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Model: XR1515

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XR1515 Series User Manual

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Overview

1.1 Equipment Overview

Thank you very much for choosing our XR1515 series equipment!

Please read this user manual carefully before operating the machine to ensure proper and safe usage.

Keep this manual in a safe, convenient place for future reference.

Depending on the specific configuration of your model, some features listed in this manual may not be available on your machine. Please refer to the actual operating functions of your specific unit.

1.2 Safety Precautions

NOTICE



The manufacturer is not responsible for damage, injury, production loss, or other losses caused by improper operation, unauthorized modification, incorrect installation, incompatible parts, or service by unqualified personnel.

1.3 Operating Environment

- Indoor, dry, clean, and well-ventilated location
- Operating workspace temperature: 41–104°F
- Relative Humidity: 30%–90%, non-condensing
- Stable, level, heat-resistant work surface
- Keep away from water, excessive dust, corrosive gases, flammable materials, and explosive vapors

1.4 Grounding & Technical Parameters

1.4-1 Grounding Requirements:

To prevent electric shock or fire hazards caused by electrical leakage, overvoltage, or insulation breakdown, please ensure the power supply control is reliably grounded. The grounding resistance must be less than 10 ohms, the wire length must be within 20 meters (approx. 65 feet), and the wire cross-sectional area must be greater than 4 square millimeters.

Danger: Moving machinery hazards present! It is the user's responsibility to design effective error-handling and safety protection mechanisms during production. This equipment assumes no obligation or liability for any incidental or consequential damages resulting therefrom.

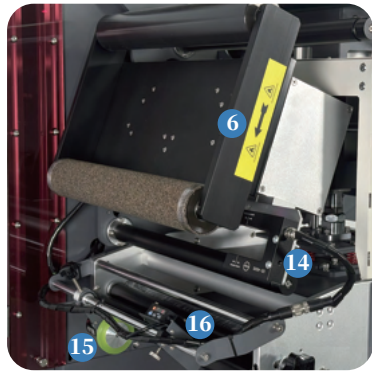
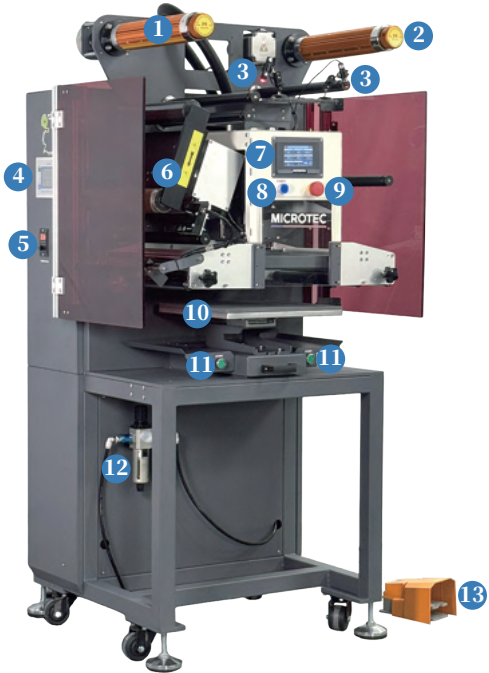
1.4-2 Technical Parameters:

Technical Specifications	Details
MODEL NO.	XR1515
Controller	PLC(XD3-32T-E + SK-043QE)
Amp\Voltage\Power\phase	10A\220V\2200W, 60HZ
Time Range(S)	0~999
Temperature Range(°F)	0~450
Heating plate size (Inch)	14.9*14.9

Appearance and Functions

2.1 Exterior View

(Please refer to the images in your original document for labels 1 through 16.)



2.2 Component Names and Functions

1.DTF Film Tensioning Shaft (Unwind): Holds the DTF material; features a tightening function.

2.DTF Film Tensioning Shaft (Rewind): Collects waste DTF material; features a tightening function. (Please refer to the DTF Film Routing Diagram).

3.Infrared Laser: Enables rapid positioning and placement of garments.

4Automatic Web Guide Controller: Allows setting and adjustment of the web guiding system's position.

5.Tension Controller: Adjusts the rewind tightness of the DTF film tensioning shaft. Please adjust appropriately.

6.High-Performance Servo Web Guide: Automatically fine-tunes the transfer position of the DTF heat transfer film on the lower plate to eliminate tracking drift or misalignment.

7.PLC Touchscreen Controller: Controls machine movements, heating, and the transfer process.

8.Power Switch: Turns the machine power ON and OFF.

9.Emergency Stop Switch: Pressing this switch during a transfer cycle immediately raises the heating plate, resets the DTF film to its highest position, and terminates the transfer process.

10.Worktable (Platen): Holds the transfer substrates/materials.

11.Dual Safety Green Start Buttons: Synchronously pressing both start buttons with both hands automatically feeds the worktable in. It automatically ejects and resets once the transfer is complete.

12.Air Regulator & Gauge Assembly: Adjusts the operating air pressure and displays the current pressure value. The green section can be shifted left or right to quickly switch the air supply ON/OFF.

13.Foot Switch: Tap lightly with your foot to automatically feed the worktable in. It automatically ejects and resets once the transfer is complete.

14Automatic Web Guide Ultrasonic Sensor: Rapidly and automatically detects the feed position of the DTF film to govern the movement direction of the web guide controller.

15.Encoder Sensor Wheel: Detects the travel distance of the DTF film.

16.Color Mark Sensor: Identifies the position of the DTF graphics/patterns.

Color Mark Sensor Setup Procedure:



Align the color mark light spot with the longest side of the pattern to ensure it detects the largest portion of the pattern.

● **16.1 Mode Selection:** Press the **MODE** button to select **TEACH** mode.

● 16.2 Teaching:

1.Align the light spot with the color mark, then press the **ON** button.

2.Align the light spot with the background color, then press the **OFF** button. (Note: The order of steps 1 and 2 can be reversed).

● **16.3 Detection:** Teaching complete. The system automatically selects the optimal LED and reverts to **RUN** mode.

(Text inside flowchart graphic)

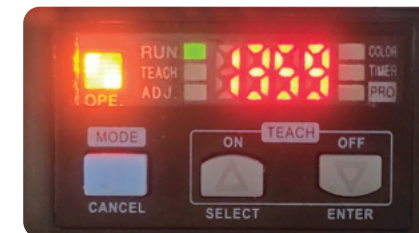
● **Mode Selection:** Press **MODE** button to select **TEACH** mode.

● Teaching:

1.Align light spot with color mark, press **ON** button.

2.Align light spot with background color, press **OFF** button. (The order of 1 and 2 can be reversed).

● **Detection:** Teaching complete. Automatically selects optimal LED and returns to **RUN** mode. (Setting complete display).



2.3 PLC Touchscreen Controller Interface and Functions

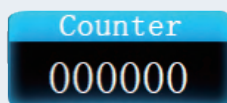
2.3.1 Main Screen



● **SV** = Set Value / Target Temperature (Tap to bring up the keypad for input).



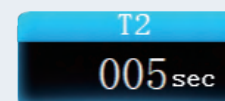
● **PV** = Process Value / Actual Temperature (Read-only / cannot be adjusted).



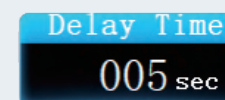
● **COUNTER** = Cycle Count (5-digit display. Increases by 1 when the countdown timer finishes. Press and hold for 5 seconds to clear/reset).



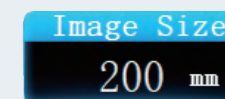
● **T1** = First Press Time (Tap **T1** to bring up the keypad to modify).



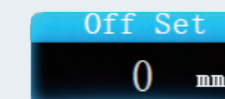
● **T2** = Second Press Time (Tap **T2** to bring up the keypad to modify. If set to 0, the second press sequence will not execute).



● **DELAY TIME** = DTF Film Lift Delay Time.



● **IMAGE SIZE** = Length of the graphic/image (in mm).



● **OFF SET** = Left/Right image adjustment. (+) shifts right, (-) shifts left. (Unit: mm. Left/Right orientation is based on the operator facing the front of the machine).



● **Right Arrow Key** = Tap the right arrow key to manually jog the film to the right by 2mm per tap. (Press and hold for 2 seconds for continuous feed; release to stop).



● **Gear Button** = Enters Engineering Mode.

T

● **"T" Key (Test):** Test key. Tap the "T" key once, then tap the foot switch once. The DTF film will automatically advance to the preset position and stop. Once completed, you **must** tap the "T" key again to return to Transfer Mode.

R

● **"R" Key (Reset):** Reset key. Tap once to clear the recorded encoder data. This reset key **must** be pressed after loading new materials or performing a "T" key test sequence.

2.3.2 Image Calibration and Automatic Operation



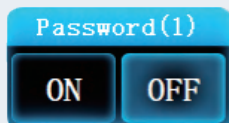
Press the "R" key to clear the current encoder value. After configuring the color mark sensor, press the "T" key to enter DTF Film Calibration Mode (the heating plate will remain inactive during this process). Press the dual start buttons or step on the foot switch; the take-up motor will run, and the film will automatically stop winding once the image reaches the center of the heating plate. Verify the image position at this stage. If there is a misalignment, adjust the **OFF SET** parameter. Press the buttons or foot switch again; the take-up motor will resume running and stop at the next image. Once debugging is complete, deactivate the "T" key to reset, and step on the foot switch again to begin automatic transfer operation.



1. Every time material is reloaded, you **must** press "R" to zero out the encoder position value (this button is disabled during active transfer operations). If pattern dimensions change, update the image size parameters and repeat the color mark sensor and DTF film calibration procedure.

2. Cycle the Emergency Stop switch to reset the equipment upon every power-up.

2.3.3 Engineering Mode Interface



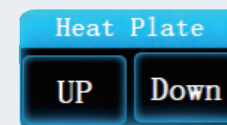
● **PASSWORD (1)** = Startup Password. Factory default is 888. The user can select **ON** / **OFF**. If **OFF** is selected, no password is required at startup.



● **PASSWORD (2)** = Machine Lockout Password. If the customer has a pending final balance, this is uniformly set to 372 prior to shipment. Once fully paid, it is set to **OFF**. If the customer wishes to enable **PASSWORD (2)** after full payment, simply tap it to configure. The machine will automatically lock every 2 months.



● **°C / °F Toggle** = The active unit illuminates green; the inactive unit stays white.



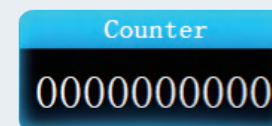
● **HEAT PLATE** = Controls the vertical travel of the heating plate. **UP** = Raise, **DOWN** = Lower.



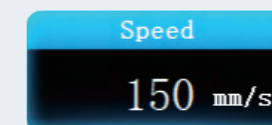
● **BOTTOM PLATE** = Controls the worktable actuation. **IN** = Advance/Enter, **OUT** = Retract/Exit.



● **FILM** = Controls the film frame vertical travel. **UP** = Raise, **DOWN** = Lower.



● **COUNTER** = Master Cycle Count (9-digit display). Increases by 1 when the countdown timer finishes. Cannot be cleared/reset).



● **SPEED** = Feed Speed (Unit: mm/s).

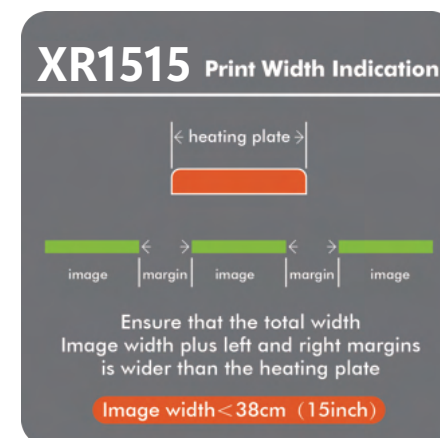
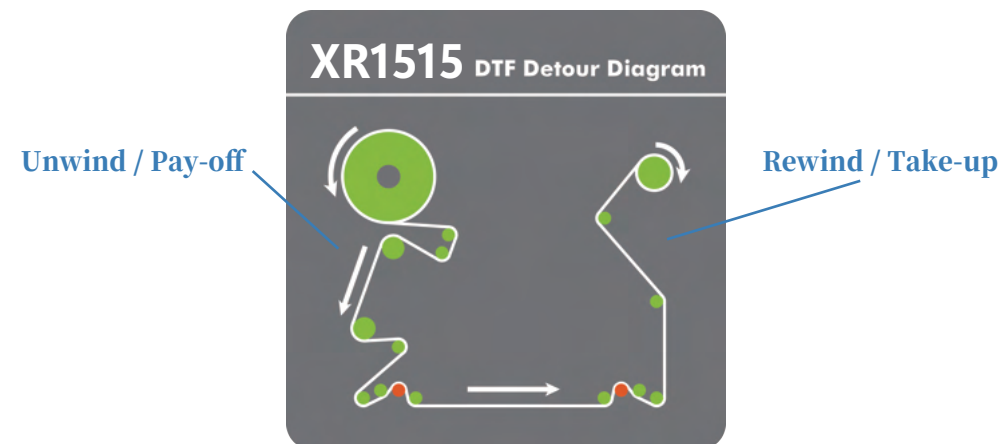


● BACK = Returns to the "Main Screen".

NOTE:

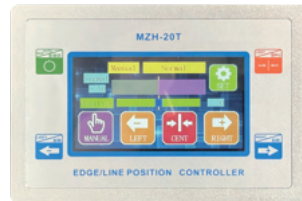
- Before tapping **"DOWN"** under the **HEAT PLATE** function, you must first tap **"DOWN"** under **FILM**, otherwise no action will occur.
- Before tapping **"UP"** under **FILM**, you must first tap **"UP"** under the **HEAT PLATE** function, otherwise no action will occur.
- To actuate **"IN"** and **"OUT"** for the **BOTTOM PLATE**, both the **HEAT PLATE** and **FILM** must be in their **"UP"** positions.

2.4 DTF Film Routing Diagram



2.5 Functional Operations

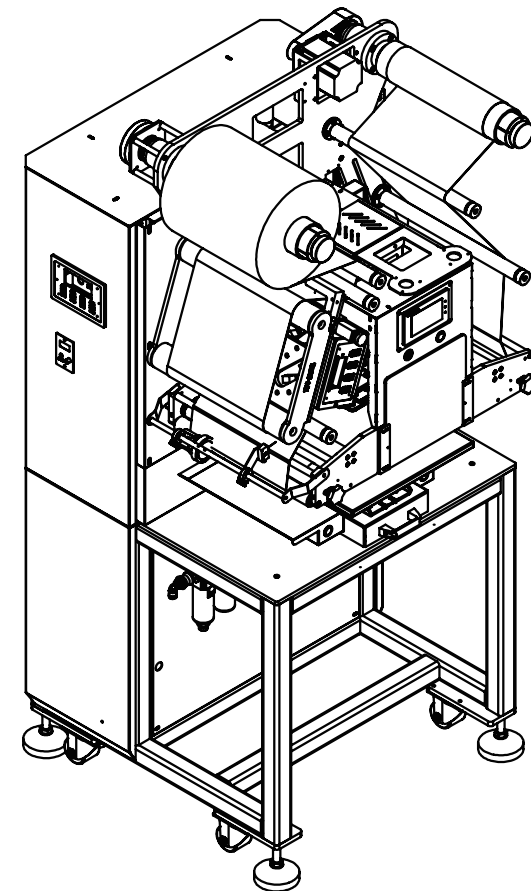
1. Verify that the air supply and power supply are normal and stable.
2. Load and route the transfer material in strict accordance with the **DTF Film Routing Diagram**.
3. Correctly adjust the torque on the tension controller.
4. Switch the web guide to **MANUAL** mode, press the center-alignment button (**CENT**), and adjust the probe position. Observe the web guide display screen until the displayed value reads 0. Then, press the **AUTO** button to put the web guide into automatic running mode.

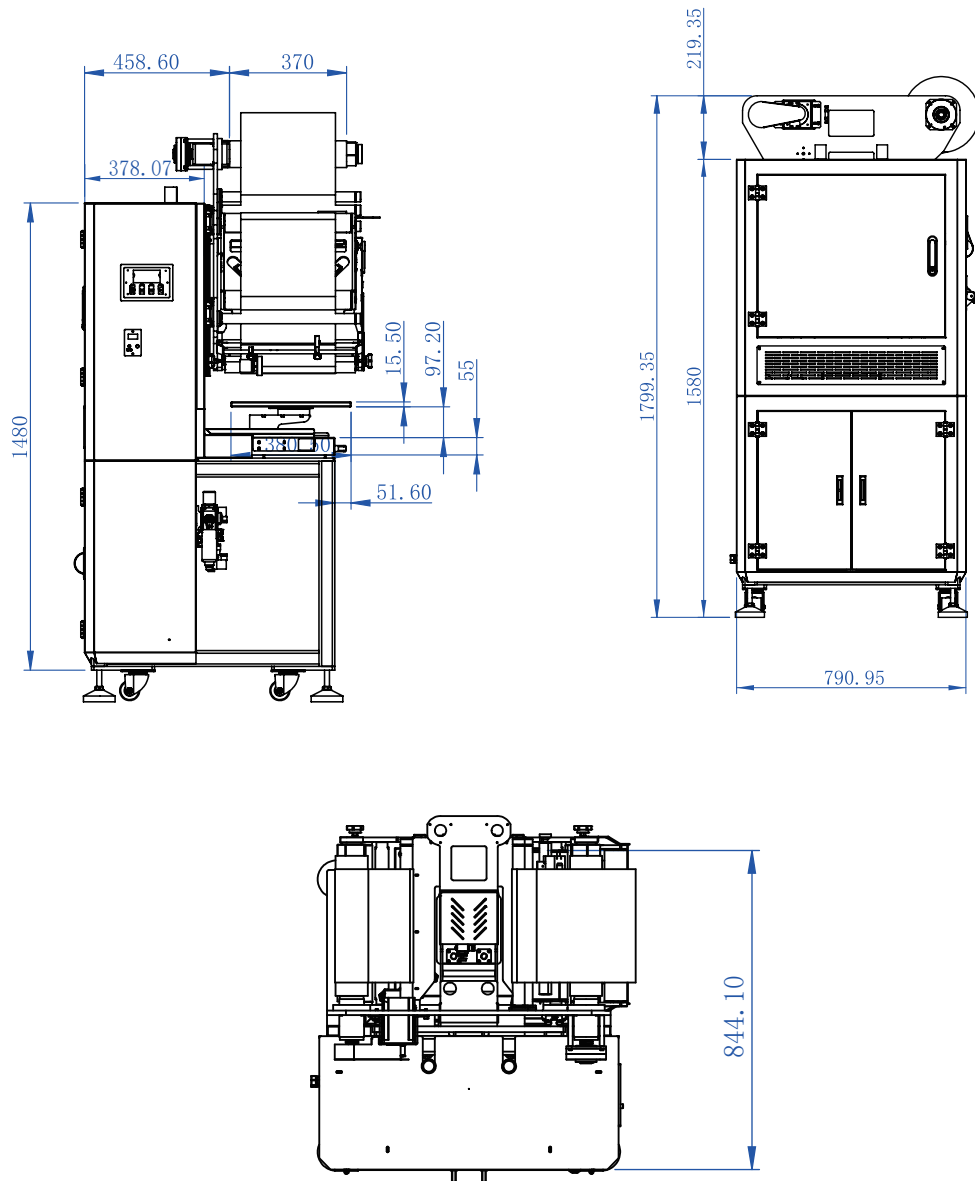


5. Set the appropriate transfer temperature, dwell time, speed, and image length.
6. Place the transfer substrate/garment flat onto the worktable.
7. Once the heating plate reaches the set temperature, press the two green start buttons simultaneously with both hands. The worktable will automatically enter the machine for the transfer cycle and eject automatically upon completion.

2.6 Equipment Dimensions

(Refer to the technical drawings in your original document for specific measurements.)





Troubleshooting

1. Equipment will not power on

- **1.a** Verify that the main incoming power supply is normal.
- **1.b** Check if the circuit breaker inside the electrical cabinet has tripped. Identify and rectify the cause of the trip before resetting the breaker.
- **1.c** Inspect the power button on the control panel.

2. Take-up motor does not rotate

- **2.a** The tension control torque is set too high. Decrease it appropriately.
- **2.b** The stepper motor drive is throwing an alarm indicator. Please cycle/restart the power supply.

3. Image detection error / Take-up motor runs continuously

- **3.a** Verify and validate the parameter settings of the color mark sensor.
- **3.b** Reduce the speed of the take-up motor.
- **3.c** Press "R" to reset the encoder.

4. Automatic mode fails to initiate

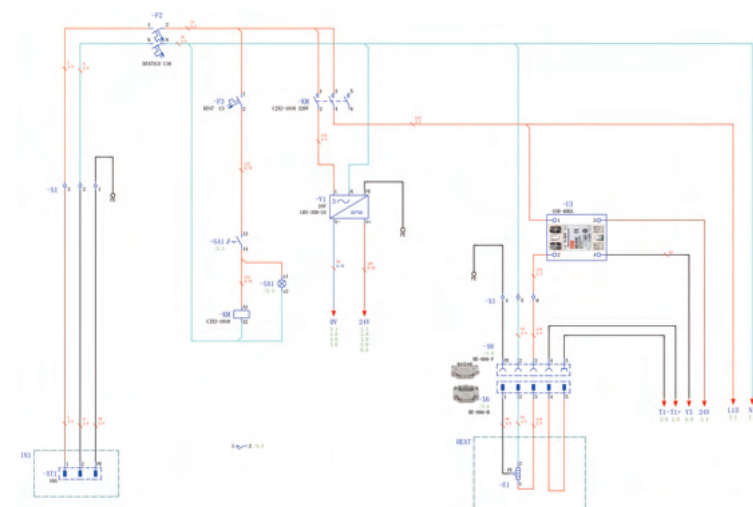
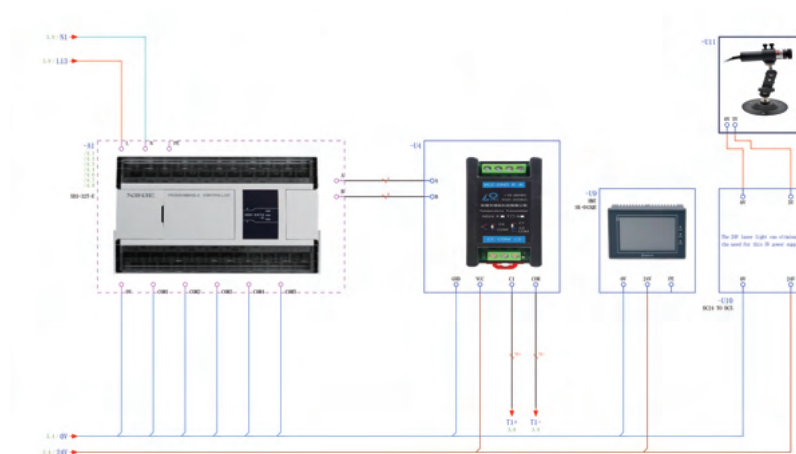
- **4.a** Check for active fault/alarm messages on screen. Press the Emergency Stop button to reset.
- **4.b** If the foot switch fails to trigger the sequence, try using the dual start buttons.
- **4.c** Check if the automatic speed parameter is set to a non-zero value.
- **4.d** The air cylinder is not at its upper limit switch position. Press the Emergency Stop button to reset.
- **4.e** Verify that the compressed air pressure is within standard operating limits.

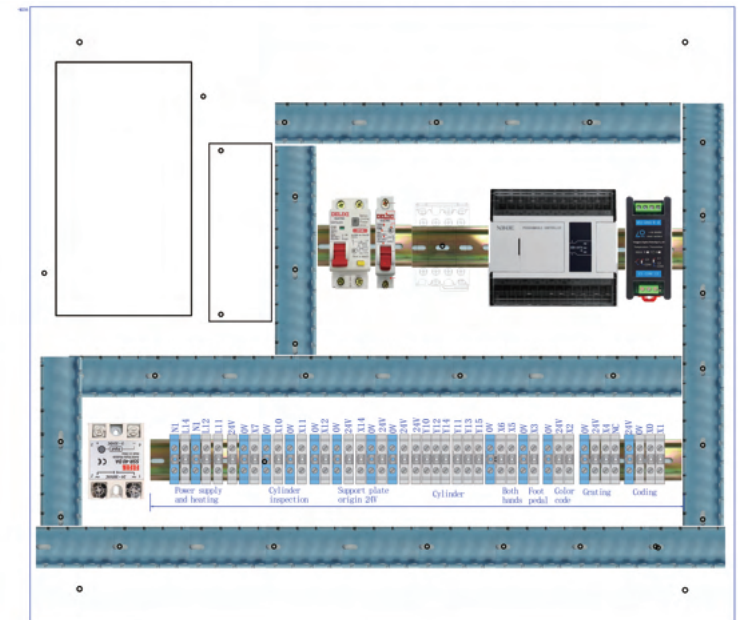
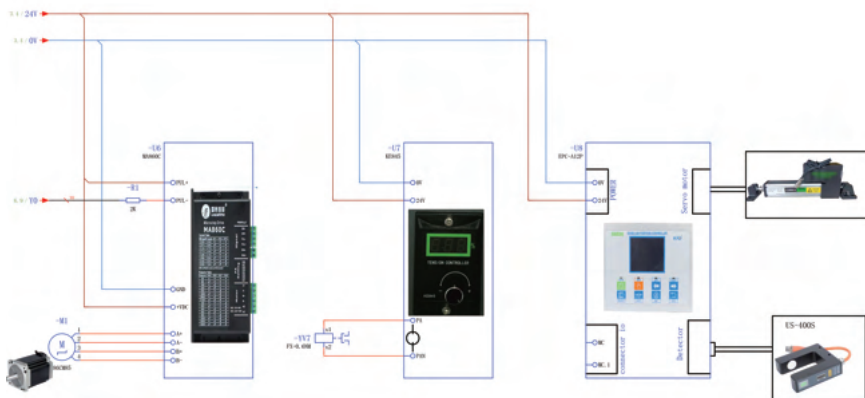
5. Cylinder Alarm Messages

- **5.a Upstream failure of DTF:** Check the DTF cylinder upper limit switch.
- **5.b Downward failure of DTF:** Check the DTF cylinder lower limit switch.
- **5.c Upstream failure of heating:** Check the heating plate upper limit switch.
- **5.d Downward failure of heating:** Check the heating plate lower limit switch.
- **5.e Platform return failure:** Check the worktable/platform home position limit switch.
- **5.f Heating failure:** Abnormal heating probe reading or temperature. Check the thermocouple probe and solid-state relay (SSR).
- **5.g Please press the reset button:** Fault reset reminder.
- **(Repeated entry text update):** Please press the **(Emergency Stop Button)** to clear and reset the alarm information.

Circuit Diagram

(Refer to your original document for the diagram layout.)





Pneumatic Diagram

(Refer to your original document for the diagram layout.)

