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MICROTEC
USA

Model: XR1620

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XR1620 Series User Manual

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Overview

1.1 Equipment Overview

Thank you very much for choosing our XR1620 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.

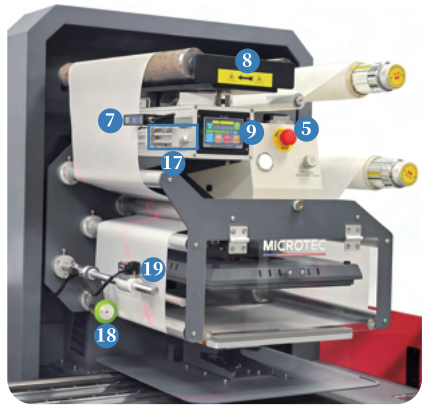
1.4-2 Technical Parameters:

Technical Specifications	Details
MODEL NO.	XR1620
Controller	PLC(XD3-32T-E + TPC1021ET)
Amp\Voltage\Power\phase	10.5A\220V\2.3KW，60HZ
Time Range(S)	0～999
Temperature Range(°F)	0～450
Heating plate size（Inch）	15.7*19.6

Appearance and Functions

2.1 Exterior View

(Please refer to the images in your original document for labels 1 through 19.)



2.2 Component Names and Functions

1.PLC Touchscreen Controller: Controls machine movements, temperature heating, and heat transfer operations.

2.Power Switch: Turns the main power supply of the machine ON and OFF.

3.Start Button: Press the start button to automatically feed the shuttle table into the machine. After the transfer is complete, the table will automatically exit and reset.

4.Reset Button: Press the reset button to automatically restore the shuttle table, heating plate, and DTF film to their home positions.

5.Emergency Stop (E-Stop) Switch: Press the E-stop switch during a transfer to instantly lift the heating plate, return the DTF film to its highest position, and stop the transfer process.

6.Infrared Alignment Light: Enables rapid and precise positioning of garments on the lower plate.

7.Automatic Web Guide Ultrasonic Sensor: Automatically detects the position of the incoming DTF film to guide the movement direction of the web guide controller.

8.High-Performance Servo Web Guide: Automatically micro-adjusts the transfer position of the DTF transfer film on the base plate to prevent alignment drift or shifting.

9.Automatic Web Guide Controller: Used to configure and adjust the position settings of the web guiding device.

10.Air Pressure Gauge: Displays the real-time downward pressure applied by the heating plate.

11.Pressure Adjustment Knob: Adjusts the pneumatic pressure for the heating plate downstroke.

12.DTF Film Tensioning Shaft (Unwind): Holds the raw DTF material roll; features a tension tightening mechanism.

13.DTF Film Tensioning Shaft (Rewind): Rewinds the spent/waste DTF material; features a tension tightening mechanism. (Please refer to the DTF Film Routing Diagram).

14.Air Supply Inlet: Connects the external compressed air source required for all pneumatic machine operations.

15.Power Cord: Provides the main power supply required to run the machine.

16.Foot Pedal Switch: Step lightly on the pedal to automatically feed the shuttle table. Once the transfer is complete, the table will automatically exit and reset.

17.Adjustment Knob: Adjusts the relative sensing position between the automatic web guide ultrasonic sensor and the DTF film edge.

18.Encoder Sensing Wheel: Measures the travel distance of the DTF film.

19.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.

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

●**19.2 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.

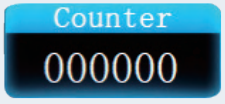
●**19.3 Detection:** Teaching complete. The system automatically selects the optimal LED and reverts to **RUN** mode.

2.3 PLC Touchscreen Controller Interface and Functions

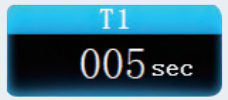
2.3.1 Main Screen

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

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

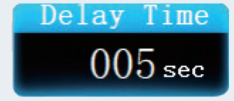


● **COUNTER** = Cycle Count (5-digit display. Increases by 1 when the countdown timer finishes. Press and hold for 5 seconds to clear/reset).



● **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.

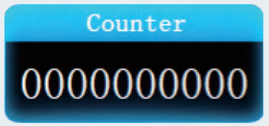
● **PASSWORD (2)** = Machine Lockout Password. If the customer has a pending final balance, this is uniformly set to 372 prior to shipment. Once fully paid, it is set to **OFF**. If the customer wishes to enable PASSWORD (2) after full payment, simply tap it to configure. The machine will automatically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

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

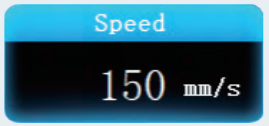
● **HEAT PLATE** = Controls the vertical travel of the heating plate. **UP** = Raise, **DOWN** = Lower.

● **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".

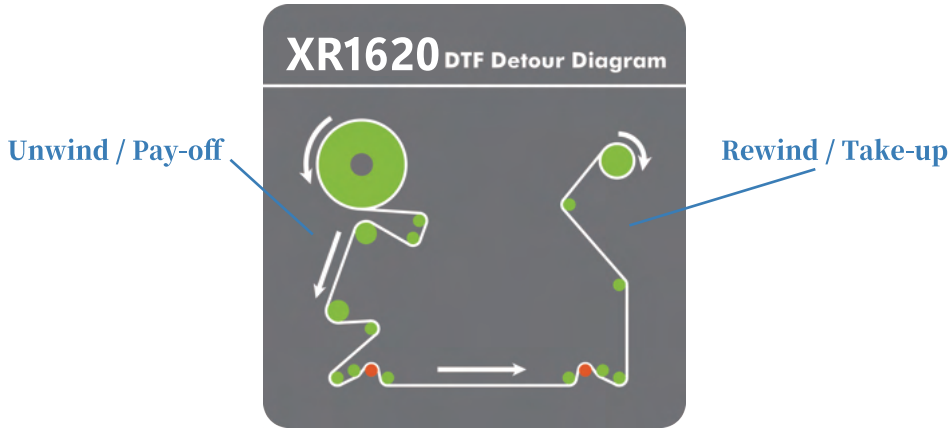
NOTE:

●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**.

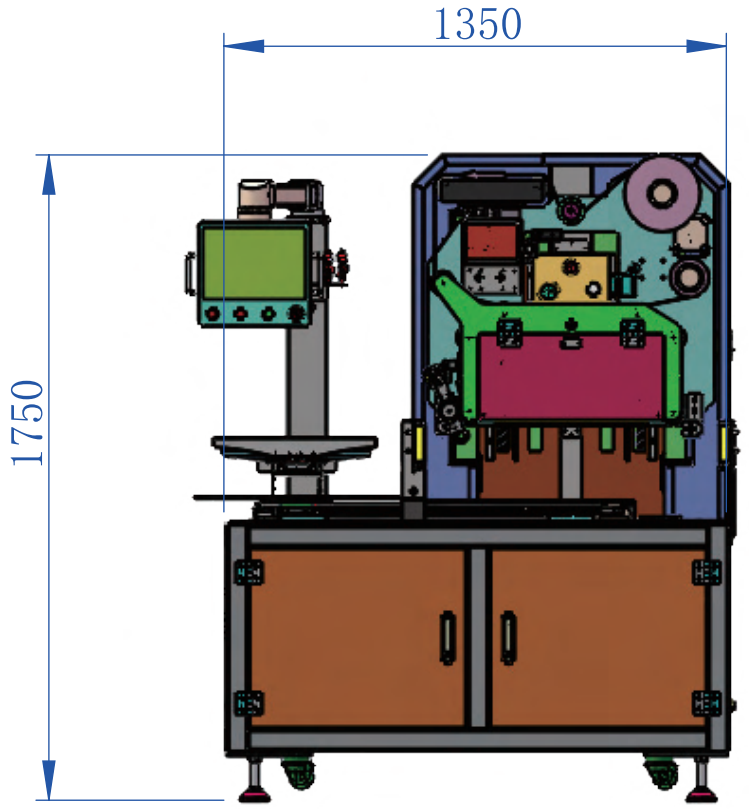
5.Set the appropriate transfer temperature, dwell time, speed, and image length.

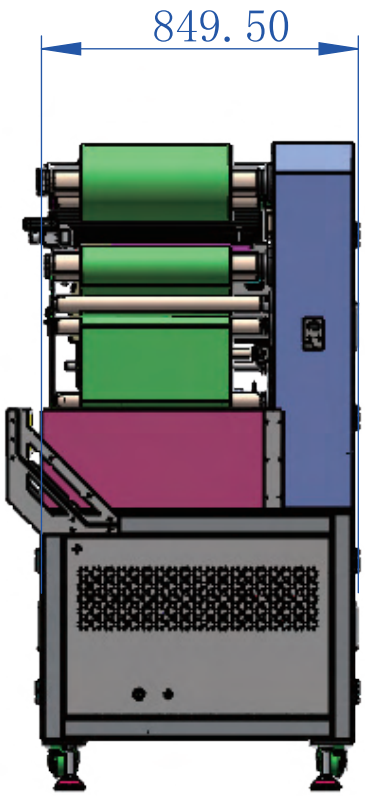
6.Place the transfer substrate/garment flat onto the worktable.

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.

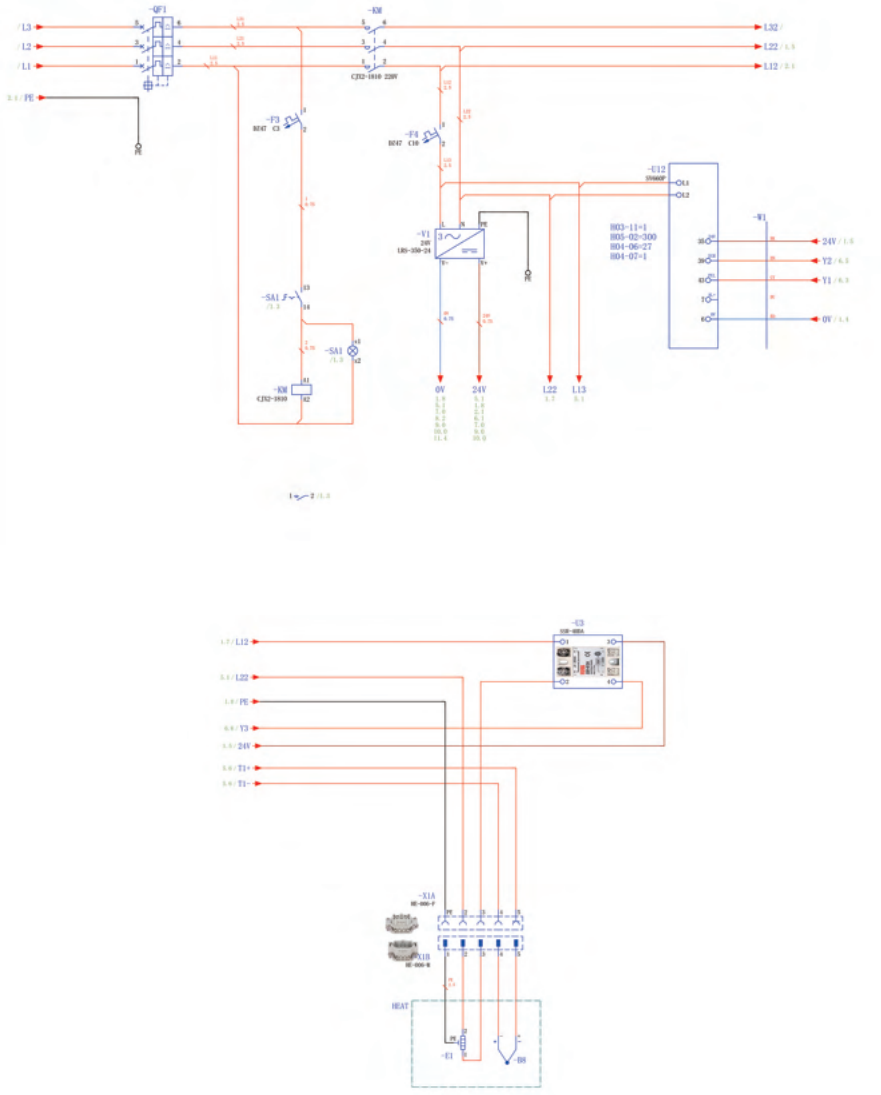
●**5.f Heating failure:** Abnormal heating probe reading or temperature. Check the thermocouple probe and solid-state relay (SSR).

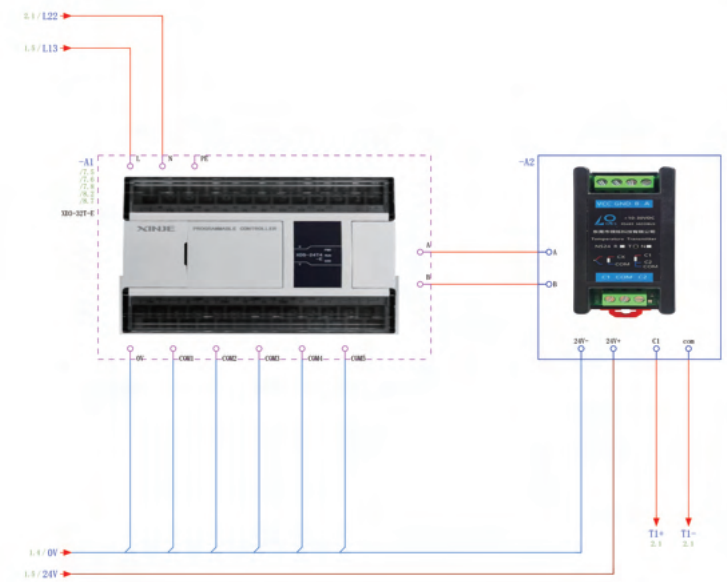
●**5.g Please press the reset button:** Fault reset reminder.

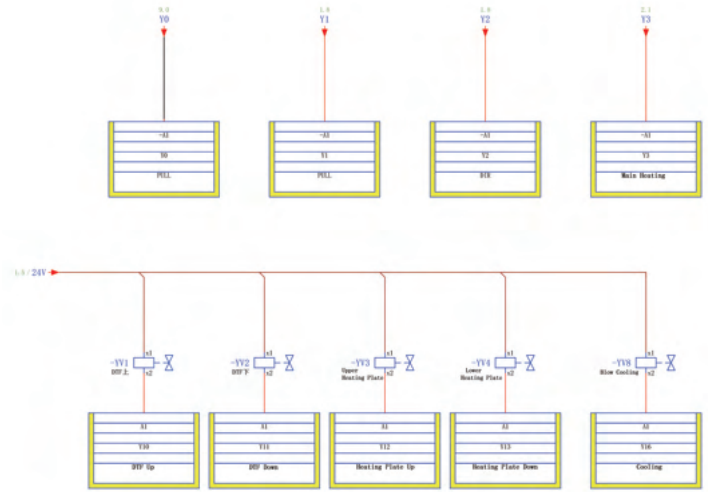
●**(Repeated entry text update):** Please press the **(Emergency Stop Button)** to clear and reset the alarm information.

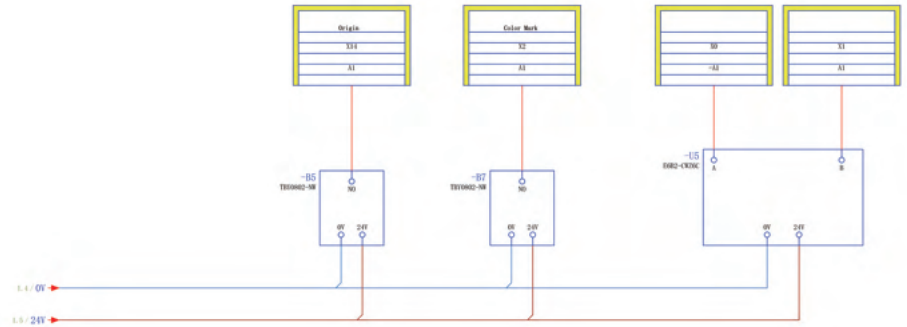
Circuit Diagram

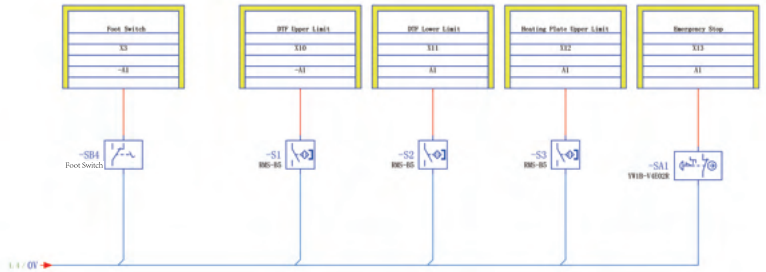
(Refer to your original document for the diagram layout.)

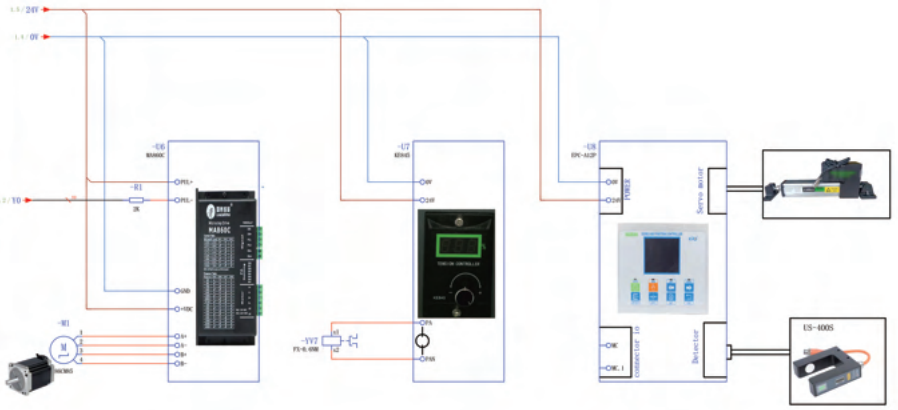


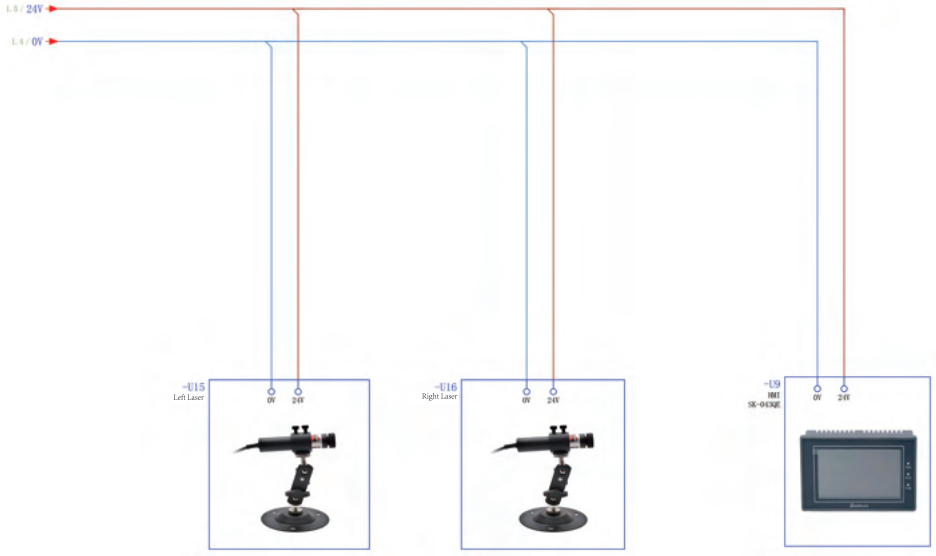


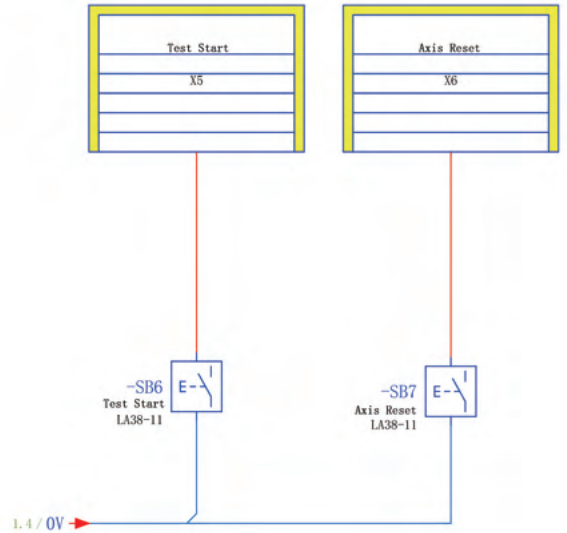


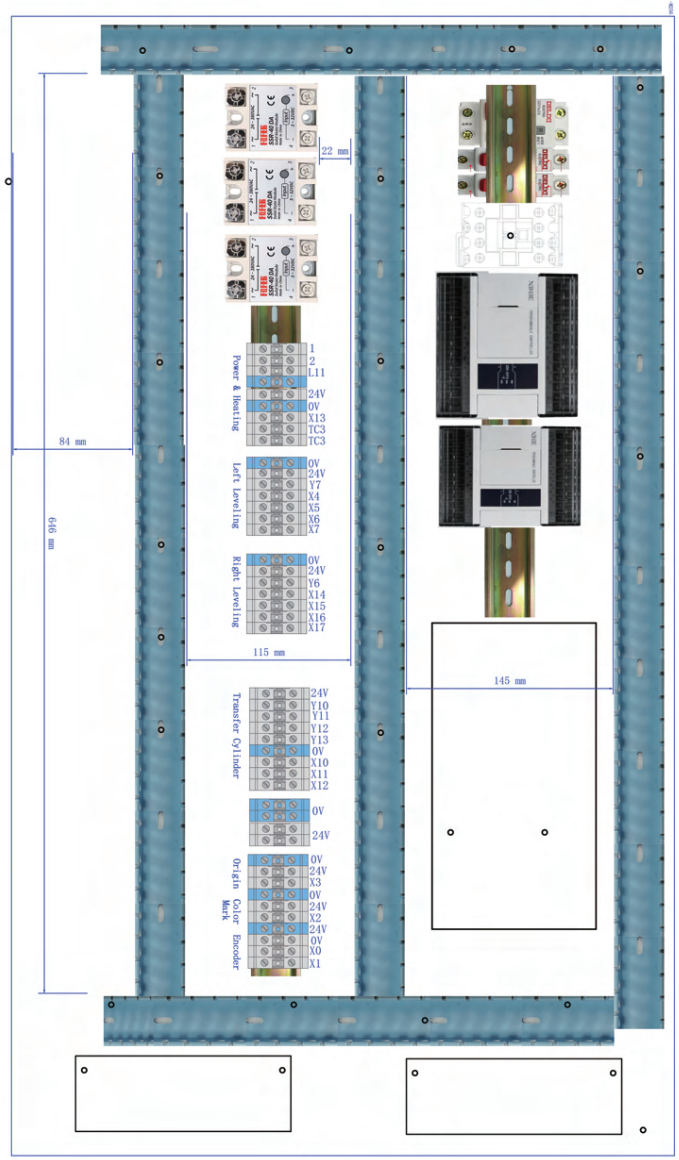







1.5 / 24V
1.4 / 0V
-U15
Left Laser
0V
24V
-U16
Right Laser
0V
24V
-U9
0V
24V


Test Start
X5
Axis Reset
X6
-SB6
Test Start
LA38-11
-SB7
Axis Reset
LA38-11
1.4 / 0V



Pneumatic Diagram

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