

Labeling machine industry solution

Product User Manual

Shenzhen Coolamy Technology Co., Ltd.

Safety precautions

The following marks are used in the safety-related contents of this instruction manual. The instructions on the safety marks are the main contents and must be followed.








-  Please read the instruction manual carefully before use.
-  The installation of components must be performed by professional technicians.
-  Please choose a suitable installation location to ensure heat dissipation of the device and reduce electromagnetic interference.
-  Please follow the rules for separate wiring of strong and weak currents to reduce electromagnetic interference.
-  The motor drivers should be kept at a distance to increase heat dissipation efficiency and reduce cross interference.
-  Please check the input and output wiring before powering on to avoid damage to the controller due to wiring errors.
-  Please ground the ground terminal reliably to improve the anti-interference ability of the controller.

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Chapter 1 Product Introduction

1.1. Product Appearance

1.1.1. Programmable controller appearance



1.1.2. Industrial human-machine interface appearance

RUN COM PWR

hh:mm:ss
yyyy-MM-dd

深圳顾美科技有限公司
Shenzhen Coolmay Technology Co.,Ltd

平面贴标机
Flat labeling machine



客服热线: 0755-86960332
Customer service: 0755-86960332

品质
Quality

专业
Professional

创新
Innovative

Coolmay

1.2. Product Description

1.2.1. Programmable Controller Description

- ❖ Highly integrated. Switch quantity has a maximum of 40 inputs and 40 outputs, and the switch quantity output can be selected from transistor/relay/mixed output; analog quantity has a maximum of 16 inputs (temperature/current/voltage or mixed type optional) and 8 outputs (current/voltage or mixed type optional)
- ❖ Comes with two PLC programming ports: MiniB USB port (faster download and read speed) and RS232 (8-hole mouse head female socket)
- ❖ Conventional 2 RS485, optional RS232 communication port; optional CAN bus
- ❖ Supports multi-channel high-speed counting and high-speed pulse. High-speed counting is usually 6 channels of 60KHz for single phase or 2 channels of 30KHz for AB (Z) phase + 1 channel of 5KHz for AB phase; high-speed pulse is usually 100KHz for each channel of Y0~Y3 and 10KHz for each channel of Y4~Y7, with independent acceleration and deceleration. The total transmission of high-speed counting + high-speed pulse cannot exceed 480KHz, CX3G-16MT, usually 8 channels of 10KHZ
- ❖ Can be specially encrypted. Setting the password to 12345678 can completely prohibit reading the program. [Note: PLC only supports 8-bit

password encryption]

- ❖ PLC programming compatible software GX Developer8.86Q and GXWorks2
- ❖ 32K step program capacity, 32K power-off retention registers, support interrupt, linear and circular interpolation, PID self-tuning and other functions
- ❖ Powerful functions. Compatible with FX3G/FX3U/FX3S series PLC, fast operation speed
- ❖ Analog input/output can be customized according to customer requirements. More specifications can be customized in batches.
- ❖ Adopt 5.0MM pitch pluggable terminals , easy wiring; can be installed using DIN rail (35mm width) and fixing holes

1.2.2. Industrial Human Machine Interface Description

- ❖ 7" 800*480 TFT LCD
- ❖ High-precision and high-reliability resistive touch panel
- ❖ Natural cooling system
- ❖ IP65 panel protection level
- ❖ LED backlight
- ❖ Built-in storage memory and perpetual calendar
- ❖ Provide a large number of vector libraries and self-built libraries
- ❖ Coexistence of software function template and personalization
- ❖ Support multiple languages, batch translation function

- ❖ Batch data and recipe import and export functions

1.3. Product Specifications

1.3.1. Programmable controller specifications

- Model: CX3G-16MT
- Environmental conditions
 - Operating temperature : 0°C~50°C
 - Relative humidity : 5%~95%RH
 - Storage temperature : -20°C~70°C
 - Vibration frequency: 10-57Hz, amplitude 0.035mm; 57Hz-150Hz, acceleration 4.9m/s²
- Switch input: 8 switch inputs
 - Isolation method: photoelectric coupling
 - Input impedance: high speed 3.4KΩ, normal 4.3KΩ
 - When NO: high-speed input current is greater than 5.8mA/24V, normal input current is greater than 9.9mA/24V
 - OFF: High-speed input current is less than 4.5mA/24V, normal input current is less than 4mA/24V
 - Input filter: configurable within the range of 0-60ms, default is 10ms
 - High-speed counting function: conventional single-phase 6-channel 60KHz or AB (Z) phase 2-channel 30KHz + AB phase 1-channel 5KHz
 - Input level : Passive NPN , common terminal isolated , S/S connected to 24V

+

- Switching output: 8-way transistor switching output
 - Maximum allowable current: 0.5A/point, 0.8A/4 points COM, 1.6A/8 points COM
 - Loop power supply voltage : DC24V
 - Circuit insulation: Optocoupler insulation
 - Isolation voltage (power supply - external terminal) : 1 500VAC
 - On response time : High speed output: 10us; Others: 0.5ms
 - High-speed output frequency: conventional 8-channel 10KHz, customizable 100KHz
 - Output level: low level NPN, COM connected to negative
- Programming port: comes with two programming ports: Mini B USB port (faster download speed) and RS232 (8-hole mouse head female socket)
- Communication port: RS232 (4/5/8 pins), RS485 (AB), RS485 (A1B1);
- Input power: DC24V

1.3.2. Industrial Human Machine Interface Specifications

- Model: TK6070FH
- Display: 7" TFT LCD, 4-wire resistive screen
- Brightness: 300cd/mm
- Color: 65536 true colors

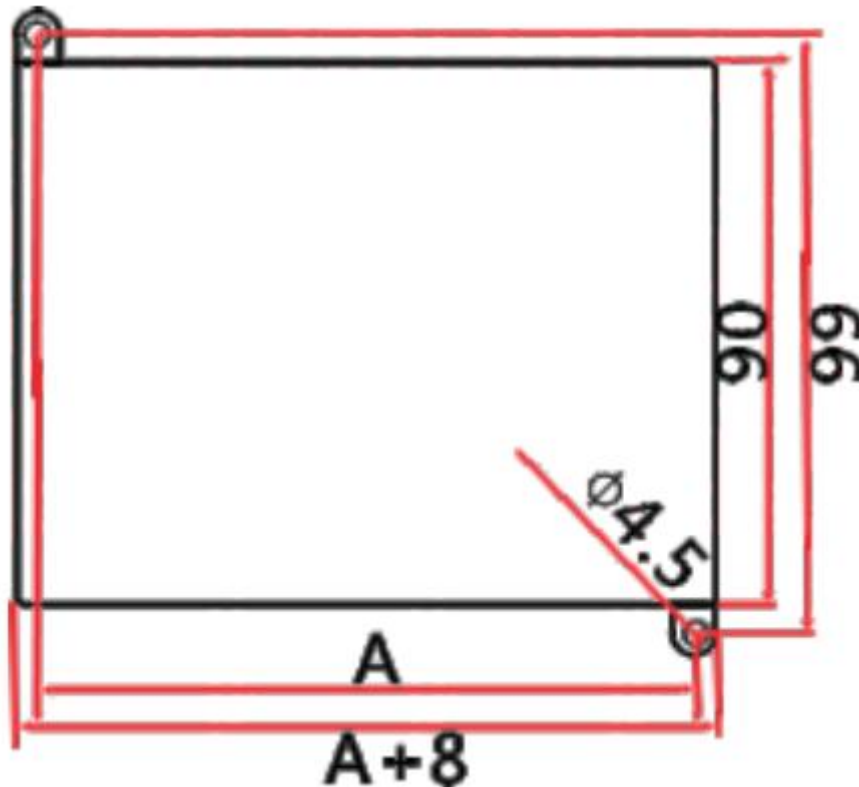
- - Contrast ratio: 400:1
- Resolution: 800*480
- Backlight: LED
- Input power: 12-24VDC \pm 10% <150mA, power 18W and above
- Environmental conditions
 - Operating temperature : 0°C~50°C
 - Storage temperature : -20°C~70°C
- Weight: 0.5KG
- Communication port: RS232 (2/3/5 pins), RS485 (A1B1)
- USB download port: Type C
- Processor: 32bit CPU 408MHz
- Flash: NOR flash 16MB
- RAM: 64MB
- Real-time clock: built-in
- Programming software: TP Works Ver: 1.42

➤ Product Installation

Chapter 2 Product Installation

2.1. Product size

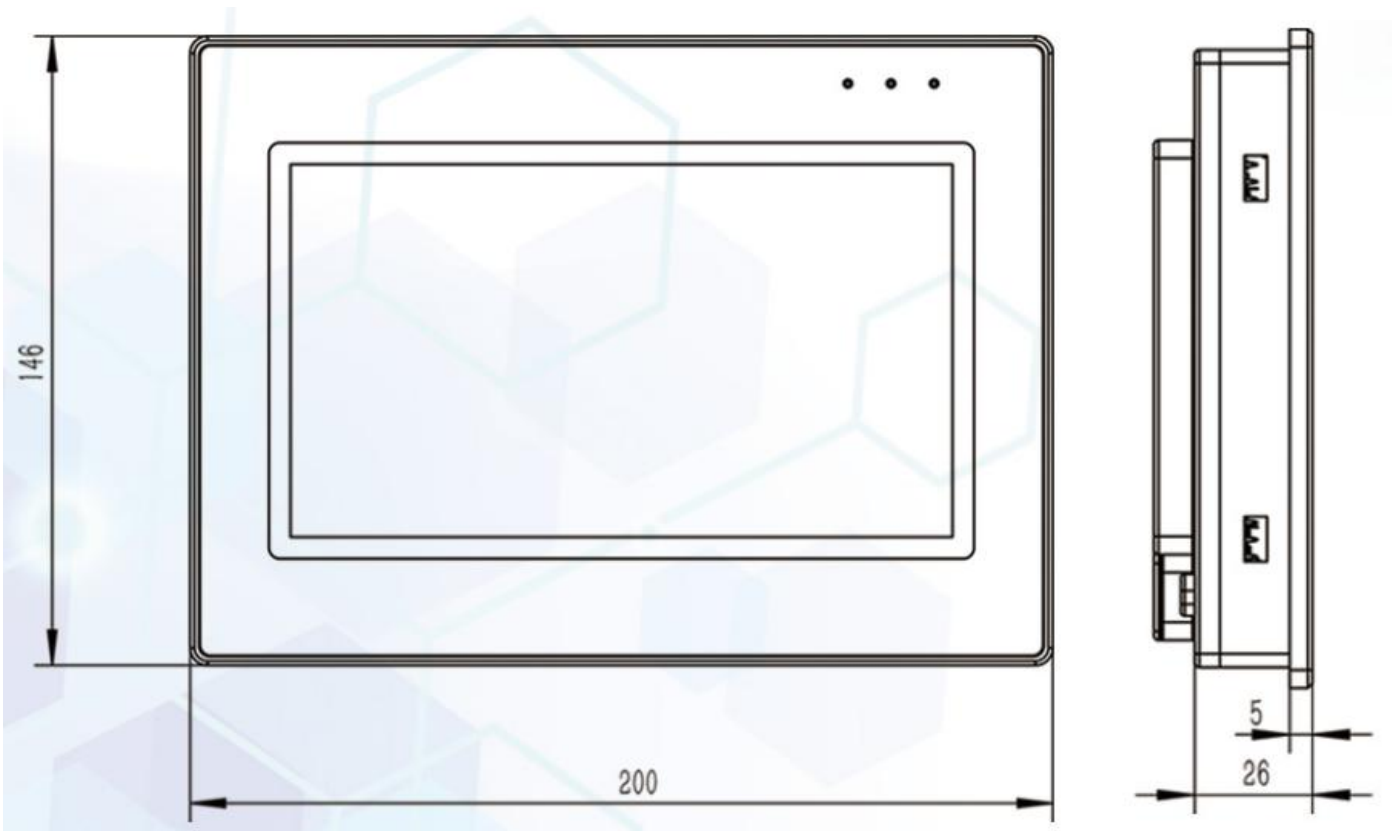
2.1.1. Programmable controller size

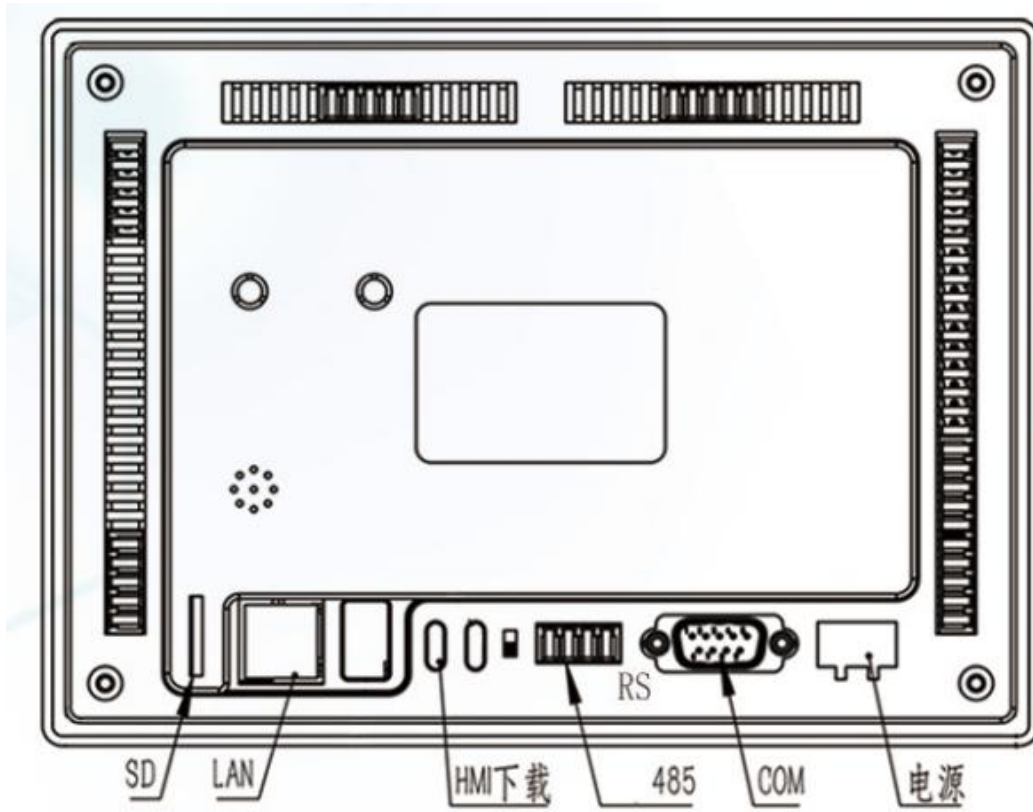


Opening size: 57*99 (mm)

Dimensions: 65*90 (mm)

2.1.2. Industrial human machine interface size





Opening size: 192*138 (mm)

Dimensions: 200*146 (mm)

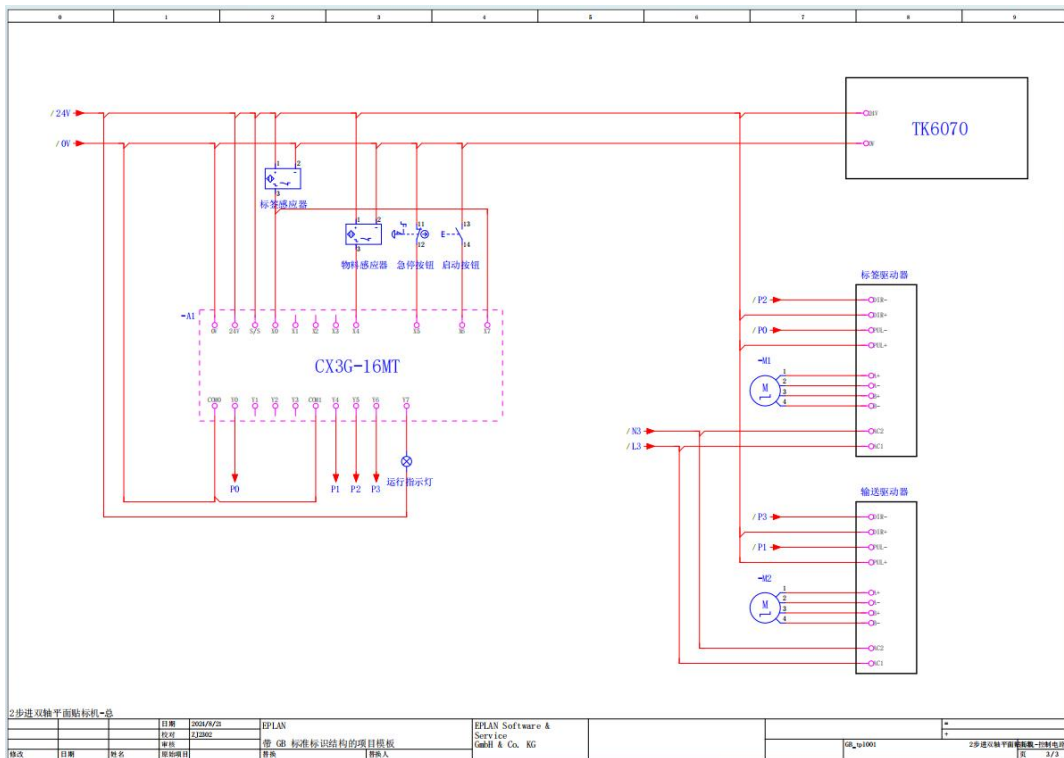
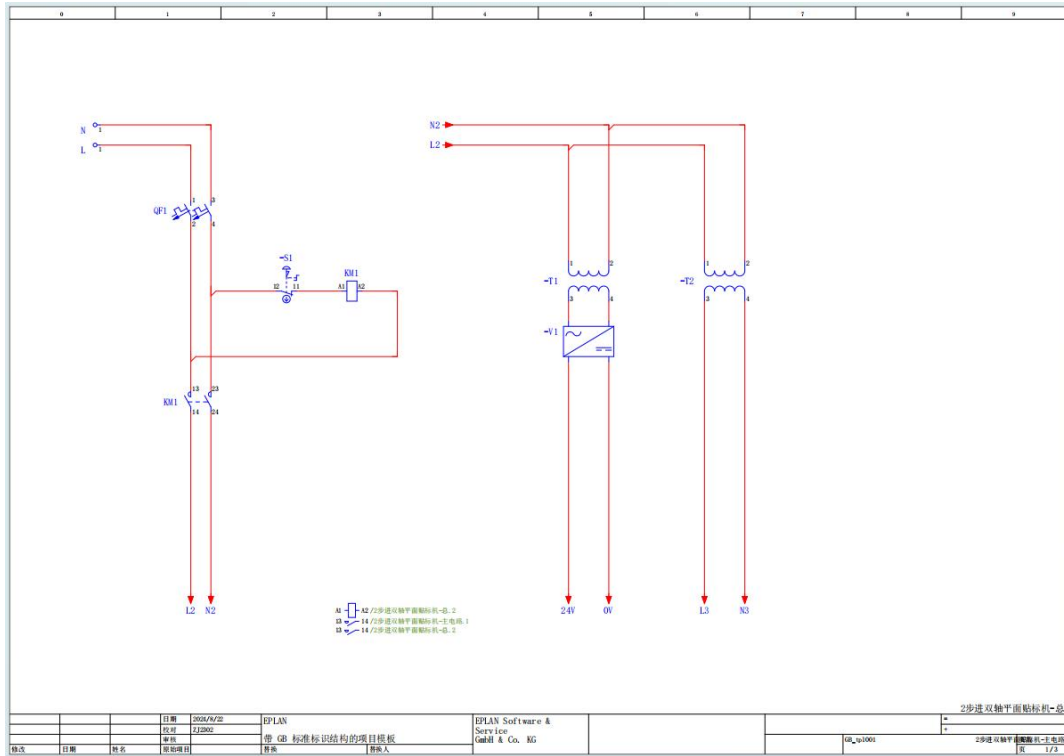
2.2. Wiring Definition



name	illustrate
S/S	Input common terminal, need to connect to 24V
X0	Interrupt positioning by sensing tags
X4	Detect incoming materials and label them
X5	The emergency stop is normally closed and stops immediately after being pressed.
X6	The start button is a hold type, press it again to pop up and stop the device

name	illustrate
COM0	The output common terminal of Y0~Y3 needs to be connected to 0V
Y0	Send pulse to labeling driver, connect to negative pole of labeling driver pulse
COM1	The output common terminal of Y4~Y7 needs to be connected to 0V
Y4	Send pulse to the transmission driver and connect to the negative pole of the transmission driver pulse
Y5	Control the direction of the labeling motor and connect it to the negative pole of the labeling driver
Y6	Control the direction of the conveying motor and connect to the negative pole of the conveying driver
Y7	The indicator light will light up when the device is running automatically

2.3. Product Wiring



2.4. Product List

name	model	factory	quantity
Emergency stop button	Normally closed self-locking	Yijia	1
Start button	Normally open self-locking	Yijia	1
Power button	2-speed rotation	Yijia	1
Programmable controller	CX3G-16MT	Gumei Technology	1
Industrial touch screen	TK6070FH	Gumei Technology	1
Two-way circuit breaker	DZ47S-C10	Delixi	1
AC contactor	CJX2-1211	Delixi	1
Switching Power Supply	S-120-24	Mean Well	1
Stepper Driver	CMA860S	Gumei Technology	2
Stepper Motor	K8618HB-118	Gumei Technology	1
Stepper Motor	K8618HB-156	Gumei Technology	1
Toroidal Transformer	Toroidal Transformer CE	Dongguan Hi-Tech Electronics	1

Tag sensor	CMBJ8- 42 03	Gumei Technology	1
Fiber Optic Sensor	GE31SD	Gumei Technology	1

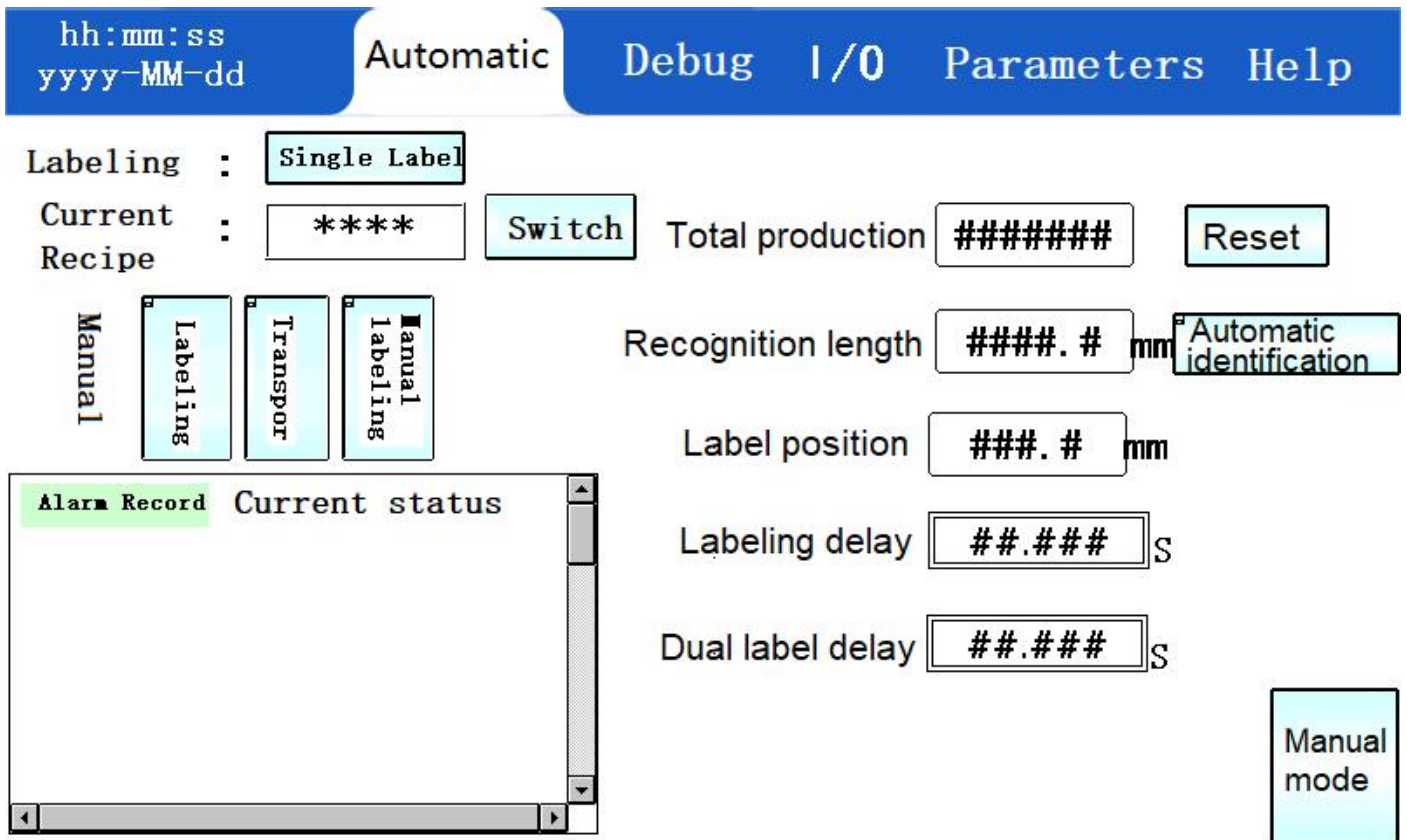
Chapter 3 Function parameters

3.1. Startup interface



- ❖ This project was designed by Gumei Technology and adopted the calibration algorithm used in labeling.
- ❖ Higher precision, greatly optimizing the original labeling error caused by the mechanical structure
- ❖ The current time and date are displayed in the upper left corner
- ❖ After power off and restart, the HMI enters this interface. Click to enter the automatic interface
- ❖

3.2. Automatic interface



Labeling mode	Touch to switch mode, divided into single label mode/dual label mode , label 1/2 sheets after detecting the material
Current recipe	The name of the recipe currently in use. The switch button is to enter the recipe configuration interface.
Manual	The actions that can be performed in manual mode include single movement of two axes and manual output of a label.
Current Status	Displays the current status of the device, black for normal status and red for alarm status

Alarm Record	Touch to enter the alarm record interface
Total production	Record the total number of products produced
Identification length	After the automatic recognition is completed, the button will automatically reset . The recognition length = label length + gap length
Label location	The position where the next label stops after the current label is output
Labeling delay	When the material is sensed, a delay is performed . When the delay time is up, the labeling axis will move and label.
Double standard delay	The delay after the first label is out , when the delay time is up, the labeling axis moves to put out the label
Manual Mode	Mode switch button, touch to switch between manual and automatic modes

3.3. Debug interface

hh:mm:ss
yyyy-MM-dd Automatic Debug I/O Parameters Help

Speed control

Labeling axis speed mm/s

Conveyor axis speed mm/s

Anti-error delay s

Function disabled

Label enabled

Conveyor enabled

Labeling axis speed	The actual running speed of the labeling axis
Conveyor shaft speed	Actual running speed of the conveyor shaft
Preventing delay	After sensing the product, the product detection is triggered again within the parameter delay, and no bid is issued.
Function Disable	You can choose whether the corresponding function will be activated in automatic mode.

3.4. I/O Interface

hh:mm:ss
yyyy-MM-dd

Automatic Debug

I/O

Parameters Help

X0 Label detection X6 Start
X1 Backup X7 Backup
X2 Backup
X3 Backup
X4 Product detection
X5 Emergency stop

Y0 Labeling pulse Y6 Conveying direction
Y1 Backup Y7 Running light
Y2 Backup
Y3 Backup
Y4 Input pulse
Y5 Labeling direction

Label Detection	The tag sensor sends a signal to the PLC. When the tag is sensed, the signal is ON.
Product Testing	The product sensor sends a signal to the PLC, and when it senses the product, the signal is ON
Emergency Stop	Motor speed, display the current motor speed
start up	Start button, automatically switches to automatic mode and runs automatically after being triggered
Labeling pulse	PLC sends pulse signal to labeling driver
Delivery pulse	PLC sends pulse signal to the conveyor drive

Labeling direction	PLC gives direction signal to labeling drive
Conveying direction	PLC gives direction signal to conveyor drive
Running lights	When the equipment is running normally and automatically, the running light is on.

3.5. Parameter interface

hh:mm:ss
yyyy-MM-dd

Auto Debugging 1/0 Parameters Help

	Tag axle	Conveyor shaft
1 turn pulse /P	#####	#####
1 turn lead /mm	####, #	####, #
Speed up and speed down	####	####

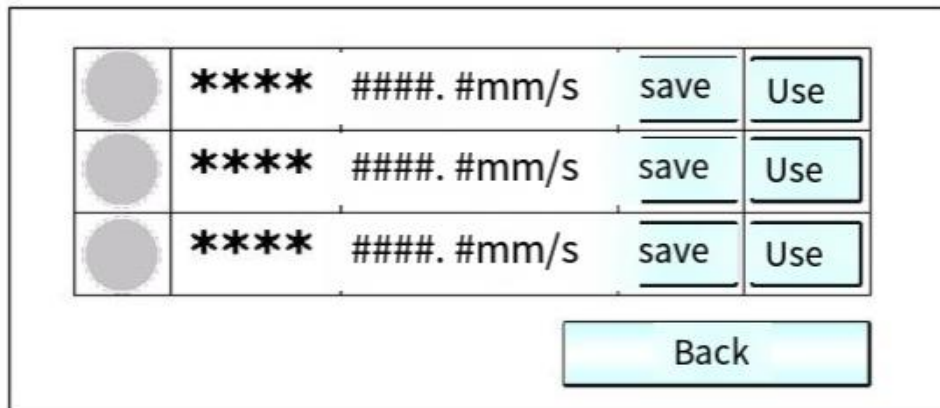
One turn of the conveyor shaft

Label shaft turn once

1 pulse	Breakdown of Drive Settings
1 turn lead	The length of product displacement corresponding to one motor

	rotation
Acceleration and deceleration	Corresponding axis acceleration and deceleration settings
One axis rotation	A button designed to facilitate the measurement of one-circle lead. It can be operated after setting one-circle pulse.

3.6. Recipe pop-up



Indicator Lights	The corresponding indicator light will light up green for the recipe currently being used.
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Recipe Name	The name of the recipe, supports Chinese editing and display
Speed display	The running speed of the label axis is only displayed. In fact, all the required parameters have been saved.
Recipe Saving	Save all current parameters in the corresponding recipe
Recipe Use	Download all the data of the selected recipe and use it for production

3.7. Alarm Record

hh:mm:ss
yyyy-MM-dd
Alarm record table
Return

No.	Alarm time	Recovery time	Alarm information

- ❖ The number of alarms is displayed counterclockwise, with the most recent alarm

information displayed at the top.

- ❖ Each alarm displays the corresponding trigger time and recovery time

3.8. Emergency stop screen



- ❖ The emergency stop button triggers this pop-up screen, prohibiting operations and production actions
- ❖ Reset the automatic process, and restart after emergency stop and recovery, and the action will start again
- ❖ Restore all alarm triggers at the same time

3.9. Help

hh:mm:ss
yyyy-MM-dd

Auto

Debugging

1/0

Parameters

Help

Manual mode

- 1: Material sensor does not work, manual button works
- 2: can identify the length, manual marking and other operations

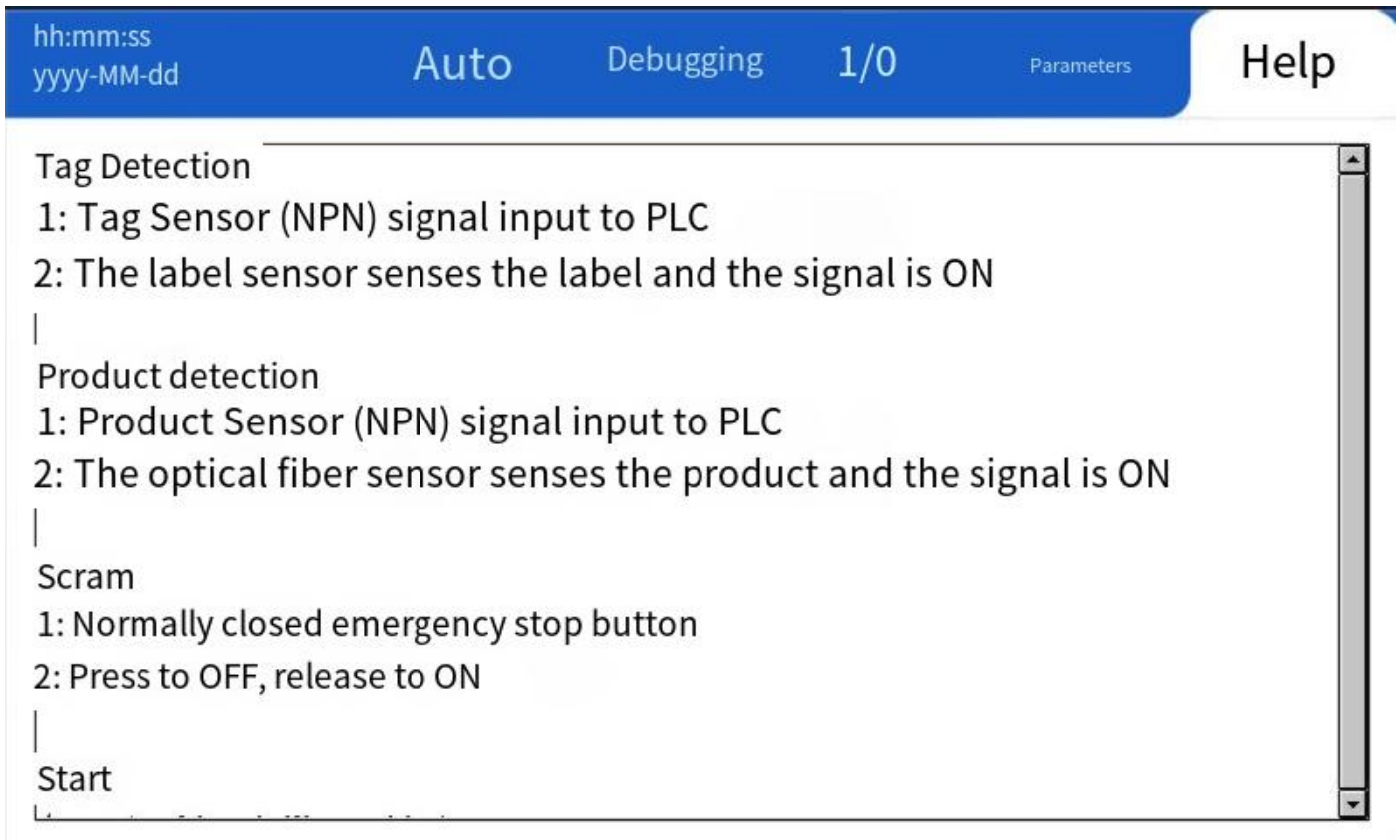
Automatic mode

- 1: Automatic mode cannot be manually operated
- 2: The material sensor is effective, and the material will be labeled automatically

Single label mode/double label mode

- 1: Single label mode: Label 1 sheet after detecting material
- 2: Double label mode: Label 2 pieces after detecting material

Identification length



- ❖ Describe the specific meaning and usage of each parameter
- ❖ The help interface entered in each working interface is the corresponding parameter analysis description

3.10. Lock screen

hh:mm:ss yyyy-MM-dd
Stage schedule [Help](#) [Back](#)

	years	month	日	Password	
First issue	###	###	###	*****	On
Phase 2	###	###	###	*****	On
Phase 3	###	###	###	*****	On
Phase 4	###	###	###	*****	Open
Issue 5	###	###	###	*****	Open
Issue 6	###	###	###	*****	Open
	Super Password		*****	On	

hh:mm:ss
yyyy-MM-dd

Dear Customer:

Hello! Due to other reasons, your use period has expired. In order not to delay your production, please contact the supplier to ask for the registration code as soon as possible!

The current usage period has expired, please enter the registration code of the {N60000, d} period

- ❖ Usage: There are 6 phases in total. Enter the phase setting interface:
- ❖ Set the expiration date and turn on the button for each issue separately as needed.
- ❖ After setting, click Confirm.
- ❖ You need to confirm the settings every time you enter the installment setting interface, otherwise the installment will not work.
- ❖ Set a super password and enable it. The super password can release all installments.

Chapter 4 Alarm query

Serial number	Alarm Name	belong	Solution
1	Automatically running	Status display	Currently in automatic mode
2	Manual operation	Status display	Currently in manual mode
3	Manual labeling axis in operation	Status display	<p>The labeling motor is running manually</p> <p>1: The labeling motor is not running. Check the debugging interface: Is the labeling speed set?</p> <p>2: Parameter interface: whether labeling parameters are set.</p> <p>3: If the motor still does not move, check whether the PLC is in operation.</p>
4	Manual conveyor axis in operation	Status display	<p>Manually running the conveyor motor</p> <p>1: The conveying motor is not running. Check the debugging interface: Is the conveying speed set?</p> <p>2: Parameter interface: whether the transport parameters are set.</p>

			3: If the motor still does not move, check whether the PLC is in operation.
5	Product clearing	Status display	<p>The total number of products is being cleared and will automatically reset after completion</p> <p>1: Not reset, check whether the PLC is running normally</p>
6	Tag recognition	Status display	<p>Label length identification in progress, will automatically reset after completion</p> <p>1: If the motor does not reset, press the emergency stop button in time to check whether the tag sensor is normal.</p> <p>2: The motor does not move: Check whether all parameters of the label axis are set</p> <p>3: Check whether the PLC is running normally</p>
7	Manual bidding	Status display	<p>Manual bidding once, it will automatically reset after the bidding is completed</p> <p>1: If the motor does not reset, press the emergency stop button in time to check</p>

			<p>whether the tag sensor is normal.</p> <p>2: The motor does not move: Check whether all parameters of the label axis are set</p>
8	Labeling axis rotates one circle	Status display	<p>The labeling axis rotates one circle and automatically resets after completion</p> <p>1: When the motor is not reset, press the emergency stop button in time to check whether the number of pulses per circle is set correctly.</p> <p>2: When the motor does not move, check whether the motor wiring and PLC are operating normally.</p>
9	Conveyor shaft rotates one circle	Status display	<p>The conveyor shaft rotates one circle and automatically resets after completion</p> <p>1: When the motor is not reset, press the emergency stop button in time to check whether the number of pulses per circle is set correctly.</p> <p>2: When the motor does not move, check whether the motor wiring and PLC are</p>

			operating normally.
10	Automatic mode stops the labeling motor!	Status display	The labeling axis is not operated in automatic mode To enable, you need to switch on the function disable in the debug interface
11	Stopping the conveying motor in automatic mode!	Status display	The conveyor axis is not moved in automatic mode To enable, you need to switch on the function disable in the debug interface
12	Emergency stop!	Abnormal alarm	Press the emergency stop button and the emergency stop alarm will appear. Cancel the emergency stop recovery alarm. If it is not recovered, check the emergency stop wiring.
13	Abnormal label!	Abnormal alarm	During automatic operation, if the label length is abnormal or the label is missing, a label abnormality alarm will be displayed. 1: Check whether the label tape is normal 2: Check whether the label sensor is normal 3: Resume alarm after emergency stop
14	Communication	System	Check the communication parameters

	alarm	alarm	between PLC and HMI to see if they match.
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- ❖ Note: If the "abnormal alarm, system alarm " alarm is not cleared after operation, please contact the manufacturer!!!

Chapter 5 Networking Communications

The programmable controller comes with two PLC programming ports: Mini B USB port (faster download and read speed) and RS232 (8-hole mouse head female socket), conventional 2 RS485, optional RS232 communication port; optional CAN bus. Support RS-485 or RS-232 standards; Serial port 2: RS485 (PLC-A, B port): support Mitsubishi programming port protocol, RS protocol and Modbus RTU/ASCII protocol ※Support RS, WR3A, RD3A, ADPRW instructions ; Serial port 3: RS232 (PLC programming port): supports Mitsubishi programming port protocol, RS2 protocol and Modbus RTU/ASCII protocol ※Supports RS2, WR3A, RD3A, ADPRW instructions . In addition, the programmable controller and network module connection can realize communication with the external network, support remote download and expansion functions, and is equipped with corresponding cloud platform services. For your specific needs, please feel free to contact us.