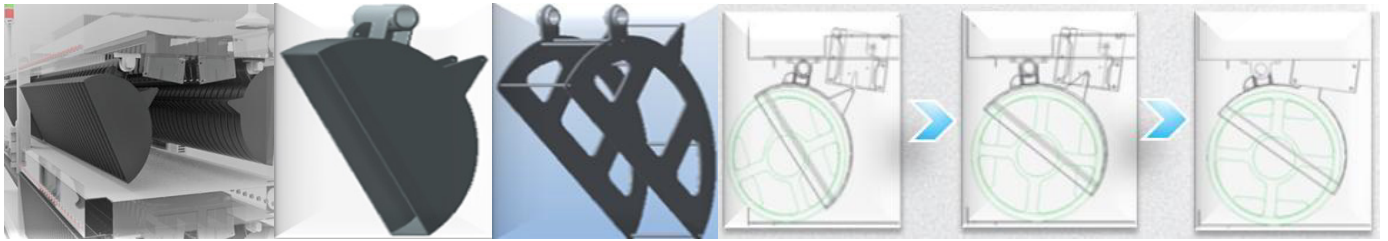# Catálogo

SMT Matrix Intelligent Locked Storage Rack

I.C.T SMT Matrix Intelligent Locked Storage Rack

Solution:

Part 1: Solution overview

1. Cloud to End control (Cloud---Server, End--- Storage Rack, Handheld PDA):

Only level-1 data access and level-1 instruction sending and receiving (i.e. cloud storage, but not storage at the end, and execution at the cloud sending instruction end), and the global feedback mechanism (data and instruction verification) have low requirements on the network, which can solve the problem of high data synchronization error rate from the root. Support network cable or full WiFi mode.

2. Multipurpose storage:

Workshop warehouse matrix storage, smt line side warehouse.

3. Data flow:

The handheld PDA collects the bar code of the material tray (the station label can be printed synchronously), and the system controls, issuing, feeding or replenishing according to the work order and the feeding table.

4. Traceability:

Real name IC card hierarchical authority management, recording operation log, responsibility traceability, whereabouts traceability, quantity change traceability.

Part 2: Detailed Description

1. Classified warehouse: general warehouse (first class warehouse, existing)   centralized warehouse (second class warehouse, new)

smt line side warehouse (third class warehouse, new).

2. Digitalization: collect data with barcode of material tray, control by system, issue, pick or load materials by cycle, work order and material loading table.

3. Efficient flow: intelligent software and hardware assistance, fool type quick take, put or reload, AGV car automatic transportation, accurate and efficient.

4. Traceability: add operator ID management, record operation log, responsibility traceability, destination traceability, quantity change traceability.

Part 3: Process drawing

![SMTVYS TECHNOLOGY]

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┌─────────┐      ──────────►      ┌──────────────────────────┐    ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
│   MES   │      ◄──────────      │   Frist class WMS+Control│      Card swiping authorization is required for the entry
└─────────┘                       └──────────────────────────┘      and exit of materials in the whole process
                                         ▲  ▲                    └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                                         │  │  ┌───────────┐
                                         │  │  │ Data flow │
                                         ▼  │  └───────────┘
                          ┌──────────────────────┐      ◄─────────      ┌──────────────────────┐
                          │    SMT warehouse     │                      │  Return to warehouse │
                          └──────────────────────┘                      └──────────────────────┘
                                  │   ┌──────────────────────────┐              ▲
                                  │   │  Auto statistics, auto feed│            │
          ┌───────┐               ▼   └──────────────────────────┘       ┌───────┐
          │  AGV  │            ┌───────┐                                  │  AGV  │
          └───────┘            │  AGV  │                                  └───────┘
                               └───────┘                                      ▲
      ┌──────────────┐             │                                          │
      │ Prepare parts│             ▼                                          │
      └──────────────┘      ┌──────────────────────┐                         │
                            │  SMT line warehouse  │                         │
                            └──────────────────────┘                         │
                                     │           ┌──────────┐                 │
                                     ▼           │  Return  │                 │
                            ┌──────────────┐     └──────────┘                 │
                            │   SMT line   │─────────────────────────────────┘
                            └──────────────┘
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Part 4: Flow drawing

Centralized warehouse

Second class warehouse

X-ray counter

AGV

SMT Line

SMT Line side warehouse
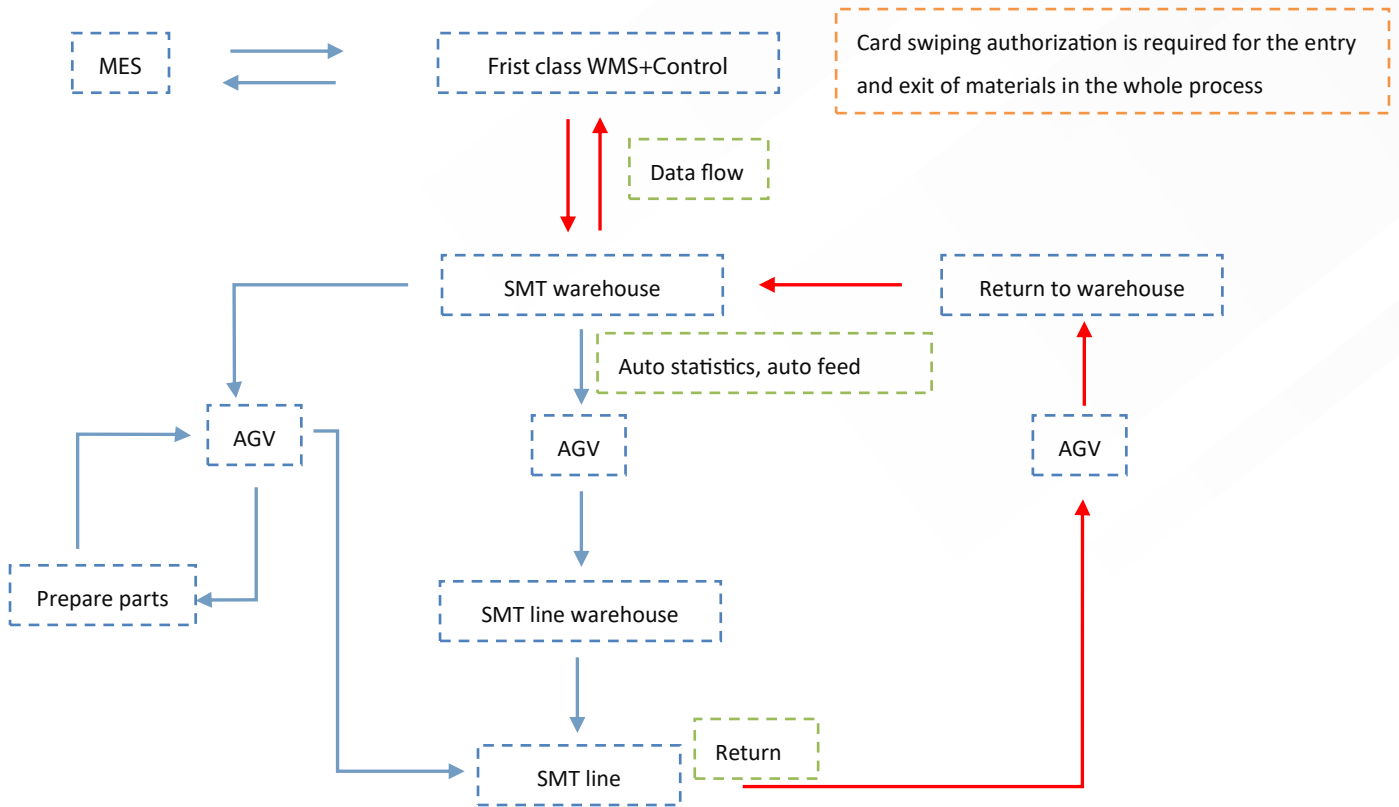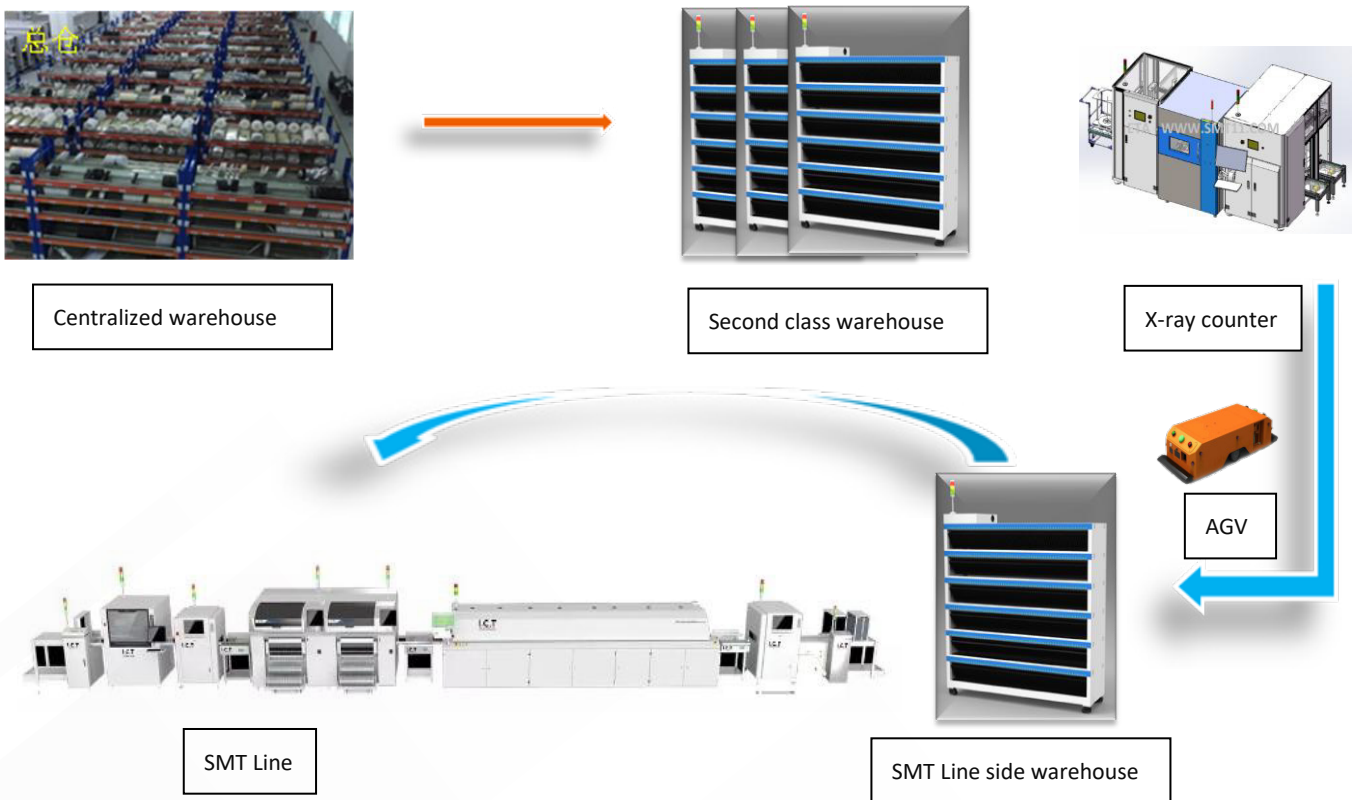
Part 5: Node description

Centralized warehouse:

Commonly known as small warehouse, it is set in each workshop to store materials for several lines. It can be fed from the general warehouse according to the cycle or production schedule. It is composed of integrated intelligent storage equipment, which can quickly scan the code and put it in and lock it at will (anti freeze). The system automatically records the matching material code, location information and material quantity. It can be connected to the database or MES to update the shared data in real time. The line side warehouse comes here to pick up materials.

SMT Line side warehouse:

That is to say, a single intelligent material rack is placed next to the SMT production line, and the nesting materials are collected from the centralized warehouse according to the work order or material loading table, and transported to the line side by the AGV trolley. The system can quickly scan the code and put it in at will and lock it (foolproof). The system automatically records the matching material code, location information and material quantity. When loading or refuelling, the personnel swipe the card for authorization and scan the code to automatically pop up the material, which is fast, accurate and intuitive.

AGV car:

The nesting material is transported from the centralized warehouse to the line side warehouse, and the transportation process is unmanned and efficient.

Automatic X-ray counter:

The unused materials are offline, X-ray materials are automatically counted, returned to the centralized warehouse, and the data is automatically updated to the database or MES.

Features:

Free rein	Safety	Simple

After receiving the materials in the main warehouse, swipe the IC card to obtain the operation authority. After scanning the barcode on the material tray, it can be placed at any empty material level in the line side warehouse at will. Push it lightly and lock it. The red light is on. Efficient, anti daze.
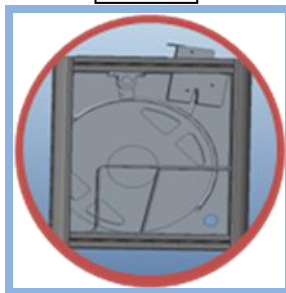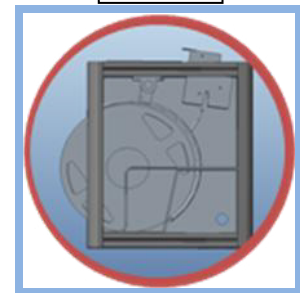
After the material tray is placed OK and the material level is locked, this material level will automatically bind with the scanned material one-to-one and generate a circulation list. After the material is discharged, the operator cannot take it out at will, and the red light is always on, so as to realize rigid anti freeze.
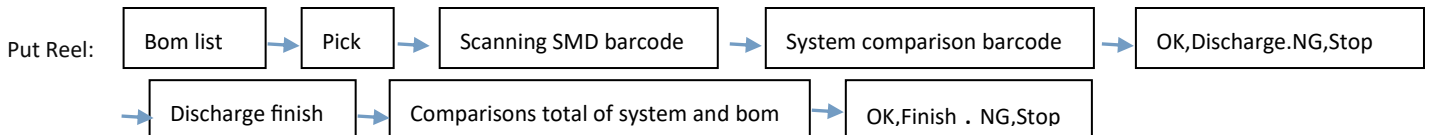
Refuelling: swipe the IC card to obtain the operation authority, scan the barcode of the empty material tray, and the system prompts the empty tray to be placed in the designated position, and the material with the same code will pop up automatically. The red light will turn green, and the material will be taken and the code will be scanned to write off the material level, and the green light will go out.
Picking: generally operate according to the specified material loading table or work order, and unlock the picking in batch.

Model A Second class warehouse:

This mode needs to edit the loading table in advance and input it into system. The master warehouse picks up materials according to the work order. When scanning the code, it needs to compare the barcode information with the material loading table. The barcode is the same and it is allowed. When the barcode is different, it is forbidden to place materials (the master warehouse sends wrong materials). After the material is placed, it will compare the quantity and total quantity of each material with the material loading table. The information is the same as that the material is placed OK. If the information is not consistent, it means that the material is picked less, picked more or picked wrong.

All operations are controlled by software. IC card is used for personnel ID management, which corresponds to the personnel card and keeps the historical operation trace.

N+   +N

Put Reel:

Bom list → Pick → Scanning SMD barcode → System comparison barcode → OK,Discharge.NG,Stop

→ Discharge finish → Comparisons total of system and bom → OK,Finish . NG,Stop
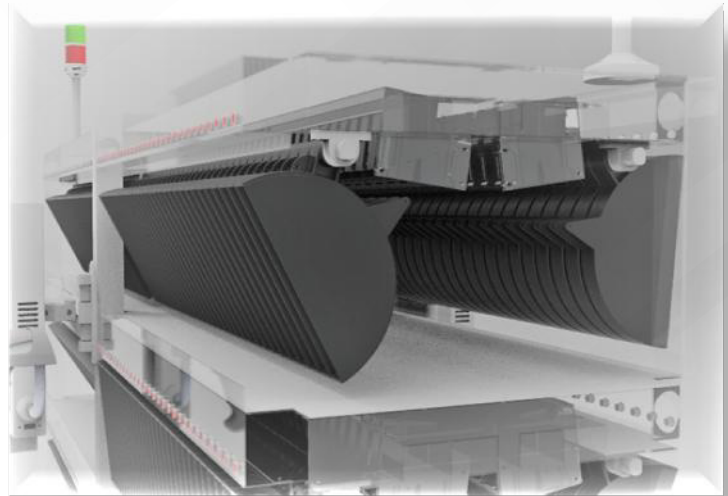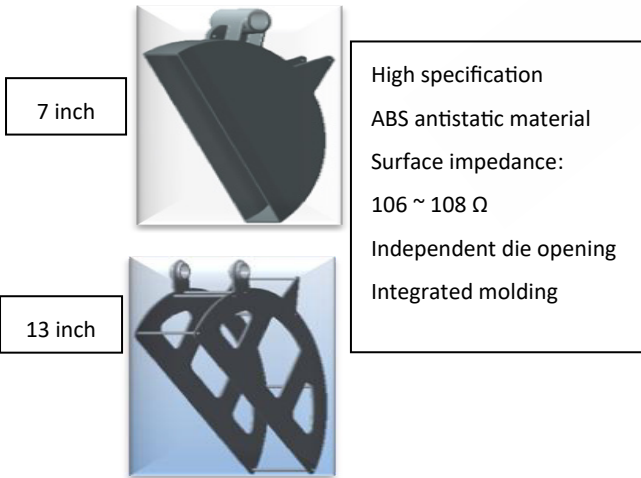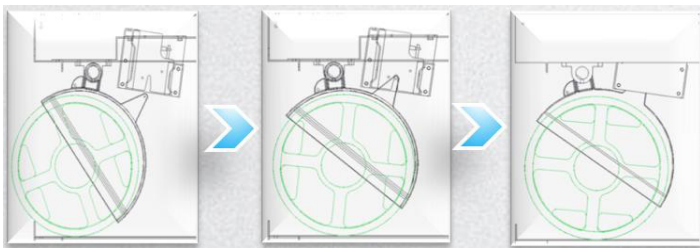
Model B SMT Line side warehouse:

After picking up the material in the main warehouse, directly scan the code and put the material tray into any material level of the line side warehouse, gently push the lock and automatically light up, and continuously put the material until the end of placing, and automatically generate the storage list. After scanning the code, the response material will pop up automatically. Scan the code to write off the material level, OK!

All operations are controlled by software. IC card is used for personnel ID management, which corresponds to the personnel card and keeps the historical operation trace.

Put Reel:

IC Card → Put reel → Scanning barcode → Arbitrary feeding, self-locking, generating list → Save,Finish

Exchange Reel:

IC Card → exchange reel → Scanning empty reel → After empty reel is placed in specified position, the same code reel will pop up automatically

→ Scanning,picking → Light off → Update, return to main interface

Pick Reel:

IC Card → Search code → Click to unlock → Scanning,picking → Light off → Update, Return
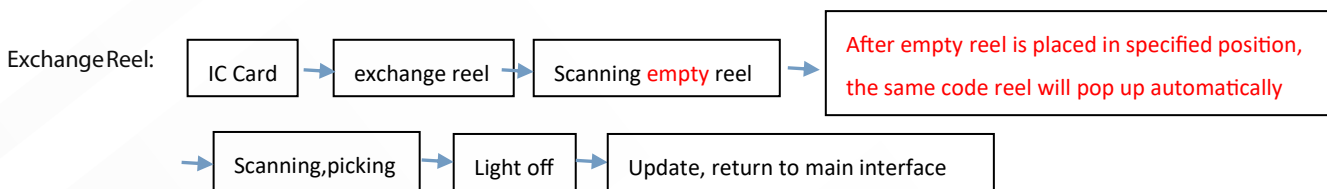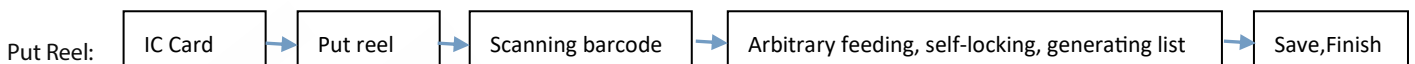
Core Advantages:

Advantages 1: Forced locking design of intelligent lock

7 inch

13 inch

High specification
ABS antistatic material
Surface impedance:
106 ~ 108 Ω
Independent die opening
Integrated molding

Reel locking principle, hardware error proofing, 1-second operation

ABS antistatic hopper.
Each reel is locked independently, and the hardware is protected from stupidity.
Each reel has an independent sensor, I/O board and indicator light.
Each floor is equipped with a primary control panel.
Each machine is equipped with a WiFi communication board.
Handheld PDA operation, code scanning, NFC card authorization

Advantages 2: New communication and control principles

Server ⟷ Switch

Switch ⟷ Server
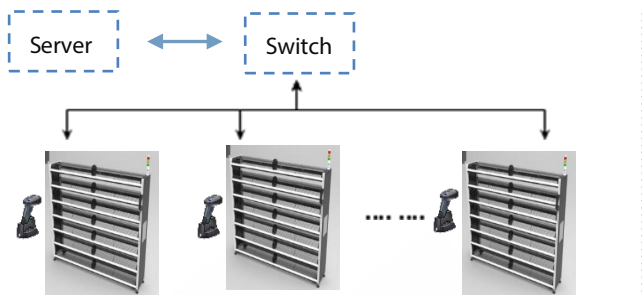
Other mode has two major problems:
1. Cloud and end-to-end storage, cloud and end need to synchronize data in batches.
2. No feedback mechanism, high requirements for network stability, error prone and difficult to check.
3. Two level communication, Android main control board has long polling time, low efficiency and data error prone.
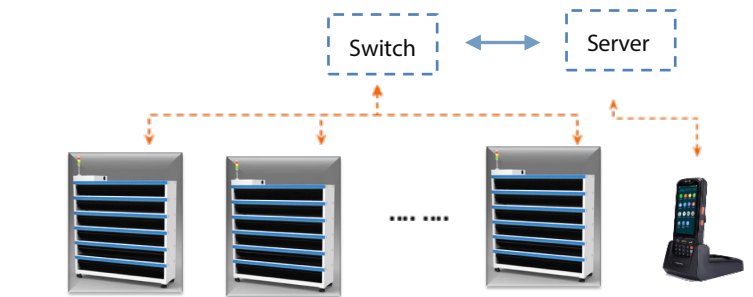
I.C.T new model advantages:
1. Cloud storage, cloud instruction, end execution.
2. The cloud and terminal feed back each other, have low requirements for network stability, and eliminate data errors.
3. Global wireless, PDA directly connected to the cloud, NFC card swiping authorization, code scanning, viewing or operation.
4. Three level parallel communication, perform their duties, second level polling, high efficiency and no error.

Compare with Sensor Rack:

Sensor + Light	I.C.T Locked Type
Sensor + indicator + system	Sensor + mechanical locked + indicator + system
Scan the code, place it arbitrarily and bind the reel level	Scan the code, place it arbitrarily and bind the reel level
Two level data, two-level control, error prone	Cloud to end control, no error
Failure does not affect put in and put out reels	If failure, use software highest authority, will not affect the use
No hardware protection, only alarm prompt	Locking + code scanning review, hard to prevent stupidity
With WMS	With WMS, supporting MES docking
Low cost	Higher cost
/	IC card authorization management, traceability
/	ABS mould, high-grade anti-static

Compare with Tower:

	Tower	I.C.T Locked Type
Photo		
Model	stereoscopic	Matrix, combinatorial
Explanation	Single type, poor flexibility, customers can not adjust the collocation at will	Combined type, can be flexibly matched according to the demand, multi unit network, one unit multi-purpose
	Very high height, inconvenient maintenance	Moderate height, easy to operate and maintain
	In case of failure, the materials cannot be taken and put, so it is very dangerous to take and put them by force	In case of failure, high authority safe reclaiming is available; the software skips the failure position and other positions operate normally
	Slow picking and discharging speed and low efficiency	High speed and efficiency of taking and discharging materials
	Once positioned, cannot move	Light and convenient, put down the caster, one person can move freely, flexible and convenient
	The mode of centralized warehouse and line side warehouse is different, which is not easy to manage	Multi machine combined centralized warehouse, single machine applicable to line side warehouse, the same mode, easy to operate, convenient for unified management
Authority control		Real name IC card hierarchical authority management, any operation needs to be authorized by swiping card, with evidence to be recovered
MES	Option	Option 1: MES;

		Option 2: when the customer does not have MES system, data centralized management software support is optional.

Specification:

Model	I.C.T IMS840S
Reel Material	Antistatic
Reel Size	7 inch
Layer Number	6
Reel Number	140pcs/Rack,Total:840 pcs reels
Power	AC220V,110V
Network	Line or Wifi
Dimension	L2000*W550*H2000mm
Remark	Customized products, all dimensions will be changed according to the customer's products, please subject to the confirmation results