Nanoprecise

Prediction with Precision


# Nanoprecise DIY App Manual

Nanoprecise
Prediction with Precision

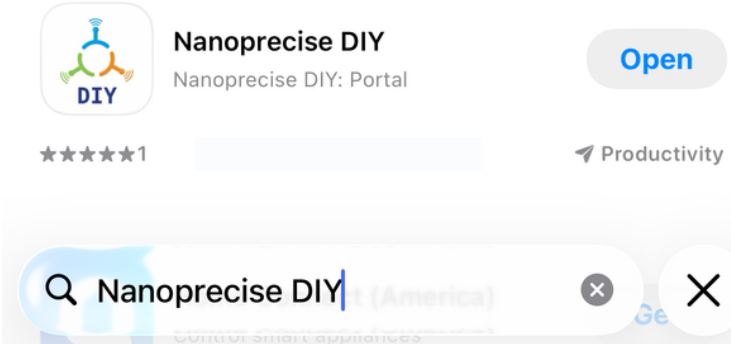
# Overview

The Nanoprecise DIY App is used to prepare your sensors for operation by configuring network settings, creating the required asset hierarchy, and assigning sensors to specific assets (equipment and components). The app provides a structured workflow that ensures each sensor is correctly identified, assigned, and configured for better and accurate data collection.

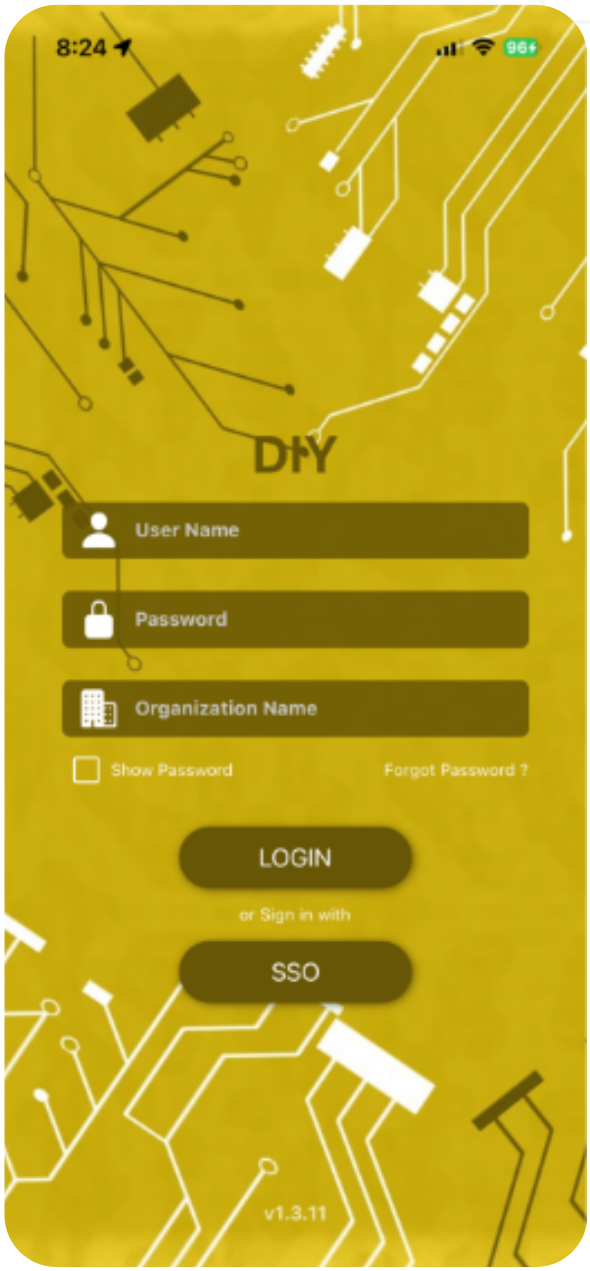
This document outlines the procedures for completing these tasks and describes the functions available in each section of the app.

# Login Page

You can download the app from App Store and Play Store by searching for “Nanoprecise DIY” The search will reflect the following results



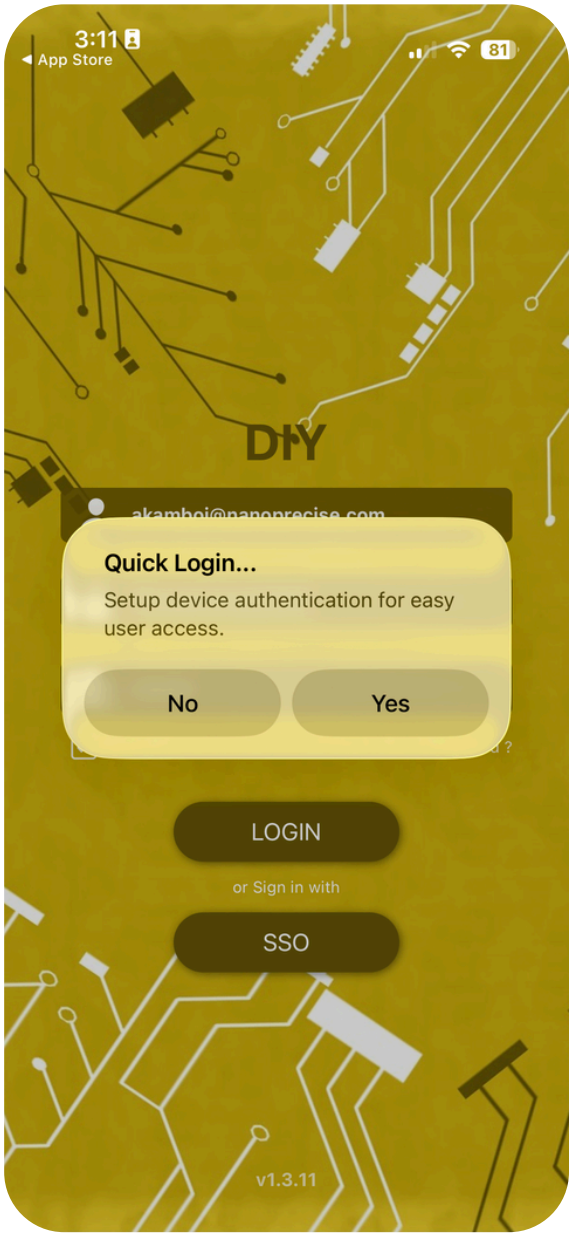
The login page allows the user to sign in using their assigned credentials. The screen includes fields for Username, Password, and Organization Name, along with an option to log in using SSO.

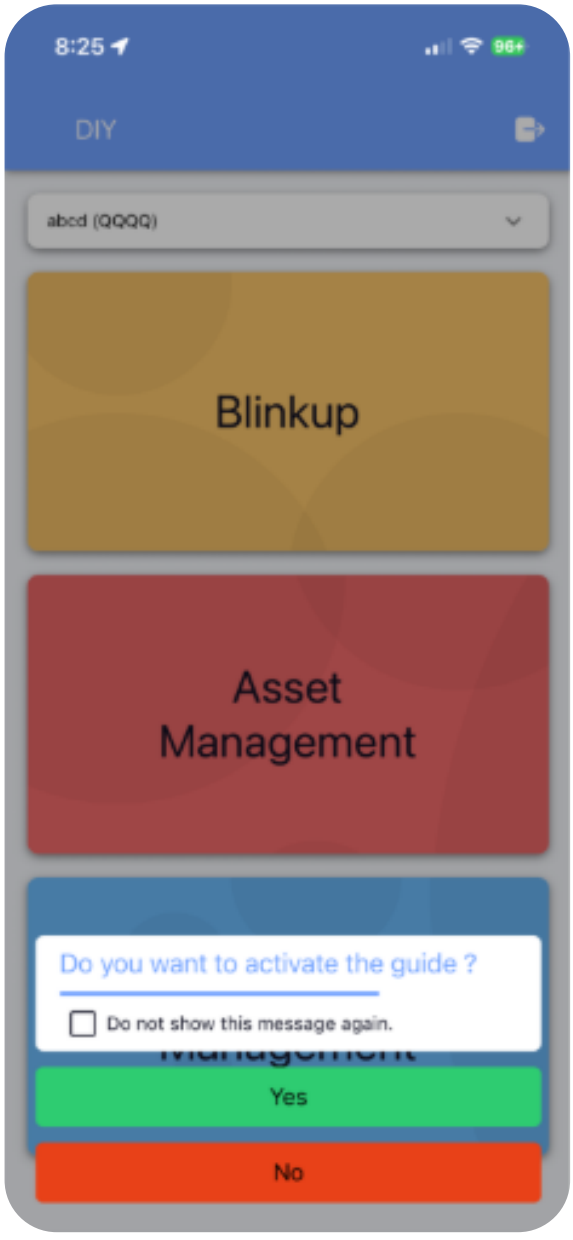


# Post Login

After signing in, the main screen displays the three primary modules of the app: BlinkUp, Asset Management, and Sensor Management. In devices that allow, you may be asked to “setup device authentication for easy user access”. This will allow you to login using your face ID the next time you login to the app.

You will also see an option for activate guide.The walkthrough briefly highlights the modules and then closes.



# BlinkUp

The BlinkUp screen is used to configure or reset the network settings on a Nanoprecise sensor. BlinkUp must be performed only if pre-configuration has not already been completed by Nanoprecise engineers, or when a device needs to be reconfigured for a different network.

## Clear Device Configuration

The Clear Device Configuration step should always be treated as a mandatory part of troubleshooting any Nanoprecise sensor. This is especially important when a sensor arrives on-site with pre-configured network credentials that don't match the current installation requirements, when the sensor has no existing configuration, or when the customer needs to switch the sensor's connectivity, for example, from Wi-Fi 1 to Wi-Fi 2, Wi-Fi to Cellular, Cellular to Wi-Fi, or Cellular 1 to Cellular 2.

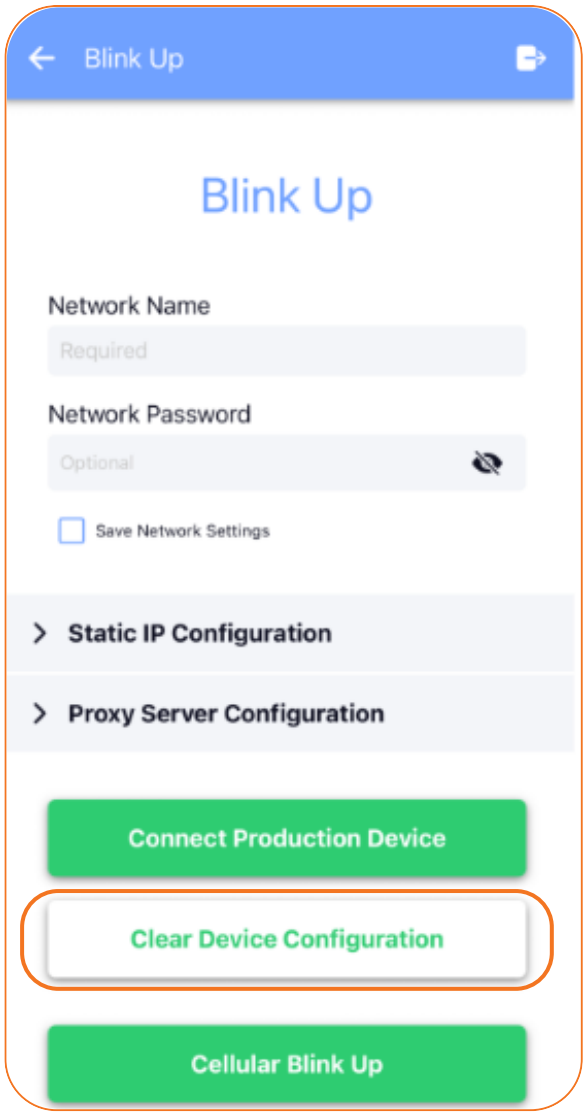
Performing a Clear Device Configuration removes all previously stored network settings and returns the sensor to its default state. Once reset, you can use the Wi-Fi blink or Cellular blink setup process to enter the new credentials required for the site.

If this step is successful, you should see a brief solid green LED for about 3 seconds, followed by flashing amber for 250ms per flash on the main board of the device.

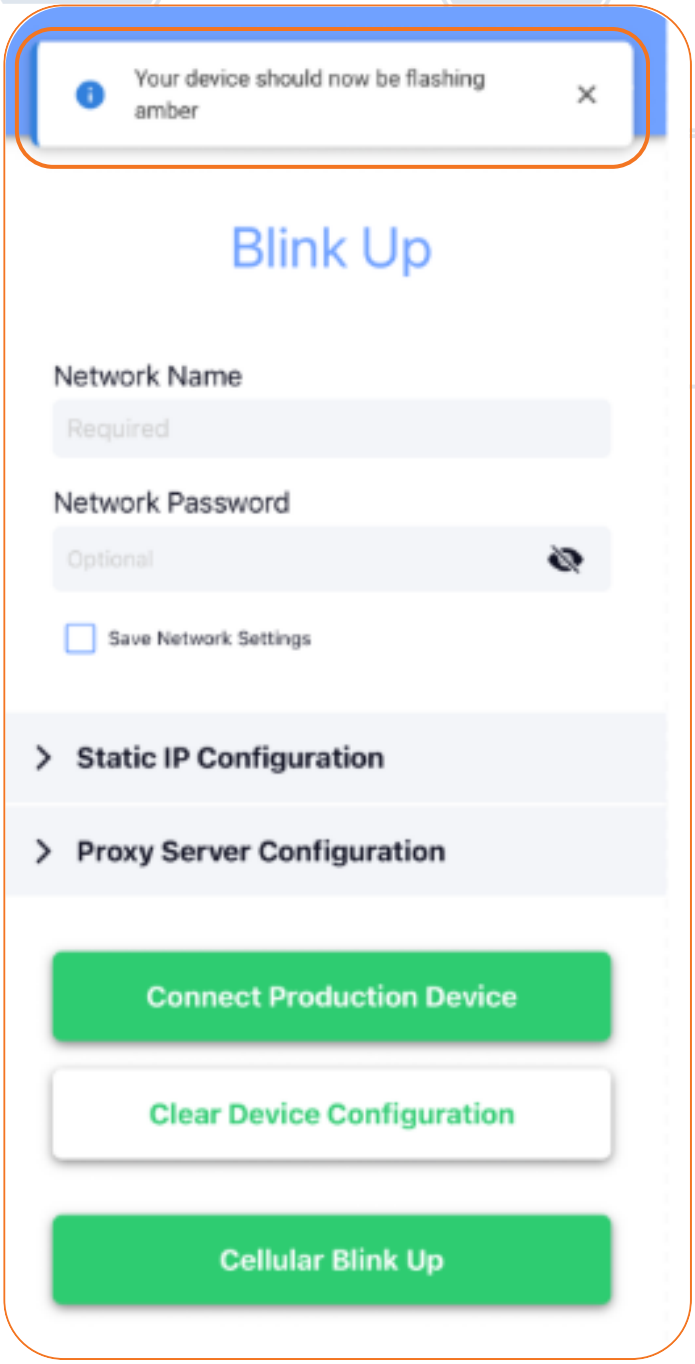
**Procedure for Clear Device Configuration:**

- Select **Clear Device Configuration**.
- A countdown will appear.
- Immediately turn the phone's screen toward the main front-facing board of the sensor.
- To ensure a successful transfer, it is recommended that the **sensor be placed face-down onto the screen and held steady**.
- Once the flashing sequence is complete, the device's credentials are cleared, and the sensor can be reconfigured.

Note: The phonescreen brightness should be set to maximum for the maximum success rate of BlinkUp.




8:25
Point screen at sensor now
3
BlinkUp™ powered by
TWILIO
electric imp


Your device should now be flashing amber
Blink Up
Network Name
Required
Network Password
Optional
Save Network Settings
Static IP Configuration
Proxy Server Configuration
Connect Production Device
Clear Device Configuration
Cellular Blink Up

# Wi-Fi BlinkUp

Wi-Fi BlinkUp is used to configure the sensor to connect to a Wi-Fi access point.

**Procedure for Wi-Fi BlinkUp:**

- Enter the required Wi-Fi SSID and Password in the fields shown.
- After entering the credentials, select Connect Production Device.
- The screen will turn black, and the countdown will begin.
- Immediately turn the phone's screen toward the main front-facing board of the sensor.
- For the best results, place the sensor face-down onto the screen while the flashing occurs.
- The flashing indicates that the app is transmitting the required data to the sensor.
- Once flashing is complete, a green light for 3 seconds will illuminate the main board of the sensor, indicating a successful BlinkUp.
- The sensor will begin connecting to the Wi-Fi network, and the app will display confirmation once the connection is established.

**Optional Network Settings**

- Static IP Configuration: Allows entry of a fixed IP address, subnet mask, gateway, and DNS values.

- Proxy Server Configuration: Allows entry of proxy host, port, and authentication parameters.

# Cellular BlinkUp

Cellular BlinkUp is used when configuring a sensor that operates on a cellular connection. This procedure is similar to Wi-Fi BlinkUp, but no credentials are required from the user.

**Procedure for Cellular BlinkUp:**

- Go to the BlinkUp page.
- Select Cellular BlinkUp at the bottom of the screen.
- Ensure the sensor is switched on.
- Before the countdown finishes, turn the phone's screen toward the front of the sensor where the blinking patterns are being emitted.
- Keep the sensor positioned correctly until the BlinkUp is complete.
- Once flashing is complete, a green light for 3 seconds will illuminate the main board of the sensor, indicating a successful BlinkUp.
- After the sequence finishes, the sensor will activate the cellular board and will attempt to find and connect to a cellular network.

# BlinkUp Status Indicators

**BlinkUp Successful**

- LED Behavior: Solid green LED for 3 seconds
- Meaning: BlinkUp settings were successfully received by the device.

| For 3 seconds |
| --- |

**If BlinkUp continues to fail:**

- Increase or decrease the brightness of your mobile device.
- Avoid bright ambient lighting or direct sunlight.
- Perform BlinkUp in a shaded area if possible.
- Adjust your phone's screen refresh rate.
- Hold both the phone and device steady during the process.

**Successfully Connected to Cloud**

- LED Behavior: Long green flash followed by a pause, repeating
- Meaning: Device has successfully connected to the Nanoprecise cloud.


# Connection Troubleshooting LED Patterns

If the device does not connect successfully, identify the issue using the LED pattern below.

**Stuck at "No Wi-F-i Settings"**

- LED Behavior: Long amber flash (repeating)
- Meaning: The device did not receive BlinkUp configuration data.

**Recommended Actions:**

- Perform BlinkUp again.
- Eliminate direct or bright lighting.
- Perform BlinkUp in the shade.
- Ensure the device remains stationary during the process.

**Stuck at "Searching for Wi-Fi Network"**

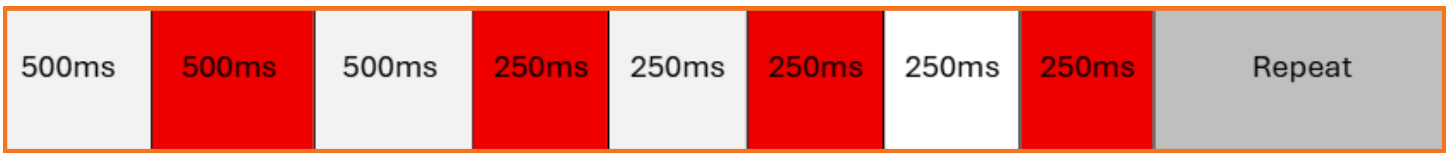
- LED Behavior: One long red flash followed by two short red flashes
- Meaning: Device received Wi-Fi credentials but cannot find the network.


**Recommended Actions:**

- Verify the Wi-Fi network name (SSID) is entered correctly.
- Check capitalization and special characters.
- **NS002 devices**: Support **2.4 GHz Wi-Fi only**.
- **NS003 devices**: Support both **2.4 GHz and 5 GHz Wi-Fi.**

**Stuck at "Joining Wi-Fi Network"**

- LED Behavior: One long red flash followed by three short red flashes
- Meaning: Device found the network but failed authentication.



**Recommended Actions:**

- Confirm the Wi-Fi password is correct.
- Ensure capitalization and special characters are accurate.

**Stuck at “Getting IP Address”**

- LED Behavior: Alternating short red and amber flashes
- Meaning: Device connected to the network but could not obtain an IP address.


**Recommended Actions:**

- Ensure DHCP is enabled on the router.
- Confirm sufficient IP addresses are available.
- Check that MAC address filtering is disabled, or that the device is allowed.

**Stuck at “Resolving Server Name”**

- LED Behavior: Alternating short amber and red flashes
- Meaning: Device cannot resolve the server domain.


**Recommended Actions:**

- Check router DNS settings.
- Disable “DNS Relay” mode on the router if enabled.
- Some older routers may not support DNS relay properly.

### Stuck at “Connecting to Server”

- LED Behavior: Alternating long amber flash and short red flash
- Meaning: Network connection exists, but server communication is blocked.


### Recommended Actions:

- Check firewall rules on the network.
- Ensure TCP port 31314 is open.
- UDP port 31314 is not required.

### Connects to Server, Then Flashes Red Repeatedly

- LED Behavior: Green flash followed by red flashes (repeating)
- Meaning: Runtime error in the device firmware.


### Recommended Actions:

- Contact the Nanoprecise Support Team.

### LED Stays Red or Flashes Red Rapidly

- LED Behavior: Continuous or rapid red flashing
- Meaning: Power supply issue.

**Explanation**:

- The device boots successfully.
- When Wi-Fi activates, power draw causes voltage to drop below operating limits.
- Device resets and repeats the cycle indefinitely.

**Recommended Actions:**

- Check battery contacts.
- Replace the battery with a new one.
- If the issue persists, contact the Nanoprecise Support Team.

# Device Firmware Update

### Updating Device OS

- LED Behavior: Solid green LED for the duration of the update
- Meaning: Firmware update in progress
- Do not power off or reset the device during this process.

### Networking Reference

For detailed information on wireless and wired networking requirements, including advanced troubleshooting scenarios, refer to: Network Requirements for imp-enabled Devices
Following are some videos for reference

- Cellular Blinkup: https://www.youtube.com/watch?v=g53EoEF9pVU
- WiFi Blinkup : https://www.youtube.com/watch?v=p95vcONB8vg
- Wifi Blinkup with incorrect credentials : https://www.youtube.com/watch?v=r2yS4HVOB9Y

# Asset Management

The Asset Management section is used to build and maintain the asset hierarchy that will be monitored by Nanoprecise sensors. This includes creating plants, machines (if applicable), equipment, and components, as well as modifying existing entries. Asset Management also provides the structure required for assigning sensors to specific components.

The hierarchy that appears in this section is **automatically determined** based on how the organization has been set up in the system. Users do not choose or change the layout; the system displays the correct structure for the account.

## Asset Type

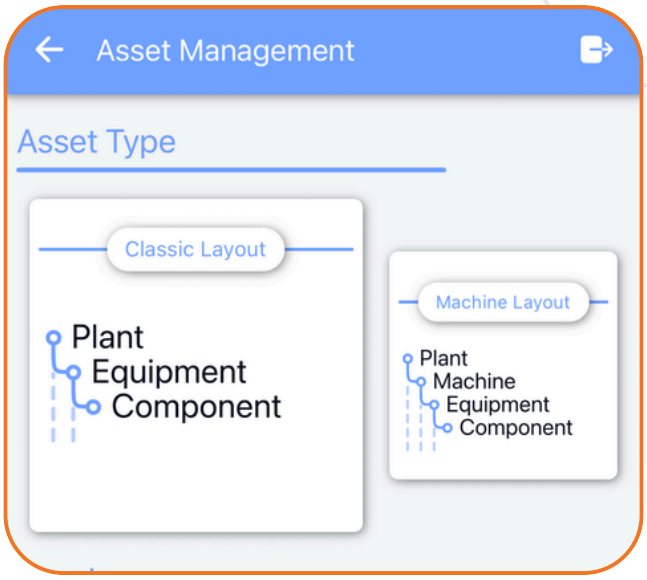
At the top of the Asset Management page, the app displays the asset hierarchy type configured for the user's organization.

Two possible hierarchy types may appear:

- Classic Layout
  - Structure: Plant → Equipment → Component
  - This layout is used when equipment is not grouped under machines. Each piece of equipment is directly associated with a plant, and components are assigned under each equipment item.

- Machine Layout
  - Structure: Plant → Machine → Equipment → Component
  - This layout is used when the organization groups equipment under machines. In this case, machines act as a middle layer between the plant and the equipment.

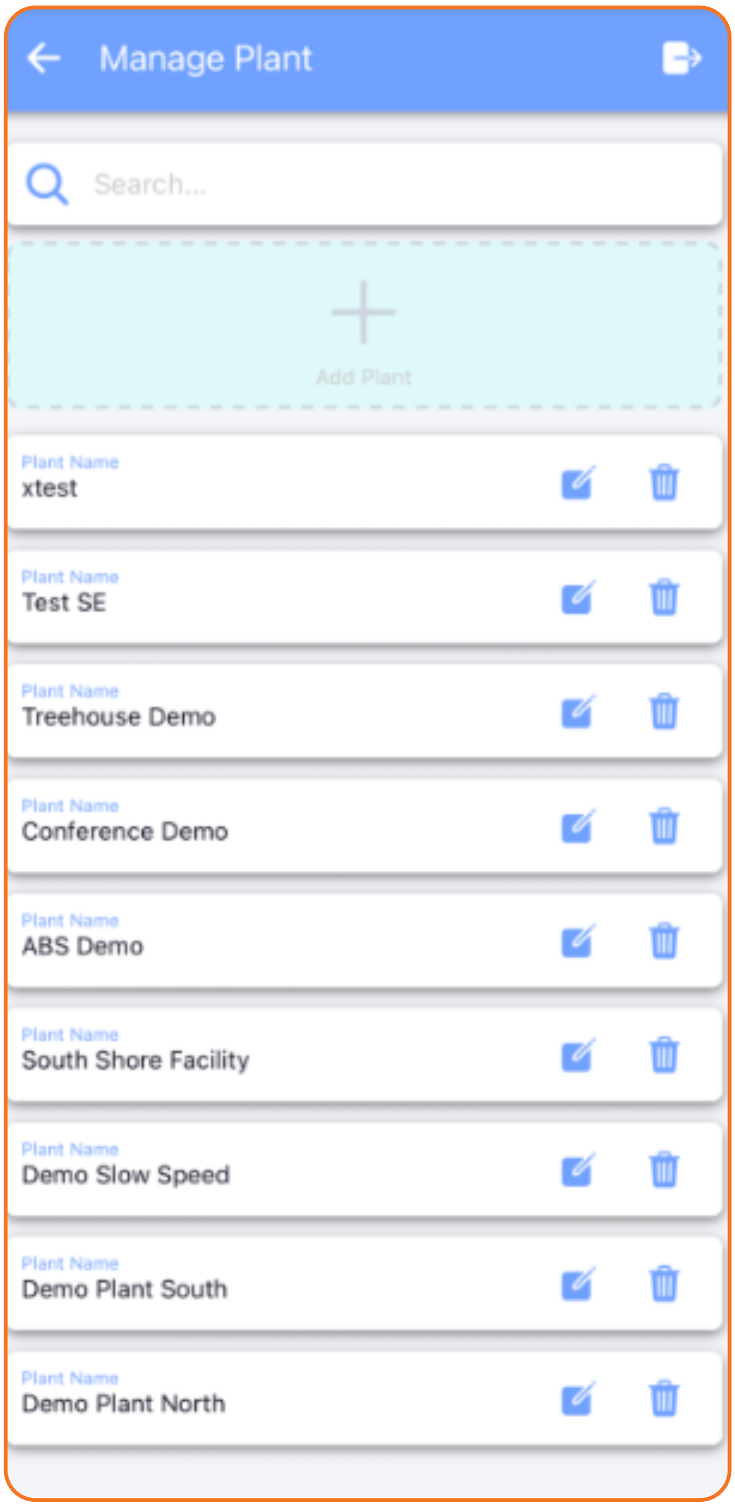
The app automatically shows the correct layout based on the backend configuration.  This section is informational and allows the user to confirm the hierarchy structure before managing assets.

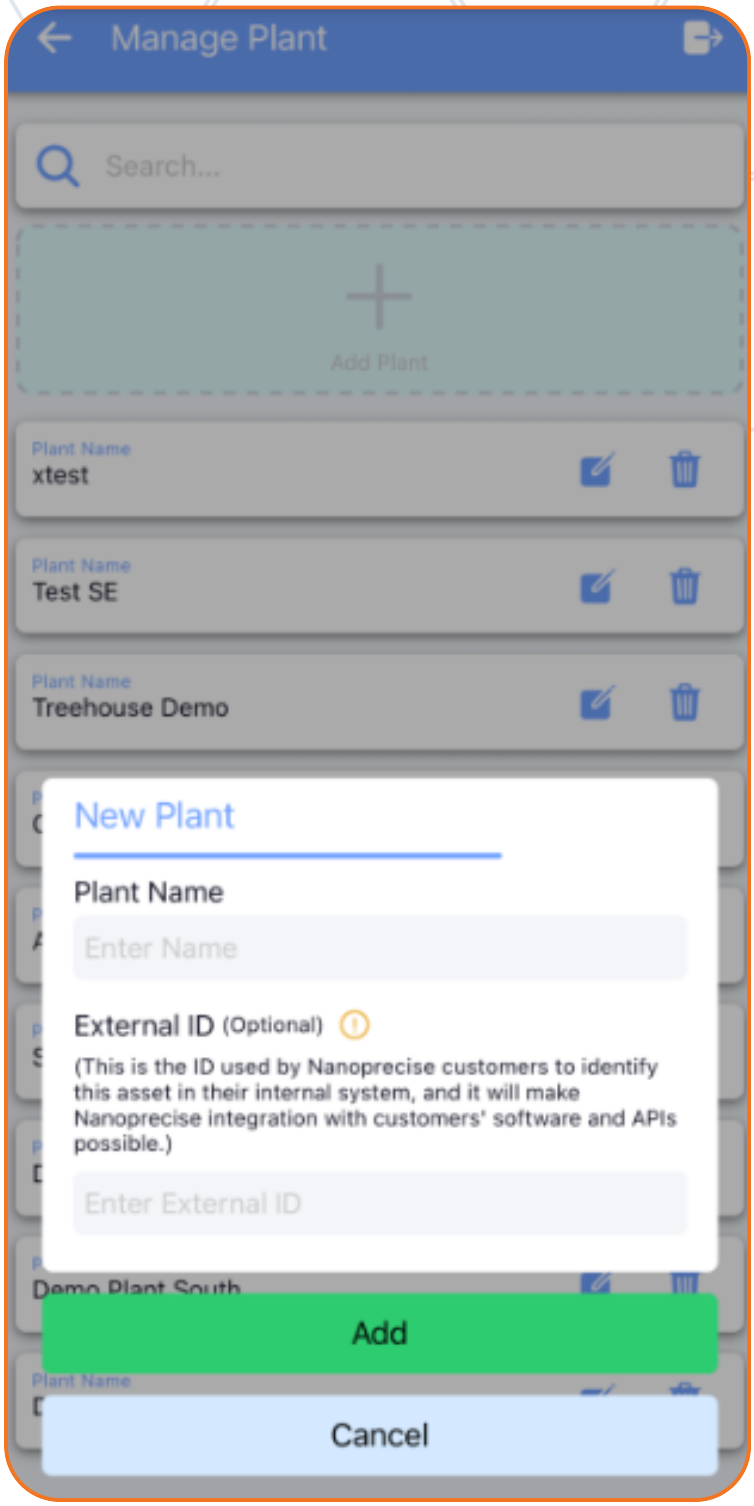



# Manage Plant

The Manage Plant screen is used to create, edit, and organize the plants in the asset hierarchy. Each plant represents a physical site where assets and sensors are deployed.

- View Existing Plants: All plants configured for the organization are listed on this page.
- Search: Use the search bar to quickly locate a plant by name.
- Add Plant
  - Tap Add Plant to create a new plant.
  - Enter the Plant Name.
  - (Optional) Enter an External ID, which is used by some customers to match the plant with their internal system identifiers and support integration with external software or APIs.
  - Select Add to save.
- Edit Plant: Use the pencil icon to update the name or External ID of an existing plant.
- Delete Plant: Select the trash icon to remove a plant that is no longer required. This will delete the plant and all the associated entities with the plant.


Manage Plant
Search...
Add Plant
Plant Name
xtest
Plant Name
Test SE
Plant Name
Treehouse Demo
Plant Name
Conference Demo
Plant Name
ABS Demo
Plant Name
South Shore Facility
Plant Name
Demo Slow Speed
Plant Name
Demo Plant South
Plant Name
Demo Plant North

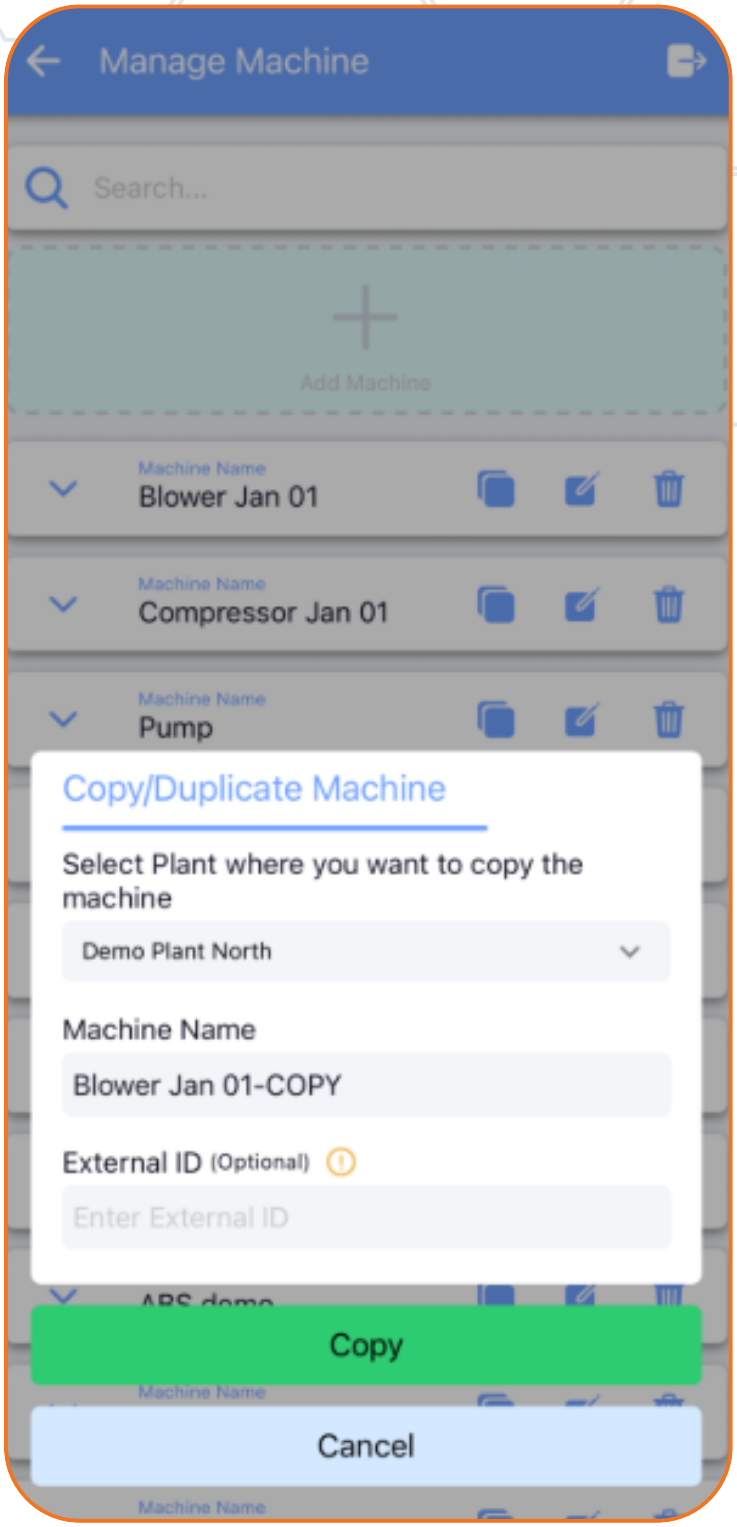

Manage Plant
Search...
Add Plant
Plant Name
xtest
Plant Name
Test SE
Plant Name
Treehouse Demo
New Plant
Plant Name
Enter Name
External ID (Optional)
(This is the ID used by Nanoprecise customers to identify this asset in their internal system, and it will make Nanoprecise integration with customers' software and APIs possible.)
Enter External ID
Add
Cancel

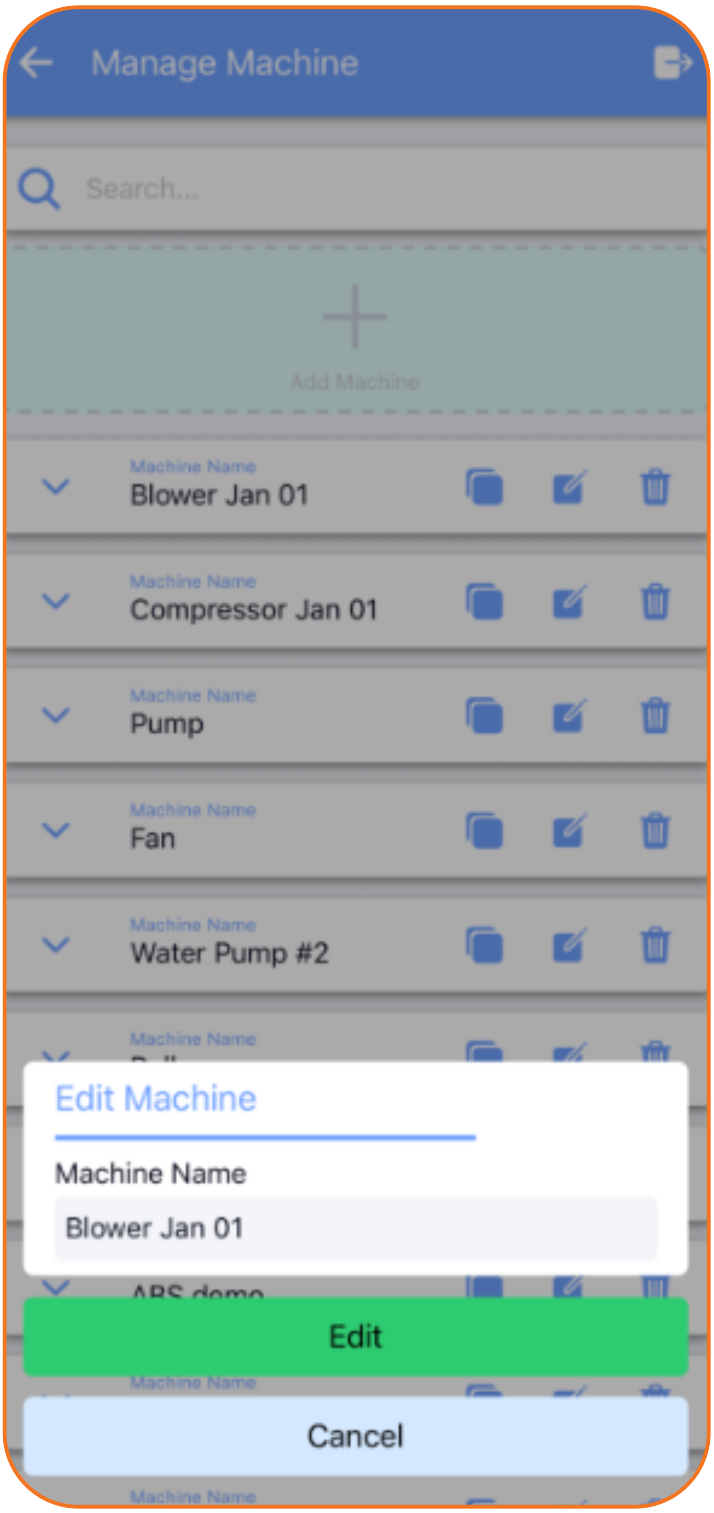
# Manage Machine

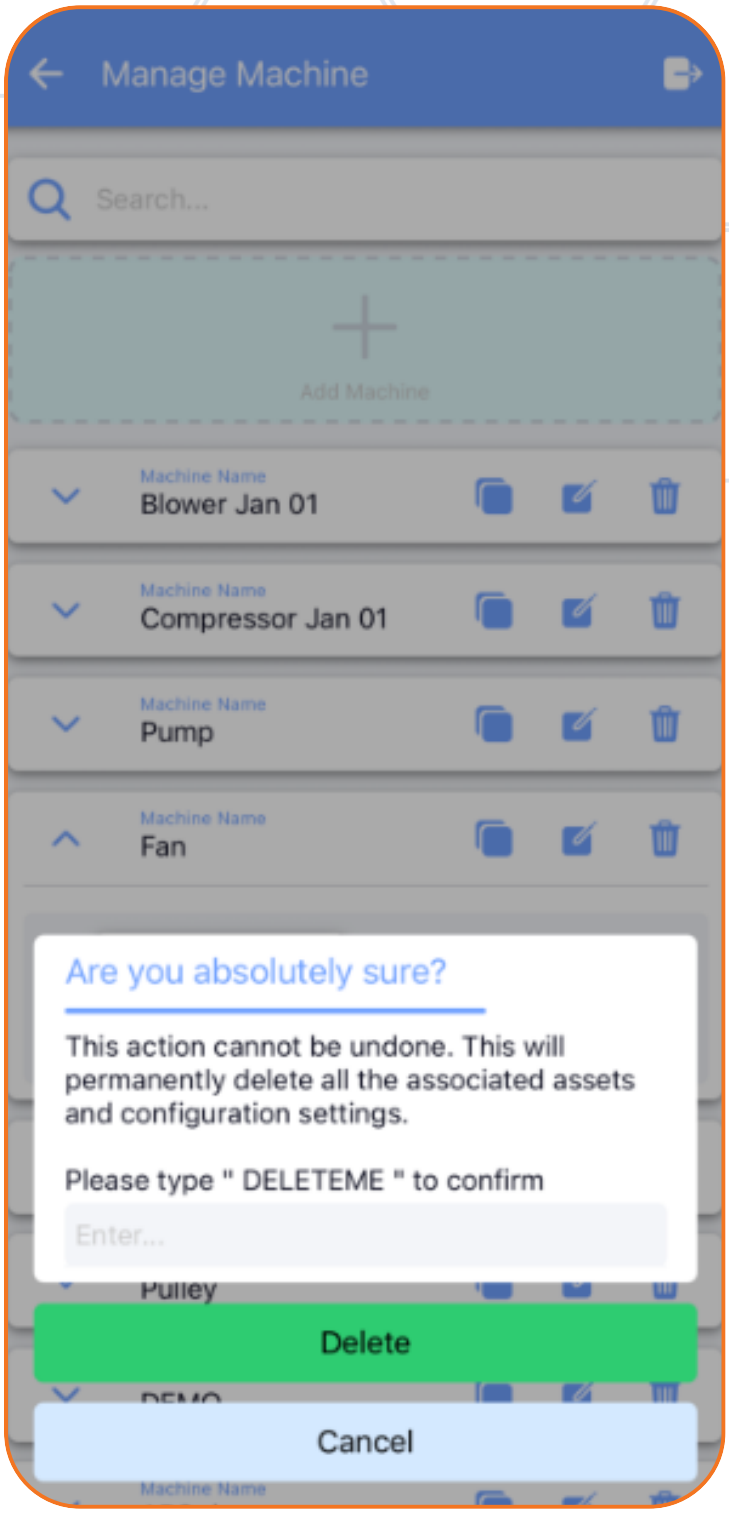
If the organization uses a hierarchy that includes machines, the next step is to configure the machines under each plant. The Manage Machine screen displays all machines defined for the selected plant and provides tools to add, update, copy, or delete machine entries.

- View Existing Machines: All machines associated with the plant are listed on the page.
- Search: Use the search bar to quickly find a machine by name.
- Add Machine
  - Tap Add Machine to create a new machine entry.
  - Enter the Machine Name.
  - (Optional) Provide an External ID if the customer uses internal identifiers that map to their system.
  - Select Add to save.
- Edit Machine: Select the pencil icon to update the machine name or External ID.
- Copy / Duplicate Machine
  - Tap the copy icon to duplicate an existing machine.
  - Select the plant where the duplicate machine should be placed.
  - Enter the new machine name (pre-filled with a “–COPY” suffix).
  - (Optional) Add an External ID.
  - Select Copy to complete the duplication.
- Delete Machine
  - Tap the trash icon to remove the machine.
  - A confirmation dialog will appear requiring the user to type DELETE ME to proceed.
  - Deleting a machine permanently removes all associated assets and configuration settings, so this action cannot be undone.


Manage Machine
Search...
Add Machine
Machine Name
Blower Jan 01
Machine Name
Compressor Jan 01
Machine Name
Pump
Machine Name
Fan
Plant
Demo Plant North
Machine
Fan
Machine Name
Water Pump #2
Machine Name
Pulley
Machine Name
DEMO


Manage Machine
Search...
Add Machine
Machine Name
Blower Jan 01
Machine Name
Compressor Jan 01
Machine Name
Pump
Copy/Duplicate Machine
Select Plant where you want to copy the machine
Demo Plant North
Machine Name
Blower Jan 01-COPY
External ID (Optional)
Enter External ID
Copy
Cancel


Manage Machine
Search...
Add Machine
Machine Name
Blower Jan 01
Machine Name
Compressor Jan 01
Machine Name
Pump
Machine Name
Fan
Machine Name
Water Pump #2
Edit Machine
Machine Name
Blower Jan 01
Edit
Cancel


Manage Machine
Search...
Add Machine
Machine Name
Blower Jan 01
Machine Name
Compressor Jan 01
Machine Name
Pump
Machine Name
Fan
Are you absolutely sure?
This action cannot be undone. This will permanently delete all the associated assets and configuration settings.
Please type " DELETEME " to confirm
Enter...
Delete
Cancel

# Manage Equipment

Once machines are created, the next step is to define the equipment installed on each machine. This section lets you add equipment, edit details, duplicate similar configurations, reconfigure assets, and set RPM ratios where required.

Adding New Equipment

- Tap Add Equipment to open the creation dialog.
- Enter the Equipment Name.
- Select the Equipment Type from the dropdown (blower, compressor, fan, pump, transformer, other).
- Complete the constant speed question to support configuration accuracy.
- (Optional) Enter an External ID if your organization needs system-level mapping for integration.
- Tap Save to create the equipment.

Viewing Equipment Details

- Expand any equipment card to view its exact position in the hierarchy.
- The hierarchy preview shows:
- Plant → Machine → Equipment
- This helps confirm whether the equipment is placed under the correct machine before assigning sensors.

Re-configuration

- The Re-config button opens the equipment's configuration page.
- Users can:
  - Edit the Equipment Name
  - Change the Equipment Type
  - Update the constant-speed setting (important for diagnostic accuracy)
- Tap Save once changes are complete.

Editing Equipment

- Tap the Edit icon to rename the equipment.
- Update the name and save.
- Changes reflect immediately in all hierarchical views.

Duplicating Existing Equipment

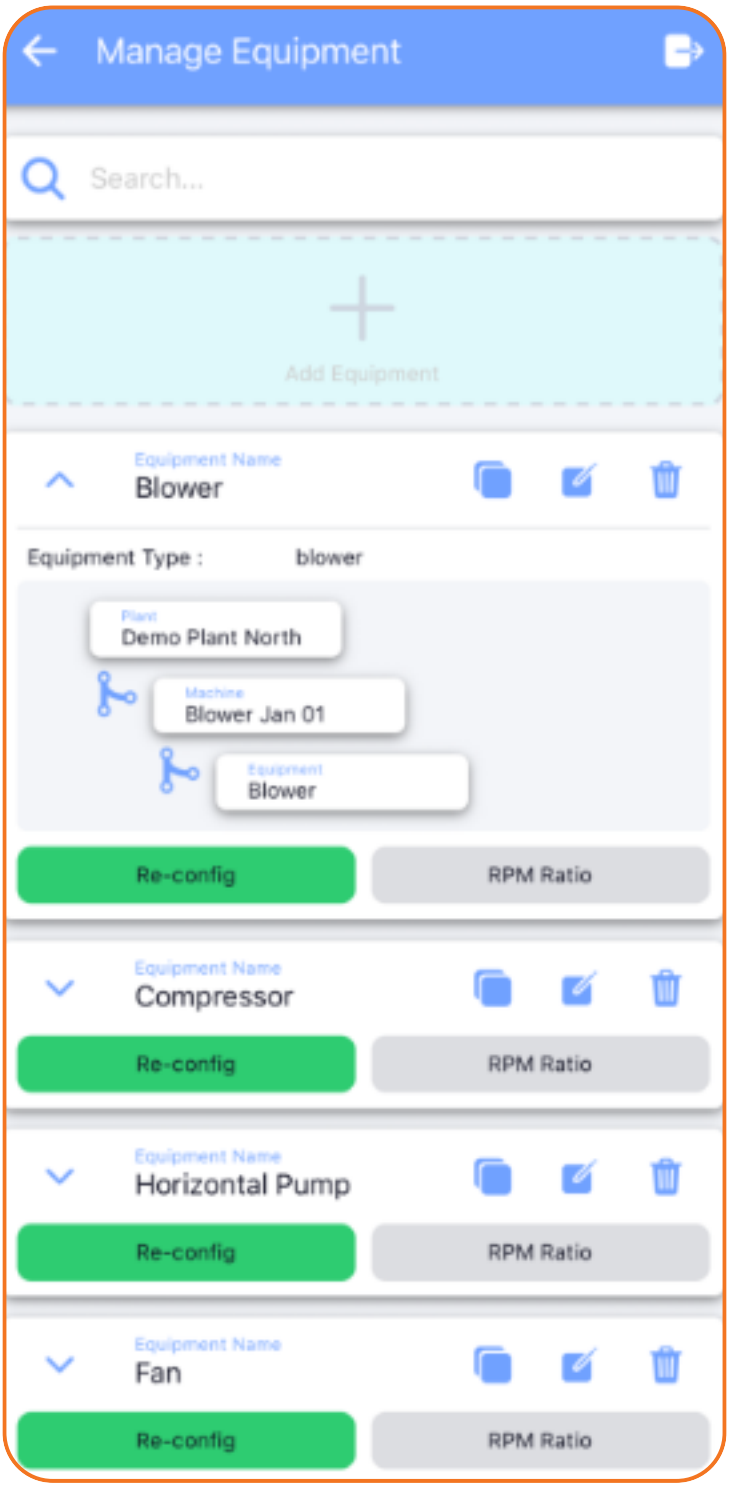
- Useful when multiple assets share similar configuration parameters.
- Tap the Copy icon.
- Select the Machine where the new copy should be placed.
- Enter the new Equipment Name (auto-suggested with “-COPY”).
- (Optional) Add an External ID.
- Tap Add to create the duplicate.

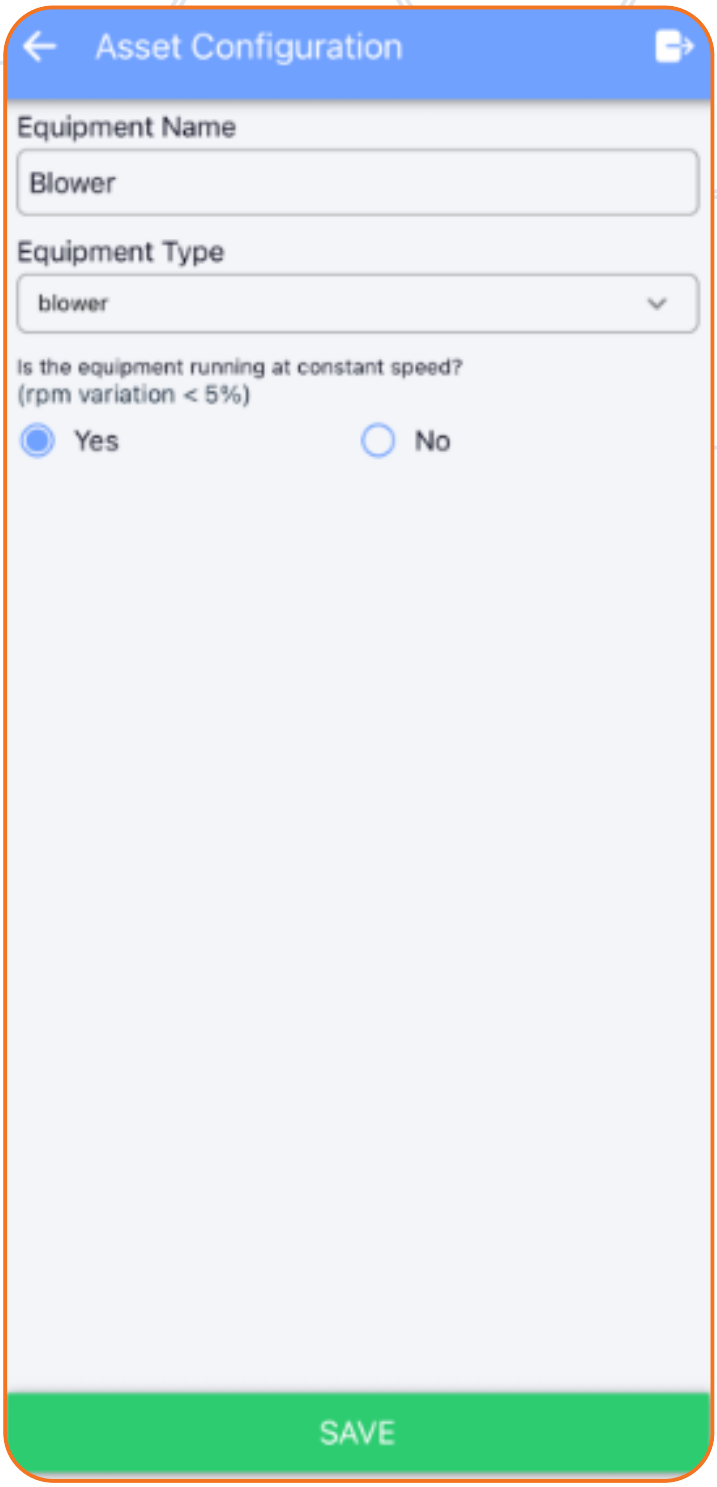
Deleting Equipment

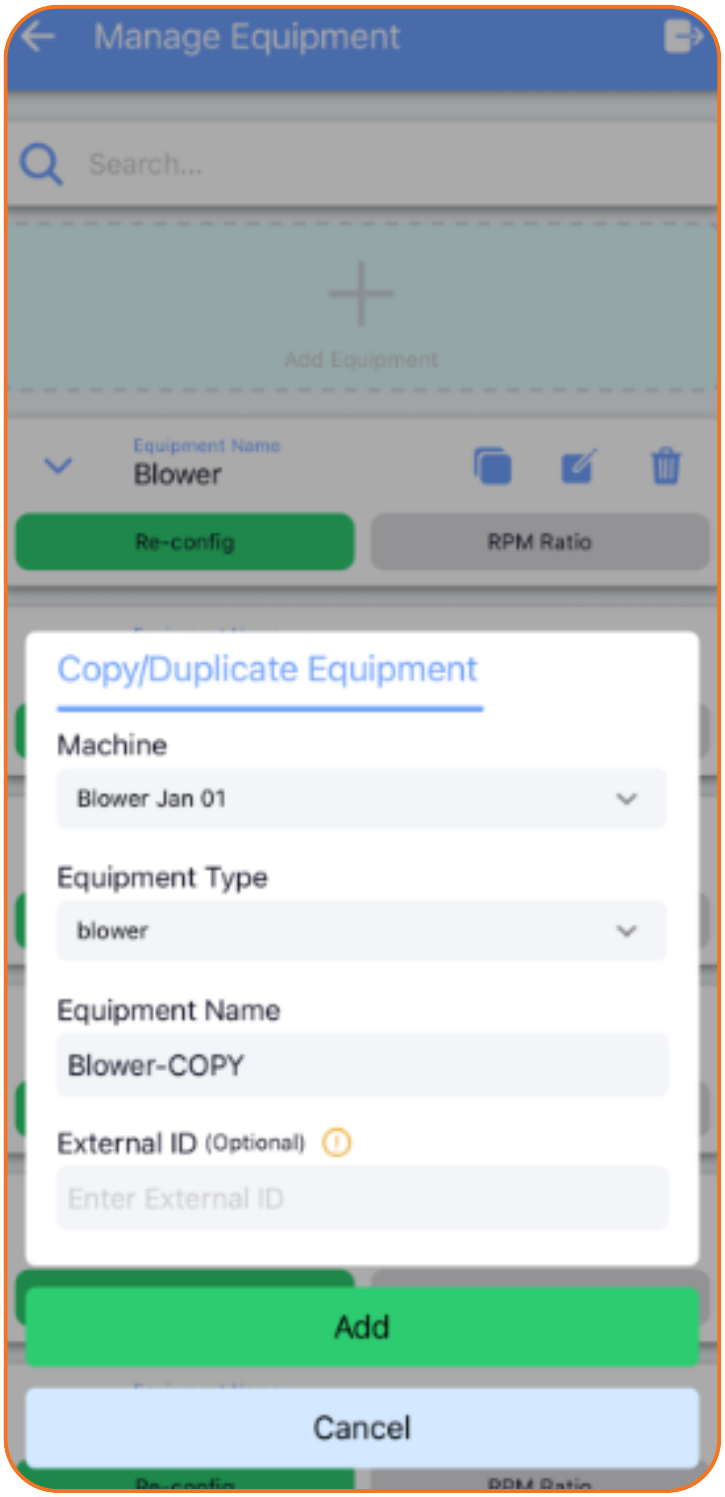
- Tap the Trash icon.
- A confirmation dialog appears requiring the user to type DELETEME. This prevents accidental deletion because removing equipment:
  - Permanently deletes associated configuration
  - Removes links to components and sensors

RPM Ratio Configuration (if applicable)

- Some equipment consists of multiple coupled components. In these cases, the system requires RPM ratios to accurately calculate linked speeds.
- Tap RPM Ratio to open the configuration view.
- For each component shown, select:
  - The Primary Component
  - The Ratio for the linked component
  - The information icon explains the rule:
- Timesync must be within 2 minutes and ratios determine linked speeds using: Linked RPM = Primary RPM × Ratio
- Tap Save to complete.


Manage Equipment
Search...
Add Equipment
Equipment Name
Blower
Equipment Type : blower
Plant
Demo Plant North
Machine
Blower Jan 01
Equipment
Blower
Re-config
RPM Ratio
Equipment Name
Compressor
Re-config
RPM Ratio
Equipment Name
Horizontal Pump
Re-config
RPM Ratio
Equipment Name
Fan
Re-config
RPM Ratio


Asset Configuration
Equipment Name
Blower
Equipment Type
blower
Is the equipment running at constant speed?
(rpm variation < 5%)
Yes
No
SAVE


Manage Equipment
Search...
Add Equipment
Equipment Name
Blower
Re-config
RPM Ratio
Copy/Duplicate Equipment
Machine
Blower Jan 01
Equipment Type
blower
Equipment Name
Blower-COPY
External ID (Optional)
Enter External ID
Add
Cancel


Manage Equipment
Search...
Add Equipment
Select RPM Ratio for all components
RPM ratio is required to be configured as well as timesync between components (data has to be within 2min) in order to use Primary speed to calculated Linked speeds for other components Ratio = Linked RPM/ Primary RPM
Pulley NDE (80 RPM)
1
Pulley NDE (80 RPM)
Select Primary:
Add Ratio:
Select Component
Enter Ratio
Save

# Manage Components

The Component step finalizes the hierarchy by defining the exact rotating element the sensor is mounted on. This is where configuration accuracy matters the most because CI and vibration diagnostics rely heavily on correct component-level data.

View & Filter Components

- Filter by plant using the dropdown ("All Plant" by default).
- Search components by name.
- Expand a component card to view:
  - Tag ID
  - Sensor ID
  - Component Type & Sub-type
- Full hierarchy path (Plant → Machine → Equipment → Component).

Configure a Component (Re-config button)

- Takes you into asset-specific vibration + motor configuration.
- You can enter or update:
  - Min RPM & Max RPM
  - Bearing Type (Journal / Anti-friction / Unknown)
  - Bearing number/model (with ability to add multiple)
  - Electrical line frequency (50Hz / 60Hz)
  - Rotor bars (number or NA)
  - Poles (number or NA)
  - Horsepower
- This ensures correct RPM-based diagnostics, demodulation accuracy, bearing fault frequency calculation, and more.

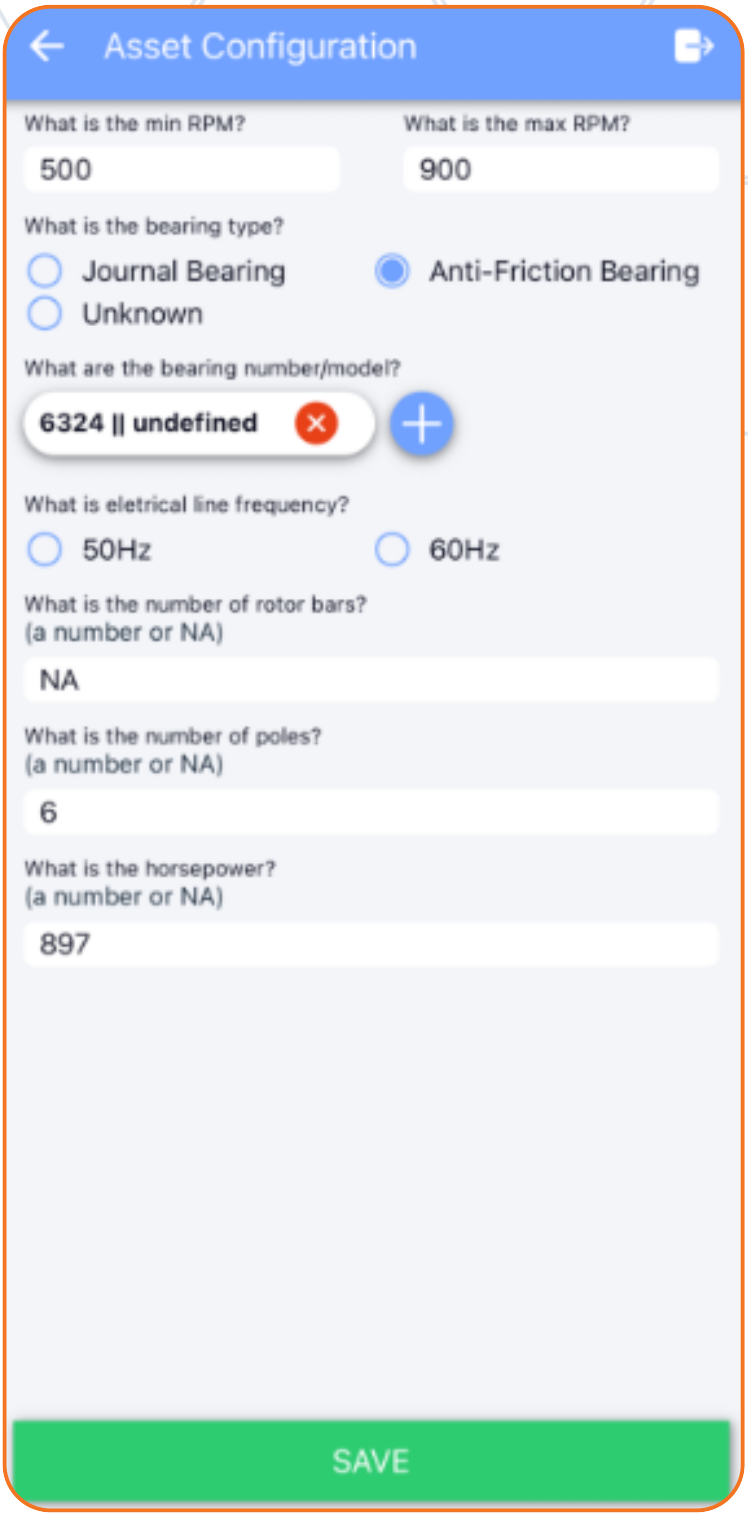
Manage Sensor

- Pressing Manage Sensor opens a menu with three options:
  - Change sensor mount type
    - Update mounting orientation (Axis Indicator, Horizontal Asset, Vertical Asset).
    - Upload equipment images (optional).
    - Upload component images (optional).
    - Update asset hierarchy if needed.
  - Unassign sensor
    - Removes the sensor from the component.
    - Displays a warning: "Unassigning this sensor will remove all the data associated with this sensor."
    - The user must confirm.
  - Assign a new sensor
    - Select a new sensor ID.
    - Confirm hierarchy: Plant → Machine → Equipment → Component.
    - Upload images (optional).
    - Choose mount type.
    - Save to complete the assignment.

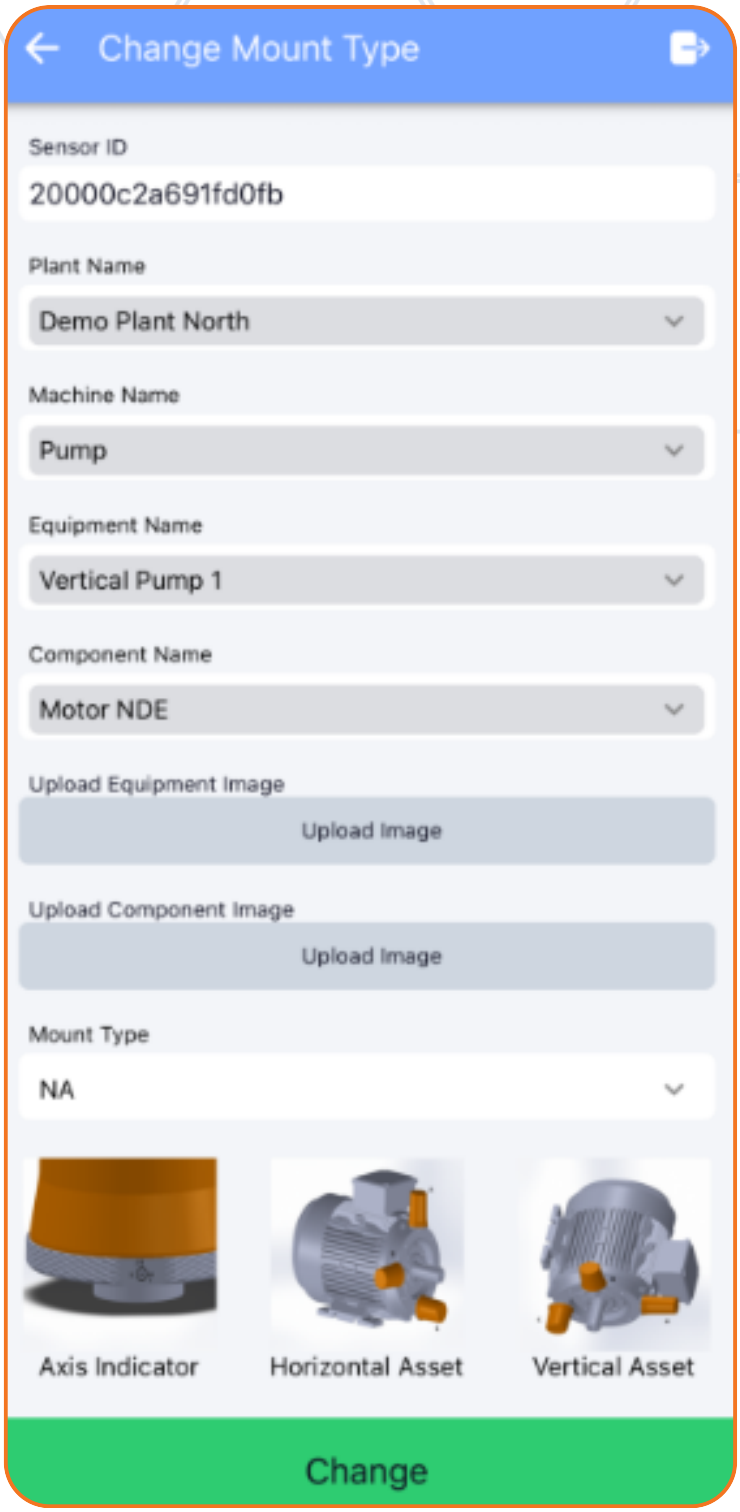
Copy or Move a Component: Accessible through the copy/move icon on the component card.

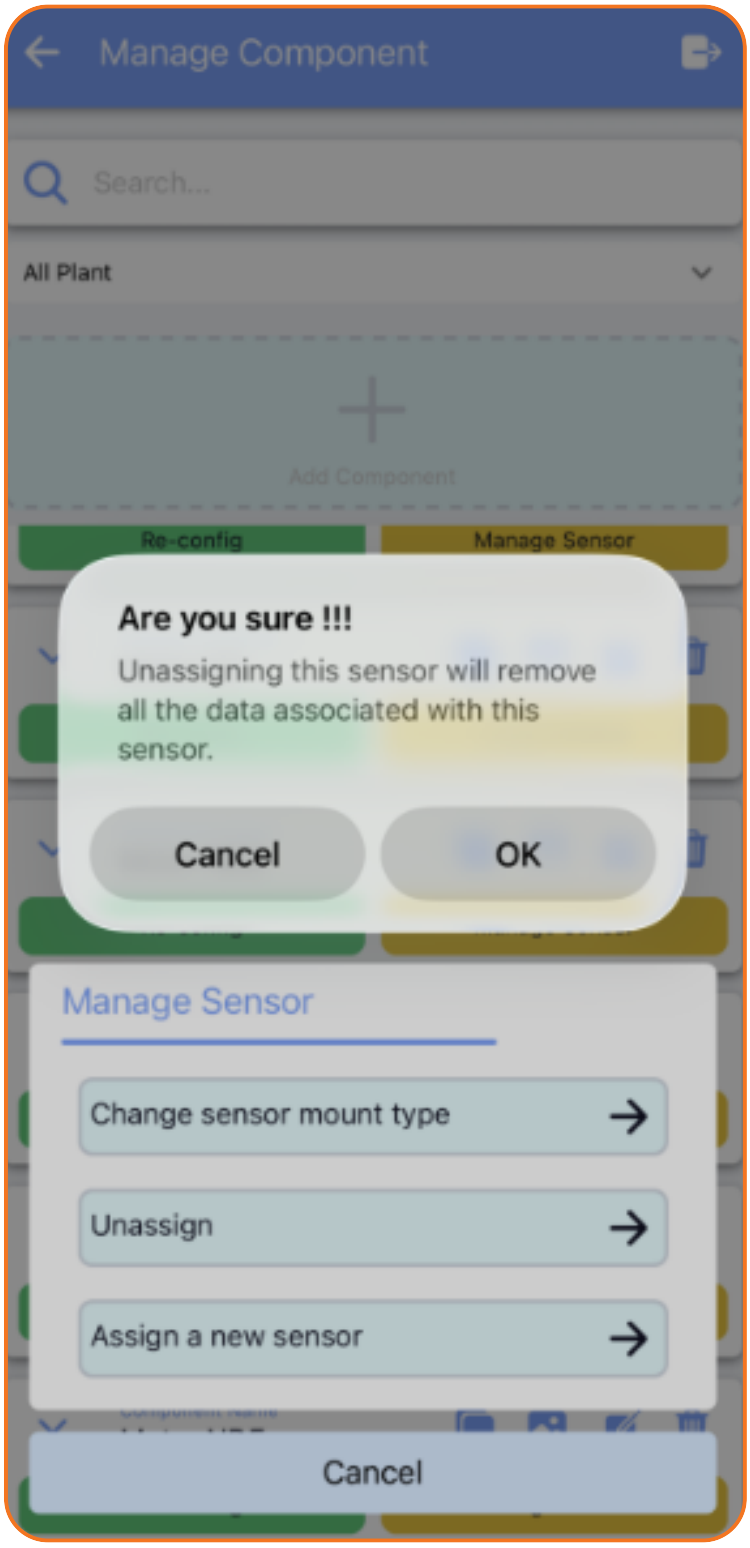
- Copy Component
  - Duplicates the component (name + configuration).
  - Allows selecting the target equipment.
- Move Component
  - Moves the component to different equipment.
  - Requires selecting the destination equipment.
  - This is used for reorganizing assets without losing data.
- Edit Component
  - Update component names.
  - Save changes instantly.
- Upload Component-Level Images
  - When clicking the component image icon:
  - Upload or replace images supporting mounting validation and component identification.

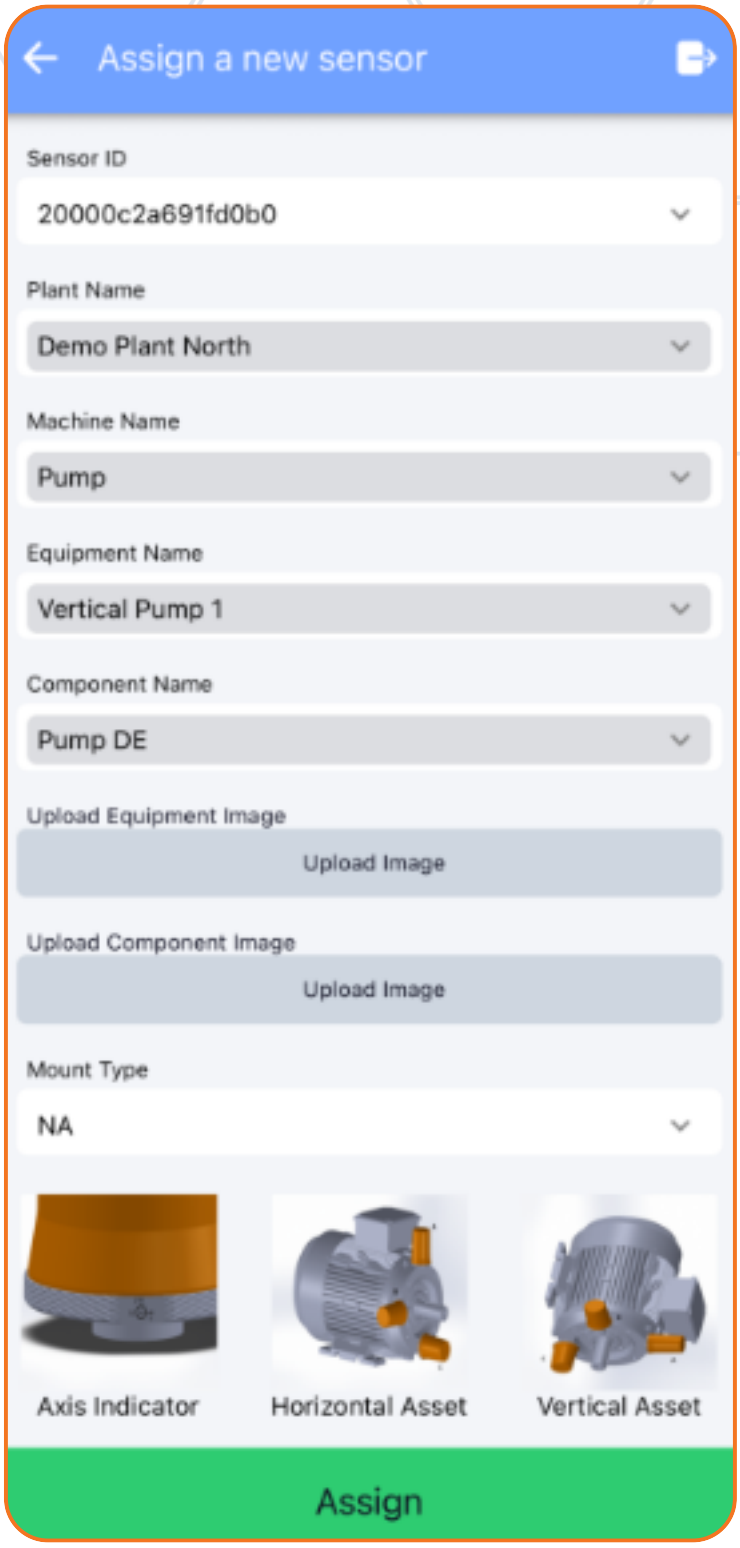

Manage Component
Search...
All Plant
Add Component
Component Name
Pump DE
Re-config
Manage Sensor
Component Name
Pump NDE
Tag ID :
DTQA9113a01138b34b3697f8d53c7886136f
Sensor ID :
20001c2a691f144e
Component Type :
pump
Component Sub Type :
centrifugal
Plant
Demo Plant North
Machine
Pump
Equipment
Horizontal Pump
Component
Pump NDE
Re-config
Manage Sensor
Component Name
Fan DE
Re-config
Manage Sensor

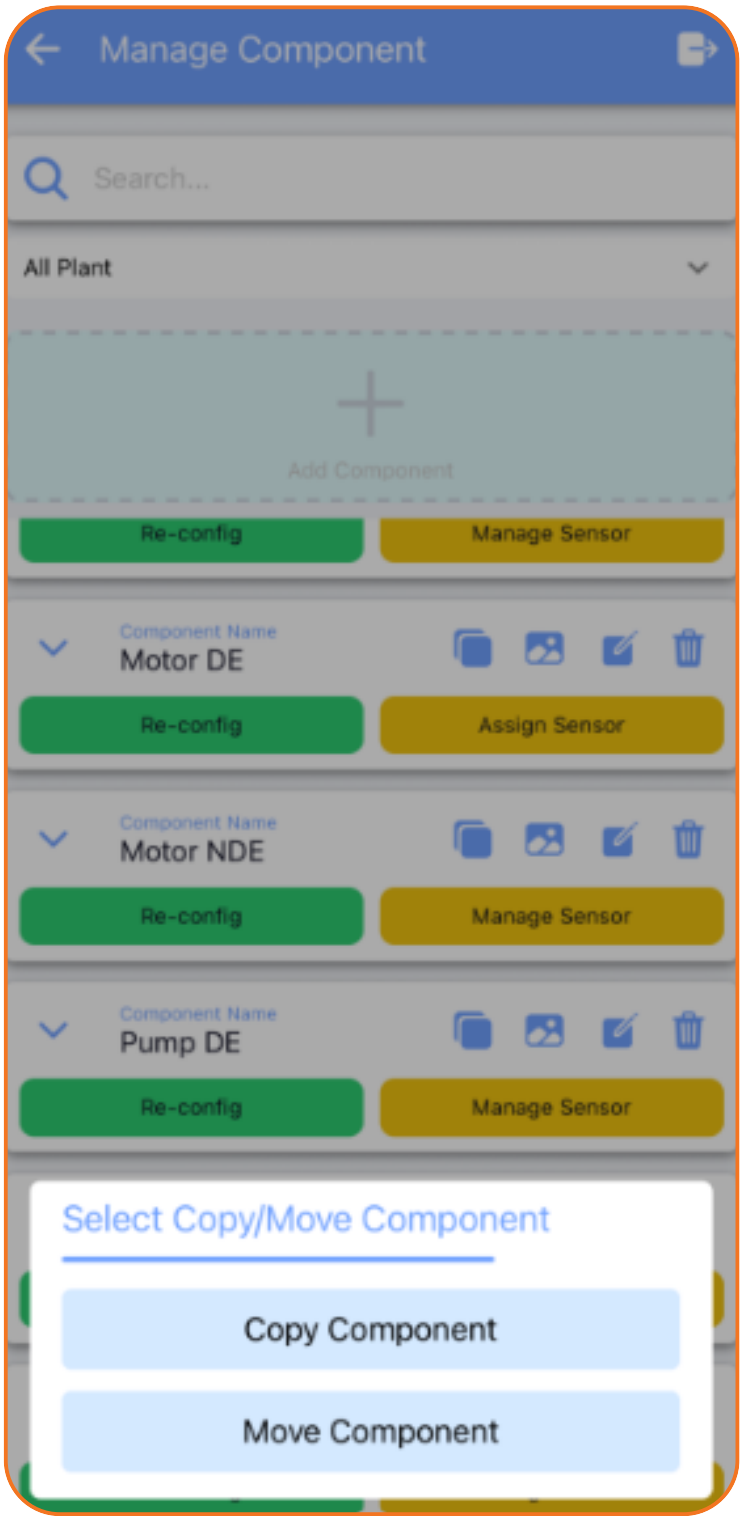

Asset Configuration
What is the min RPM?
500
What is the max RPM?
900
What is the bearing type?
Journal Bearing
Anti-Friction Bearing
Unknown
What are the bearing number/model?
6324 || undefined
What is eletrical line frequency?
50Hz
60Hz
What is the number of rotor bars?
(a number or NA)
NA
What is the number of poles?
(a number or NA)
6
What is the horsepower?
(a number or NA)
897
SAVE

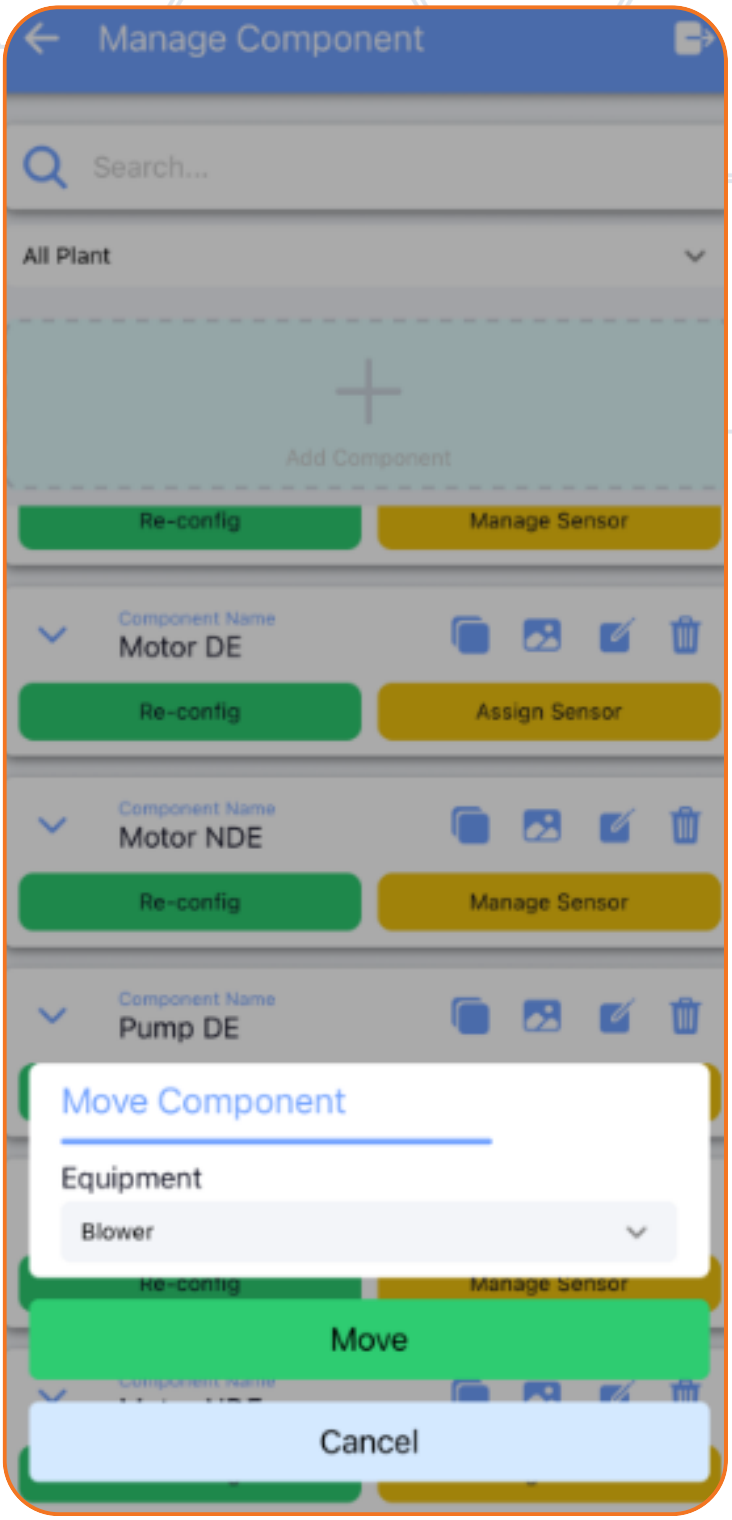
Nanoprecise
Prediction with Precision

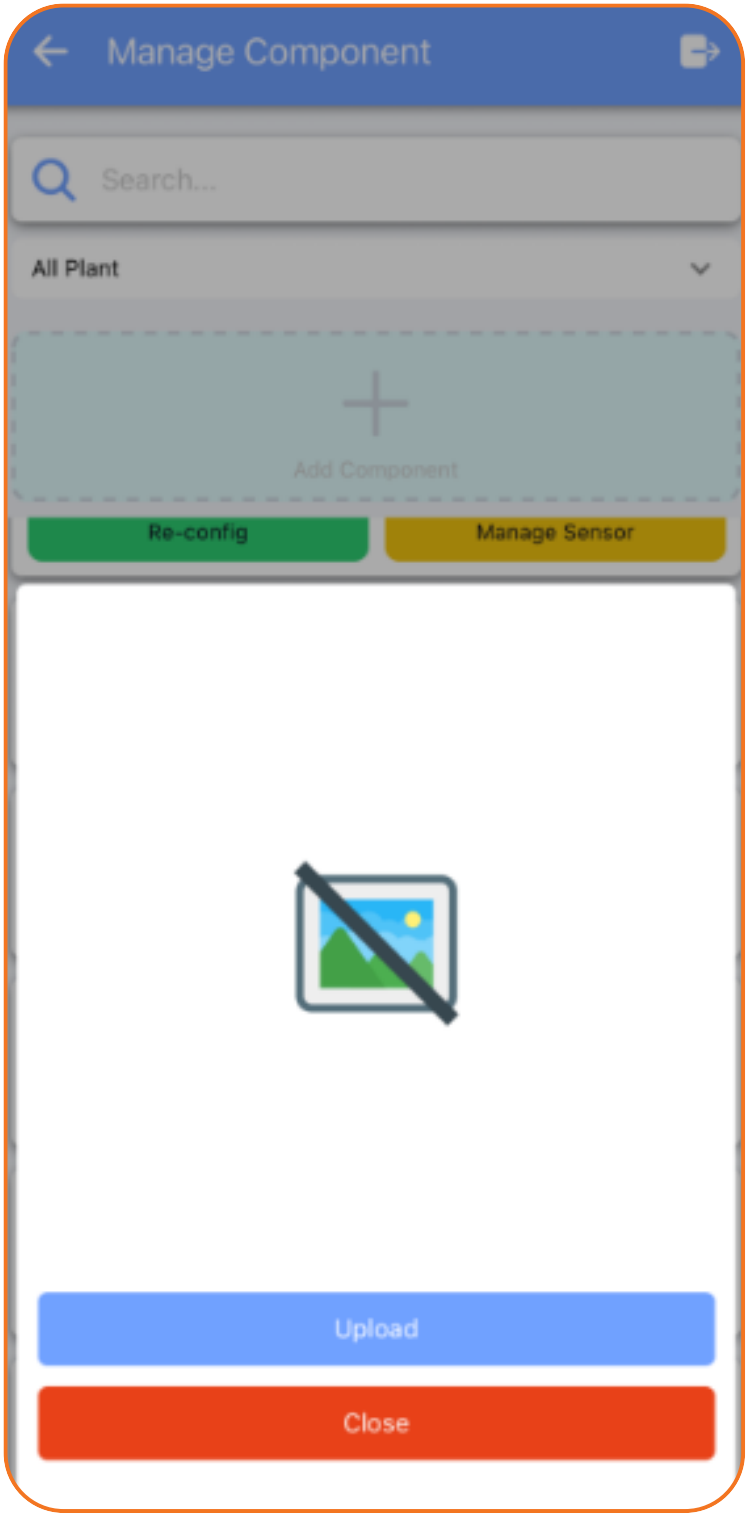




Manage Component
Search...
All Plant
Add Component
Re-config
Manage Sensor
Are you sure !!!
Unassigning this sensor will remove all the data associated with this sensor.
Cancel
OK
Manage Sensor
Change sensor mount type
Unassign
Assign a new sensor
Cancel


Assign a new sensor
Sensor ID
20000c2a691fd0b0
Plant Name
Demo Plant North
Machine Name
Pump
Equipment Name
Vertical Pump 1
Component Name
Pump DE
Upload Equipment Image
Upload Image
Upload Component Image
Upload Image
Mount Type
NA
Axis Indicator
Horizontal Asset
Vertical Asset
Assign


Manage Component
Search...
All Plant
Add Component
Re-config
Manage Sensor
Component Name
Motor DE
Re-config
Assign Sensor
Component Name
Motor NDE
Re-config
Manage Sensor
Component Name
Pump DE
Re-config
Manage Sensor
Select Copy/Move Component
Copy Component
Move Component


Manage Component
Search...
All Plant
Add Component
Re-config
Manage Sensor
Component Name
Motor DE
Re-config
Assign Sensor
Component Name
Motor NDE
Re-config
Manage Sensor
Component Name
Pump DE
Move Component
Equipment
Blower
Move
Cancel


Manage Component
Search...
All Plant
Add Component
Re-config
Manage Sensor
Upload
Close


Manage Component
Search...
All Plant
Add Component
Re-config
Manage Sensor
Component Name
Motor DE
Re-config
Assign Sensor
Component Name
Motor NDE
Re-config
Manage Sensor
Component Name
Pump DE
Edit Component
Component Name
Pump DE
Edit
Cancel

# Sensor Management

The Sensor Management section allows users to view, search, assign, unassign, and reassign sensors that are deployed in the field. This ensures each sensor is correctly mapped to the right plant, machine, and equipment.

**Viewing Allocated Sensors**

- Select a Plant from the dropdown menu (or keep All Plant selected).
- Tap View Sensor List.

The system displays a list of all allocated sensors for the selected plant(s), including:

- Sensor ID
- Sensor location (e.g., Motor DE, Blower NDE)
- Assignment status
- Associated Plant, Machine, and Equipment

A summary at the top shows the total number of sensors allocated.

**Searching for a Sensor** - Sensors can be located in two ways:

- Search by Sensor ID using the search bar.
- Scan the QR code available on the physical sensor housing using the Scan QR Code button.

Both methods take you directly to the sensor details page.

**Understanding Sensor Status** - Each sensor displays a status indicator:

- Assigned – Sensor is currently mapped to a specific machine and equipment.

**Sensor Actions** - For each listed sensor, the following actions are available:

- Unassign Sensor
  - Removes the sensor from its currently assigned machine and equipment.
  - Use this option when a sensor needs to be removed, replaced, or relocated

- Reassign Sensor
  - Allows the sensor to be mapped to a different plant, machine, or equipment.
  - Use this when a sensor is physically moved or needs to be repurposed.

**QR Code-Based Management** - You can also manage sensors directly by scanning the QR code on the sensor housing:

- Tap Scan QR Code.
- Scan the sensor QR code using your phone.
- After scanning, the sensor can be assigned, unassigned, or reassigned as needed.

**Best Practices**

- Always verify the physical mounting location before reassigning a sensor.
- Ensure the correct Drive End (DE) or Non-Drive End (NDE) selection during assignment.
- Use QR scanning in the field to avoid manual Sensor ID entry errors.