Inventory Intelligence

User Guide

Inventory Intelligence is a web-based analytics application for Spire ERP. It connects to your Spire server, syncs inventory, purchasing, sales, and production data, then runs computations to surface actionable insights — from stockout risks and dead stock to vendor performance and price break opportunities.

This guide covers every page, workflow, and setting in the application.

Gemini Logic Inc.

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Getting Started

First Launch

1. Open the application in a web browser (default: `http://localhost:3000`).
2. You will be directed to the **Settings** page to configure your Spire connection.
3. Enter your Spire API base URL (e.g., `https://your-server:10880`), company code, username, and password.
4. Click **Test Connection** to verify connectivity. A successful test shows the number of inventory items found.
5. Click **Save Spire Settings**.
6. Navigate to the **Data Status** page and click **Force Sync** to trigger the initial data load.
7. The first sync pulls all historical data and runs computations. This may take several minutes depending on your data volume.

Prerequisites

- The application must be on the same LAN as your Spire server.
- You need a Spire user account with read access to inventory, purchasing, sales, and production modules.
- If you want to create purchase requisitions, the Spire user also needs write access to inventory requisitions.

Navigation & Layout

Sidebar

The left sidebar organizes pages into three groups:

Group	Pages
Intelligence	Inventory Health, Inventory Detail, Financial Impact, Demand Forecast
Operations	Vendor Scorecard, Price Breaks, Action Queue
System	Settings, Data Status, Formulas

Click any page name to navigate. The active page is highlighted.

Top Bar

- **Breadcrumb** — Shows the current page path.
- **Global Search** (`Ctrl+K`) — Search for any item by part number or description. Results link directly to the Item Drilldown page.
- **Sync Health Indicator** — Shows how many endpoints are healthy (e.g., “12/14 endpoints”). Click to go to the Data Status page.

Common UI Patterns

- **Part numbers are links.** Every part number displayed in the application is clickable and opens the Item Drilldown page for that part.
- **Expandable rows.** Many tables have rows you can click to expand for more detail. Look for the expand arrow on the right side of a row.
- **KPI cards.** Summary cards at the top of each page. On some pages (like Inventory Health), clicking a KPI card filters the table below.
- **Filter pills.** Pill-shaped buttons that filter data. Click a pill to toggle it. Active filters are highlighted.
- **Pagination.** Tables show 50 items per page with Previous/Next buttons at the bottom.
- **Badges.** Color-coded labels that indicate status, priority, item type, or grade at a glance.

Badge Color Reference

Badge	Colors
Health status	Green = Healthy, Red = Dead Stock, Amber = Overstock, Orange = Stockout Risk, Purple = RP Misaligned
Priority	Red = Critical, Orange = High, Amber = Medium, Blue = Low
Item type	Blue = Normal (N), Purple = Manufactured (M), Teal = Value Added (V), Amber = Kit (K), Red = Raw (R)
ABC class	Green = A, Amber = B, Grey = C

Vendor grade	Green = A, Blue = B, Amber = C, Orange = D, Red = F

Dashboard Pages

Inventory Health

Route: `/health`

The executive summary of your inventory position. Use this page to quickly identify risk areas and optimization opportunities.

KPI Cards (top row)

Card	Description
Total Inventory Value	Sum of on-hand quantity × current cost across all items, with total item count
Dead Stock	Items with no sales in the configured period (default 180 days) that still have stock on hand. Shows SKU count and percentage of total value.
Overstock	Items with more months of supply than the configured threshold (default 6 months). Shows SKU count.
Stockout Risk	Items where available stock is below the safety threshold relative to lead time demand. Shows item count and dollar value at risk.
Healthy	Items not flagged by any risk category. Shows percentage of total value and SKU count.
RP Misaligned	Items where Spire's reorder point is significantly below the calculated optimal reorder point (default: more than 20% below). Shows item count.

Clicking a KPI card filters the table to show only items in that health status.

Filters

- **Health Status** — All, Dead Stock, Overstock, Stockout Risk, Healthy, RP Misaligned
- **Item Type** — Normal, Manufactured, Value Added, Kit, Raw
- **ABC Class** — A (top ~80% of revenue), B (next ~15%), C (remaining ~5%)

Table Columns

Column	Description
Part No	Clickable link to Item Drilldown
Description	Item description from Spire
Type	Item type badge (N/M/V/K/R)
ABC Class	Revenue classification (A/B/C)
On Hand	Current stock quantity
Velocity/Month	Average monthly demand (units sold per month)
Days of Stock	How many days current on-hand will last at current demand rate. Red if below 14 days.

Value	On-hand quantity × current cost
Status	Health status badge
Urgency	Priority level (Critical/High/Medium/Low)
Action	Link to the related action in the Action Queue

Inventory Intelligence

Route: `/intelligence`

A detailed, card-based view of every item with expanded supply pipeline tracking, demand analysis, and reorder recommendations. Use this page for in-depth item-by-item analysis.

KPI Summary Row

Six summary cards showing counts and values for: Stockout Risk, Dead Stock, Overstock, RP Misaligned, Healthy Items, and Total Value.

Filters

- **Urgency** — All, Critical, High, Medium, Low
- **Status** — All, Stockout Risk, Dead, Overstock, Misaligned, Healthy
- **Type** — All, N, M, R, V, K
- **ABC** — All, A, B, C
- **Sort** — Urgency, Value, Velocity, Days of Stock

Item Cards

Each row shows a collapsed summary. Click to expand for three columns of detail:

Column 1 — Stock Position & Supply Pipeline

- Current on-hand, committed, on-purchase, backorder quantities
- Net available quantity (on-hand minus committed)
- Days of stock remaining
- Table of open purchase orders for this item: PO number, status, vendor, ordered/received/remaining quantities, required date

Column 2 — Demand Analysis

- Monthly and daily velocity
- Trend direction (growing, declining, or stable) with indicator arrow
- Coefficient of variation (demand consistency)
- Last sale and last receipt dates
- Analysis window and total outbound quantity

Column 3 — Reorder Recommendation

- Lead time visualization
- Safety stock calculation
- Optimal reorder point vs. Spire’s current reorder point
- Percentage of optimal (color-coded: red if below 80%, amber if below 100%, green if at or above 100%)
- Average daily demand, unit cost, and total inventory value

For manufactured items, this column highlights that ordering triggers a production order rather than a purchase order.

Financial Impact

Route: `/financial`

Working capital analysis showing carrying costs, inventory efficiency, and optimization opportunities.

KPI Cards

Card	Description
Inventory Value	Total value of all on-hand inventory
Annual Carrying Cost	Total yearly cost of holding inventory, with monthly breakdown
Carrying Rate	Combined annual carrying cost percentage (sum of all cost components)
Inventory Turns	Annual cost of goods sold divided by average inventory value. Green if at or above target (default 5.0×).
Days Inventory Outstanding	Average number of days inventory sits before being sold (365 ÷ turns)

Carrying Cost Breakdown (left panel)

Shows each cost component as a row with its rate and dollar amount:

Component	Default Rate
Cost of Capital	6.5%
Storage & Handling	3.5%
Obsolescence Risk	2.5%
Insurance	0.8%
Shrinkage	0.5%
Total	**13.8%**

All rates are configurable in Settings.

Inventory Efficiency (right panel)

- Inventory turns vs. target (bar chart with target marker)
- Days inventory outstanding
- Excess capital tied up above target turns
- Trailing 12-month cost of goods sold

Demand Forecast

Route: `/demand`

Sales velocity analysis with 3-month projections and seasonal patterns.

KPI Cards

Card	Description
12-Mo Demand	Total units sold in the trailing 12 months
Avg Monthly	Average units per month
MTD Pace	Month-to-date units with comparison to prior month
3-Mo Forecast	Projected total units for the next 3 months
Growing	Count of items with accelerating demand
Declining	Count of items with decelerating demand
YoY Growth	Percentage change, recent half vs. prior half

Charts

Monthly Unit Demand (left) — Bar chart showing 12 months of actual demand plus 3 months of forecast with confidence bands. Summary stats below include peak month, trough month, seasonal range, and forecast confidence.

Seasonal Pattern (right) — Bar chart of seasonal indexes for each month. Bars above 1.0× indicate higher-than-average demand months; bars below 1.0× indicate slower months. The current month is highlighted.

Item Trajectory Table

Filter by trajectory: Growing, Declining, Stable, or Volatile.

Column	Description
Part No	Clickable link
Description	Item description
Trend	Badge with directional arrow
12-Month Velocity	Sparkline visualization
Current	Current monthly velocity
Growth	Percentage growth rate
3-Mo Projection	Forecast quantity
Confidence	Forecast confidence as progress bar

Click a row to expand and see the monthly consumption grid and velocity statistics (mean, median, range, standard deviation, coefficient of variation, trend slope).

Trajectory Distribution Bar

A stacked horizontal bar showing the percentage breakdown of items by trajectory (Growing / Declining / Stable / Volatile). Click a segment to filter the table.

Quote Pipeline

At the bottom of the page, a table of open sales quotes from Spire showing order number, customer, dates, and subtotal. This provides forward visibility into potential demand.

Vendor Scorecard

Route: `/vendor`

Supplier performance scoring calculated from purchase order history.

KPI Cards

Card	Description
Total Vendors	Number of scored vendors
Avg Score	Average composite score out of 100
Avg On-Time	Average on-time delivery percentage
Total Orders	Number of purchase order lines tracked
Grade Distribution	Count of A/B/C grades vs. D/F grades

Vendor Table

Click column headers to sort by name, score, on-time percentage, lead time, or order count.

Column	Description
Vendor	Vendor name and code
Score	Composite score with radial progress ring and grade letter
On-Time %	Percentage of deliveries within grace period of the required date
Avg Lead Time	Average days from order to receipt
Consistency	Lead time consistency (low variation scores higher)
Trend	Recent performance direction (improving, declining, or stable) with delta
Orders	Total purchase order lines analyzed

Expanded Vendor Detail

Click a vendor row to expand and see:

- **Score Breakdown** — Visual bars for each scoring component: On-Time Delivery (40%), Lead Time Speed (25%), Consistency (20%), Trend Direction (15%)
- **Vendor Info** — Code, status, phone, email, payment terms
- **Performance Summary** — Total orders, on-time percentage, average lead time, composite score, items supplied
- **Items Supplied Table** — Scrollable table of parts with per-part metrics: order count, average lead time, on-time percentage, average price, last order date

Grading Scale

Grade	Score Range
A	90–100
B	80–89
C	70–79

D	60–69
F	Below 60

Price Break Configuration

Route: `/pricebreak`

AI-analyzed purchase order history to detect and manage quantity-based price breaks. The page has three views, toggled at the top.

View 1: AI Suggestions

Automatically detected price-vs-quantity correlations from your PO history.

Column	Description
Part No	Part number with description
Vendor	Vendor name and code
Signal	Detection strength: Strong, Moderate, Weak, or Minimal (with correlation value)
Avg / Break Price	Average price shown crossed out, break price shown bold
Break Qty	Minimum quantity for the price break
Orders	Number of PO lines analyzed
Savings/yr	Estimated annual savings if the break price is used
Status	Unreviewed, Confirmed, or Dismissed

Click a row to expand and see PO History, AI Analysis, and Price Break Tiers (editable table of tier quantity/price pairs with evidence count).

Actions on expanded rows:

- **Confirm Price Breaks** — Accepts the detected tiers and uses them in ordering recommendations
- **Add Tier** — Manually add an additional price tier
- **Dismiss** — Mark the suggestion as not applicable
- **Re-evaluate** — Revert a dismissed suggestion back to unreviewed

View 2: Configured Breaks

All confirmed price breaks in one table. Includes vendor, part, price tiers (displayed as badges), source (AI Suggested or Manual), confirmation date, and a Remove button. A JSON export is available for integration with other systems.

View 3: Uncovered Items

Items that have no detected or configured price breaks. Use this view to identify items where manual price break research may be worthwhile. Each row has an **Add Break** button to manually enter tier pricing.

Manual Price Break Dialog

When adding a manual price break, a dialog allows you to specify the vendor number, add one or more tiers (each with minimum quantity and price), and save the configuration.

Action Queue

Route: `/actions`

Prioritized recommendations generated from the inventory analysis computations. This is where you act on the insights from all other dashboards.

KPI Cards

Card	Description
Total Actions	Total recommendations generated
Critical	Actions requiring immediate attention
High Priority	Actions to address this week
Medium	Actions to address this month
Total Open Impact	Annual dollar benefit of all open actions
Captured	Dollar benefit from completed actions

Impact Distribution Bar

A stacked bar showing the percentage of total impact by category: Purchasing, Inventory, Sales, Production. Click a segment to filter.

Filters

- **Priority** — All, Critical, High, Medium, Low
- **Category** — All, Purchasing, Inventory, Sales, Production
- **Status** — All, Open, In Progress, Done, Executed, Deferred

Action Cards

Each action shows a priority number (color-coded by urgency), badges for type/category/source/status, description of the recommended action, impact (estimated dollar benefit), effort level, and action buttons.

Status	Available Buttons
Open (reorder)	Execute, Start, Defer
Open (other)	Start, Defer
In Progress (reorder)	Execute, Complete
In Progress (other)	Complete
Done / Deferred	Reopen
Executed	(no buttons — shows requisition number)

Click a row to expand and see the full analysis detail, AI explanation, and affected items table.

Action Types

Type	Category	Executable?	Description

Reorder	Purchasing	Yes	Create a purchase requisition for items below reorder point or at stockout risk
Dead Stock Cleanup	Inventory	No	Liquidation suggestions for items with no recent sales
Overstock Reduction	Purchasing	No	Recommendations to reduce purchasing for overstocked items
RP Misalignment	Inventory	No	Items where Spire's reorder point needs updating

Only **reorder actions** show the Execute button. All other action types are informational — you act on them manually in Spire.

Item Drilldown

Route: `/item/:partNo`

The complete picture of a single item. Accessible by clicking any part number anywhere in the application.

Header

Shows the part number, item type badge, health status badge, ABC class badge, and any linked action badges. Below: description, group number, primary vendor, and warehouse.

KPI Cards (2×4 grid)

Card	Description
On Hand	Current stock quantity
Committed	Quantity committed to sales orders
On Purchase	Quantity on open purchase orders
Available	On Hand minus Committed (red if negative)
Monthly Velocity	Average monthly demand
Current Cost	Per-unit cost from Spire
Spire RP	Reorder point currently set in Spire
Optimal RP	Calculated optimal reorder point

Tabs

Overview Tab

- AI-generated summary of the item's situation (if AI is enabled)
- Health reason card explaining why the item has its current health status
- Days of stock and months of supply
- Velocity statistics: trend slope (growing/declining/stable), coefficient of variation, last sale date, last receipt date

Supply Chain Tab

- **Open Purchase Orders** — Table of active POs: order number, vendor, status, quantities (ordered/received/remaining), unit price, required date
- **Open Sales Orders** — Table of active SOs: order number, customer, quantities (ordered/committed), unit price, required date

Reorder Analysis Tab

- **Reorder Point Comparison** — Visual bar comparison of Spire RP vs. Optimal RP with the difference and percentage
- **Reorder Parameters** — Safety stock, average lead time (editable), average daily demand

Settings

Route: `/settings`

All configurable parameters that control how the application computes its analyses. The page is split into a **section navigation** sidebar (left) and a **parameter editor** (right). Click a section name to view and edit its parameters.

Sections

Section	What It Controls
License	View activation status, company, hostname (read-only)
Spire API	Server URL, company, credentials, UDF filter, data horizon, sync schedule
Carrying Cost Model	Five cost component rates that determine annual carrying cost
Reorder Point Formula	Z-score, service level, lead time buffer, review period, velocity window
Health Thresholds	Dead stock days, overstock months, stockout risk factor, RP misalignment threshold
Vendor Scoring Weights	Weights for on-time delivery, lead time speed, consistency, trend (must sum to 100%)
Forecast Parameters	Regression window, seasonal toggle, quote conversion rate, confidence band, trajectory threshold
Business Targets	Target inventory turns, target DIO, target service level, max carrying rate
AI Integration	Claude API key, model selection, enable/disable toggle

Changing any numeric parameter automatically triggers a background recomputation of all affected dashboards. See the Settings Reference section for complete details on every parameter.

Data Status

Route: `/status`

Monitoring dashboard for the sync engine that pulls data from Spire.

KPI Cards

Card	Description
Last Sync	Timestamp of the most recent sync cycle
Healthy Endpoints	Count of endpoints in good status vs. total (green when all healthy)
Errors	Number of endpoints with errors (green when zero)
Total Records	Total number of records across all synced tables

API Endpoints Table

Column	Description
Status	Green dot = healthy, pulsing = syncing, red = error
Endpoint	API path (e.g., `/inventory/items/`)
Records	Number of records synced
Last Sync	Time since last successful sync
Duration	How long the last sync took
Errors	Error count (red if > 0)

Click a row to expand and see sync details and the last error message (if any).

Force Sync Button

The **Force Sync** button in the top right triggers a full sync of all endpoints immediately. Use this after initial setup, after changing Spire settings, or if you need fresh data outside the normal schedule.

Sync Schedule

Data syncs automatically at the configured daily time (default 22:00, configurable in Settings > Spire API). Different endpoints sync at different intervals:

Interval	Endpoints
15 min	Inventory items, purchase orders, purchase order items, sales orders
30 min	Inventory movement, production orders, production items
60 min	Purchase history, purchase history items, vendors
120 min	Sales invoices, sales invoice items

Formula Reference

Route: `/formulas`

A searchable reference of every mathematical formula used in the computations. Use this page to understand exactly how each metric is calculated.

Sections

Section	Formulas
Velocity & Demand	Monthly Velocity, Trend Slope, Coefficient of Variation, Seasonal Index
Health Classification	Available Quantity, Days of Stock, Dead Stock, Stockout Risk, RP Misaligned, Overstock
Reorder Points	Safety Stock, Optimal Reorder Point
Vendor Scoring	On-Time Delivery, Speed Score, Consistency Score, Composite Score
Financial	Carrying Cost, Inventory Turns, Days Inventory Outstanding
Price Breaks	Correlation, Annual Savings
Forecast	Demand Projection

Use the search bar at the top to find formulas by keyword. Matching sections auto-expand as you type. Click a section header to expand or collapse it.

Key Workflows

Creating a Purchase Requisition

Purchase requisitions are the only write operation the application performs against Spire. A requisition is a staging item — your purchasing team reviews and converts it to an actual purchase order within Spire.

Step-by-step:

1. Navigate to the **Action Queue** (`/actions`).
2. Find a reorder-type action (category: Purchasing, with an **Execute** button).
3. Review the action details by expanding the row — check the recommended quantity, affected part number, and impact value.
4. Click the **Execute** button.
5. A **confirmation dialog** appears showing the action description and priority, a table of items to be requisitioned (part number, description, quantity, unit cost, extended cost, vendor), the total estimated cost, and a warning that this will create requisition(s) in Spire.
6. Review the details. Click **Create Requisition(s)** to proceed, or **Cancel** to abort.
7. On success, a green notification appears with the Spire requisition number. The action status updates to “Executed” and displays the requisition number.
8. On failure, a red notification appears with the error message. The action status remains unchanged so you can retry.

After execution:

- The requisition appears in Spire’s requisition list with status “U” (Unprocessed).
- Purchasing staff use Spire’s “Convert Requisition to PO” function to create the actual purchase order.
- The requisition reference number follows the format `INTEL-{actionId}` for traceability.

Viewing requisition history:

- Executed actions in the Action Queue display their requisition number as a teal badge.
- A full audit log of all requisition creations (successes and failures) is available at `/api/actions/log`.

Investigating a Problem Item

When you see a flagged item on any dashboard, here's how to do a full investigation:

1. **Click the part number** on any page to open the Item Drilldown (`/item/:partNo`).
2. **Check the header** — Note the health status badge and urgency level.
3. **Review the KPI cards** — Look at on-hand vs. committed to understand availability. Check if there's stock on purchase.
4. **Read the Overview tab:** The AI summary (if enabled) provides a plain-language explanation. The health reason explains exactly why the item was flagged. Velocity statistics show demand trends.
5. **Check Supply Chain tab:** Are there open purchase orders? When are they expected? Are there sales orders consuming the stock?
6. **Review Reorder Analysis tab:** Compare Spire's reorder point to the calculated optimal. If the optimal RP is significantly higher, consider updating Spire. If lead time data seems wrong, you can override it.
7. **Take action** — From the Action Queue, find the related action and execute, start, or defer it as appropriate.

Configuring Price Breaks

Price breaks let the system recommend larger order quantities when vendor pricing rewards bulk purchases.

1. Navigate to **Price Breaks** (`/pricebreak`).
2. The **AI Suggestions** view shows automatically detected price-vs-quantity patterns from your purchase history.
3. Review each suggestion: **Signal strength** indicates confidence (Strong = high negative correlation between quantity and price). Expand a row to see the actual PO history and detected price tiers.
4. For valid price breaks: Edit the tier quantities and prices if needed. Click **Confirm Price Breaks** to activate them.
5. For irrelevant detections: Click **Dismiss** to remove them from the unreviewed list.
6. To add price breaks manually: Switch to the **Uncovered Items** view, find the item, click **Add Break**, enter the vendor number and tier quantity/price pairs, then click **Save Price Break**.

Confirmed price breaks may cause the Action Queue to recommend bumping an order quantity to reach a price break tier, with the additional savings shown in the action impact.

Overriding Lead Time for an Item

The system calculates average lead time from purchase order history. If the calculated value is inaccurate for a specific item, you can set a manual override.

1. Navigate to the **Item Drilldown** for the part (`/item/:partNo`).
2. Click the **Reorder Analysis** tab.
3. In the Reorder Parameters section, find **Avg Lead Time**.
4. Click the value to edit it.
5. Enter the correct number of days.
6. Click the save button (checkmark) to confirm.
7. The system triggers a background recomputation of the optimal reorder point and all downstream calculations.

A **“Manual”** badge appears next to overridden lead times. To revert to the calculated value, delete the override from the same location.

Monitoring Sync Health

1. Navigate to **Data Status** (`/status`).
2. The page auto-refreshes every 15 seconds.
3. Check the KPI cards: **Healthy Endpoints** should match the total (e.g., “12/12”). **Errors** should be 0 (green).
4. If any endpoint shows errors: Expand the row to see the error message. Common causes include Spire server restart, network issues, and credential changes. After resolving the underlying issue, click **Force Sync** to retry.

Triggering a Manual Sync

1. Navigate to **Data Status** (`/status`).
2. Click the **Force Sync** button in the top right.
3. A confirmation message appears: “Sync started”.
4. Watch the endpoint table — status dots will pulse for endpoints currently syncing.
5. After all endpoints complete, computations run automatically (scripts 01 through 08 in sequence).
6. All dashboard data updates once computations finish.

Tuning Reorder Points

If the system’s reorder point recommendations seem too aggressive or too conservative:

1. Navigate to **Settings** > **Reorder Point Formula**.
2. Adjust the parameters: **Z-Score** (higher values increase safety stock), **Lead Time Buffer** (extra days for unreliable vendors), **Review Period** (longer periods require more safety stock), **Velocity Window** (shorter windows react faster but are noisier).
3. Click **Save Changes**.

4. The system recomputes all affected tables in the background. Changes reflect across Inventory Health, Inventory Intelligence, and the Action Queue within a few seconds.

Settings Reference

Carrying Cost Model

Controls the annual cost of holding inventory, used in the Financial Impact dashboard.

Parameter	Key	Default	Unit	Range	Description
Cost of Capital	capital_cost_rate	6.5	%	0–20	Opportunity cost of money tied up in inventory
Storage & Handling	storage_cost_rate	3.5	%	0–15	Warehouse space, equipment, and labor costs
Obsolescence Risk	obsolescence_rate	2.5	%	0–10	Expected annual write-down for inventory becoming outdated
Insurance	insurance_rate	0.8	%	0–5	Inventory insurance premium
Shrinkage	shrinkage_rate	0.5	%	0–5	Loss, damage, and theft

Total carrying rate is the sum of all five components. Applied to total inventory value to calculate annual carrying cost.

Reorder Point Formula

Controls how optimal reorder points and safety stock are calculated.

Parameter	Key	Default	Unit	Range	Description
Safety Stock Z-Score	z_score	1.65	σ	0.5–3.0	Statistical confidence level. 1.65 = 95% service, 1.96 = 97.5%, 2.33 = 99%.
Service Level Target	service_level	95	%	80–99.9	Target probability of not stocking out
Lead Time Buffer	lead_time_buffer	5	days	0–30	Extra days added to vendor lead time
Review Period	review_period	7	days	1–30	Days between inventory reviews
Velocity Window	velocity_window_months	6	months	3–24	Months of history used for demand calculation

Health Classification Thresholds

Controls how items are classified into health statuses.

Parameter	Key	Default	Unit	Range	Description
Dead Stock Days	dead_stock_days	180	days	30–365	Items with no sales in this period (and stock on hand) are flagged as dead stock

Overstock Months	overstock_months	6	months	3–18	Items with more than this many months of supply are flagged as overstock
Stockout Risk Factor	lead_time_factor	1.5	×	1.0–3.0	Multiplier on lead-time demand. Items with less available stock than this threshold are at risk.
RP Misalignment	rp_threshold	20	%	5–50	Reorder points more than this percentage below optimal are flagged
ABC A-Class	abc_a_pct	80	%	—	Cumulative revenue percentage for A-class items
ABC B-Class	abc_b_pct	15	%	—	Revenue percentage for B-class items (after A)

Vendor Scoring Weights

Controls how vendor composite scores are calculated. **All weights must sum to 100%.**

Parameter	Key	Default	Unit	Range	Description
On-Time Delivery Weight	delivery_weight	40	%	0–100	How much on-time delivery matters in the composite score
Lead Time Speed Weight	lead_weight	25	%	0–100	How much fast delivery matters
Consistency Weight	consistency_weight	20	%	0–100	How much delivery predictability matters
Trend Direction Weight	trend_weight	15	%	0–100	How much recent improvement matters
On-Time Grace Period	grace_days	3	days	—	Days after required date that still count as on-time

Forecast Parameters

Controls demand forecasting and trajectory analysis.

Parameter	Key	Default	Unit	Range	Description
Regression Window	regression_window	12	months	6–36	Months of history used for trend projection
Seasonal Adjustment	seasonal_enabled	On	toggle	—	Apply 3-year seasonal indexes to projections
Quote Conversion Rate	quote_conversion	42	%	10–90	Expected percentage of quotes that convert to orders
Confidence Band Width	confidence_band	1.0	σ	0.5–2.0	Width of forecast confidence interval
Trajectory Threshold	trajectory_threshold	15	%	5–30	Minimum growth/decline rate to classify an item as growing or declining

Business Targets

Goals used for gap analysis in the Financial Impact dashboard.

Parameter	Key	Default	Unit	Range	Description
Target Inventory Turns	target_turns	5.0	×/yr	2.0–12.0	Desired annual inventory turnover
Target DIO	target_dio	73	days	30–180	Desired average days inventory outstanding
Target Service Level	target_service_level	97	%	85–99.9	Desired order fill rate
Max Carrying Rate	max_carrying_rate	13	%	5–25	Alert threshold for total carrying cost percentage

Spire API

Connection and sync configuration for the Spire ERP server.

Parameter	Default	Description
Server URL	(none)	Spire API base URL (e.g., https://your-server:10880)
Company	(none)	Spire company database code (e.g., mil)
Username	(none)	Spire API username
Password	(none)	Spire API password (masked in UI)
Use UDF Filter	Off	When enabled, only syncs inventory items opted-in via a Spire User-Defined Field
Data Horizon	2 years	How far back to sync historical data (1, 2, 3, 5 years, or all)
Daily Sync Time	22:00	Time the automatic daily sync runs

Warning: Changing the Server URL or Company triggers a full data clear — all synced and computed data is deleted and must be re-synced.

AI Integration

Optional AI-powered features for item summaries and action explanations.

Parameter	Default	Description
Claude API Key	(none)	Anthropic API key (masked in UI)
Claude Model	claude-sonnet-4-5-20250929	Model used for AI features
AI Enabled	On	Master toggle for all AI features

When enabled, AI provides item summaries on the Item Drilldown page, action explanations on the Action Queue, and price break analysis on the Price Break page.

Glossary

Term	Definition
ABC Classification	Items ranked by revenue contribution. A = top ~80% of revenue (highest value), B = next ~15%, C = remaining ~5%.
Available Quantity	On Hand minus Committed. Represents stock not yet allocated to sales orders.
Carrying Cost	The annual cost of holding inventory, including capital, storage, obsolescence, insurance, and shrinkage.
Coefficient of Variation (CV)	Standard deviation of monthly demand divided by mean monthly demand. Measures demand consistency — lower is more predictable.
Committed	Quantity allocated to open sales orders in Spire.
Composite Score	Vendor performance score (0–100) combining on-time delivery, speed, consistency, and trend metrics.
Days of Stock	How many days current on-hand inventory will last at the current daily demand rate.
Days Inventory Outstanding (DIO)	Average number of days inventory sits before being sold. Calculated as 365 ÷ inventory turns.
Dead Stock	Items with on-hand inventory but no sales in the configured period (default 180 days).
Demand Velocity	Average monthly units sold, calculated from outbound shipment history.
Forecast	Projected future demand using linear regression on historical velocity, optionally adjusted for seasonal patterns.
Full Replace Sync	Sync strategy that deletes and reloads all records each cycle. Used for smaller, frequently changing datasets.
Incremental Sync	Sync strategy that only adds records newer than the last sync. Used for large, append-only datasets.
Inventory Turns	Annual cost of goods sold divided by average inventory value. Higher turns indicate more efficient use of capital.
Lead Time	Days from placing a purchase order to receiving the goods. Calculated from PO history per vendor/item.
Lead Time Buffer	Extra days added to calculated lead times as a safety margin against vendor delays.
Months of Supply	On-hand quantity divided by monthly velocity. How many months current stock will last.
On Hand	Current physical stock quantity in the warehouse.
On Purchase	Quantity on open purchase orders not yet received.
Optimal Reorder Point	Calculated reorder point based on demand, lead time, and safety stock. May differ from Spire's current reorder point.
Overstock	Items with more months of supply than the configured threshold (default 6 months).

Price Break	A quantity threshold where the vendor offers a lower per-unit price. Detected from PO history patterns.
Requisition	A purchase request created in Spire as a staging step before a formal purchase order. Status: U = Unprocessed, O = Open, R = Received.
Review Period	Days between inventory reviews in the periodic review model. Affects safety stock calculations.
RP Misaligned	Items where Spire's reorder point is significantly below the calculated optimal reorder point.
Safety Stock	Extra inventory held to buffer against demand variability and lead time uncertainty.
Seasonal Index	Average demand for a specific month divided by overall monthly average. Values above 1.0 indicate above-average demand months.
Service Level	Target probability of not experiencing a stockout. A 95% service level means a 5% chance of stocking out during a lead time period.
Stockout Risk	Items where available stock is insufficient to cover expected demand during the lead time period.
Trend Slope	The direction and rate of demand change over time, calculated via linear regression. Positive = growing, negative = declining.
UDF Filter	User-Defined Field filter in Spire. When enabled, only items with the Inventory Intelligence UDF are synced.
Velocity Window	The number of months of historical data used to calculate demand velocity and variability.
Z-Score	Number of standard deviations used in safety stock calculation. Higher z-scores provide higher service levels at the cost of more safety stock.