# ****Back-end API Documentation****

### Base URL:

http://localhost:3000

## ✅ Common Note on IST Support

All endpoints support a query parameter:

?format=ist

If this is included, timestamps in the response will be converted to **Indian Standard Time (IST)** in ISO format. If not provided, they default to **UTC** in ISO format.

## 1. Get Latest Data (All Devices)

**Endpoint:**

GET http://localhost:3000/get-latest

**Query Params:**

format=ist (optional): to get timestamps in IST

**Description:**  
Fetches the most recent reading from **each unique device**.

**Example:**

http://localhost:3000/get-latest?format=ist

**Response:**

[

{

"device\_id": "device\_01",

"timestamp": "2025-06-24T14:30:00.000Z",

"pm25": "36.0 µg/m³",

"pm10": "82.0 µg/m³",

"temperature": "32.1 °C",

"humidity": "48.2 %"

},

...]

## 2. Get Latest Data for a Specific Device

**Endpoint:**

GET http://localhost:3000/device/:id/latest

**Example:**

http://localhost:3000/device/device\_01/latest?format=ist

**Description:**  
Returns the most recent reading for a **specific device**.

**Response:**

{

"device\_id": "device\_01",

"timestamp": "2025-06-24T14:30:00.000+05:30",

"pm25": "36.0 µg/m³",

"pm10": "82.0 µg/m³",

"temperature": "32.1 °C",

"humidity": "48.2 %"}

## 3. Get 1-Hour Average for a Device

**Endpoint:**

GET http://localhost:3000/device/:id/hourly

**Example:**

http://localhost:3000/device/device\_01/hourly?format=ist

**Description:**  
Fetches the **average of all data points from the last 1 hour** for a given device. Requires at least **45 readings**.

**Response (if data points ≥ 45):**

{

"interval": "Average for last 60 minutes",

"average\_pm25": "35.4 µg/m³",

"average\_pm10": "78.5 µg/m³",

"average\_temperature": "31.9 °C",

"average\_humidity": "47.0 %",

"count": 60,

"device\_id": "device\_01",

"timestamp": "2025-06-24T14:45:00.000+05:30"}

**Response (if < 45 readings):**

{

"message": "Not enough data for hourly average (requires ≥ 45 points)"}

## 4. Get 15-Minute Interval Averages (Last 1 Hour)

**Endpoint:**

GET http://localhost:3000/device/:id/15min

**Example:**

http://localhost:3000/device/device\_01/15min?format=ist

**Description:**  
Returns **four sets of average values**, one for each 15-minute block in the past hour:

* 45–60 mins ago
* 30–45 mins ago
* 15–30 mins ago
* 0–15 mins ago

**Response:**

[

{

"interval": "Average for 45-60 min ago",

"average\_pm25": "33.5 µg/m³",

"average\_pm10": "70.2 µg/m³",

"average\_temperature": "30.8 °C",

"average\_humidity": "49.1 %",

"count": 14,

"device\_id": "device\_01",

"timestamp": "2025-06-24T14:45:00.000+05:30"

},

...]

## Timestamp Handling

All endpoints return timestamp in one of the following formats:

Default: "2025-06-24T09:15:00.000Z" (UTC)

With ?format=ist: "2025-06-24T14:45:00.000+05:30" (IST)

## Units Used in All Responses

| **Field** | **Unit** |
| --- | --- |
| pm25 | µg/m³ |
| pm10 | µg/m³ |
| temperature | °C |
| humidity | % (relative) |