2023

QTX Manual for Standard Front-Pushing Tape Feeder

Thank you for purchasing our product. Please adhere to the following instructions during use:

★Operation should be performed by personnel with electrical knowledge.
★Please read and understand this manual thoroughly before proper use.
★Please keep this manual properly for future reference.



消费电子　新能源电池　智慧数字工厂

Warning

Front Position of Cutter,Rear Position of Cutter,Clamp Position of Material Tape,Motor Gear Position,Beware of Pinching at Belt Transmission Position!

Warning

Improper use may result in minor to moderate personal injury, severe injury or even death in extreme cases. Additionally, it may cause significant economic losses.

Warning

For safety purposes, this product must not be used directly or indirectly for human detection.

Do not use this product as a dedicated detection device forhuman protection.

High voltage parts inside. Disassembly may result in electric shock or burns due to high temperatures.

Please refrain from dismantling, repairing, modifying, overloading, or incinerating the main unit.

Caution

May cause malfunction or fire.

In use, please do not exceed the rated voltage.

There is a potential risk of minor burns in some cases.

please note that the housing may be hot during operation or after power is just turned off. Avoid touching the housing.

Key Safety Points

For safety, comply with these instructions to avoid damage or fire:

1.Set up the environment

（1）Please do not use it in an environment with flammable or explosive gases.

（2）Keep controller away from high-voltage or power equipment for safe operation or maintenance.

（3）Please maintain a safe distance from peripheral equipment during use.

2.Power Supply and Control Cable

（1）Please ensure the load is used within the rated range.

目录

Overview 2
Product Overview 2
Product Features 2
Common specifications and parameters 4
Mechanism Introduction and Description 5
Machine Structure Overview 5
Component Description 5
Technical Specifications 6
Feeder installation and disassembly 7
Feeder installation 7
Feeder disassembly 7
Feeder loading 8
Tape threading method 8
Initial Loading and Debugging 8
Wiring Control Instructions 9
Touch Screen Operating Instructions 10
1. Main Interface 10
2. Single-Step Debugging 11
Routine Maintenance 13
Troubleshooting 14
Version Record 15

Overview

Product Overview

The front-push reel feeder is suitable for automatically peeling and feeding roll materials such as paper labels, protective films, foams, double-sided adhesives, conductive adhesives, copper foil, steel sheets, stiffeners, etc. Featuring an industrial-grade intelligent design, this feeder boasts strong compatibility, fast feeding speed, adjustable feeding parameters, and includes both online and automatic modes for user convenience. It supports abnormal alarm output and remote reset, with optional GPIO communication and RS232 communication. Additionally, it features a simple-to-operate color touchscreen for displaying and setting parameters. When integrated into automated equipment, the rear-withdrawal reel feeder can effectively achieve automatic feeding and improve production efficiency, making it highly suitable for the SMT industry, 3C manufacturing, and logistics industries.

- Within the range of supporting the largest backing paper, our SMT feeder supports adjustable widths of different tape feeds. In the design of fixed tape feeds, we abandon the pressing method and adopt a suction design to maximize the preservation of the original state of the materials.

- In the design of material peeling, we utilize a motion control method of suction prior to peeling, achieving precise and flawless peeling.

- In terms of anti-stick treatment, we utilize an exceptional anti-stick material that minimizes the adhesion force of materials during label dispensing, preventing material deformation and enhancing the positional accuracy of dispensed components in the SMT feeder industry.

- In our SMT feeder manufacturing industry, we adopt a highly reliable industrial-grade design for our control system, featuring a 32-bit efficient processor, innovative motor control and motor drive design. This system supports advanced control functions such as ultra-quiet operation, anti-jitter, step loss prevention, anti-overshoot, and dynamic torque adjustment based on speed, ensuring the stability and reliability of material dispensing.

Product Features

- Compact design that maintains maximum tape width while reducing overall width, tailored for the SMT feeder industry.
- Independently developed micro-power structure, featuring compact size and high torque.

- Designed with sturdy aluminum alloy, it is lightweight, solid, and durable.
- Advanced push-feed mechanism, featuring peel-before-pick.
- Supports simultaneous dispensing of single and multiple columns.
- ±0.3MM feeding accuracy and a dispensing rate of over 99.7%.
- Utilizing a 32-bit high-efficiency processor, it demonstrates superior control performance.
- Exceptional usability, supporting both online and automatic modes.

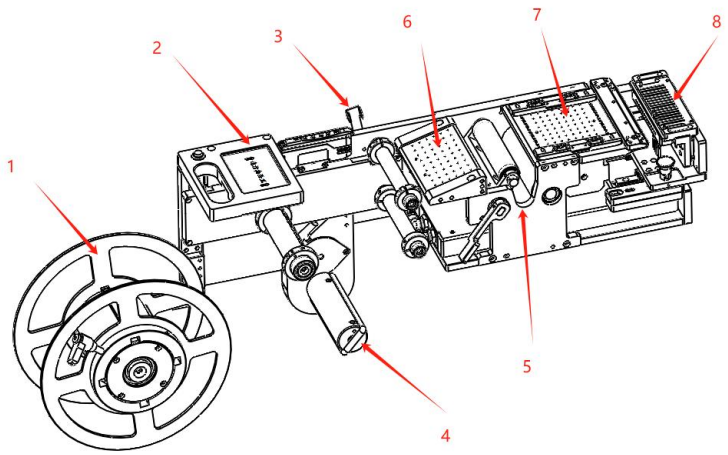
Common specifications and parameters

项　目 ITEMS	
Feeding method	Strip-then-pick
Material Type	Roll materials such as paper labels, protective films, foams, double-sided adhesive tapes,and conductive adhesives.
Backing paper width.	20mm — 120mm , 120mm , The above requires customization.
Backing paper thickness.	≤ 0.07mm
Backing paper material	PET　Plastic Mold/Paper Tape Release Paper
Material Width	≥ 3mm ≤ Backing Paper Width
Material Thickness	≤ 10mm
Reel Core Size	Standard 3-inch feed shaft included, optional standard 6-inch feed shaft (customizable).
Magazine Shelf Capacity	3Kg MAX
Material Receiving Platform	High-density foam/High-polymer anti-stick material
Material Positioning Method	Fiber Optic Sensing + Software Compensation
Film Cover Retrieval Method	Supports independent film-collecting component expansion on the top.
Tape Take-Up Method	Standard with bottom transmission component for collecting liner/Supports independent liner-collecting component expansion at the bottom.
Feeding Position Accuracy	± 0.2 mm
Feed Position Adjustment Method	Adjustment of mechanical limit component in X direction, software adjustment in Y direction, and mechanical adjustment in Z direction.
Input Power Specification	DC 24.0V ｜3.0A MAX
Input Air Pressure Specification	Compressed Air 0.40 Mpa ~ 0.60 Mpa,Negative Pressure-60 Kpa ~ 100 Kpa
Communication Interface	None
Hardware Communication Method	GPIO
Central Processing Unit (CPU)	32-bit High-Performance Processor
Actuation Drive Method	Electric + Pneumatic
Operation Panel	3.5-inch TFT color screen, 480 x 320 pixels, resistive touch screen
Feed Speed	Infinitely Variable Speed Control, Maximum Support for 150mm/s MAX.
Standby Power Consumption	< 15W
Operating Temperature	Temperature -20 ~ 65℃
Operating Humidity	Humidity 20~90%RH, No condensation
Storage Temperature	Temperature -40 ~ 85℃
Storage Humidity	Humidity 10 ~ 95%
Lifespan	>=20K hrs. (25℃)
Dimension	Subject to the actual product specifications.
Quality	Subject to the actual product specifications.

Mechanism Introduction and Description

Machine Structure Overview

The following image introduces a standard push-type feeder, which supports a maximum base paper width of 120mm. Customization is required for widths exceeding 120mm.



Note: Image for reference, actual product prevails.

Component Description

(1) Feed Reel Shaft

Feed Spindle, Supports 3-inch, 6-inch, and Customized Sizes. Material Rolls are Mounted on the Spindle for Easy Loading.

(2) Touch Screen Assembly

Feeder Control Interface for System Parameter Settings and Flyer Movement Control.

(3) Linkage Mechanism

Fixed Tape Feed Mechanism.

(4) Bottom Film Retract Mechanism

Used for winding waste backing paper. The material collection action of the standard collection spindle typically adopts a drive system, and also supports a separate drive design.

(5) Feeder Clamp Assembly

The function of the feeder clamp assembly is to grip and advance the tape carrier.

(6) Vacuum Platform

The vacuum platform serves to increase the friction between the backing paper and the platform, preventing the material tape from deviating, and can also cooperate with the pressure cylinder to keep the material tape stable and stationary when the peeling knife retracts.

(7) Stripper Component

With the knife blade, material separates smoothly from backing paper. The blade has a scale for easy paper position adjustment. Its hinge plate is adjustable to set limits based on paper conditions.

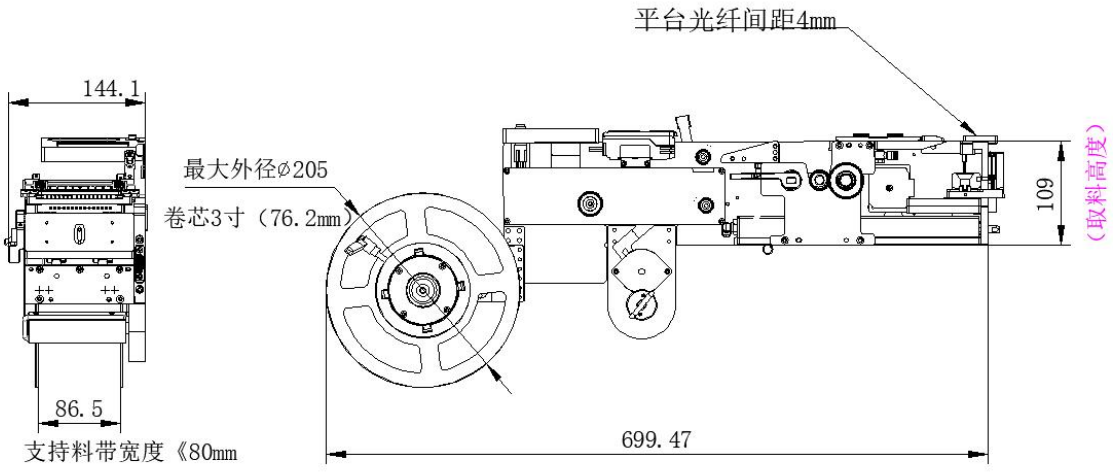
(8) Pick-up Platform

The receiving platform has a sensor that halts feeding upon material detection. It also features anti-stick technology to prevent material adhesion.

(9) Cover Film Retrieval Mechanism

For use with winding film, the cover film retraction mechanism typically employs a separate drive design.

Technical Specifications

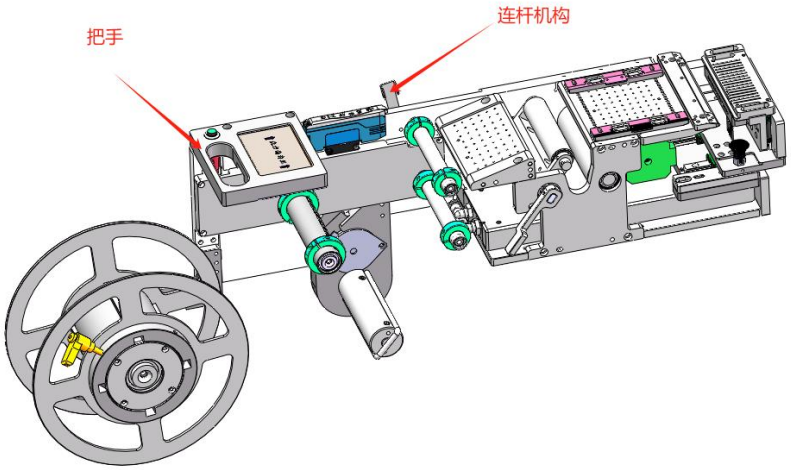


Feeder installation and disassembly

Feeder installation

☆Feeder installation

For installation, pull out the positioning pin, hold the feeder handle with the left hand, support the bottom with the right, insert the guide rail vertically into the slot, push to the limit, and lock the feeder with the linkage mechanism as shown below.



Feeder disassembly

During disassembly, please pull the linkage mechanism backward first, then hold the handle with your left hand and pull it backward, while supporting the feeder bottom with your right hand to slowly pull out the feeder.

Cautions：

1.During feeder installation, please avoid forceful insertion as it may easily cause damage to the feeder.

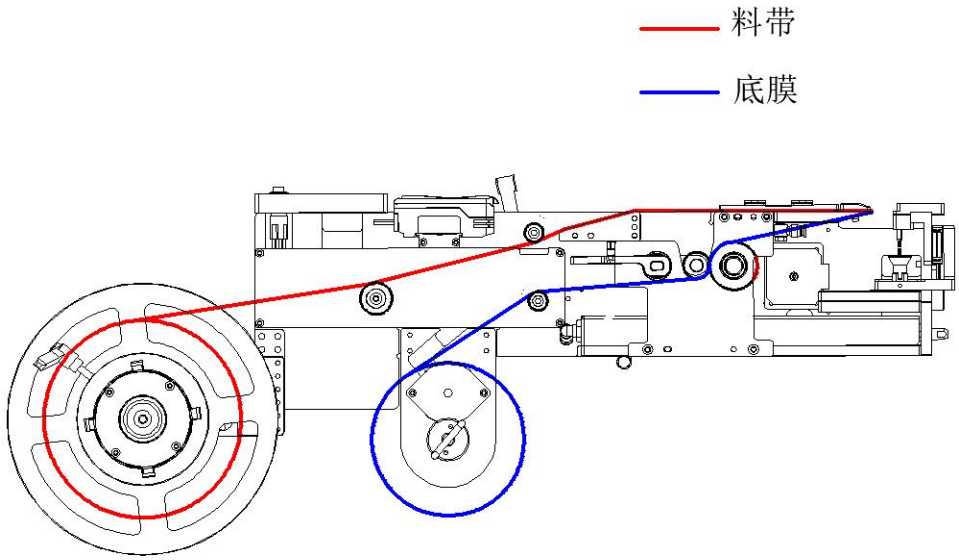
2.When pulling out the feeder, please do not apply excessive force to prevent it from falling.

3.Be cautious about safety during plugging and unplugging.

Feeder loading

Tape threading method

The threading diagram is shown below:



Initial Loading and Debugging

① To ensure the equipment is in a paused state, manually lift and rotate the locating pin to move the component feeding platform assembly forward.

② Mount the new tape reel onto the 3(6)-inch feed shaft, properly install the label stop plate, and release all limit rings and blocks.

③ Start threading the tape according to the tape path shown in the above diagram.

④ Thread the tape along the red route as indicated in the diagram above.

⑤ Thread waste film per purple path, tighten to taut, clamp with handle, wrap end around spool, secure with clamp.

⑥ Thread waste film along blue path, wrap end on take-up shaft, clamp with wire.

⑦ Push the splice platform back to its original position, then rotate and press the locating pin to secure the splice platform.

⑧ Tap Feed button on touchscreen. Initial test with empty tape. Lock limits after tape is aligned.

Wiring Control Instructions

Wiring Instructions for Standard Front-Loading Tape Feeder (14-PIN Quick-Connect Terminal)

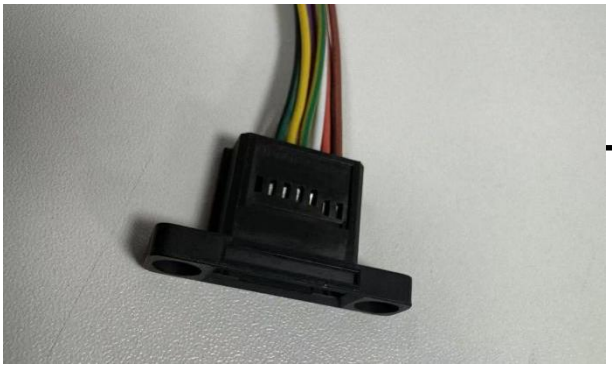
Basic Instructions

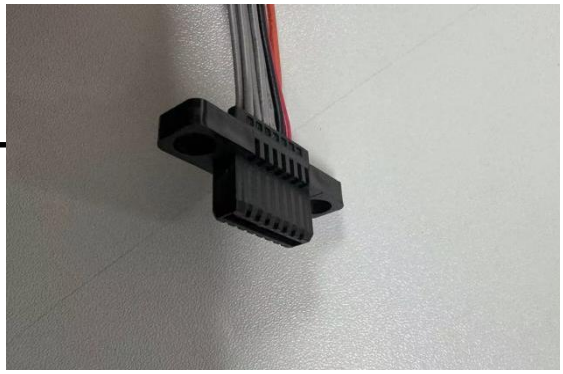
1.The feeder communicates with equipment via IO. See manual for function details.
2.Factory-equipped with 12-PIN aviation connector harness, 1500mm length.
3.Feeder signals are tested and approved before shipment.
4.Harness preinstalled on feeder side, other end trimmable per customer needs.
5.Feeder signals are normally open.

Pin Description

Pin Coding	Wire Color	Pin Name	Function Description
1	Black	Positive Power Terminal	Positive Power Supply, 24V DC Input
2	Brown	Positive Power Terminal	Positive Power Supply, 24V DC Input
3	Red	Negative Power Terminal	Negative Power Terminal, DC 0V Input
4	Orange	Negative Power Terminal	Negative Power Terminal, DC 0V Input
5	Black & White	EXI3	Emergency Stop Signal, Active at Low Level
6	White	EXI2	Initialization Signal, Active Low
7	Orange-White	/	Backup
8	Yellow-Green	EXI0	Feed Start Signal, Active Low
9	Purple	EXO3	Feed Completion Signal, Active Low
10	Yellow	/	Backup
11	Gray	EXO1	Fault Alarm Signal, Active Low on Alarm
12	Green-Black	EXO0	Initialization Complete Signal, Active Low
13	Empty	/	/
14	Empty	/	/

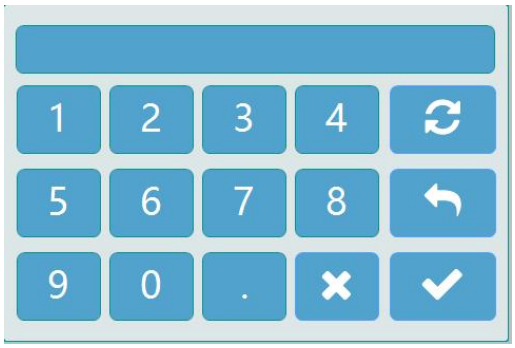
Product Photo：





Touch Screen Operating Instructions

1. Main Interface



①Unlock: Log in with "0000" to modify parameters. Click "Unlock", enter "0000", click √. Must log in first.

②Mode Selection: Modes include Automatic Mode and Online Mode

Auto Mode: Auto Feed; Resets auto-feed if no material detected, no external control.

Online Mode: The host computer can control the feeder actions via IO signals.

③System Reset: Resets feeder to normal operation after alarm or emergency stop.

④Feed Button: Executes single feed in debug mode.

⑤Emergency Stop: Feeder Motion Stop Button; To halt the feeder's operations, press the "Emergency Stop" button. This will stop all feeder movements. To resume feeder operations, press "System Reset" on the interface or trigger an external initialization signal.

⑥Feed Counting: Records the number of feeding cycles, unit/pcs

Tape Feed Speed: The advancing speed of the carrier tape during feeding by the feeder, expressed as a percentage of the maximum rotation speed of the feeding motor, unit/%. For example, if the maximum motor speed is 1200r/min and the tape feed speed is set to 50, the actual motor speed will be 600r/min.

Feed Compensation: The additional distance the material advances after the material head is sensed by the sensor, unit/mm.

Tape Feed Limit: Maximum forward distance for a single tape feed, unit: mm; If the sensor fails to detect the material after traveling the set "Tape Feed Limit" distance, an alarm will be triggered, outputting "Feed Failure".

2. Single-Step Debugging

All buttons correspond to single actions.

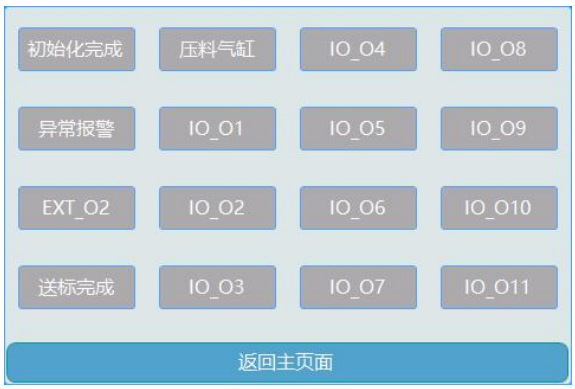
Ageing Start: For feeder ageing test purposes.

3. Input Port

Feeder Input Signal Monitoring Page; Used for Signal Interfacing

4. Output Port

Feeder Output Signal Monitoring Interface; Suitable for Signal Integration



5. Feeding Parameters

Feeder feeding speed can be divided into two stages: fast fixed-length movement + slow target search (ensuring both feeding speed and precision).

Slowdown Position: Length for rapid feeding before slowdown

Slowdown Speed: Slow speed for material location

Collection Speed: Collection speed of the lower material collection mechanism

Material Release Speed: Material release speed of the upper material collection mechanism

Delayed Feeding: Time interval between removing the current material and the next feeding in automatic mode

Other items are consistent with the main interface.

6. Motor Control

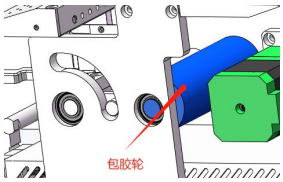
Motor 1: Feed Motor　　Motor 2: Standby

Motor 3: Upper Collection Motor　　Motor 4: Lower Collection Motor

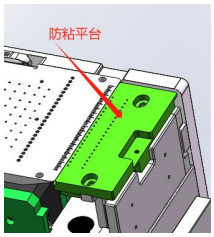
Routine Maintenance

1.Regularly check if there are any abnormal noises, smells, deformations, etc., during the operation of the entire feeder.

2.Regularly inspect the rubber-coated wheels for damage, residual material attachment, and perform regular cleaning.

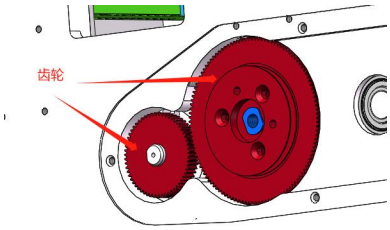


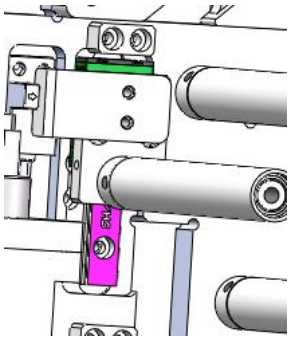
1.Regularly check for damage to the anti-stick silicone gel on the material receiving platform.

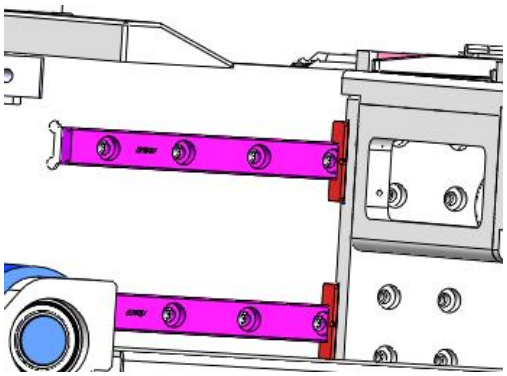


1.Regularly check for loose screws in the transmission parts.

2.Regularly lubricate transmission components such as gears, racks, lead screws, and guide rails.







Troubleshooting

Fault Phenomenon	Handling Method
Tape Misalignment	Check if the tape is pulled straight.
	Check if the material limit block completely restricts the tape.
	Check if the limit ring is set correctly to serve its limiting function.
	Check if the rubber-coated wheel is worn or deformed.
Material Cannot Be Normally Peeled Off	Is the backing paper excessively thick?
	Check if the material release force is too high.
	Check if the height of the anti-stick platform is higher than the peeling blade.
	Is the gap between the anti-stick platform and the peeling plate too large?
Material front end does not peel off at the stripping point and moves down together with the backing paper	Tape tension insufficient, tighten tape for more damping.
	Increase vacuum for more damping.
	Excessive release force, check material separation.
	Check tape pressure cover & anti-stick platform height.
	Check gap between anti-stick platform & peeling plate.
Material warping	Adjust the feeding compensation until feeding is normal.
	Check if the material receiving platform is higher than the cutter blade.
Uneven feeding	Insufficient pressure between rollers, adjust or replace Non-professionals, do not operate!
Unable to pick up material normally	Anti-stick platform worn, replace material for normal pickup.
	Mismatched nozzle and material.
	Incorrect nozzle pickup height setting.
Screen prompt detects obstruction at sensor position	Fiber optic may be obstructed by small objects. Blow air on the fiber optic head.
	Adjust the sensing value of the fiber optic amplifier.
	Material found on the receiving platform.
Abnormal motor noise	Control board malfunction, please replace the main control board.
	Motor malfunction, please replace the motor.
	Excessive gear clearance causing abnormal noise or gear wear, please replace.
Motor does not rotate	Control board malfunction, please replace the main control board.
	Motor malfunction, please replace the motor.
Abnormal dispensing position	Motor missteps or stalls, causing feeding position issues.
	Sensor threshold misconfigured, please reconfigure.
	Tape slipping, check tape damping and clamping for issues.
Tape is difficult to pull	Check tape damping, pressure cover, and tape jamming.
	Check bottom paper clamp, gear assembly, motor for issues.
Abnormal withdrawal of stripping knife	Check for obstructions in the knife retraction path.
	Check motor strength and control board for anomalies.

Touchscreen display is blacked out.	Touchscreen malfunction, please replace the touchscreen.
	Control board malfunction, please replace the main control board.
	Check for loose connections of the touchscreen.
Touchscreen display is blank.	Touchscreen malfunction, please replace the touchscreen.
	Control board malfunction, please replace the main control board.
Touchscreen display is distorted	Touchscreen malfunction. Please replace the touchscreen.
Touchscreen malfunctioning.	Touchscreen malfunction. Please replace the touchscreen.
External IO control feeder malfunction	Control board malfunction, please replace the main control board.
	Check the 14PIN or 12PIN connector on the feeder for poor contact.
	Check control circuit and logic for accuracy.
The feeder cannot save data.	Control board memory error, replace mainboard.
Feeder emitting unusual odor	Please check if the temperature of each motor is excessively high.
	Check for unusual odor or carbonized parts on the control board.

Version Record

Version	Revision date	Revisor	Revision details