Inventory Module Documentation

# 1. Overview

The Inventory Module provides a centralized system to:  
- Receive products from suppliers.  
- Ensure product quality through inspections.  
- Track stock by batch or serial number.  
- Manage warehouse-to-warehouse transfers with proper approvals.  
- Provide visibility on inventory levels and stock health.

# 2. Roles

## Main Warehouse Manager

* - Approves transfers to sub-warehouses.
* - Oversees main warehouse stock.
* - Receives returns from sub-warehouses.

## Sub Warehouse Manager

* - Acknowledges incoming transfers.
* - Assigns storage locations.
* - Initiates returns to main warehouse.

## Quality Inspector

* - Performs QC for items requiring inspection (serial or batch).

## Inventory Manager / Store Manager

* - Monitors dashboards, stock health, and summaries.

# 3. Key Objects

|  |  |
| --- | --- |
| Object | Description |
| Item | Product master record (SKU, type, category, thresholds, serial/batch tracking). |
| Goods Receipt (GRN) | Records supplier deliveries and received items. |
| GoodsReceiptItem | Line items under a GRN; includes QC status and results. |
| StockBatch | Batch created from GRN items; tracks good, rejected, available, and consumed quantities. |
| LotSerial | Physical stock unit: either a serial (qty=1) or batch-lot; linked to warehouse/location. |
| Warehouse / WarehouseLocation | Main or sub-warehouse and exact storage location (zone/floor/shelf/bin). |
| WarehouseTransfer | Movement document between warehouses; includes line items and approvals. |

# 4. End-to-End Workflows

## Goods Receipt (GRN)

* - Create GRN with supplier, warehouse, items, and dates.
* - System validates: warehouse exists, invoice uniqueness, item existence.
* - Auto-calculates total quantity/value.
* - Result: GRN created (status = Pending) and team notified.

## Send to Quality Test

* - Trigger QC for a GRN.
* - Items with qcRequired=false auto-complete.
* - Items with QC required can be: Ready QC / Partial / Completed based on item-level completion.

## Quality Control

* - Serial-tracked: Scan serials and mark pass/fail; counts must match received quantity and be unique.
* - Batch-tracked: Inspect quantities; record pass/fail; sums must match received quantity and cannot exceed it.
* - Updates item totals, marks QC completed, recalculates GRN status, and notifies the team.

## Stock Visibility

* - View stock per warehouse, item, or serial.
* - Includes batch, receipt, QC status, and location.
* - Supports pagination and search functionality.

## Warehouse Transfer

* - Create transfer request (from → to warehouse, items).
* - Approval at Main Warehouse:  
   - Serial: move serial record to destination.  
   - Batch: split quantity into new record for destination; adjust original batch.
* - Acknowledgment at Sub Warehouse: Completes transfer.

## Returns to Main Warehouse (from Sub)

* - Serial: move entire serial back.
* - Batch: move partial or full quantities.
* - Validates ownership and quantities.

## Location Assignment (Sub Warehouse)

* - Assign warehouse LocationId to lot/serial records.
* - Enables zone/floor/shelf/bin tracking.

# 5. Responsibilities by Role

## Main Warehouse Manager

* - Approves transfers and initiates movements to sub-warehouses.
* - Oversees GRNs and ensures QC is progressing.
* - Reviews stock health at main warehouse.

## Sub Warehouse Manager

* - Acknowledges transfers and assigns storage locations.
* - Manages returns to main warehouse for corrections or rebalancing.
* - Monitors local inventory and unassigned lots.

## Quality Inspector

* - Executes QC for items marked qcRequired.
* - Serial: scans all serials, marks pass/fail.
* - Batch: audits quantities, records pass/fail totals.
* - Ensures GRN status transitions to Completed when all items are done.

## Inventory Manager / Store Manager

* - Monitors dashboards:
* - - Pending receipts
* - - QC inspection status
* - - Transfer pipeline
* - - Low stock alerts
* - - Warehouse utilization  
    
    
    
  **over all flow**
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* **Module‑wise (what it does)**
* **1-Items**
* Create products/components with SKU, type, category, and relationships (sub-assemblies/components).
* Auto‑generate SKU numbers per prefix.
* Optional: link manufacturer parts for components.
* **2-SKU Prefix**
* Define prefixes (like ELEC‑, MECH‑) so SKUs auto‑number correctly.
* **3-Item Types & Categories**
* Item Types (e.g., Product, Sub‑assembly, Component).
* Categories to group items for browsing and reports.
* **4-Manufacturers & Manufacturer Parts**
* Maintain manufacturer profiles.
* Store manufacturer part numbers and link to items (especially components).
* **5-Goods Receipt (GRN)**
* Record incoming deliveries from suppliers.
* Capture item quantities, batch/lot info, and document references.
* **6-Quality Control**
* Inspect received items.
* Approve to stock, or reject/return if failed.
* Approved quantities move to stock batches/lots.
* **7-Stock Management (Batches/Lots/Serials)**
* Track stock by batch/lot/serial with quantities and status (good/hold).
* Maintain minimum stock thresholds and low‑stock alerts.
* **8-Warehouses & Locations**
* Set up warehouses and internal locations/bins.
* Store stock at precise locations for accurate counts.
* **9-Warehouse Transfer**
* Move stock between warehouses/locations.
* Keep audit of source, destination, and moved quantities.
* **10-Notifications**
* Inform inventory team (roles like Warehouse Manager, Inventory Manager) on key events: new item, quality pass/fail, low stock.
* **11-Dashboard & Reports**
* Overview of total items, active items, low stock, categories, recent receipts, and transfers.