SOUTHERN MACHINERY

ProSMD Storage System Solution

Components reel storage, finished PCBA storage and empty PCB storage proposal for SMT production management.

3 Storage Tracks | ESD Control

Humidity Control | May 27, 2026

Prepared for: ProSMD
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Overall Scheme & Storage Logic

Three storage requirements are organized from incoming components to boards and WIP handling.

1 Components Reels Storage

Moisture-proof cabinet for approximately 1000 standard SMD reels, with ESD and humidity control.

2 Finished Board Storage

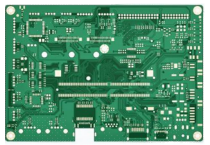
Anti-static PCB containers or dry cabinet configuration for completed PCBs after SMT / THT assembly.

3 Empty Board Storage

S9616 ESD trolley for organized bare PCB buffering and transfer before production.

18-25°C
Target stable temperature for component reel storage.

1-60% RH
Wide-range adjustable humidity control.



10^6-10^9 Ω
ESD reference range for PCB trolley and ESD storage systems.

Requirement Summary

Key requirements extracted and reorganized into a decision table.

Area	Storage object	Capacity / environment	Structure & control requirement
1. Reel Storage	SMT / SMD reel components	Approx. 1000 standard reels; 18-25°C; 30-50% RH target; 1-60% RH adjustable	Closed dust-proof moisture-proof cabinet; ESD compliant trays; monitoring only, no intelligent control required
2. Finished Board Storage	Finished PCBs after SMT / THT assembly	+10°C to +25°C; 1-60% RH adjustable according to product requirements	Anti-static racks and anti-static PCB containers; open rack or dry cabinet depending on humidity need
3. Empty Board Storage	Unprocessed bare PCBs	Bulk storage around 1000 standard-size blank PCBs	Multi-layer anti-static PCB storage trolley with dedicated slots / trays

Selection principle: capacity target, humidity requirement, reel / PCB size mix and ESD control should be confirmed together before final cabinet quantity and inner configuration are fixed.

Request 1 - Components Reels Storage

Storage target: SMT / SMD reel components with controlled humidity and ESD protection.

Core storage requirement

Storage object: SMT reel components / SMD reel components.

Storage capacity: approximately 1000 standard SMD reels.

Temperature: stable control at 18-25°C.

Humidity: stable control at 30-50% RH; compatible with 1-60% RH wide-range adjustment.

ESD protection: cabinet and internal trays should comply with SMT industry ESD standards.

Closed cabinet design with dust-proof function.

No intelligent control system required; only basic temperature / humidity maintenance and monitoring.

Built-in dedicated trays compatible with standard SMD reels.

1000
Approximate standard SMD reel storage target.

30-50% RH
Target humidity range for normal control.

ESD
Cabinet and tray protection requirement.

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Components Reel Storage - Three Solution Options

Options are organized by inner configuration and capacity approach.

A S-1428L

Moisture-proof cabinet with built-in slots

5 SMT-dedicated shelves.

Slot width: 17 mm.

Maximum 700 reels (7-inch reference).

B S-1428LS

Cabinet + ESD reel containers

Same cabinet size as S-1428L.

Interior shelf board for multiple ESD reel containers.

Container sizes: 410 / 490 / 560 mm reference.

Maximum 960 reels reference.

C S-1428LE

Empty cabinet + SIR5000 storage rack

Empty cabinet for internal ESD storage rack.

SIR5000 rack size: 1198 × 457 × 1500 mm.

Capacity: 450 pcs 7-inch + 30 pcs 13-inch reference.

Better for mixed reel sizes and rack-based access.

Recommendation note: S-1428LS is closest to the 1000-reel target. Final cabinet quantity should be confirmed with actual reel diameter, reel width and 7-inch / 13-inch mix.

S-1428L Moisture-Proof Cabinet - Specifications

Base cabinet platform for Solution A and common cabinet reference for Solution B / C.

Item	Specification
Model specification	S-1428L
Cabinet material	1.2 mm cold rolled steel plate
Dehumidification range	1% - 60% RH
Shelf configuration	5 SMT-dedicated shelves
Rated voltage	AC 220V, 50/60Hz
Average power consumption	10W - 35W
Internal sensor	Imported from Sweden
Humidity control accuracy	±2% RH
External dimensions	W1200 × D710 × H1920 mm
Internal dimensions	W1198 × D680 × H1738 mm
Dehumidification method	Physical dehumidification
Slot width	17 mm
Storage capacity	Maximum 700 reels (7-inch reference)

Configuration note

Capacity is a reference value and depends on reel diameter, reel width and shelf layout. Final layout should be confirmed with actual materials.

S-1428L Cabinet Structure & Key Features

Mechanical and environmental control details supporting stable reel storage.

Removable Door Column

Detachable center door column supports easier storage of large components or materials.

Double-Sided Access Doors

Dual-side opening design helps material loading and unloading from both sides of the line.

Adjustable Multi-Tier Shelves

Five freely adjustable shelves; each shelf supports up to 100 kg reference load.

Humidity Control

Microcomputer display for temperature / humidity, with alarm limit and calibration functions.

Airtight & Visible

3.2 mm tempered glass and 360° magnetic door seal support visibility and closure.

ESD Body & Mobility

Anti-static coating, hidden push locks, casters and fixed feet for access and positioning.

Solution B - S-1428LS with ESD Reel Containers

Higher reel density by using multiple ESD reel containers inside the moisture-proof cabinet.

Configuration logic

Cabinet dimensions are the same as S-1428L.

Interior is configured as shelf board for multiple ESD reel containers.

Container size references: 410 × 190 × 110 mm, 490 × 190 × 110 mm and 560 × 358 × 175 mm.

Slot quantity: 26 / 32 slots reference by container type.

Capacity: maximum 960 reels reference.

Best fit when high 7-inch reel quantity is the priority and the customer wants cabinet-level humidity control without an intelligent management system.

960 reels
Maximum capacity reference for this configuration.

26 / 32
Container slot options depending on container size.

Solution C - S-1428LE with Internal SIR5000 Rack

Empty moisture-proof cabinet configured with a dedicated internal ESD storage rack.

1198 × 457 × 1500 mm

SIR5000 internal rack size reference.

5 layers

4 layers for 7-inch reels + 1 layer for 13-inch reels.

450 + 30

Reference capacity: 450 pcs 7-inch and 30 pcs 13-inch.

17 / 37 mm

Slot width reference: 7-inch / 13-inch reels.

Use this option when mixed reel sizes, rack-style access and cabinet-level environmental control are required. Final capacity should be reviewed according to the actual 13-inch reel share.

Request 2 - Finished Board Storage

Finished PCBs after SMT / through-hole assembly require organized ESD storage and optional humidity control.

Storage requirements

Storage object: finished printed circuit boards after SMT / THT assembly.

Temperature: maintained between +10°C and +25°C.

Humidity: adjustable between 1% and 60% RH based on product requirements.

Structure: anti-static racks + anti-static baskets / slots for organized finished PCB storage.

Optional configuration: open anti-static storage racks or anti-static dry cabinets with temperature / humidity control.

Design decision

Use an open ESD rack when humidity is not critical. Use a dry cabinet with ESD PCB containers when humidity control and dust protection are required.

Finished Board Storage - Proposed Configuration

S-1428LS moisture-proof cabinet with ESD PCB containers for controlled finished PCB storage.

Cabinet reference	Specification
Model	S-1428LS / S-1428L cabinet platform
Cabinet material	1.2 mm cold rolled steel plate
Dehumidification range	1% - 60% RH
Shelf configuration	5 SMT-dedicated shelves
Power	AC220V, 50/60Hz; average 10W - 35W
Humidity accuracy	±2% RH reference
External dimensions	W1200 × D710 × H1920 mm
Internal dimensions	W1198 × D680 × H1738 mm
Use with	ESD PCB containers selected by board size and slot requirement

ESD PCB Container Options

Each container type shows both the empty container body and the board-loading reference view.

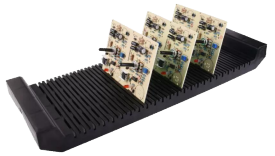
Empty container | With PCBA example

1 L Shape Container

L270 × W210 × H95 mm
25 slots | Slot size 5 × 4 mm

2 U Shape Container

L465 × W175 × T23 mm
25 slots | Slot size 8 × 3 mm / 3 × 2 mm

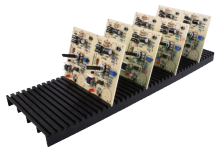


3 H Shape Container

L440 × W160 × T27 mm
25 slots | Slot size 8 × 3 mm

4 Plane Container

L415 × W145 × T20 mm
42 slots | Slot size 5 × 3 mm



Selection note: confirm actual PCBA outline, thickness, component keep-out area, slot pitch and ESD handling procedure before final container selection.

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Request 3 - Empty Board Storage

Bare PCB storage for standard-size blank boards before SMT processing.

Blank PCB storage requirement

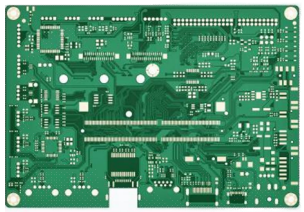
Storage object: unprocessed blank printed circuit boards (bare PCBs).

Storage capacity: bulk storage of approximately 1000 standard-size blank PCBs.

ESD protection: storage rack and slots / trays should comply with SMT industry ESD standards.

Structure: multi-layer anti-static PCB storage rack with dedicated slots / trays for organized board storage.

Reference design: standard PCB handling / storage rack compatible with common blank PCB sizes.



Recommended direction

Use an ESD trolley for flexible buffering, line-side movement and organized bare PCB handling before production.

S9616 ESD Trolley for PCB Handling

Proposed storage and transfer trolley for empty PCB storage and workshop movement.

Item	Specification
Model	S9616 ESD trolley for PCB handling
Dimensions	950 × 600 × 1600 mm
Resistance	10^6 Ω - 10^9 Ω
Container quantity	24 pcs
Container slots	38 slots per container
Total slots	912 slots
Load capacity	100 kg reference
Material	Stainless steel

912
Total slot capacity reference.

100 kg
Reference load capacity.

10^6-10^9 Ω
ESD resistance reference.

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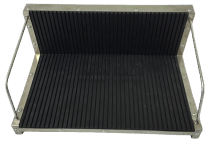
S9616 Feature Highlights

Practical construction features for ESD handling and daily workshop operation.



Stable ESD Performance

Compliant with anti-static reference range of 10^6 - 10^9 Ω; tested using heavy-electrode surface tester.

Ultra-Silent Swivel Casters

High-strength double-bearing silent casters, with impact-resistant and deformation-resistant construction.

Continuous Fish-Scale Welding

Full weld structure improves durability compared with spot welding for long-term use.

Application note: this trolley supports empty PCB staging and movement. Final slot plan should be checked according to board size, board thickness and production transfer method.

Environmental, ESD & Process Considerations

Controls should be matched with actual material sensitivity and site operating practice.

Humidity Control

Use dry cabinet humidity setting based on reel / board sensitivity and storage time.

Temperature Range

Reel storage target: 18-25°C. Finished board storage: +10°C to +25°C reference.

ESD Protection

Cabinets, trays, containers and trolleys should be reviewed according to SMT ESD procedures.

Dust & Handling

Closed cabinets reduce dust exposure; containers and slots support organized board handling.

Monitoring Scope

Basic temperature / humidity maintenance and monitoring is sufficient for this request.

Final Validation

Capacity and configuration should be validated using actual reels, boards and site layout.

No fixed environmental guarantee is assumed here. Final storage setpoint and acceptance method should be confirmed according to the customer site and material requirements.

Implementation Sequence & Confirmation Checklist

Recommended order for confirming final layout and quantity.

1 Confirm Materials

Reel diameter / width, 7-inch / 13-inch mix, finished PCBA size and bare PCB size.

2 Select Inner Layout

Built-in slots, ESD reel containers, internal rack, PCB containers or trolley slots.

3 Check Capacity

Calculate real slot utilization and cabinet / trolley quantity according to actual material mix.

4 Confirm Site Conditions

Power, footprint, aisle clearance, ESD grounding and operating access around storage area.

Final confirmation checklist

Humidity setpoint and alarm range for reels / finished boards.
Actual reel container quantity and total reel count.
Finished board container shape and slot pitch.
Bare PCB slot pitch, trolley quantity and aisle width.
ESD verification method and storage operating procedure.
Final project configuration and delivery documentation.

Service, Documentation & Training

Support items for project communication, delivery and day-to-day operation.

Pre-Sales Support

Requirement review, solution proposal and configuration communication.

Installation / Training

Installation guidance and operator training can be arranged according to project requirements.

Spare Parts Support

Spare parts and wear parts can be coordinated for storage system maintenance planning.

Customized Solution

Special cabinet layout, rack structure and storage configuration can be reviewed upon request.

Southern Machinery can provide English proposal materials, configuration discussion and project follow-up for overseas SMT customers.

Contact Southern Machinery

Storage system solution for ProSMD.

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