This ensures easy access for operators while maintaining proper airflow and containment.
- **Minimum Room Height Requirement:**
To accommodate the LAF Tent and ensure optimal performance, the **minimum room height** must be at least **2.7 meters (270 cm)**. This allows sufficient space for the unit's installation, airflow circulation, and maintenance access

4.2. Mobile Installation

1. Unlock the wheels and position the unit in the desired location.
2. Lock the wheels to prevent movement during operation.
3. Connect the power supply and ensure proper grounding.
4. Install the PVC curtains and ensure they are sealed properly.

4.3. Initial Setup

1. Power on the unit and initialize the PLC controller.
2. Calibrate the velocity and DP sensors using the HMI.
3. Perform a leak test to ensure the integrity of the PVC curtains.

5. Operation

5.1. Powering On

5.1.1. Device Startup and Navigation:

1. Turn on the main power switch.
- When the device is turned on, **Image 1** is displayed on the screen.



Image 1.

- With a single tap on the screen, you navigate to **Image 2**.

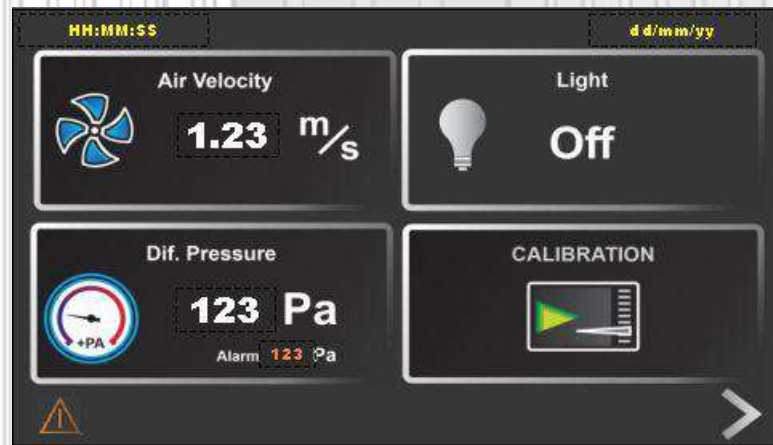


Image 2.

5.1.2. Main Menu (Image 2):

- The main menu of the device is displayed on **Image 2**.
- By clicking on the **Air Velocity** box, the fan starts operating, and it automatically controls the air velocity at **0.45 m/s** using the **Air Velocity Sensor**.

- By tapping on the **Light box**, the light turns on, and tapping it again turns the light off. The same functionality applies to the **Air Velocity Fan**:
 - One tap turns the fan on, and another tap turns it off.
- These two controls (light and fan) are also available via the **remote control**.
- The **Differential Pressure Sensor** window displays the real-time pressure value in **Pascal (Pa)**. The larger number shows the current pressure, while the smaller orange number indicates the **pressure alarm limit** set for the sensor.

5.1.3. Calibration Menu (Image 3):

- By clicking on the **Calibration box**, you enter the **Calibration Menu** (shown in **Image 3**).



Image 3.

- In this menu:
 - You can input the **offset values** for the **Air Velocity Sensor** and **Pressure Sensor**.
 - You can also view the **filter runtime** and reset the filter counter.

5.1.4. Alarm Indicator (Main Menu - Image 2):

- At the bottom of the main menu (**Image 2**), there is a **white hazard triangle**.
 - If the triangle is **white**, it means there are no active alarms.
 - If it turns **orange**, it indicates the presence of an alarm.
- By tapping on the hazard triangle, you are directed to **Image 4**, which displays the **Alarm Log**. This page shows:
 - The **time** and **date** of each alarm.
 - A **description** of the alarm.

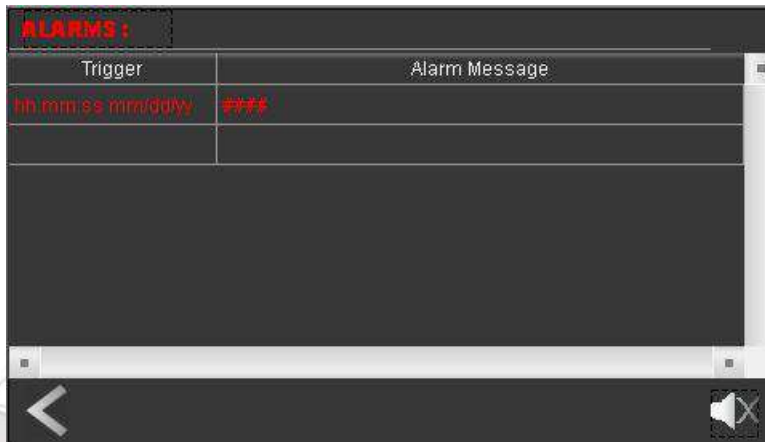


Image 4.

- On the **Alarm Page** (Image 4), there is a **silent icon** in the bottom right corner.
- Tapping this icon once will **silence the alarm sound**, but the alarm will remain displayed on the screen until the issue is resolved.

5.1.5. Device Information (Image 5):

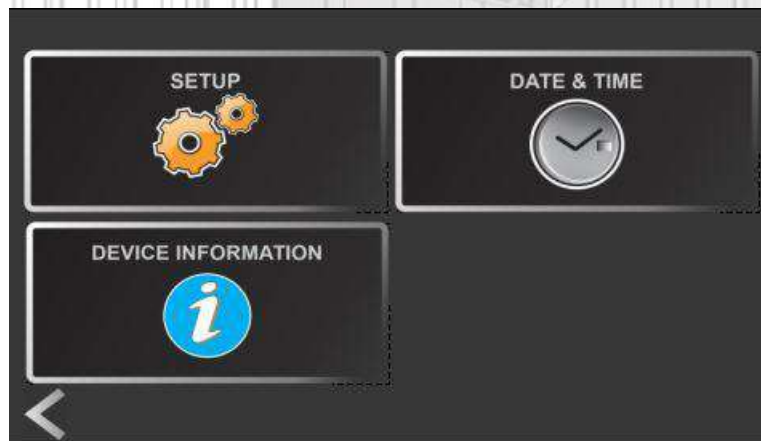


Image 5.

- **Image 5** contains **three boxes**:
 - The **Set-Up Tab** is related to the **manufacturer's settings**, where certain configurations can be adjusted.

- The (Device Information Box): When tapped, it displays **Image 6**, which shows:



Image 6.

- **Device Model, Serial Number, Manufacturing Date, and Warranty Expiry Date.**
- The **Date & Time Menu** allows you to set the **date and time** (H.M.I. settings).

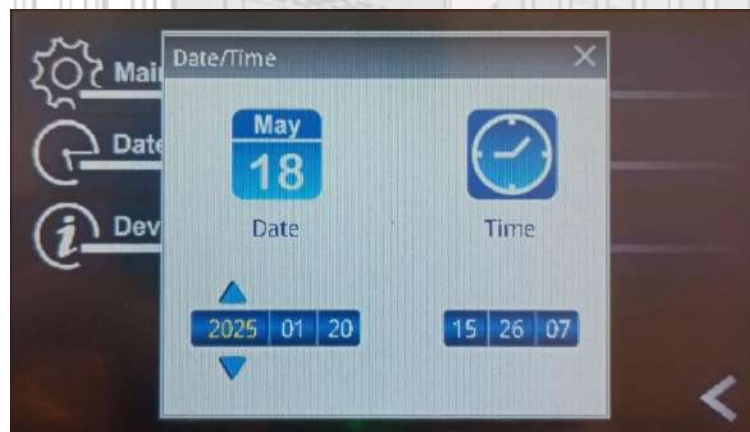


Image 7.

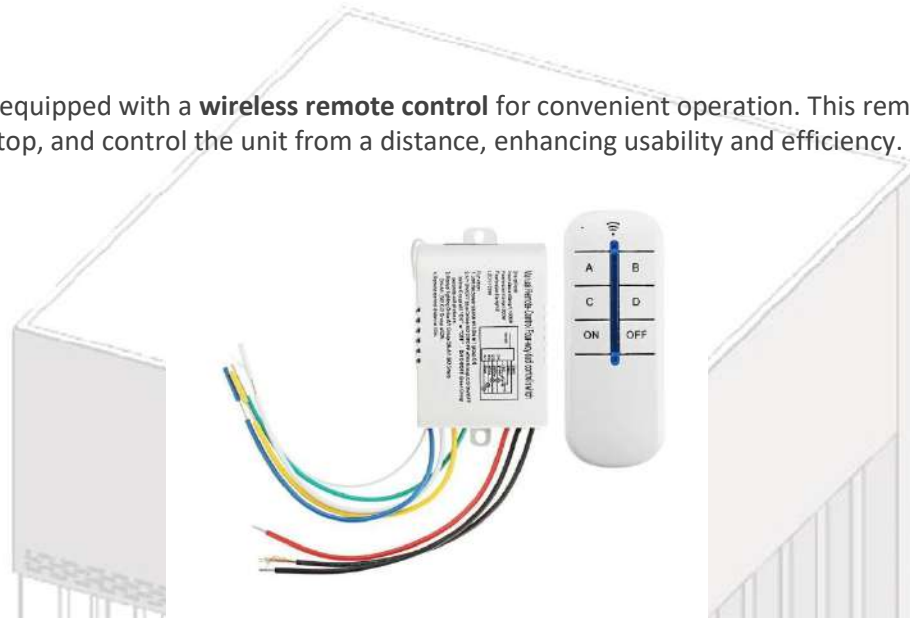
5.2. Powering Off

1. Stop all processes inside the tent.
2. Turn off the unit using the HMI.
3. Turn off the main power switch.

5.3. Wireless Remote Control for LAF Tent

Overview

The LAF Tent is equipped with a **wireless remote control** for convenient operation. This remote allows users to start, stop, and control the unit from a distance, enhancing usability and efficiency.



5.3.1. Remote Control Features

1. **Buttons and Functions:**
 - **ON/OFF Button:**
 - Used to power the LAF Tent on or off.
 - **Buttons A, B, C, D:**
 - These buttons may be programmed for specific functions, such as Running fan, controlling lighting.
2. **Wireless Operation:**
 - The remote control operates via **infrared (IR)** or **radio frequency (RF)** technology, ensuring reliable communication with the LAF Tent.
 - The typical operating range is **5-10 meters**, depending on the environment.
3. **LED Indicator:**
 - The remote may include an LED light to indicate successful signal transmission or low battery status.

5.3.2. Using the Remote Control

1. **Pairing the Remote Control:**
 - Ensure the LAF Tent is powered on.
 - Test the remote by pressing the **ON/OFF** button.
2. **Starting the LAF Tent:**
 - Point the remote at the LAF Tent's receiver.
 - Press the **ON** button.

- The unit will start, and the HMI will display the home screen.
3. **Stopping the LAF Tent:**
- Point the remote at the receiver.
 - Press the **OFF** button.
 - The unit will stop.

5.3.3. Troubleshooting the Remote Control

Issue	Possible Cause	Solution
Remote Control Not Working	Low battery	Replace the battery.
	Obstruction between remote and receiver	Ensure a clear line of sight.
	Remote not paired	Re-pair the remote control.
Intermittent Operation	Weak signal	Move closer to the unit.
	Interference from other devices	Remove or turn off interfering devices.

5.3.4. Maintenance and Care

- Replace the remote-control battery as needed (typically every 6-12 months).
- Keep the remote clean and free from dust or moisture.
- Store the remote in a safe place when not in use.

5.3.5. Additional Notes

- The remote control is an optional feature and may not be included in all models.
- Ensure the remote control is used within the specified range (typically 5-10 meters).
- For advanced remote-control features (e.g., integration with building management systems), consult the manufacturer.

6. Maintenance

6.1. Daily Maintenance

- Wipe down the PVC curtains with a clean, lint-free cloth.
- Check the HMI for any active alarms or errors.

6.2. Weekly Maintenance

- Inspect the HEPA filter for damage or clogging.
- Clean the fan blades and housing.

6.3. Periodic Maintenance

- Replace the HEPA filter as recommended by the manufacturer (typically every 6-12 months).
- Recalibrate the velocity and DP sensors annually.

7. Troubleshooting

Issue/Alarms	Possible Cause	Solution
Low Airflow Velocity	Clogged HEPA filter	Replace the HEPA filter
Hi Airflow Velocity	Raptured or Leakages HEPA Filter	Replace the HEPA filter
Fluctuation in air velocity readings	Malfunction of the sensor's hot wire	Inspect the air velocity sensor and replace it if necessary.
	Physical impact or damage to the sensor	Check the sensor for physical damage. If damaged, replace the sensor.
	Spillage of cleaning agents or liquids on the sensor	Clean the sensor and ensure it is completely dry. If the issue persists, replace the sensor.
	Loose or faulty electrical connections	Inspect the sensor's connections and repair or replace them if necessary.
	Electromagnetic interference (EMI)	Keep the sensor and its cables away from sources of interference (motors or inductive devices).
Low DP Alarm Triggered	Blocked vent or Raptured or Leakages HEPA Filter	Clear the vent
Hi DP Alarm Triggered	Clogged HEPA filter	Replace the HEPA filter
HEPA Filter Life Expired	HEPA Filter Life Expired	Replace the HEPA filter
Air Flow Alarm Triggered	Fan malfunction	Check fan and replace if necessary
HMI Not Responding	Power supply issue	Check power connection

8. Annexures

- **Annexure D: Contact Information for Technical Support**

🔔 KavoshTeb Ayandeh Negar Company 🔔

After-sales Service Unit:

☎ Phone: 09105038825

✉ Email: service@kavoshteb.com

This manual provides a comprehensive guide for the safe and effective use of the Laminar Air Flow Tent. For further assistance, contact the manufacturer or supplier.

