CONTROLLER MANUAL

VE2.8

Yannes int

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1 Main Interface Functions

1.1 Main interface

The main interface mainly displays the tightening results and tightening curves sent by the tightening machine, scanning information, program, transmission rate or group information.

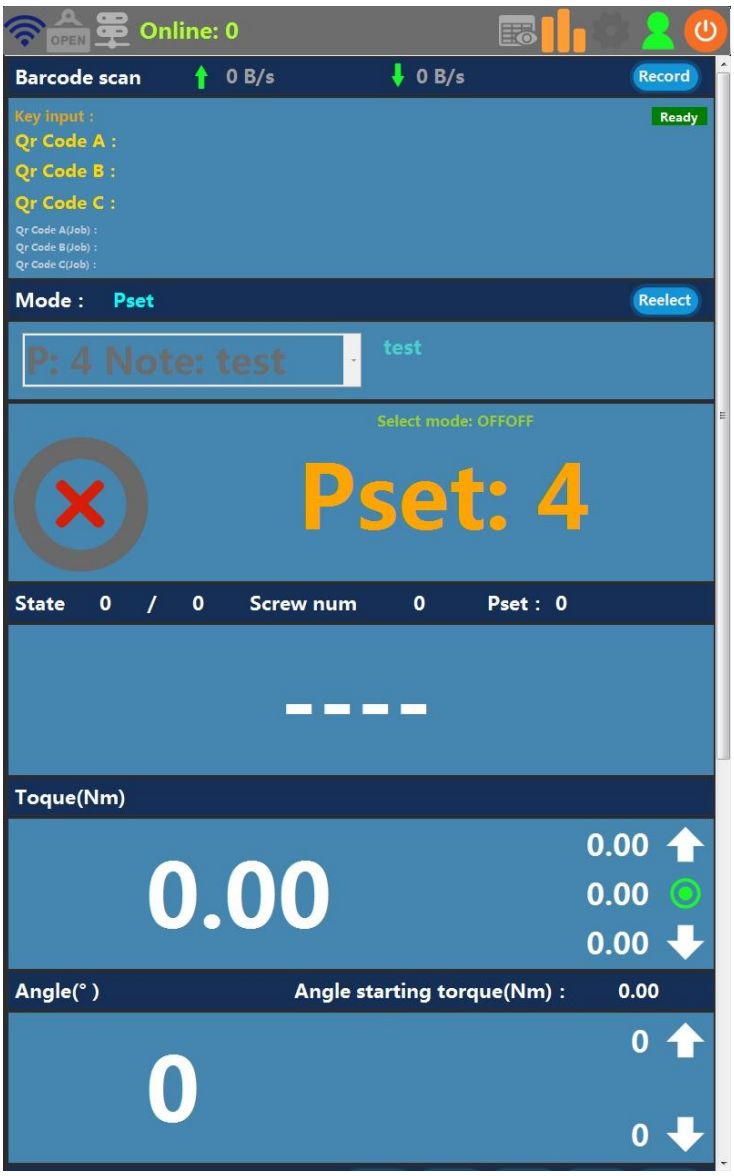


Figure 1-1 Main Interface

Record: Used to record the function of work number when multiple identifiers are used to select the program. Recorded identifiers do not participate in program selection, the number of recorded identifiers is set in the Work Mode menu - Sweep Policy Setting.

Reselect: Used when the group is not completed, an error has occurred and the group needs to be reselected with this button.

Note: 1. Before using this controller, you need to plug the antennas before powering it on, otherwise it will cause damage to the internal circuit!

2. After powering up the controller and the main power switch is illuminated, please wait for two to three minutes before pressing the on/off button.

1.2 Main interface menu bar introduction

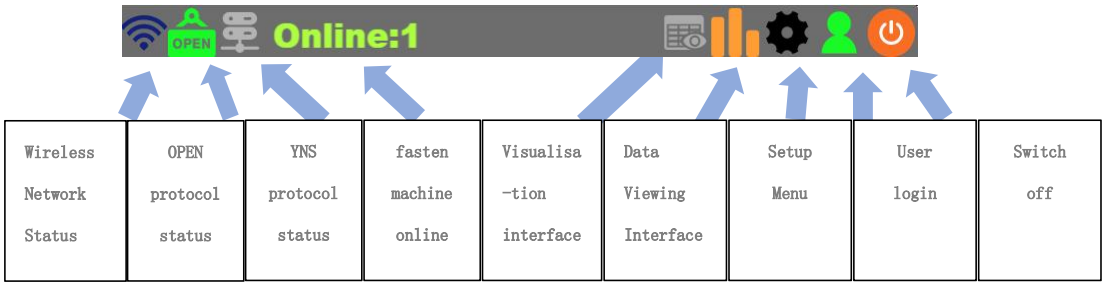


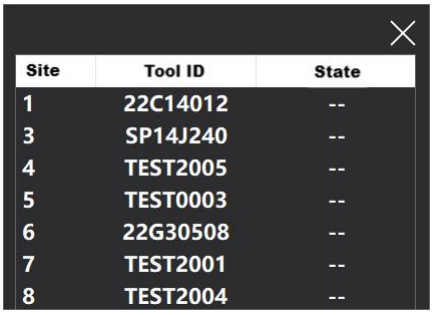
Figure 1-2 Main interface menu bar

① **Visualization**

The user can access the visualization interface through the visualization display button. This interface is graphically based on the serial number of the screw position, making it easier for the user to observe the tightening results and status. This function is only available in group mode.

② **Current device online**

This displays the number of devices that are currently online. You can click this control to bring up the details of the online devices, as shown in Figure 1-3.



Site	Tool ID	State
1	22C14012	--
3	SP14J240	--
4	TEST2005	--
5	TEST0003	--
6	22G30508	--
7	TEST2001	--
8	TEST2004	--

Figure 1-3 Current online equipment information

③ **OPEN protocol status**

This icon is automatically lit if the device's Open Protocol service is up and running properly, otherwise it is greyed out. Grey means that Open Protocol is not working properly.

Figure 1-4 closed open protocol service

Figure 1-5 correct open protocol service

④ **Controller Wireless Signal Status**

Represents the wireless link status of the controller. If the wireless signal status is grey, it means that there is a problem with the wireless link and the tightener cannot communicate with the controller.

Figure 1-6 Unusual controller wireless signals

Figure 1-7 Unusual controller wireless signals

⑤ **Data viewing**

The main function of the Data View button is to query historical data and export data. Data View requires a simple password to be entered in order to use this function.

⑥ **YNS protocol status**

The YNS protocol is our customized protocol used to output the tightening data. Gray color means disconnected from the server receiving the data, otherwise it means the connection is normal.

Figure 1-8 Unusual YNS protocol

Figure 1-9 usual YNS protocol

⑦ **Setting**

The Setup button is primarily for setting up the tightener and controller. This button is normally grayed out and will only be effective when the user is logged in. (After 30 minutes after the user has logged in, the button will automatically become invalid and will need to be logged in again to take effect.)

⑧ **User login**

User login will pop up the interface as shown in Figure 1-10, if the user enters the password correctly it will change the setup button to the valid status. (Valid status is 30 minutes)

The system provides three accounts by default:

Account 1：admin　　password：admin123。

Account 2：root　　password：root123。

Account 3：user　　password：user123。

Figure 1-10 User login interface

Figure 1-11 Shutdown interface

⑨ **Turn off**

This button is used to shut down or restart the server, and its interface is shown in Figure 1-11.

⑩ **Simple Password Interface**

The simple password screen is used to enter the password required for "program reselection and data viewing", which can be set in the operating mode.

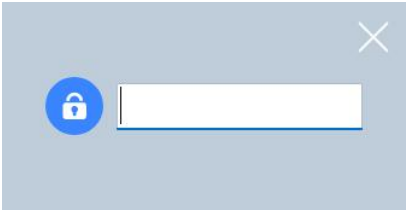


Figure 1-12 simple password interface

1.3 Curve Viewing

Tightening curves can be viewed from the main screen by dragging the scroll bar on the main screen to the bottom to see the curve display area.

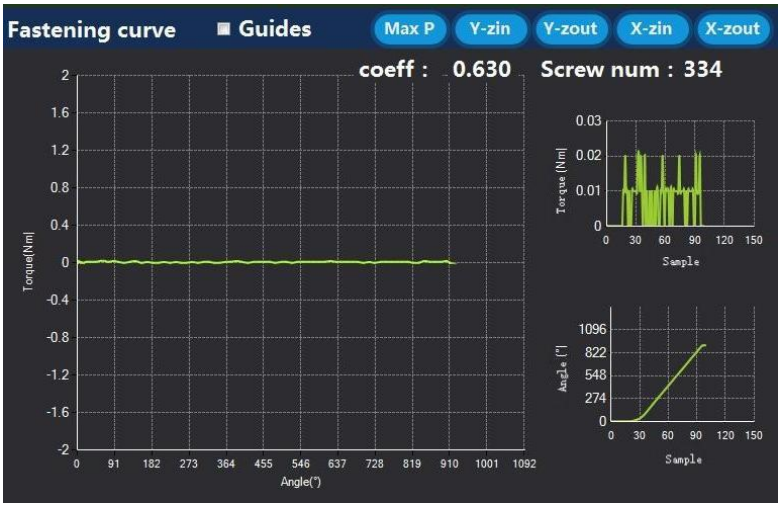


Figure 1-13 Tightening curve display

2 Settings

2.1 Setting menu main screen

Settings include Tool config, Tool setup, Tool bar code, Tool network , Working pattern, identifier, Position arm, Net out config, Register users, Bounding tool, Set group, Set Job, IO config, Comout format, Bus setup, Tool upgrade, log view, Led setting, Device info, Time set , soft update and Tool log.

Figure 2-1 Settings main menu

2.2 Tool config

Tightening machine setting is to set the working parameters of each tightening machine, you need to connect the controller and the tightening machine through USB cable or wireless network, and then select USB in the drop-down box, then the original configuration information in the tightening machine will be read automatically. After the setting is finished, you can download it to the tightening machine through the download button on the right side of the drop-down box. (Click the left arrow in the upper left corner to return to the previous interface).

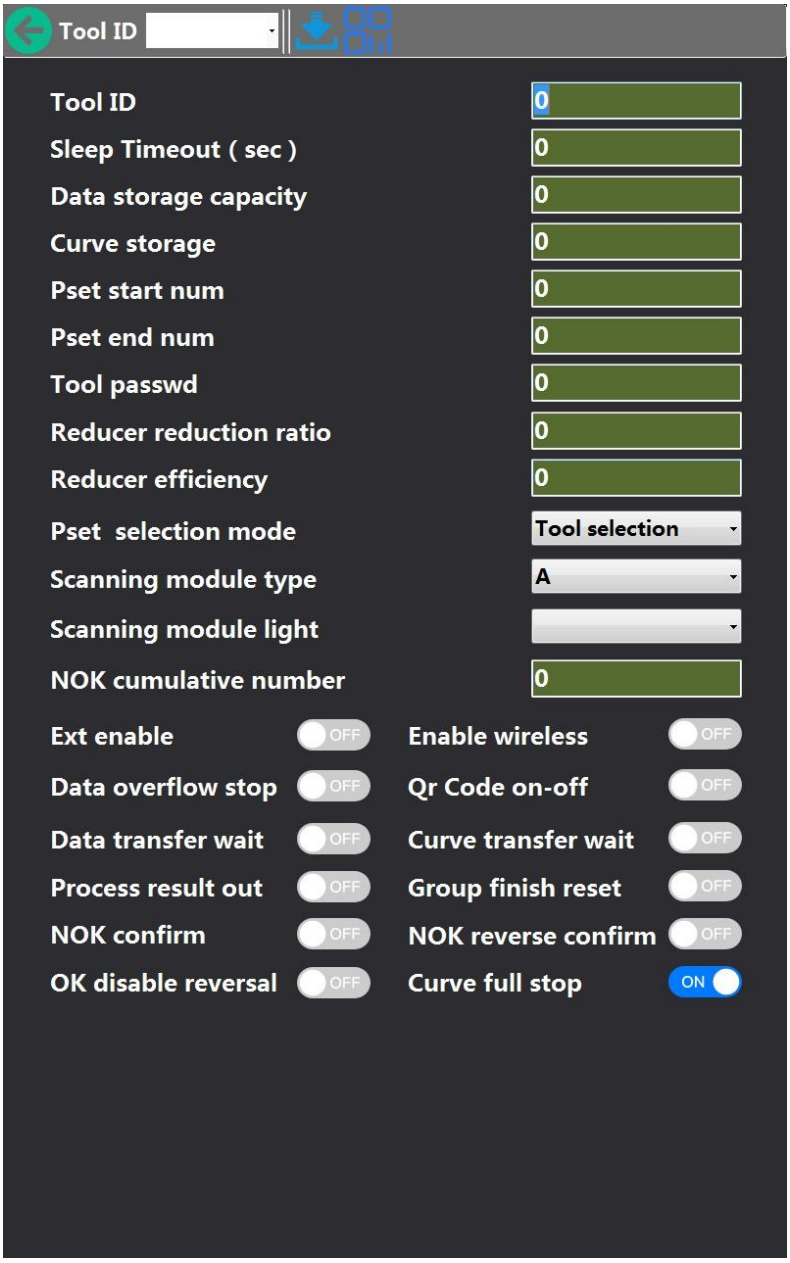


Figure 2-2 Tightening machine settings

（1） Tool ID

Tightening machine ID is a positive integer in the range 0-99999999, which is a number given to the tightener on behalf of the user, not a serial number. The user can define this ID at will, where each tightening result contains this ID.

（2） Sleep Timeout(sec)

This function is to set the standby time for the tightening machine to automatically hibernate, if the set time is reached without operating the tightening machine, the tightening machine will automatically hibernate. The maximum is 999 seconds.

（3） Data storage capacity

This function is to set the maximum number of tightening data that can be stored in the tightening machine, and the specific number of data stored can be judged according to the tightening machine model.

（4） Curve storage capacity

This function is to set the maximum number of tightening curves that can be stored in the tightening machine, and the specific number of stored curves can be judged according to the tightening machine model.

（5） Pset start num

The program start number is the minimum program number for which the user can select a program. The program start number cannot be greater than the program end number, nor can it be zero.

（6） Pset end num

The end-of-program number is the maximum program number for which the user can select a program. The end-of-program number cannot be less than the start-of-program number, nor can it be zero.

（7） Tool passwd

The password is a four-digit code used for authentication when accessing the setup screen from the tightener. The values range from 0000 to FFFF.

（8） Pset selection mode

The program switching mode consists of three modes:

- **Tool Selection:** Set to this mode, the user can switch program numbers manually by

tightening machine.

- **Wi-Fi Selection：** Set to this mode, the user needs to switch the program through Open protocol or other forms.
- **QR Code Selection：** Set to this mode, the user can switch the program number by scanning the identifier and barcode, provided that some characters of this information are stored in the tightener (usually the first 8 characters). How to store the identifier information is described in the following section.

（9） Ext Enable

If the external enable is set to ON, the tightening machine must be enabled by Open protocol or other forms, otherwise the tightening machine will not operate normally. If you do not want to enable the screwing machine externally, please set it to OFF.

（10） Data overflow stop

Due to the limited storage capacity of the tightening machine (at most, it can only store the maximum number of data set by the user, refer to the data storage capacity setting), if the user sets it to ON, the tightening machine can not continue to be used when it is full of data, and it must be cleared by the computer software before it can be continued to be used. If the setting is OFF, then the tightening machine will work all the time, when the data is full, the later data will overwrite the previous data.

（11）Data transfer wait

Data transmission wait If set to ON and the wireless function is turned on, the tightening machine must transmit the resultant data to the controller in order to continue working, otherwise the data will be sent until it is successful and the tightening machine cannot continue to be used. Setting it to OFF will also transmit the data to the controller, but due to the characteristics of the wireless network, the data may be lost, but it will be stored in the tightening machine. If you do not require high data storage, you can set it to OFF.

（12） Curve transfer wait

"Curve transmission wait" is an extension of data transmission wait, but instead of merely waiting for result data, it involves waiting for the entire curve to be received before the tightening machine can continue to operate.

（13） Enable wireless

Enable Wireless If set to ON the wireless connection function of the tightening machine is turned on, OFF the wireless connection function is turned off.

（14） Identifier on-off

Identifier Scanning if set to ON the tightening machine identifier scanning function is turned on, and OFF the identifier scanning function is turned off.

（15） Process result out

It is a multi-step situation where the tightening machine does not complete the last step. Just send the result of the last step of the intermediate step to the controller.

（16） Group finish reset

It means that the tightening machine itself uses the group and can automatically reset the group when it is finished. (In the case of not using the controller group).

（17） Scanning module type

There are four scanning module types, A, B, C and D, which can be configured automatically according to the type of your scanning head.

（18） Scanning module light

Scanning module light brightness is with 10 levels, where 0 is off light. Not all scanning heads support light adjustment, please set it according to your scanning head type.

（19） NOK confirm

If the result is confirmed as unqualified, after opening this function , manual confirmation is required before the tightening machine can continue to be used for the current screw that was tightened but found unqualified. Typically, this confirmation is done by pressing the "Confirm" button or "Toggle Forward/Reverse" on the tightening machine (with the function to confirm unqualified results by reversing enabled).

（20） NOK reverse confirm

Only when this function is turned on, the tightening machine can confirm whether to continue working or not by “switching forward and reverse” when the tightening fails. Otherwise, it can only be confirmed by pressing the “confirmation key”.

（21） OK disable reversal

If this function is turned on, the tightening machine will not be allowed to rotate in the reverse direction after the tightening result is passed.

（22） **Curve full stop**

Shutdown when curve data is full reference shutdown on when data is full description, except that here the judgment is curve.

（23） **NOK cumulative number**

The result failure confirmation function is turned on, so that if the number of times the tightening machine generates a result that needs to be confirmed is too high, the controller is required to confirm the result in order to avoid misoperation. The maximum number of confirmations allowed for the tightening machine is set here, and once the number is exceeded, confirmation is required from the controller. If you do not need to use the controller to confirm the function, then set 0 here.

（24） **Reducer reduction ratio**

This setting is the amplification of the torque amplifier used by the tightening machine. It must be set to 1 if no amplifier is used, otherwise the result display will be affected.

（25） **Reducer efficiency**

This setting is the amplification efficiency of the tightening machine using the torque amplifier, without using the amplifier must be set to 1, otherwise it will affect the result display.

2.3 Tool setup

Program setting is to add different programs for the tightening machine to facilitate the user to apply different tightening data in different environments. Figure 2-3 shows the program setting interface control menu.

2.3.1 Program settings menu bar

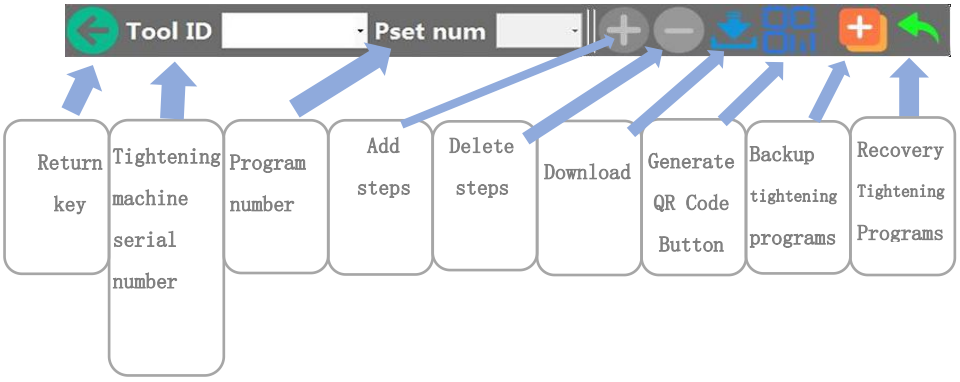


Figure2-3 Function description of the control menu

Tightening machine selection box： The tightening machine can be selected for configuration via USB or serial number. (The displayed serial number of the tightening machine represents wireless transmission, while USB represents a device connected via cable.) (Note: Only one USB cable can be connected at the same time.)

Program Selection Box： The Program Selection Box is used for selecting programs, and each tightening machine supports up to 32 programs.

Download button：Download the edited programs into the tightening machin.

Add steps：Add steps in programs, the maximum steps can be added is 8 per program.

Delete the steps：Delete the last step in program.

Backup tightening programs：All programs within the tightening machine can be backed up into a single file.

Recovery Tightening Programs： The backed-up programs can be downloaded back into the tightening machine.

2.3.2 Main interface for program settings

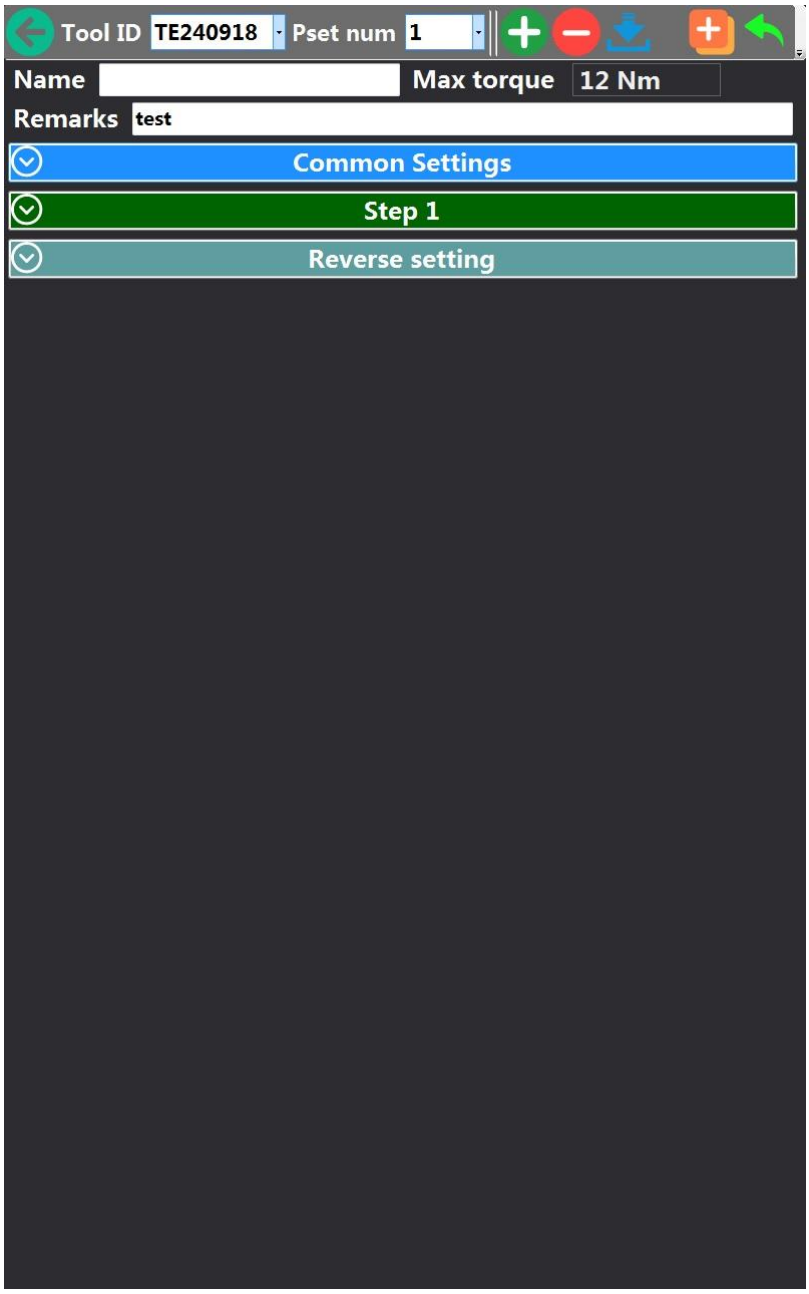


Figure 2-4 Main interface for program settings

Program Name： The Program Name can be up to 3 characters long and serves as an identifier for the current program.

Program Remarks： The Program remarks section can support program description information up to 100 characters long.

Maximum Torque： Displays the maximum torque supported by the current tightening machine.

2.3.3 Program setting attributes

（1） Common settings

The various options for general settings are illustrated in Figure 2-5.

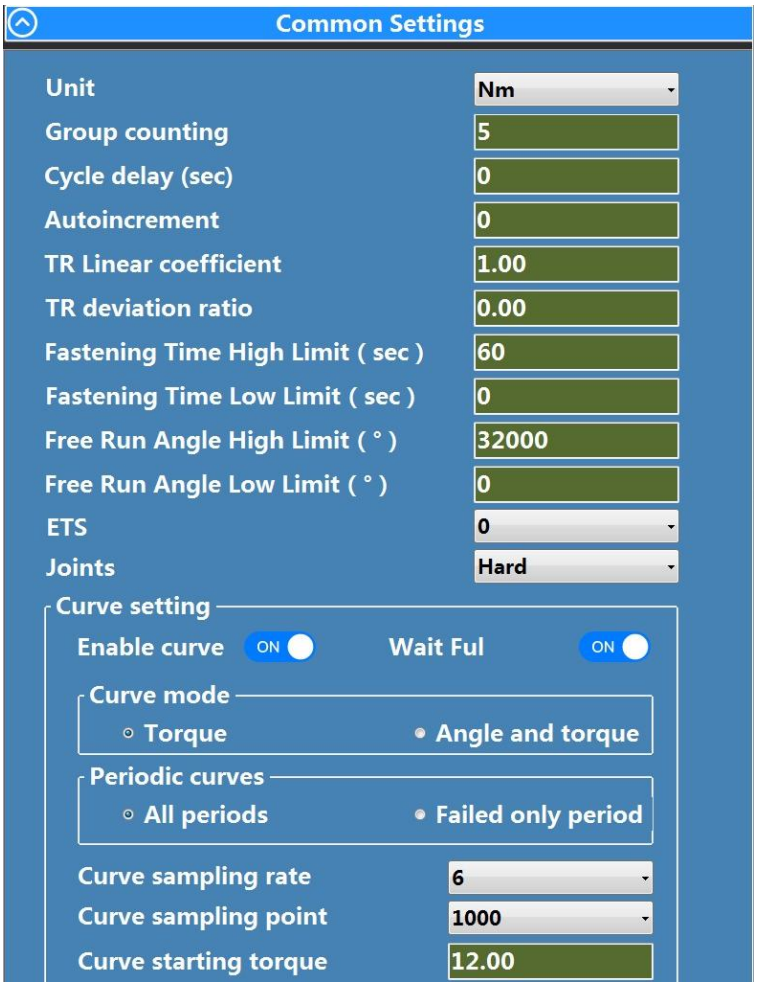


Figure 2-5 General setting

① Unit

The unit selection can be Nm, In-lbs, Ft-lbs, and dNm. Currently, the tightening machine defaults to using Nm (Newton-meters) as the unit, with the others not in use.

② Group Counting

Group Counting is a parameter that needs to be set when the tightening machine uses its own group feature. The maximum supported value is 255. When using a controller group, this should be set to 0.

③ Cycle delay(sec)

Cycle Delay represents the amount of time that needs to be waited after tightening one screw

before proceeding to tighten the next screw.

④ **Auto increment(Currently not in use)**

⑤ **TR Linear Coefficient**

TR Linear Compensation is used to calculate the error between the calibrated set torque and the actual tightening torque, with a default value of 1. Users should not arbitrarily set this value to avoid introducing errors in the output torque.

⑥ **TR deviation ratio**

TR Offset Compensation is used to calculate the discrepancy between the calibrated set torque and the actual tightening torque, with a default value of 0. Users should refrain from adjusting this value arbitrarily to prevent errors in the output torque.

⑦ **Fastening Time high limit (sec)**

The upper limit of tightening time refers to the maximum time restriction that can be achieved during the tightening process.

⑧ **Fastening Time low limit (sec)**

The minimum time restriction that can be achieved during the tightening process.

⑨ **Free run angle high limit(°)**

The maximum angle restriction that can be achieved during the tightening process.

⑩ **Free run angle low limit(°)**

The minimum angle limitation that can be achieved during the tightening process.

⑪ **ETS**

Pulse mode 0 turns the mode off, while 1, 2, and 3 turn it on with different levels.

⑫ **Curve setting**

When the "Enable Curve" setting is set to ON, it indicates that the curve recording for the program is activated, allowing you to view the tightening curve on the main interface. The curve comes in two modes: 1. Torque vs. Time; 2. Torque vs. Angle. (You can select according to your needs.)

Curve Output Rules:

1. All cycles (a curve will be output for each screw).
2. Only failed cycles (a curve will only be output for screws that fail the tightening criteria).

（2） Reverse Setting

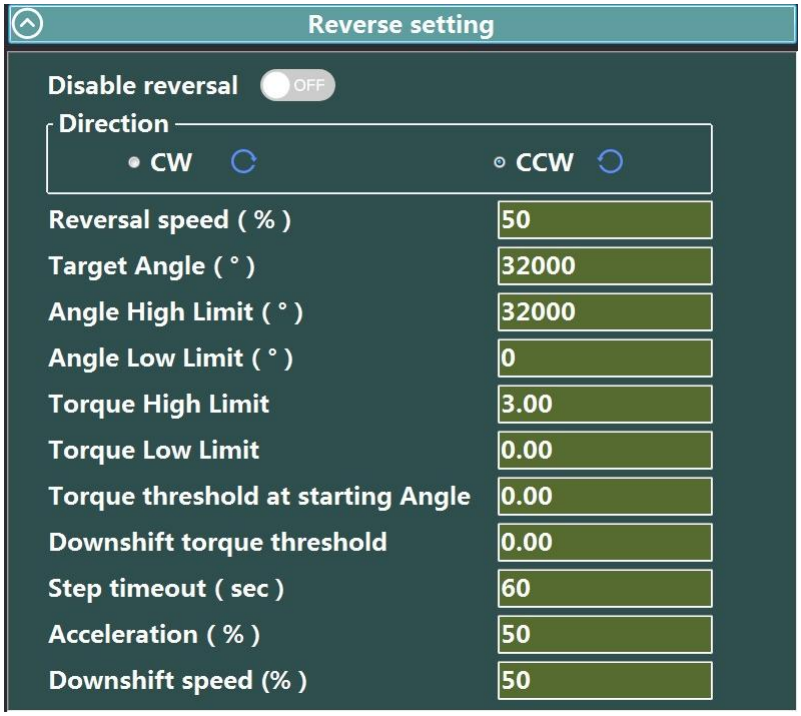


Figure 2-6 Reverse Setting

① **Disable reversal**

If this bit is in the ON state, the reversal function is prohibited; if it is in the OFF state, the reversal function is enabled.

② **Direction**

The tightening machine can be set to rotate counterclockwise or clockwise through the direction setting.

③ **Reverse speed**

Reverse speed is a percentage parameter that adjusts the speed based on the maximum rotational speed.

④ **Target angle**

Since reversal is primarily set based on an angle parameter, the user needs to set a target angle. The reversal will stop when it reaches this target angle.

⑤ **Angle high limit**

It represents the maximum angle value that the tightening machine is allowed to reach.

⑥ **Angle Low limit**

It represents the minimum angle value that the tightening machine is allowed to reach.

⑦ **Torque high limit**

The upper torque limit refers to the maximum torque that can be achieved during the operation of the tightening machine. The upper torque limit cannot exceed the maximum torque capacity of the tightening machine.

⑧ Torque low limit

The torque lower limit refers to the minimum torque that can be reached during the operation of the tightening machine.

⑨ Torque threshold at counted angle

The torque threshold for counted angle is a decimal number, indicating that angle calculation will only begin once this threshold is reached.

⑩ Downshifting torque threshold

The torque threshold for downshifting is a decimal number, indicating that once this threshold is reached, the tightening machine will start to reduce its rotational speed.

⑪ Step timeout

Step timeout represents the maximum time limit that should not be exceeded when executing a particular step.

⑫ Acceleration

Acceleration, though not strictly a percentage parameter, refers to the rate of speed increase achievable by a tightening machine when raising its rotational speed. The greater the acceleration, the shorter the time it takes to reach the target speed.

⑬ Downshift speed

The downshift speed, expressed as a percentage parameter, refers to the speed threshold or range that a tightening machine can achieve when initiating the downshifting process, prior to coming to a complete stop.

（3） Step Settings

The steps refer to the specific parameters executed by the tightening machine during the tightening process. They can be divided into multi-step programs and single-step programs (with a maximum of 8 steps supported). The settings for these steps are basically the same as those for reverse settings.

Figure 2-7 Step setting

① **Torque and Angle**

Users can choose whether the tightening mode is primarily based on angle or torque. If angle-based, the target value to be set is the target angle; if torque-based, the target value to be set is the target torque.

② **Free Speed**

Refers to the maximum speed that can be achieved by the tightening machine when it is idling, expressed as a percentage value.

（4） Primary torque

On the Step 1 settings interface, you can see a primary torque setting in the left dropdown menu. In the primary torque mode, users can set relevant parameters such as the target cut-in angle, primary range settings, and final torque settings. After setting the required parameters, the controller will automatically generate a tightening program based on the settings to facilitate quick program setup for complex tightening operations for users. (For specific parameter adjustment settings, please contact professionals.)

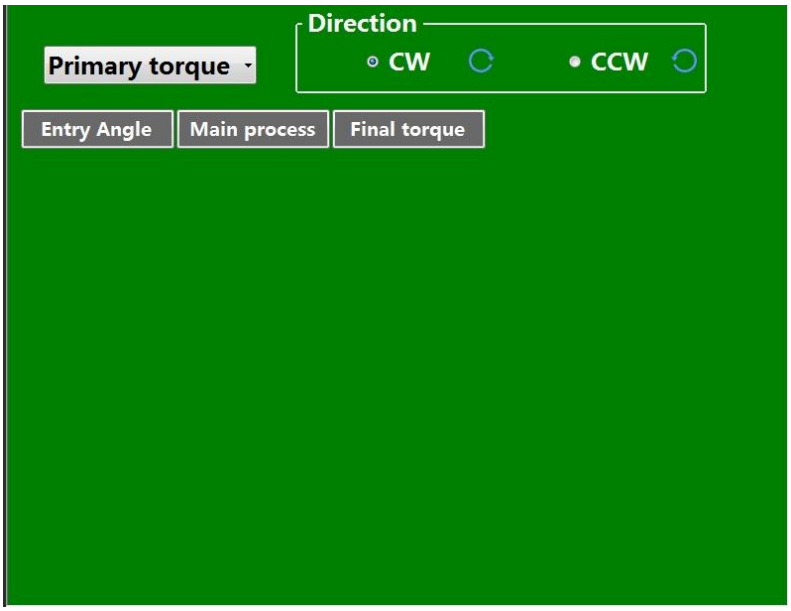


Figure 2-8 Primary Torque settings

2.4 Time set

Time setting refers to configuring the local runtime of the controller. The operation is relatively simple, and once the settings are completed, they can be saved.

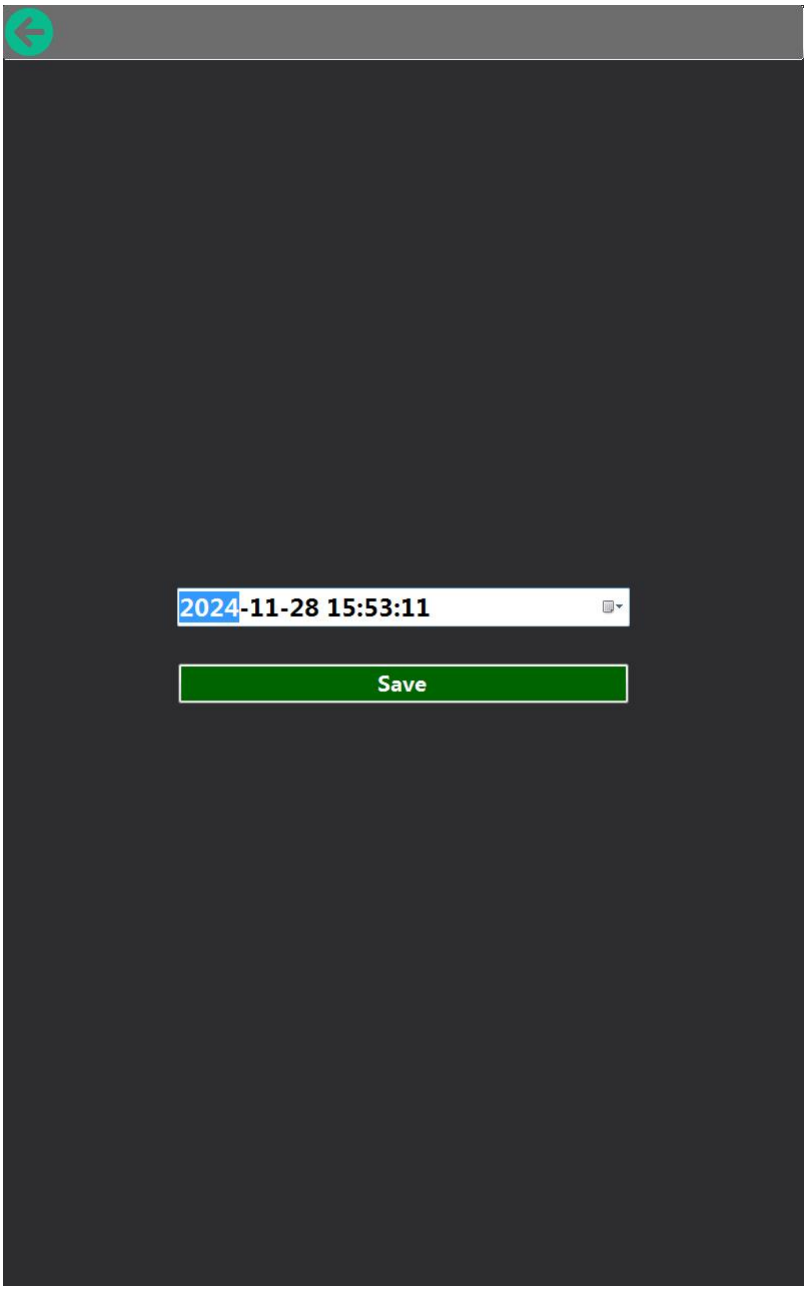


Figure 2-9 Time setting

2.5 Tool network

Network settings primarily involve configuring the wireless parameters of the tightening machine. The configured wireless parameters can be downloaded to the tightening machine via the download button. (The default setting is static IP, and DHCP is not used.)

Figure 2-10 Network setting interface

① **Wi-Fi name**

The Wi-Fi name refers to the SSID of the wireless network that the tightening machine needs to connect to. By default, the Wi-Fi name is set to the serial number of the controller.

② **Wi-Fi password**

The Wi-Fi password refers to the security key required for the tightening machine to connect to the wireless network. The Wi-Fi password is fixed as: siguo_037.

③ **Server IP Address**

The server IP address refers to the IP address of the controller within the wireless network, which is fixed at 192.168.1.2.

④ **Server port**

The server port number refers to the default port of the controller's service program. It is fixed at 9096.

⑤ **IP address**

The IP address refers to the IP address of the tightening machine within the wireless network. In the same network, the IP address of each tightening machine must be unique.

⑥ **Subnet Mask**

The subnet mask for the wireless network is fixed at 255.255.255.0.

⑦ **Gateway**

The IP address of the wireless network router is fixed at 192.168.1.1.

⑧ **Port**

It refers to the port number of the tightening machine itself, which defaults to 9096. The value range is from 2048 to 65535.

⑨ **Identifier**

The new version of the tightening machine (V2.x.x) allows for wireless parameter configuration by scanning the identifier on the controller.

2.6 Tightening machine identifier

If the user selects the identifier scanning switch program on the tightening machine, they first need to set the relevant string for the identifier here. Due to limited storage capacity of the tightening machine, each program can only correspond to 8 characters. The user can input 8 or more consecutive characters from the identifier into the corresponding program number. In this way, when the user scans the identifier, it will automatically switch to this program. After completing the settings, the user needs to download them to the tightening machine using the download button.

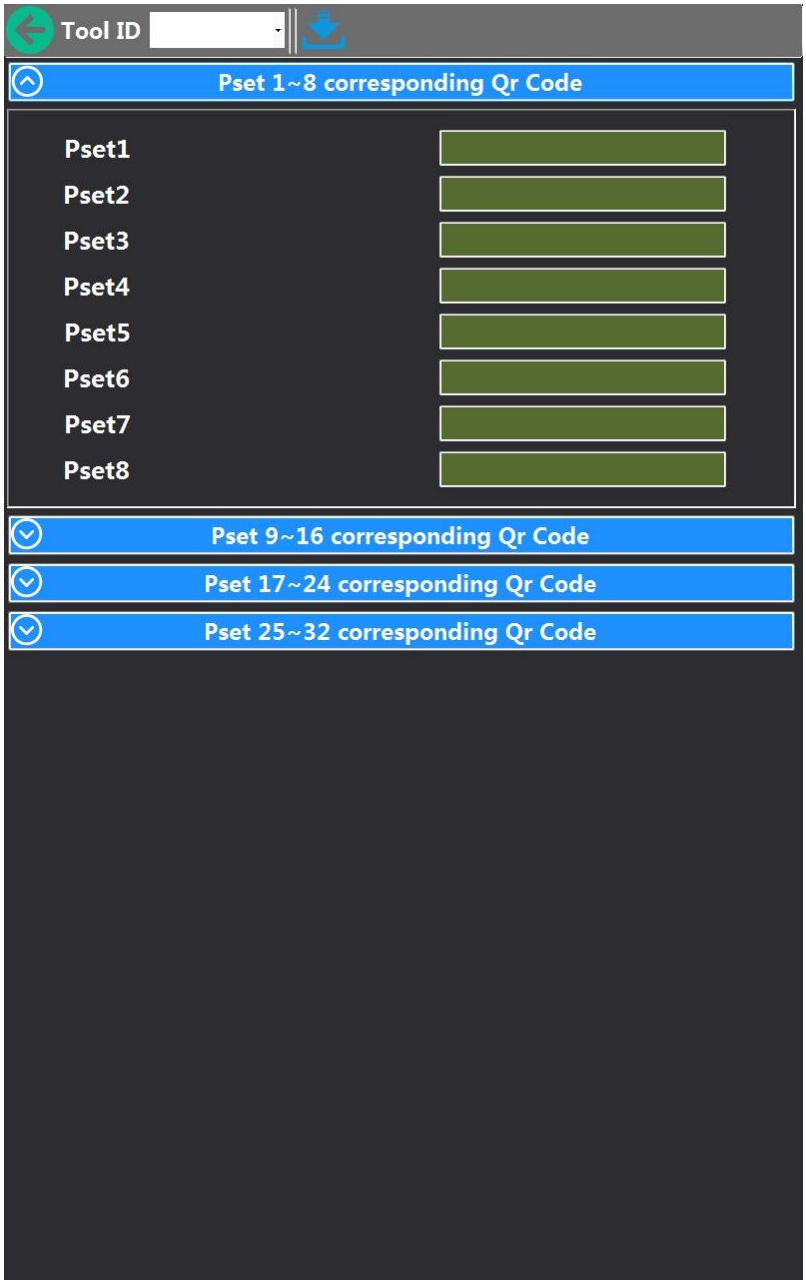


Figure 2-11 Interface for Scanning Information

2.7 Binding Tool

Binding the tightening machine refers to the process of associating the tightening machine with a controller. If the tightening machine is not bound to a controller, then the controller will not be able to communicate with the tightening machine properly.

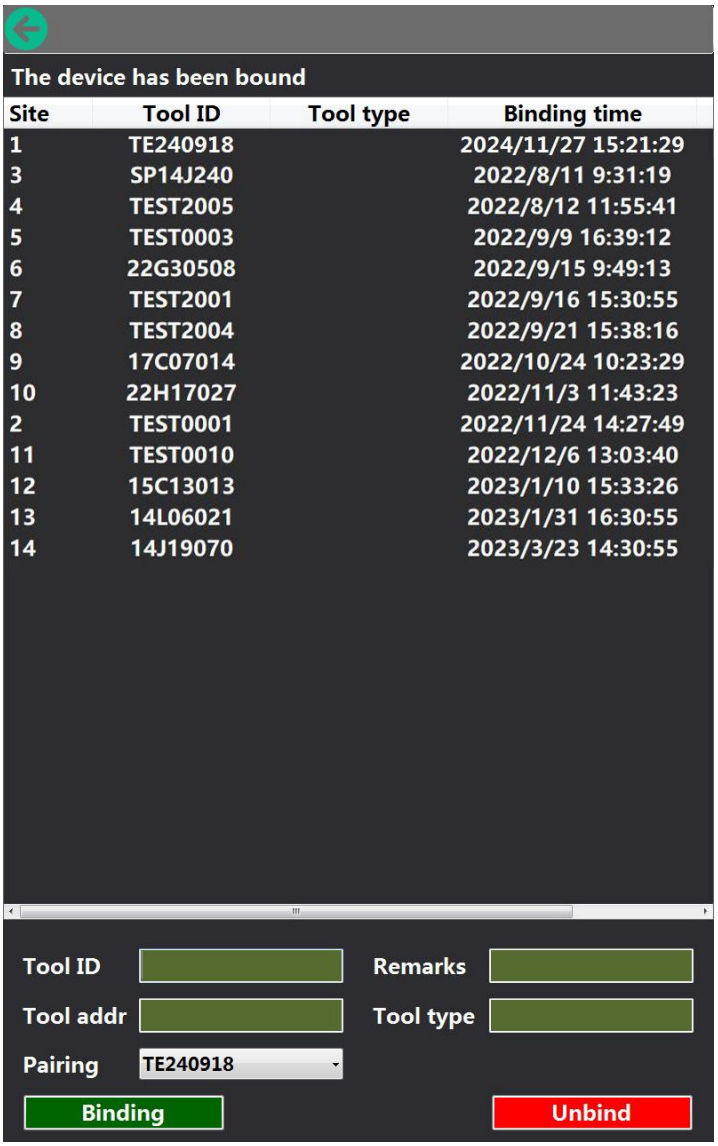


Figure 2-12 Tightening Machine Binding Interface

To bind a tightening machine, you need the serial number of the tightening machine, which can be viewed on the machine itself. The address is used for communication with the tightening machine using the Open protocol, and the address range is 0-99. Each tightening machine under a controller must be bound to a unique address; otherwise, the binding will not be successful. For CM0201 model controllers, each controller can bind multiple tightening machines, but only one can be used at a time. Users need to select the serial number of the tightening machine they intend to use from the

dropdown menu for pairing.

To unbind a tightening machine, you only need to enter its serial number.

2.8 Work Pattern

The working mode sets the operational state of the controller. The working modes are divided into Group Mode, Job Mode, and Default Mode. To use Group Mode, the tightening machine must be set to WiFi selection. If the tightening machine is set to Tightening Machine Selection or QR Selection mode, Group Mode needs to be turned off and set to OFF mode. To use Job Mode, Group Mode must be enabled.

2.8.1 Group mode

Group Mode represents that the smallest working unit of the controller is based on groups, which can contain one or multiple programs.

Figure 2-13 Group working mode

（1）Group switching mode

When the Group Function is set to ON, the Group Mode is enabled. The Group Mode includes five switching modes: OP Selection, IO Selection, Controller Selection, Bus Selection, and QR Selection. (For the method of adding groups, see Section 2.11)

OP-S: Switches groups via the Open protocol. If the controller is set to this mode, group switching can only be done through the Open protocol.

IO-S: Switches groups based on external IO signals.

Cu-SW: Also known as manual selection, allows the user to choose the desired group to switch

to via a dropdown menu.

QR-SW: Switches groups by scanning a QR code on the tightening machine. (For binding identifiers to groups, see Section 2.10)

For the above modes, the tightening machine needs to be set to Wi-Fi program selection.

Bus-S: Allows the controller to communicate with a PLC via protocols such as Profinet or CC-Link. (Requires corresponding modules)

OFF: Turns off controller program or group selection and only receives data.

（2）Group tightening mode

OK switch: means that only when all screws within the group are qualified can the next screw be processed.

NOK repeat count: refers to the number of retries set when "Qualified Switching" is OFF. If a screw fails to meet the criteria after this number of attempts, the system will proceed to the next screw.

NOK stop: means that if any screw within the group fails to qualify, the entire group will be reset and started from the beginning.

Group validity time(sec): refers to the time limit within which the group must complete its task; otherwise, the group will be deemed unqualified. (Set to 0 if not used.)

（3）Group Completion Strategy

Completion Strategy ,It refers to the operations executed after a group completes its tasks.

Loop execution: When ON is selected, the controller will automatically reset the group based on the subsequent reset time to proceed to the next group. If OFF is selected, manual reset by the user is required after the group execution is completed, including OP selection, identifier selection, controller selection, bus selection, and IO selection.

Running not SW: When ON is selected, switching groups is not allowed when the current group is not completed. If a group reselection is absolutely necessary, the user can click the reselection button to choose a different group.

Reset Time: Refer to the description of Group Cyclic Execution.

Order fastening: The specified group must be tightened in the set sequence. This feature is primarily used in conjunction with robotic arms. If robotic arms are not used, set it to OFF.

2.8.2 Default Mode

Default mode and group mode are basically similar, but with one key distinction: while group mode involves switching between groups, default mode involves switching between programs. (Programs and groups have an inclusive relationship, meaning that a group can contain one or more programs.)

Figure 2-14 Default working mode

2.8.3 Job mode

The "Job Mode" is another management level above the group level, primarily designed to address the unified management of workpieces required for complex tightening processes. (The Job Mode necessitates the use of QR selection.)

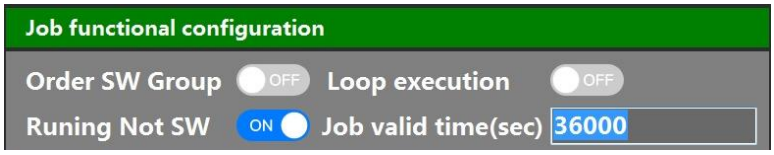


Figure 2-15 Job function setting

To use the Job Mode, you must first set up the corresponding groups and ensure that the group function is enabled. The primary function of Job Mode is to unify multiple groups into a single module.

Order SW Group: If enabled, the groups within a Job must be executed in the order they were set when the Job was added.

Job Loop Execution: This refers to whether a Job resets and starts over after it has been completed.

Running not SW: This determines whether a new Job can be selected while the current Job is still in progress.

Job Validity Time(sec): The Job must be completed within the specified time frame; otherwise, it will be considered unqualified. To disable this feature, set the time to 0.

2.8.4 Scanning Code Strategy(retrieval)

Scanning supports up to three identifiers for selecting a program. This update introduces a Record Mode, which means that if users choose a program using one or two codes, they can additionally record one or two more identifiers, with a maximum of three identifiers. Record Mode settings: 0 represents turning off recording; 1 represents recording one identifier; 2 represents recording two identifiers.

To select a group or program using a certain number of identifiers, simply check the corresponding number of identifiers. Here, identifiers A, B, and C correspond to the three codes (A, B, C) used when binding the identifiers to groups or programs.

Users can choose which code to use for selecting a program based on their needs.

Figure 2-16 Scanning Code Strategy options

History no-repeat: This function searches for identical serial numbers among multiple workpieces. If a duplicate serial number is found within the specified search range, a prompt will be displayed. The search range can be set between 1 and 10 according to user needs. If users do not need to check for duplicate serial numbers in historical workpieces, please disable this function.

Keyboard input: The controller supports external USB barcode scanners or keyboard input for identifiers. If external devices are not required, you can ignore this setting. If you need to connect an external keyboard for input, make sure to set this option to ON. For external USB barcode scanners, set it to OFF. When inputting via keyboard, the time between entering any two characters should not exceed 10 seconds, otherwise the system will automatically consider the input as complete.

2.8.5 Data output mode

Serial Port Output: Users can receive result data through the RX1 and TX1 ports of the controller's serial interface. Please refer to Chapter 8 for hardware port illustrations, and Chapter 2.12 for the output data format.

Bus Output: The Profinet module and CC-Link are optional and require the configuration of corresponding modules.

Status indicator light Output: External tower lights are used to output pass and fail signals.

Network Output Protocol: Data is sent to the server through designated network ports. Due to

variations in MES protocol interfaces among most clients, the specific protocols used are not listed here. If users require information on the protocols, please contact our company.

FIgure 2-17 Data Output Mode

2.8.6 Setting password

The password set here is used for group and job reselection, clearing alarms, and viewing data. The password will only be required in the corresponding interfaces when the simple password setting is ON.

Login Password: When set to ON, login is required to access the settings; otherwise, no login password is needed.

Figure 2-18 Password settings

2.8.7 Other settings

Battery Low Warning for the Tightening Machine: When set to ON, if the battery level of the tightening machine falls below the set warning threshold parameter, a warning interface will pop up.

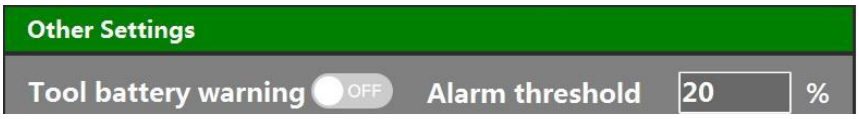


Figure2-19 Other settings

2.8.8 Alarm prompt Settings

The pop-up warning prompt can be set to automatically exit based on the configured time. If you need to keep it displayed, simply disable the automatic exit feature.

Figure 2-20 Waring alarm settings

2.8.9 Sleeve Setting

If users need to confirm whether the program selected on the controller is correct using a socket selector, they should enable this function. Then, in the IO settings interface, select the corresponding socket input point and connect it sequentially to the output wires of the socket selector.

Figure 2-21 Socket settings

2.8.10 QR code input mode

The setting enables the input of identifiers into the controller through multiple methods, including (but not limited to) a tightening machine, bus system, barcode scanner, keyboard, and Open protocol. Users have the option to select more than one method for inputting identifiers.

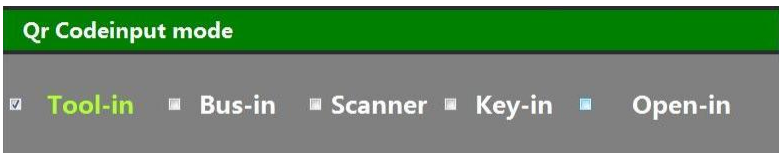


Figure 2-22 Identifier Input Method

2.8.11 Language setting

Users can choose multiple languages to display interface information. Currently, only Chinese and English are supported.

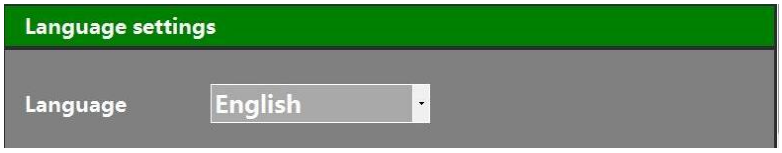


Figure 2-23 Language options

2.9 Identifiers (for binding groups, Jobs, and programs)

The identifier information is stored in the controller and is different from the tightening machine identifier. This identifier serves as the basis for the controller to select groups, Jobs, or programs. (It supports 1-64 characters and does not support Chinese characters.)

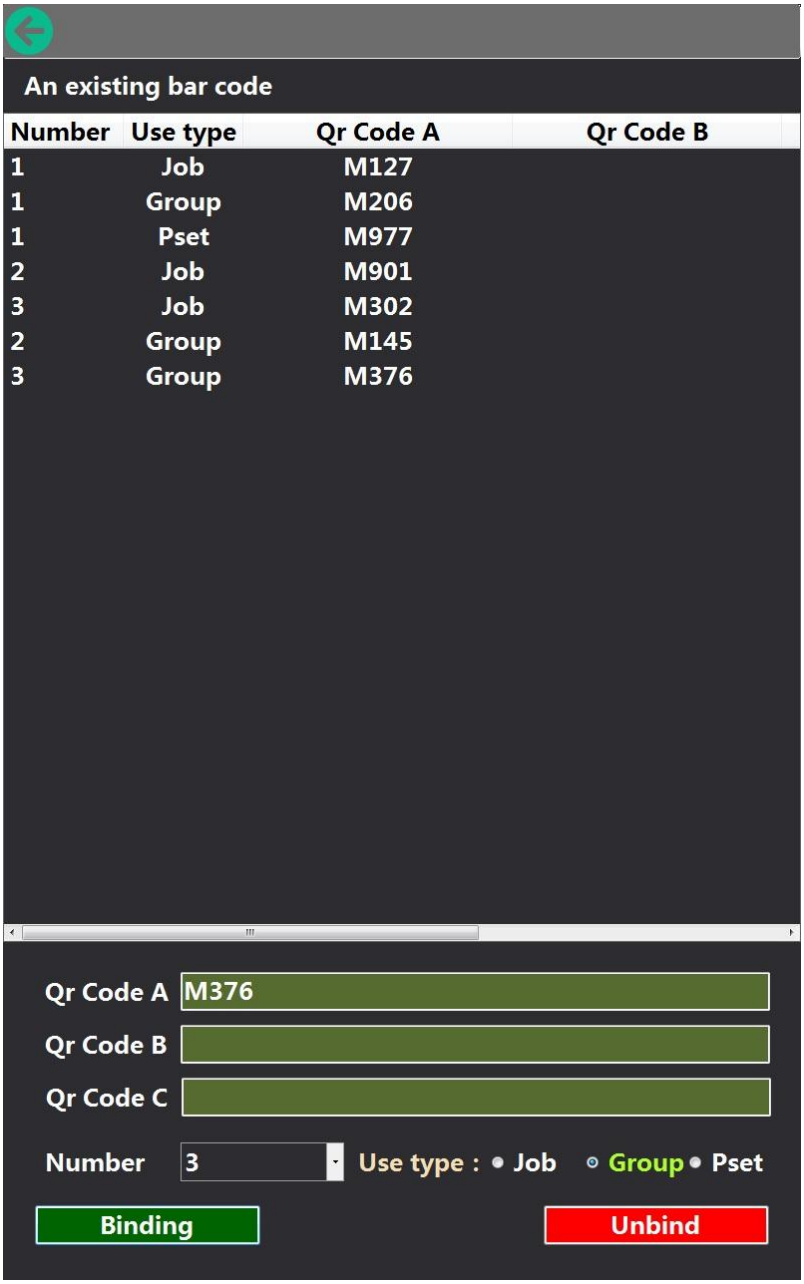


Figure 2-24 The identifier information stored in the controller

Each number can correspond to a maximum of three identifiers. When binding an identifier, the user must specify whether the binding is for selecting a Job, a group, or a program. To unbind an identifier, simply select the identifier information from the bound list and click on the unbind option.

Identification Number: When selecting a program, it corresponds to the program number; when selecting a group, it corresponds to the group number; and when selecting a Job, it corresponds to the Job number.

2.10 Add group

When the controller is in group mode, there must be selectable groups, and the addition and deletion of groups are both done on this interface.

2.10.1 Main Interface for Adding Groups

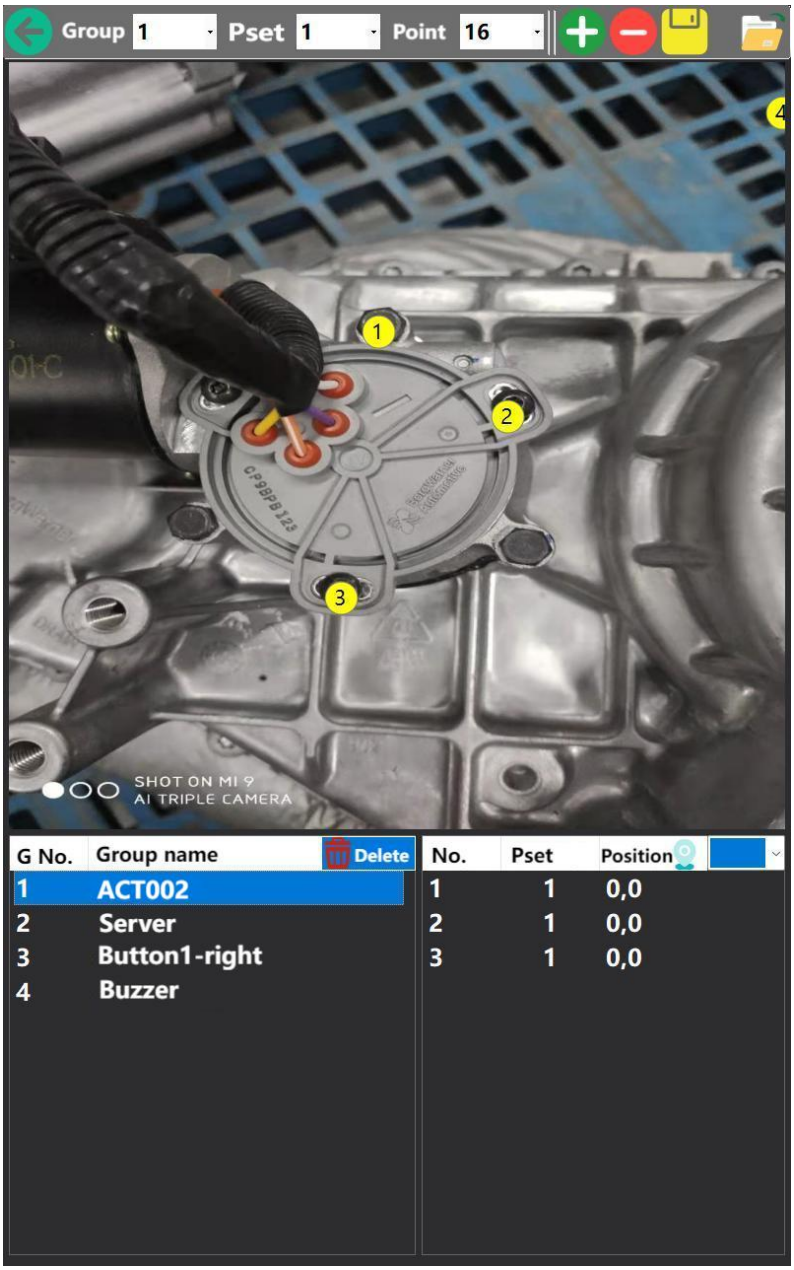


Figure 2-25 Main Interface for Group Settings

2.10.2 Introduction to the Menu Bar

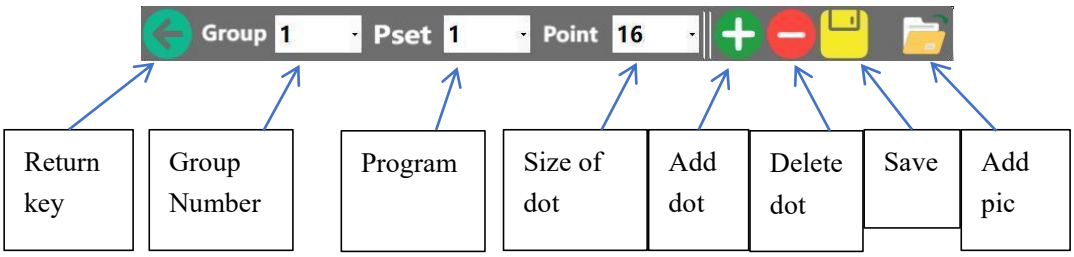


Figure 2-26 Group Menu Bar

2.10.3 Steps to add a group

(1) Prepare a USB flash drive with the renamed image saved on it and insert it into the controller's USB port. (Before adding a group, you need to add an image first, and the name of the image will be the name of the group after it is saved.)

(2) Click the "Add" button, and a dialog box will pop up. Locate the image you want to add from the USB flash drive and click "Open". As shown in the figure below: (The supported image formats are BMP, JPG, and PNG. Adding an image is mandatory when adding a group.)

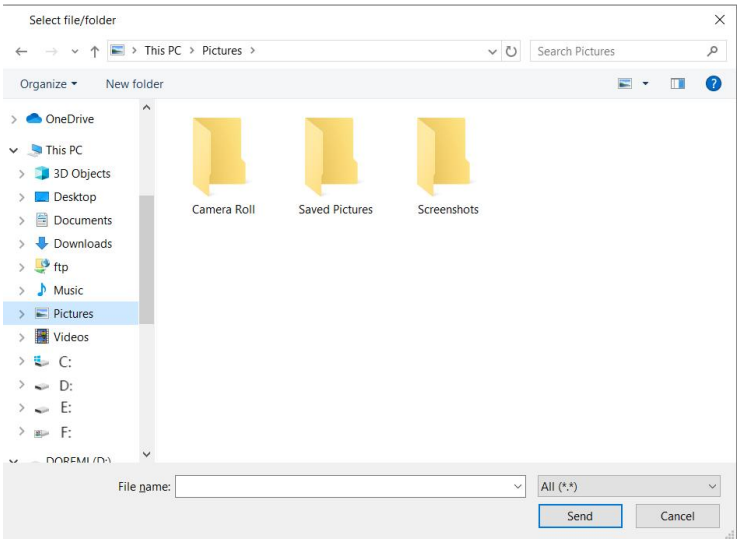


Figure 2-27 Insert image dialog box

(3) After adding the image, we will see the added image on the interface. At this point, we can select a group number through the group number dropdown box. Note that group numbers cannot be reused, and already used group numbers can be viewed in the saved group area.

(4) Next, we can select a program through the program number dropdown box. After selecting, click the "Add Program" button, and then click on the screw hole location where you want to place the program. If a yellow dot with a serial number appears, it means that a program has been successfully added. To add multiple programs, repeat this step. The size of the dot can be changed

through the "Dot Size" dropdown box (please change the size before adding the dot).

(5) Remember to save after adding the programs.

2.10.4 Delete a group

To delete a group, first select the group name and press the delete button to remove the group.

Figure 2-28 Delete the group

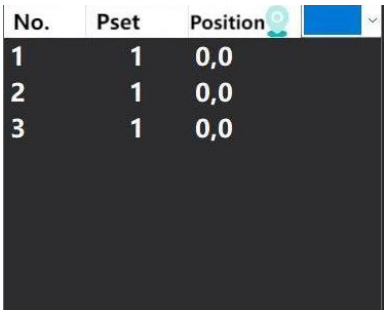


Figure 2-29 Modify the program number

2.10.5 Modify the programs within a group

First, select the program you want to change, and then use the dropdown box in the top right corner to select the new program you want to replace it with. As shown in Figure 2-29.

2.10.6 Add Position (Use Position Arm)

If you need to use the position arm, the parameters of the position arm will be automatically read for each group added. Therefore, please move the position arm to the corresponding position before adding a point. If you want to change the position value, select the position you want to change and then click the "Read Position" icon.

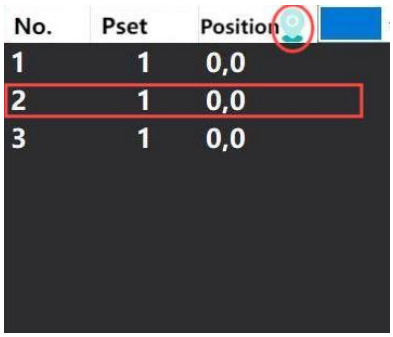


Figure 2-30 Modify position

2.11 Serial port output data format

If the serial port output is enabled, the data format for serial port output needs to be defined here. By default, the data output through the serial port is in ASCII format, and the serial port output rate is set to 9600 by default.

The serial port output format is shown in Figure 2-29. If a checkbox is ticked, the corresponding item will be output; if not, it will not be output.

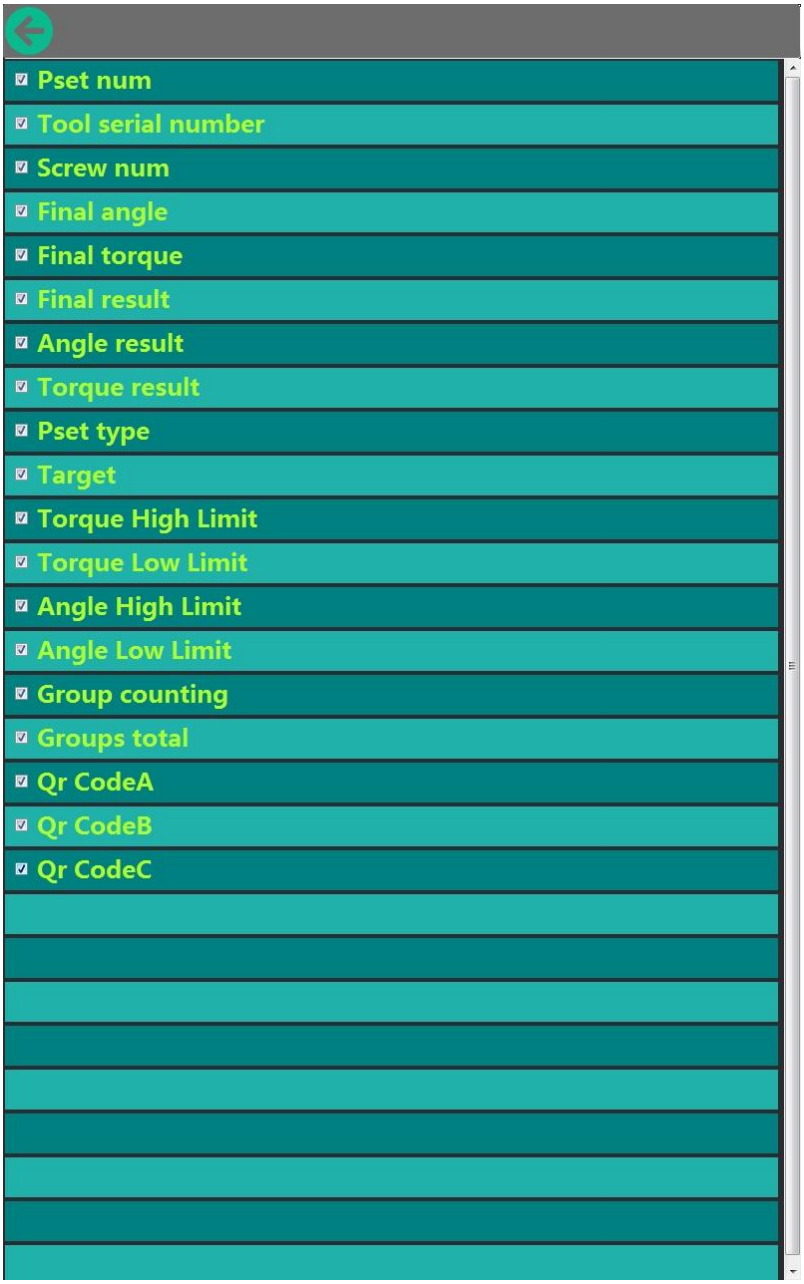


Figure 2-31 Definition of Serial Port Output Format

2.12 Position Arm Settings

The position arm mainly sets the port, baud rate, and switch. Users can optimize position recognition by setting the allowable error limits, with specific parameters adjusted according to the actual workpiece.

Generally, the coordinates of a position need to be located through two parameters from Channel 1 and Channel 2.

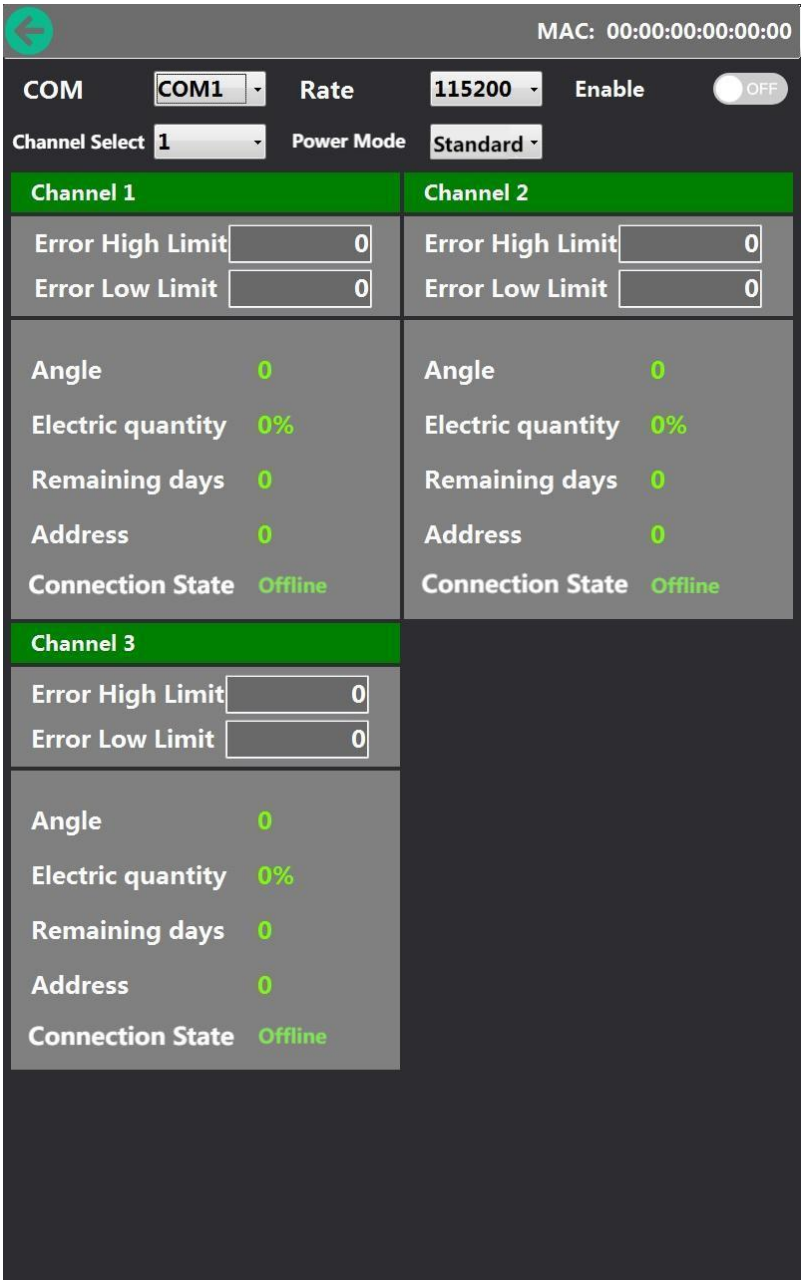


Figure 2-32 Position Arm Configuration Interface

2.13 Add Job

1. Select a Job number. Do not select a Job number that has already been added.

2. Set a Job name and click the "Add" button behind it.

3. Add a Group: Select a Group number, which determines the order of the Group within the Job. Then, select a Group number and click the "Add" button. Repeat this step to complete the group addition. (Note: The Group number must be unique.)

4. Bind the settings.

5. If you need to unbind, select a Job above and click "Unbind".

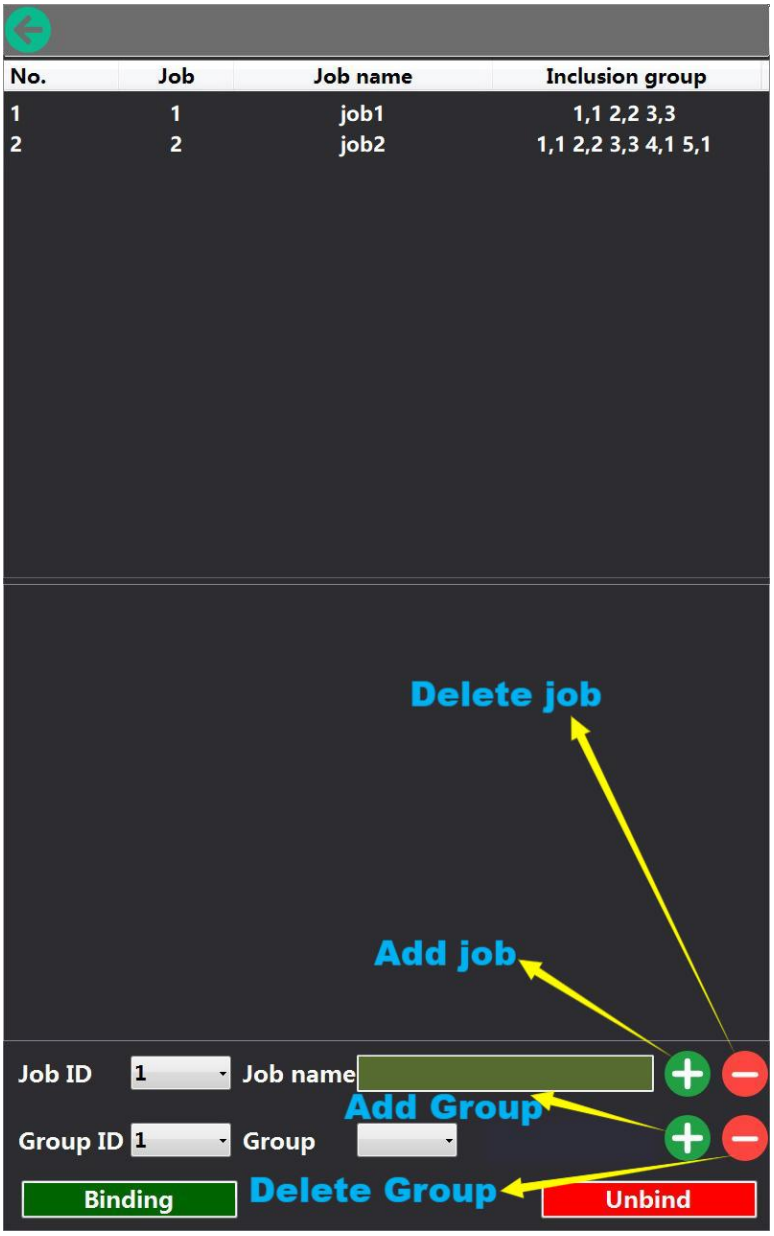


Figure 2-33 Job setting interface

3 Data viewing

3.1 Data viewing main interface

Figure 3-1 Data viewing interface

（1）Retrieve specific operation steps

① Select the desired tightening machine serial number from the corresponding date dropdown list and the tightening machine serial number dropdown list.

② Click "Retrieve" to view the data. You can navigate through pages using the "Previous" and "Next" buttons.

③ To export data, you must first insert a USB flash drive, select the corresponding tightening machine serial number, and then choose the data you wish to export. "Export Part" indicates exporting a portion of the data, "Export All" indicates exporting all the data, and "Export Current" indicates exporting the currently selected data.

Using "Export Part" as an example, the export process is as follows:

After inserting the USB flash drive, select "Export Part". A dialog box will pop up, where you should select the corresponding USB flash drive.

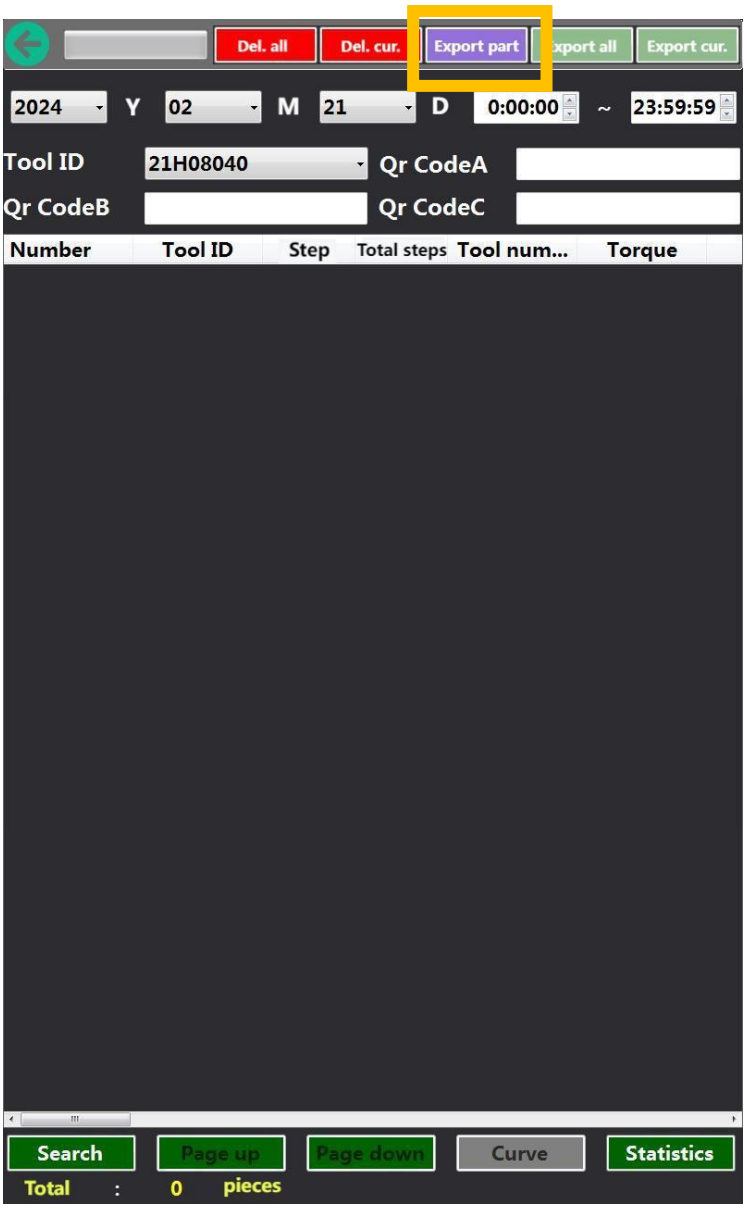


Figure 3-2 Export data operation

Select the folder on the USB flash drive where you want to export the data, and click "OK".

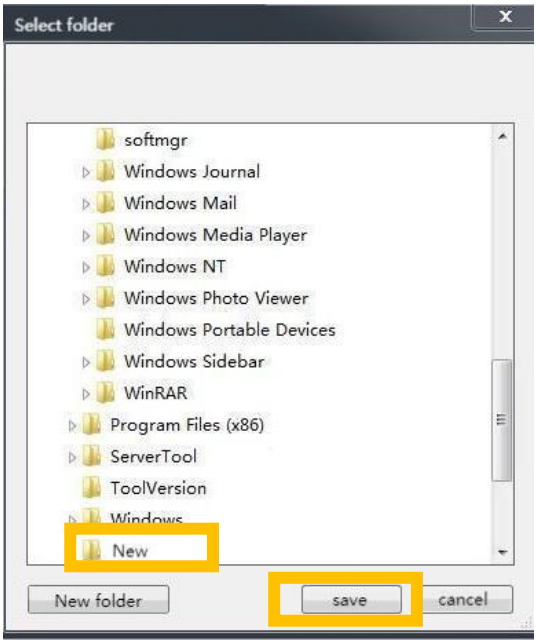


Figure 3-3 Export data operation

Select the time range for which you want to export data and click "Confirm".

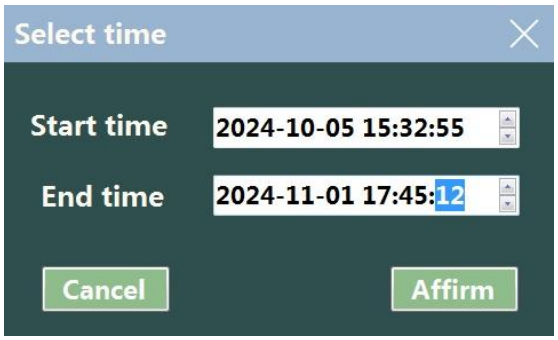


Figure 3-4 Time Range Selection Dialog

A dialog box will pop up asking whether to export the curves. Make your selection as needed.

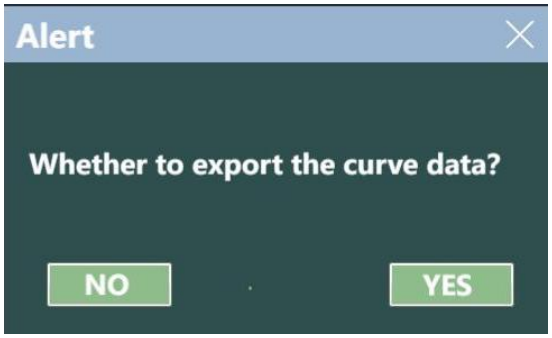


Figure 3-5 Export Curves Dialog

The following dialog box will pop up, indicating that the data export is complete.

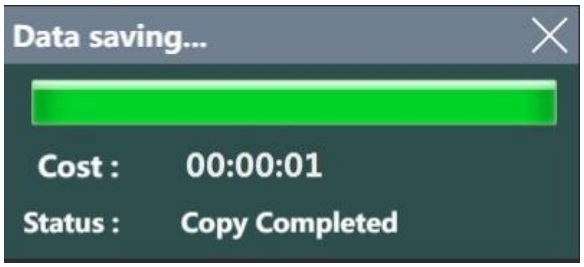


Figure 3-6 Export data complete

④ You need to login before delete the data

Login default accounts：

Account1：admin Password：admin123。

Account2：root Password：root123。

Account3：user Password：user123。

"Delete All" will delete all data, so use this function with caution. "Delete Current" will delete the currently selected data.

Figure 3-7 Login interface

（2）Curve viewing function

If a selected data entry contains a curve, the "Curve" button will be illuminated. Clicking the "Curve" button will display the curve for that data entry. As shown in Figure 3-3.

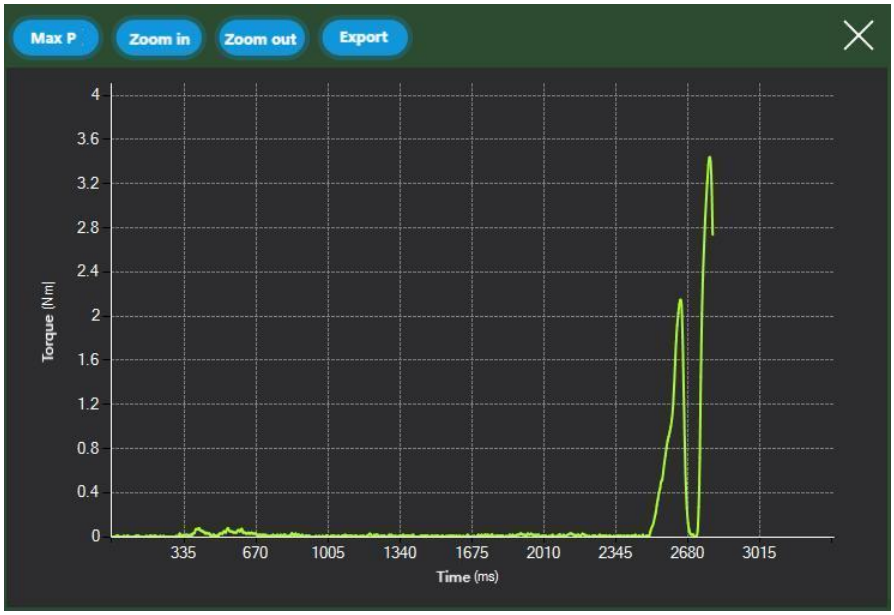


Figure 3-8 Curve viewing

If a USB flash drive is inserted, clicking the "Export" button will export the curve data to the USB flash drive.

3.2 Statistics

The statistics function allows for the analysis of tightening data. You can view the results of data analysis through three visualization methods: bar charts, range charts, and average charts.

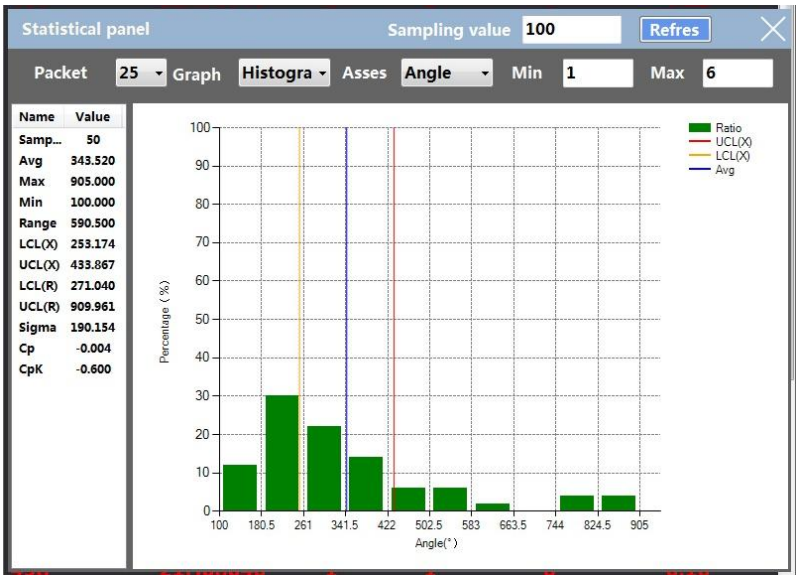


Figure 3-9 Statistics Interface

3.2.1 Acquisition of Data Samples

You can determine the scope of the data to be analyzed by setting the content parameters in Figure 3-5. The maximum number of data samples is 5000. The data with the most recent end time is used as the basis for analysis. For details, see Table 3-1.

Figure 3-10 Retrieval conditions

Table 3-1 Definition of data range

Title	Description
Time interval	Measurement data from start time to end time.
Data sample size	Up to 5000 times. Use the most recent data.
Result state	Pass and fail results.
Tightening machine ID	Limited to the same tightening machine
Identifier A/B/C	**Barcodes that are limited to a particular type of workpiece.**

3.2.2 Setting of Statistical Parameters

Table 3-2 Definition of statistical parameters

Title	Description
Group Size	An integer between 2 and 25. Used to determine the lower and upper control limits. Divide the sample data into N groups (the maximum data sample for a single group is 25).
Graphs	Histograms, polar plots, and mean plots.
Setting Maximum Value	Enter the value used to calculate the upper limit USL.
Set Minimum Value	Enter the value used to calculate the lower LSL limit.
evaluate	Select the main parameter for analysis (torque or angle).
Reload	If you set new retrieval conditions or sampling values, you need to manually reload.
Sampling value	The maximum is 5000 times and the minimum is 25 times.

Number of Values	Used to calculate the number of arrays of visualized data. Presented as an integer multiple of the grouping. For example, if the grouping is 10 and the sampled value has 105 data, only 100 of those data will be used.
Average value($\bar{x}$)	The average value of the sample data adopted is also the average value of all groups.
Minimum	The minimum value of the adopted sample data.
Maximum	The maximum value of the adopted sample data.
LCL	In quality control, the Lower Control Limit (LCL) is the lower boundary for data points below the control (average) line on a control chart. For histogram and mean charts, the LCL is calculated using the following formula: $$\mathrm{LCL}_{\bar{x}} = \bar{x} - (A_2 \times \bar{R})$$ For the range chart, calculate the LCL using the following formula: $$\mathrm{LCL}_{\bar{R}} = D_3 \times \bar{R}$$
range value R	The range value R = the maximum value within a group - the minimum value within a group. There are as many R - values as there are groups.
Average range value ($\bar{R}$)	Average range value：$\bar{R} = \frac{\sum_{i=1}^{n} R_1+R_2+\ldots+R_n}{n}$
UCL	In quality control, the Upper Control Limit (UCL) is the upper bound of data points that are above the control (average) line in a control chart. For histograms and mean charts, calculate the UCL using the following formula. $$\mathrm{UCL}_{\bar{x}} = \bar{x} + (A_2 \times \bar{R})$$ For the range chart, use the following formula to calculate the UCL (Upper Control Limit): $$\mathrm{UCL}_{\bar{R}} = D_4 \times \bar{R}$$
σ	Standard deviation：$S = \sqrt{\frac{\sum_{i=1}^{n}(X_i-\bar{x})^2}{n-1}}$
Cp	The Cp index is an indicator for measuring process capability. It is the ratio of the process tolerance (defined by the control limits) to six - standard deviations: $$\mathrm{Cp} = \frac{\mathrm{USL} - \mathrm{LSL}}{6 \times \mathrm{S}}$$
Cpk	The Cpk index comprehensively considers process potential and is an indicator that measures the difference between the process mean and the specification mean. If the process mean is centered on the target (nominal) specification value, then Cpk

	equals Cp. If Cpk is negative, it indicates that the process mean exceeds the specification limit. If Cpk is between 0 and 1, the 6σ distribution exceeds the specification range. If Cpk is greater than 1, the 6σ distribution is completely within the specification range. $$C_{PK} = \frac{\min(\bar{x} - LSL, USL - \bar{x})}{3 \times S}$$

Table 3-3 Control Limit Coefficient

Group Size	A_2	D_3	D_4
2	1.880	0.000	3.267
3	1.023	0.000	2.574
4	0.729	0.000	2.282
5	0.577	0.000	2.114
6	0.483	0.000	2.004
7	0.419	0.076	1.924
8	0.373	0.136	1.864
9	0.337	0.184	1.816
10	0.308	0.223	1.777
11	0.285	0.256	1.744
12	0.266	0.283	1.717
13	0.249	0.307	1.693
14	0.235	0.328	1.672
15	0.223	0.347	1.653
16	0.212	0.363	1.637
17	0.203	0.378	1.622
18	0.194	0.391	1.608
19	0.187	0.403	1.597
20	0.180	0.415	1.585
21	0.173	0.425	1.575
22	0.167	0.434	1.566
23	0.162	0.443	1.557
24	0.157	0.451	1.548
25	0.153	0.459	1.541

3.2.3 Bar Chart

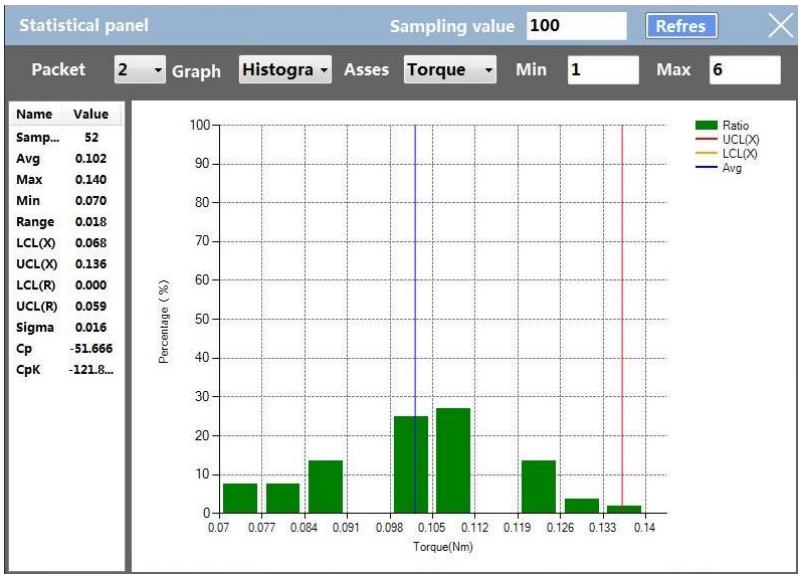


Figure 3-11 Bar graph

3.2.4 Range Chart

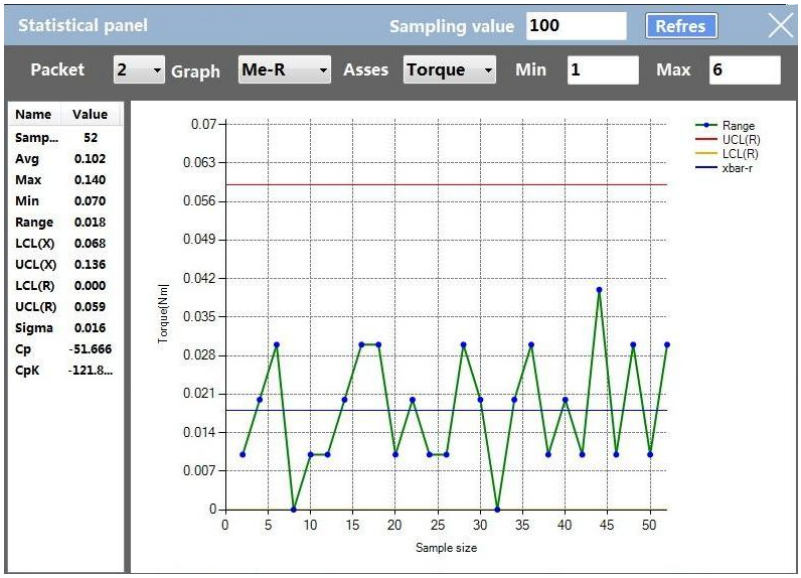


Figure 3-12 Range chart

3.2.5 Average Chart

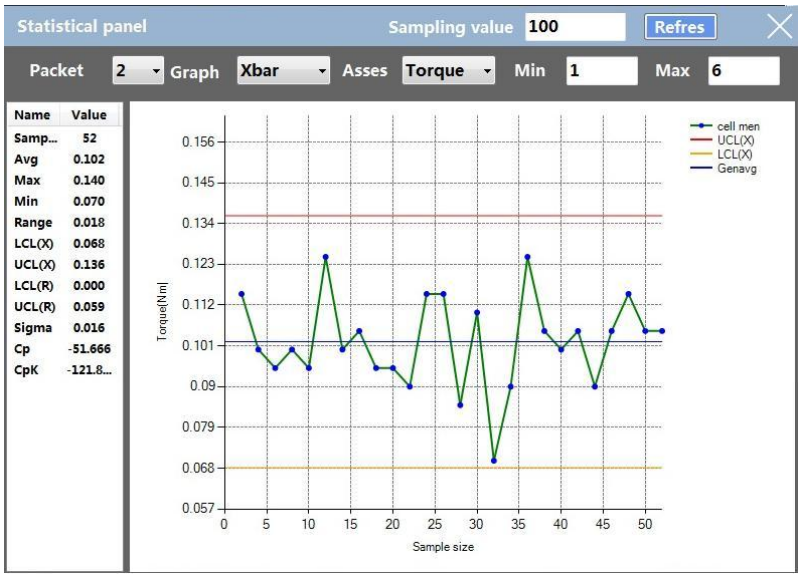


Figure 3-13 Average chart

4 Register user

Apart from the pre - set accounts, users can also register their own account information by themselves.

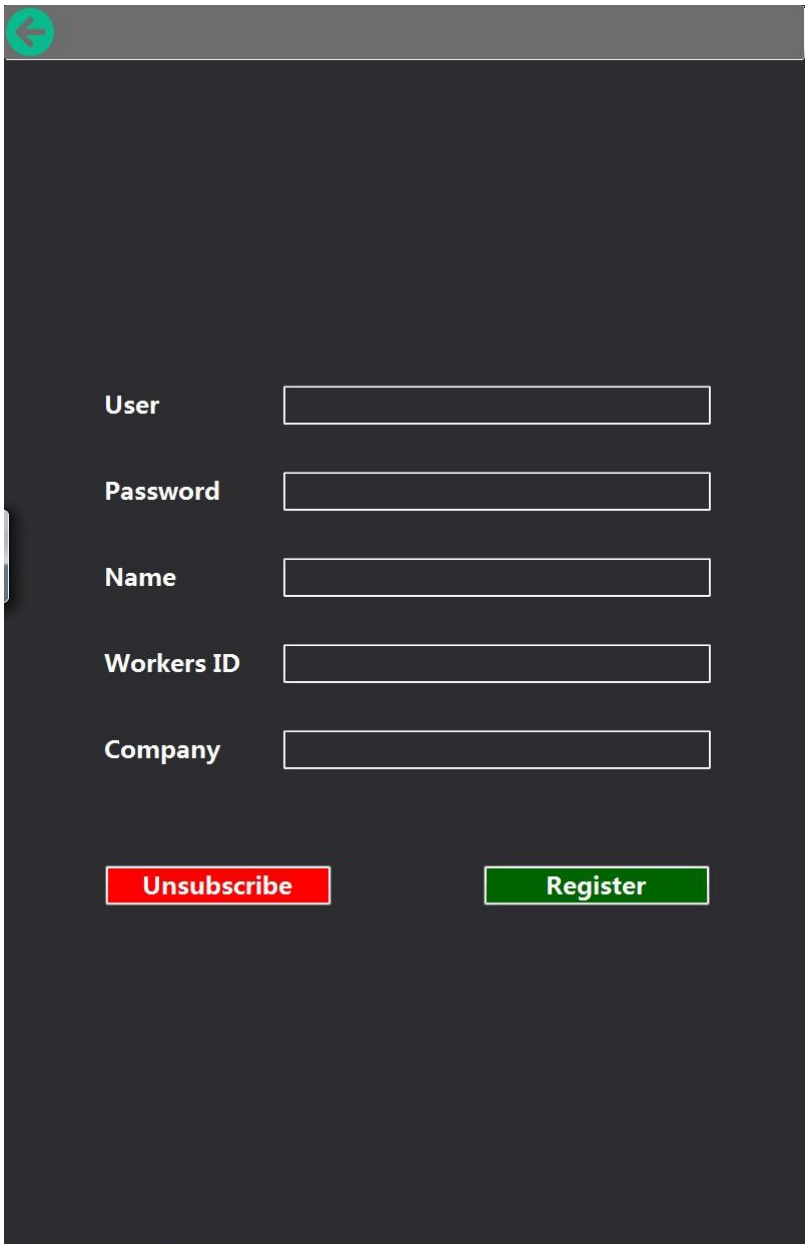


Figure 4-1 Registered User Interface

Table 2-1 System default accounts

	User name	Password	permission
Account 1	admin	admin123	1
Account 2	user	User123	0
Account 3	root	Root123	2

5 Equipment Information

The device information mainly shows the basic information of the current controller, such as current, voltage, and chassis temperature, which are displayed at the top.

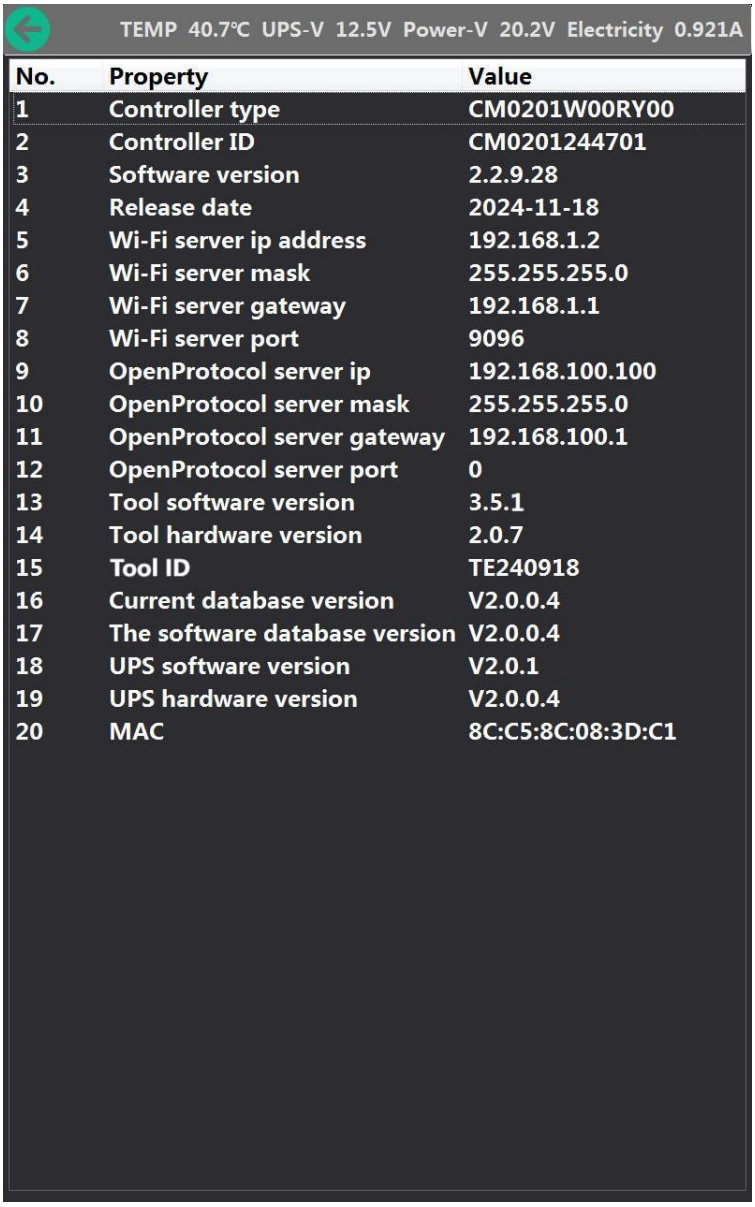


Figure 5-1 Device Information Interface

6 Visualization Interface Display

The visualization interface can only be accessed when the controller group mode is turned on. Before entering the visualization interface, the group must be properly set up. The visualization interface enables one to see the tightening status of the screws within the group more intuitively.

6.1 Visualization Interface

The pictures and the set points are displayed on the upper part, while the tightening result data are shown in the table on the lower part.

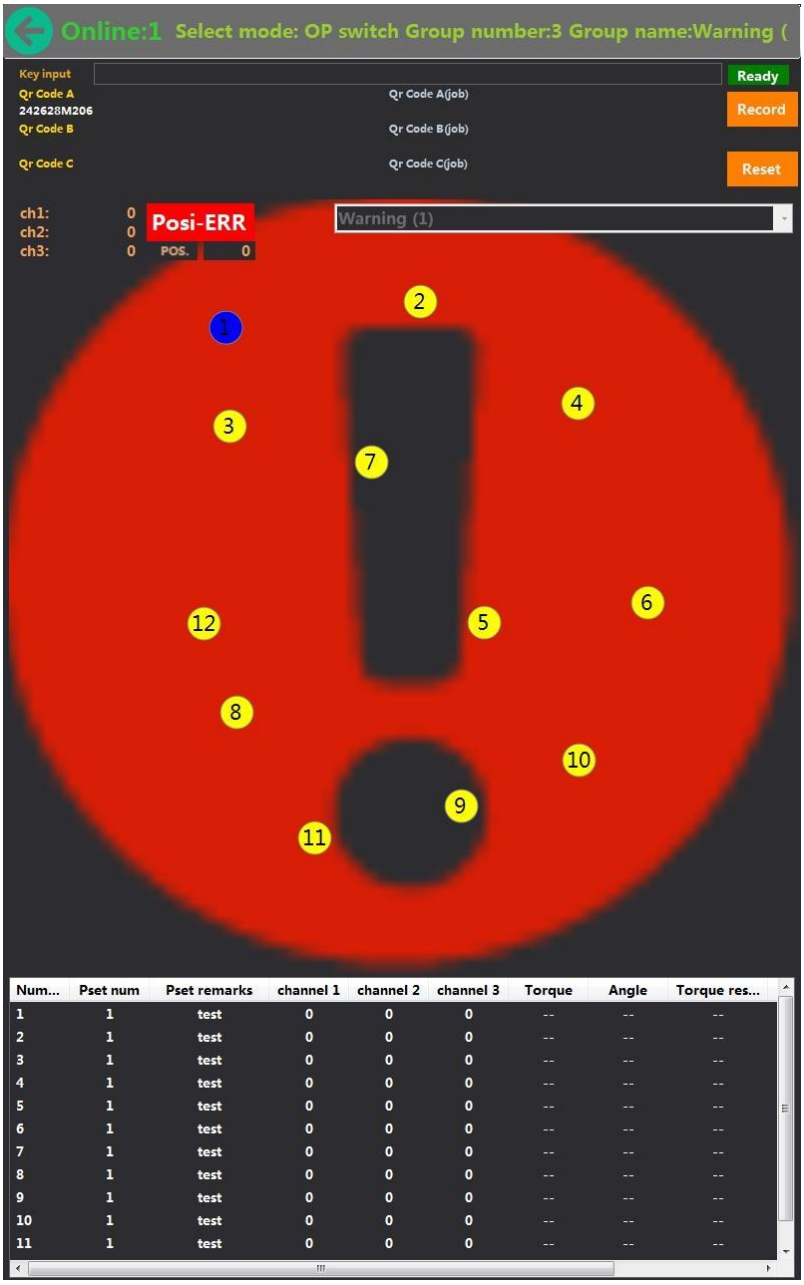


Figure 6-1 Visualization Interface

6.2 Several states of the points on the visualization interface

When the color of the point is blue, it indicates the screw that is to be tightened next.

When the color of the point is yellow, it signifies the waiting status.

When the color of the point is red, it implies that the current screw is defective.

When the color of the point is green, it denotes that the current screw is acceptable.

6.3 The display of jobs on the visual interface.

The status display for a Job shows the Job number and the current number of groups within the Job at the top. Below, it displays the sequence in which the groups appear within the Job, along with the group number, group name, and other information, separated by commas. The color of the icon in front indicates: gray represents unfinished; red represents unqualified; green represents qualified; and blue represents currently being executed.

7 IO Port Editing

The IO ports are used when selecting IO programs. Users can customize the status of IO ports and set what signals the IO ports will output respectively.

Each time a user wants to edit, they need to click the edit button to start the editing. After the editing is completed, they must click the save button; otherwise, the changes will not be saved.

Each output port can have its signal holding time set individually. If a signal needs to be held permanently, the delay time should be set within 100ms, and generally, it can be set to -1.

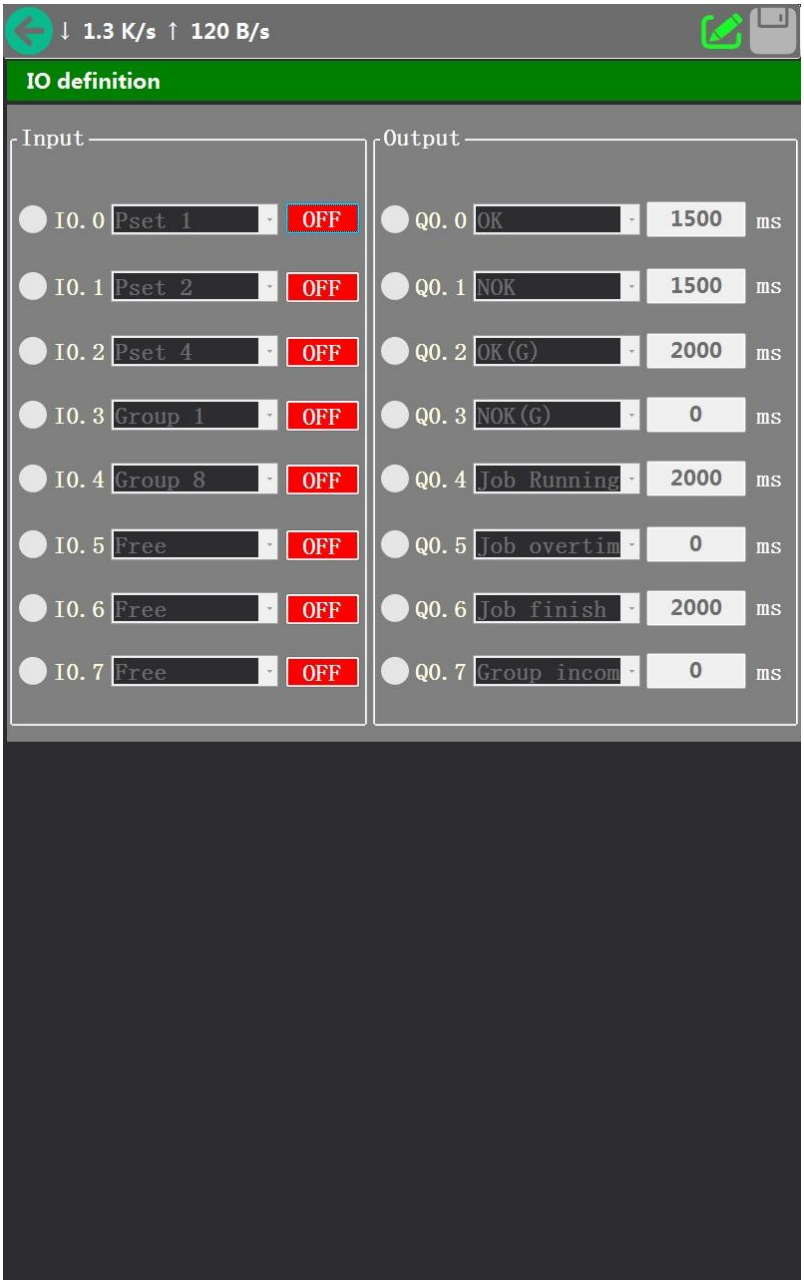
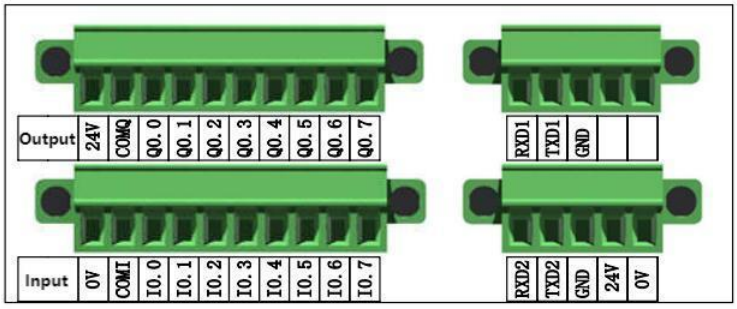


Figure 7-1 IO port edit interface

The signals currently supported by the input ports are: Idle, Enable, Start, Reverse, Program 1, Program 2, Program 4, Program 8, Program 16, Group 1, Group 2, Group 4, Group 8, Group 16, Group 32, Group 64, Group 128, Reset.

The signals currently supported by the output ports are: Idle, OK, NOK, OK (Group), NOK (Group), Program 1, Program 2, Program 4, Program 8, Program 16, Torque Over Upper Limit, Torque Over Lower Limit, Angle Over Upper Limit, Angle Over Lower Limit, Running Status, Group 1, Group 2, Group 4, Group 8, Group 16, Group 32, Group 64, Group 128, Group Completed.

8 Controller IO Port Wiring Diagram



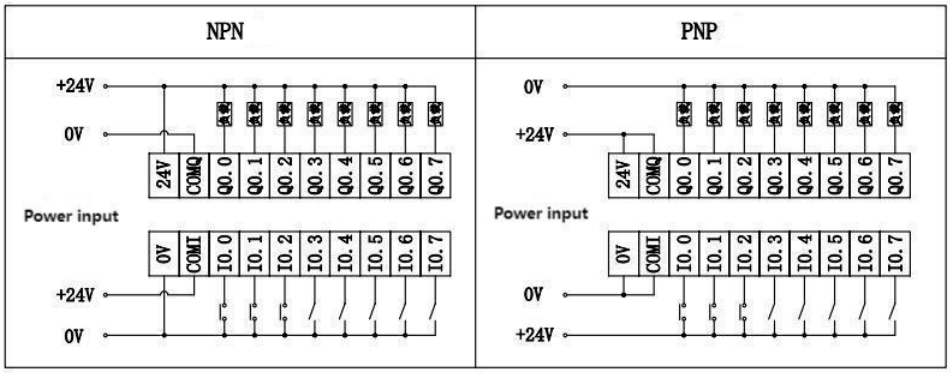


Figure 8-1 Controller IO Definitions

9 Bus Settings

9.1 Bus I/O Configuration Instructions

The bus settings are basically the same as the IO settings. The only difference is that the bus has 32 channels for input and output, while the IO only has 8 channels for input and output. The bus settings can refer to the IO settings.

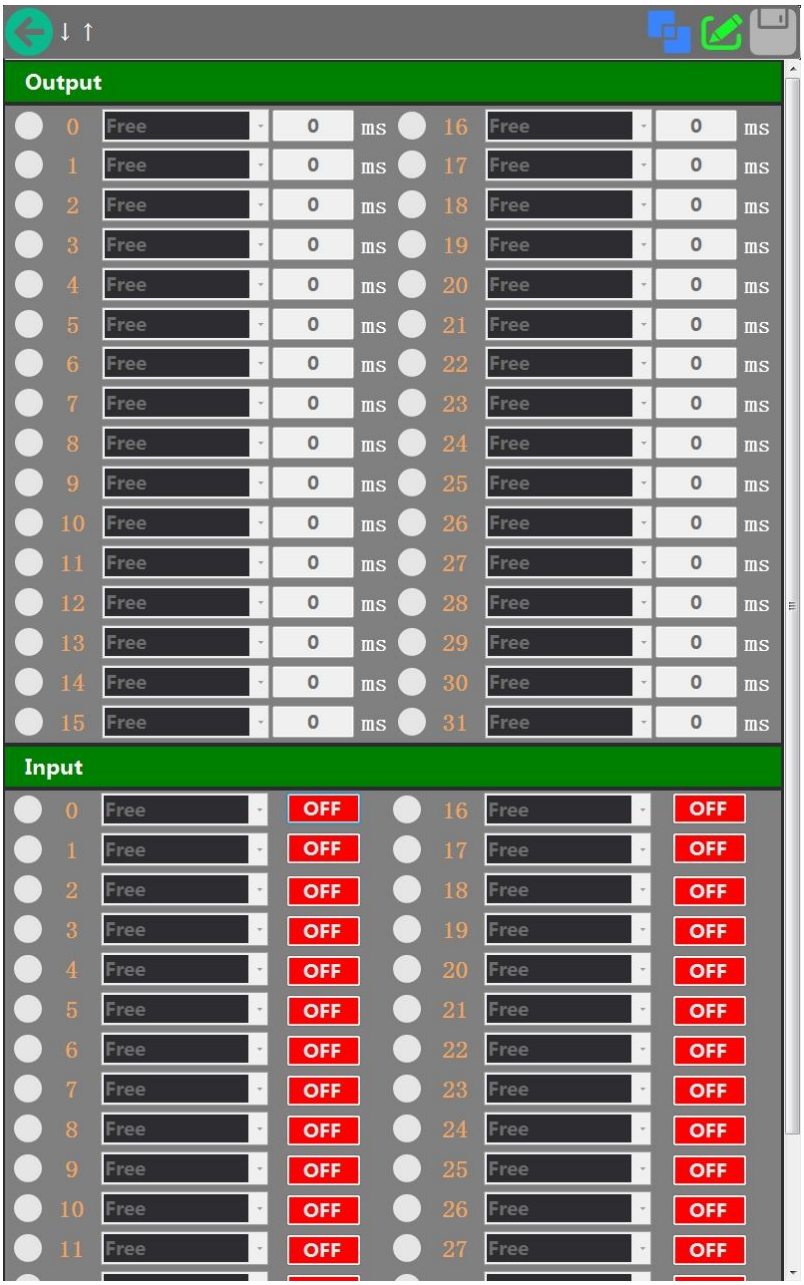


Figure 9-1 input and output setting

9.2 WiFi Frequency Bands and Antenna Port Output Power

This Controller supports the 2.4GHz WiFi frequency band, with a specific frequency range from 2412MHz to 2462MHz. Within this band, the device can automatically or manually select different channels for wireless communication.

Under the 802.11g protocol, the Peak output power of the device's antenna port is 20.97dBm.

9.3 Bus Output Variable Address Table (Profinet Protocol or CC-Link Protocol, etc.)

Table 9-1 Variable Address Table

0	Program number	BYTE	Current program
1	Screw Identification Number	DWORD（double word）	Record the number of tightened screws
2			
3			
4			
5	Mode	BYTE	0：Torque 1：Angle
6	Target torque	Real	Torque Value at the End of Tightening
7			
8			
9			
10-13	Target angle	Real	Angle Value at the End of Tightening
14	Tightening results	BYTE	0:NOK 1:OK
15	Angle results	BYTE	0:NOK 1:OK
16	Torque results	BYTE	0:NOK 1:OK
17	Torque Upper Limit	Real	The set upper limit of programmed torque
18			
19			
20			
21	Torque Lower Limit	Real	The set lower limit of programmed torque
22			
23			

24			
25	Target value	Real	The set target value
26			
27			
28			
29	Angle upper Limit	WORD	The set upper limit of the program angle
30			
31	Angle Lower Limit	WORD	The set lower limit of the program angle.
32			
33	Group Counting	BYTE	
34	Total number of groups.	BYTE	
35	Group number	BYTE	
36-99	Identifier A	ASCII	The maximum supported size is 64 BYTEs
100-163	Identifier B	ASCII	The maximum supported size is 64 BYTEs
164-227	Identifier C	ASCII	The maximum supported size is 64 BYTEs
228-239	Tightening Machine Serial Number	ASCII	The maximum supported size is 12 BYTEs
240-255	Controller Serial Number	ASCII	The maximum supported size is 16 BYTEs

10 Log Viewing

Users can view the system's operational information through the log viewing interface. Currently, most log entries primarily consist of error logs. Users can export logs to a USB drive using the button in the top right corner.

Number	Description	Time
1	20220427.log	2022/4/27 17:03:33
2	20220428.log	2022/4/28 18:29:09
3	20220429.log	2022/4/29 16:58:36
4	20220505.log	2022/5/5 17:59:59
5	20220506.log	2022/5/6 12:31:30
6	20220507.log	2022/5/7 17:11:50
7	20220509.log	2022/5/9 18:00:40
8	20220510.log	2022/5/10 17:19:19
9	20220511.log	2022/5/11 16:21:10
10	20220512.log	2022/5/12 17:55:10
11	20220513.log	2022/5/13 17:35:32
12	20220516.log	2022/5/16 10:19:10
13	20220517.log	2022/5/17 13:27:26
14	20220519.log	2022/5/19 8:44:15
15	20220523.log	2022/5/23 17:16:09

Figure 10-1 Log Viewing

11 Firmware upgrade

The firmware upgrade function is used to update the firmware of the tightening machine. Users can utilize this setting to upgrade the firmware of their tightening machines. Before proceeding with the upgrade, please consult the manufacturer to confirm whether the current tightening machine supports firmware upgrades.

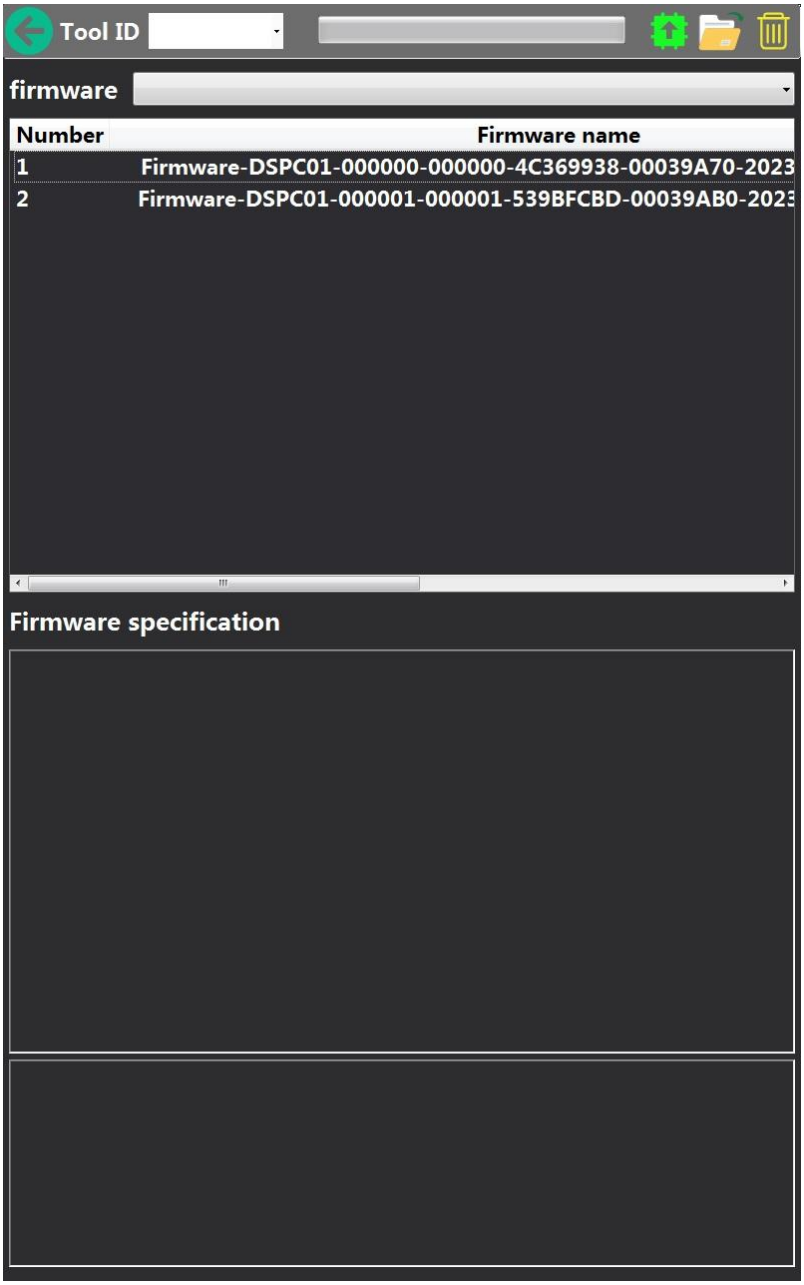


Figure 11-1 Firmware upgrade interface

11.1 Introduction to the Firmware Upgrade Menu

Back: Returns to the previous menu level.

Progress Bar: Used to view the progress of the firmware upgrade.

Upgrade Tightening Machine: Sends firmware upgrade to the tightening machine.

Add Firmware: Adds firmware from a USB drive to the controller's internal storage.

Delete Firmware: Deletes unnecessary firmware from the controller.

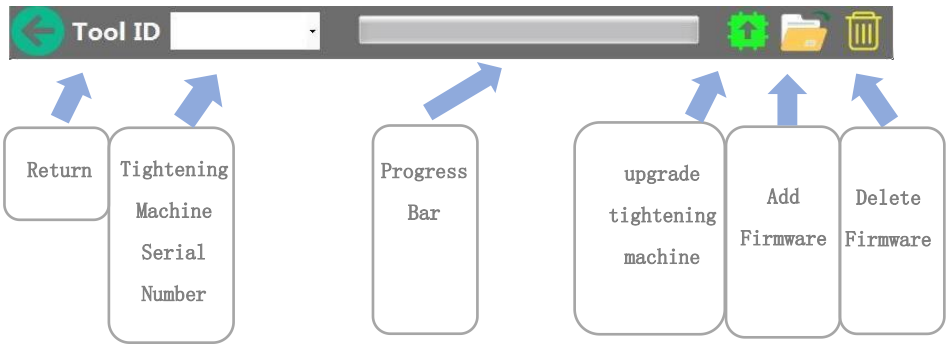


Figure 11-2 Firmware Menu

11.2 View Firmware

You can view the firmware description by clicking on the firmware in the list.

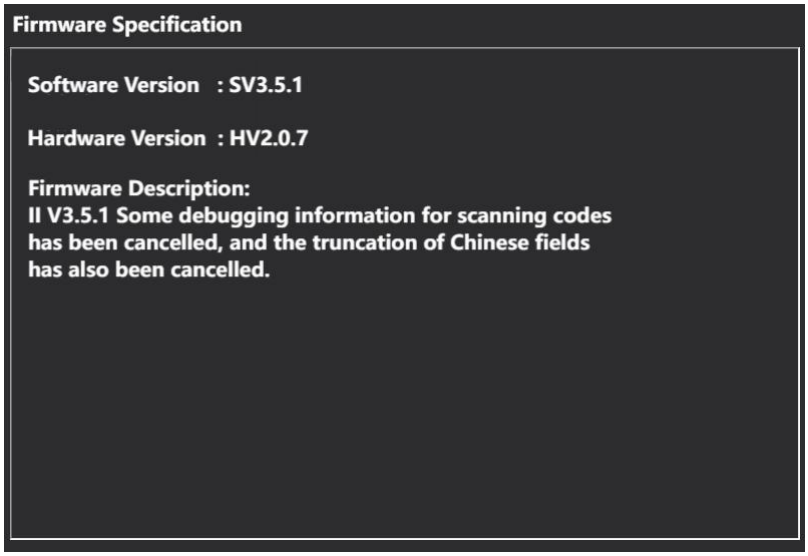


Figure 11-3 View Firmware

11.3 Firmware Selection

You can select a firmware that needs to be upgraded from the firmware selection dropdown list.

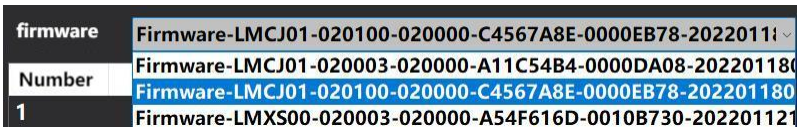


Figure 11-4 Choose firmware

11.4 Firmware Upgrade

After selecting the firmware, you can proceed with the firmware upgrade for the tightening machine. Simply click the "Firmware Upgrade" button to start the automatic upgrade process. Wait for the progress bar to complete, and you will be prompted with a message indicating that the upgrade has been successful.

11.5 Add firmware

First, copy the firmware provided by our company onto a USB flash drive, and then insert the USB flash drive into the USB port of the controller. Next, enter the firmware upgrade interface and click the "Add Firmware" button. This will bring up a firmware selection dialog box. At this point, select the firmware file from the USB flash drive and click "Open" to successfully add it. As shown in Figure 11-5.

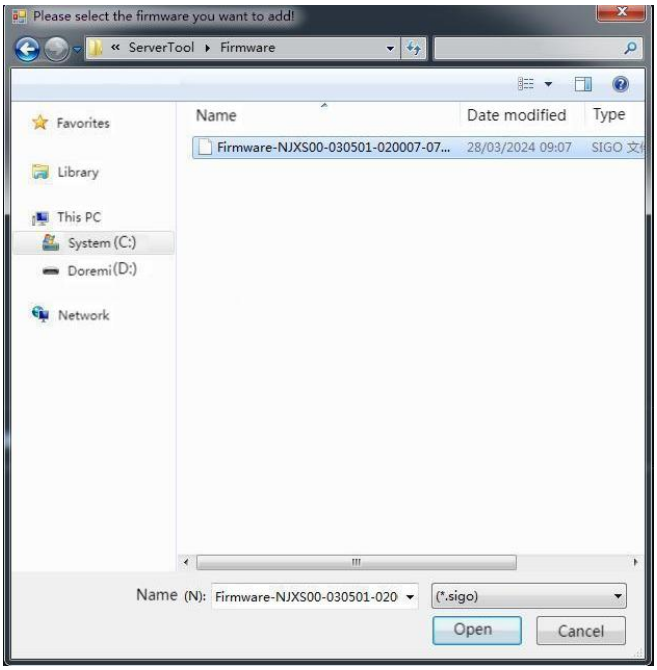


Figure 11-5 Upgrade firmware

12 Led Setting

12.1 Led instruction

The signal lamp used is a serial port signal lamp, and only the signal lamp of a fixed model can be used. You can choose what signals each color represents (qualified or unqualified signals), combine it with the buzzing of the buzzer, the flashing of the flash lamp, etc. If the delay setting is less than 100 milliseconds, the signal lamp will remain constant. If the delay setting is greater than or equal to 100 milliseconds, the signal lamp will automatically turn off according to the set time. If you want to use the flashing function, you need to set the delay to more than 2000 milliseconds.

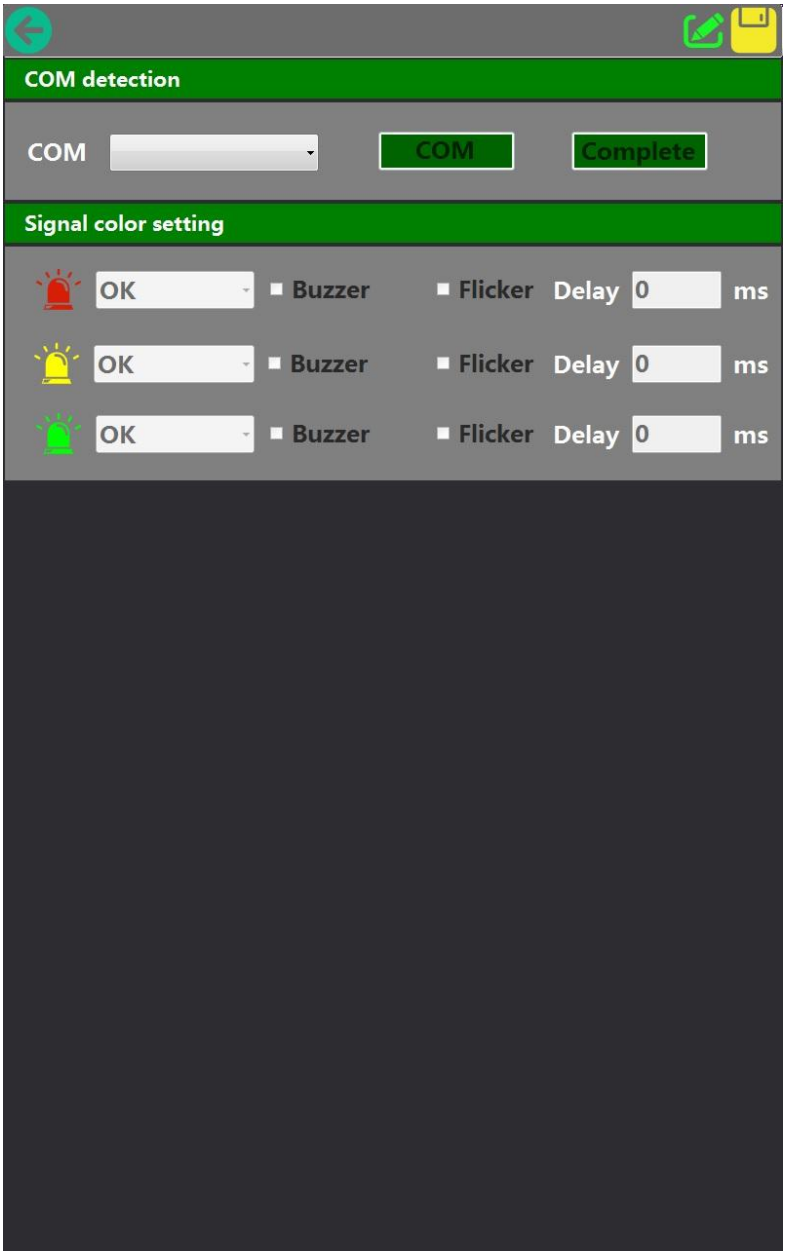


Figure 12-1 Led Setting interface

12.2 Operating instructions

① Firstly, click the edit button (on the left side of the upper right corner).

② Click on the port drop-down box to select a port (above COM3).

③ After selecting the port, click the detection button and then check whether the signal lamp is lit.

④ If the signal lamp is on, click the "Detection Completed Button". If the signal lamp is not on, reselect another port and repeat steps ①②③ until there is an output from the signal lamp.

⑤ Just save it after the settings are completed.

13 Network Output Configuration

The network output is sent to the server through the specified port. Before sending, you need to set the port number and IP address of the server. Meanwhile, select a network output protocol under the working mode menu. The specific protocol may not be specified. Please contact our company to inquire about the protocol details.

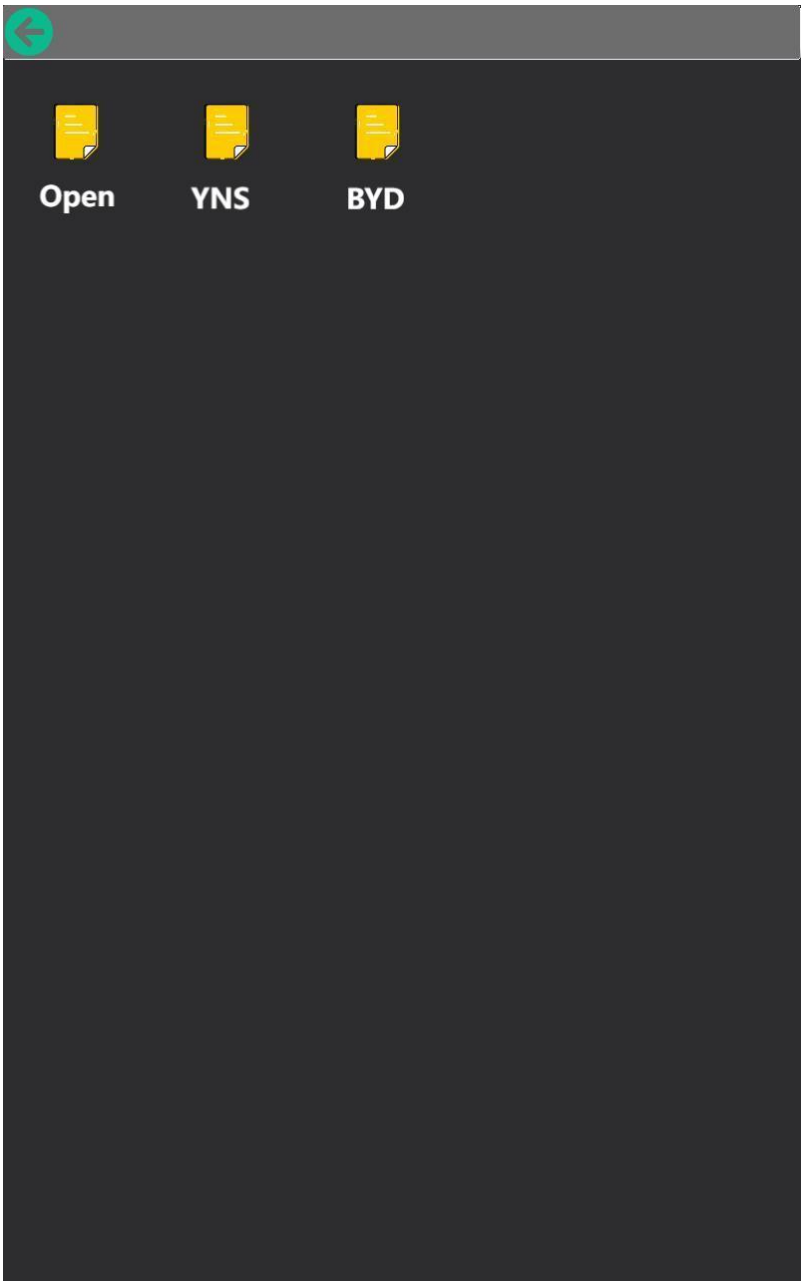


Figure 13-1 Network output settings

13.1 Open Protocol

The Open Protocol settings are mainly for configuring the parameters of the Open Protocol server. Once the parameters are set, click "Save" to apply the changes.

Server IP: Refers to the IP address of the Open Protocol port on the controller.

Server Port Number: Represents the port number of the Open Protocol.

Subnet Mask: An artificially assigned network address mask, typically set to 255.255.255.0.

Server Gateway: The network exit assigned for the internal network. If there is no specific requirement, it can be left as default.

Version Number: V2.6 is the standard version of the Open Protocol; V3.0 is a customized version evolved from the Open Protocol.

For the specific data format of the Open Protocol, please refer to the Open Protocol Standard Manual or the Open Protocol instructions provided by our company.

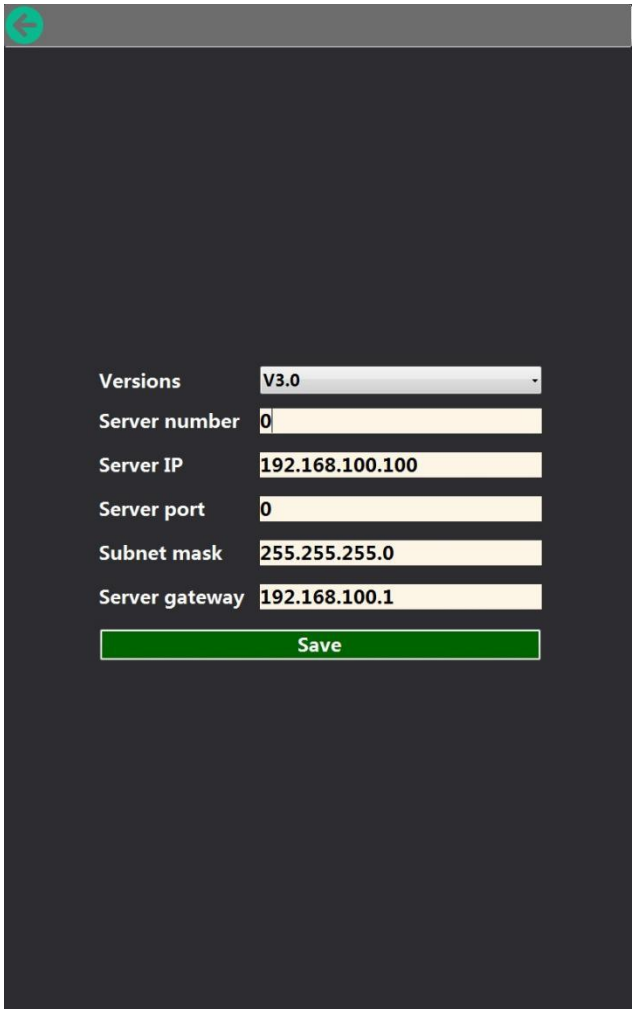


Figure 13-2 Open Protocol Server Configuration Interface

13.2 YNS Protocol

The YNS protocol is a custom protocol of our company, which controls the sending of fixed data to a server that needs to receive data through a TCP connection. The data format is shown in Table 13-1. If users need to develop based on this protocol, please contact our company for support.

Table 13-1 Data Format of the YNS Protocol

Information Description	Byte	Value
Length of Information Flow	0-4	Length 00000-99999
	5-6	00
Controller Serial Number	7-26	20 ASCII Characters
	27-28	01
Controller Model	29-48	20 ASCII Characters
	49-50	02
Serial Number of the Tightening Machine	51-70	20 ASCII Characters
	71-72	03
Tightening Machine Model	73-92	20 ASCII Characters
	93-94	04
Screw Sequence Number	95-102	8 ASCII Characters，00000000-99999999
	103-104	05
Tightening Result	105	1：OK ，0：NOK
	106-107	06
Angle Result	108	1：OK ，0：NOK
	109-110	07
Torque Result	111	1：OK ，0：NOK
	112-113	08
Torque	114-118	5 ASCII Characters，00000-99999，The default is to display two decimal places. For example, for 01001, it would be 10.01 Nm.
	119-120	09
Upper Torque Limit	121-125	5 ASCII Characters，00000-99999，The default is to display two decimal places. For example, for 01001, it would be 10.01 Nm.
	126-127	10
Lower Torque Limit	128-132	5 ASCII Characters，00000-99999，The default is to display two decimal places. For example, for 01001, it would be 10.01 Nm.
	133-134	11
Angle	135-140	6 ASCII Characters，000000-999999
	141-142	12
Upper Limit of Angle	143-148	6 ASCII Characters，000000-999999
	149-150	13
Lower Limit of Angle	151-156	6 ASCII Characters，000000-999999

	157-158	14
Program number	159-161	3 ASCII Characters，000-999
	162-163	15
Group number	164-166	3 ASCII Characters，000-999
	167-168	16
Group counting	169-171	3 ASCII Characters，000-999
	172-173	17
Total Number of Groups	174-176	3 ASCII Characters，000-999
	177-178	18
Time	179-197	19 ASCII Characters， YYYY-MM-DD:HH:MM:SS
	198-199	19
Identifier A	200-263	64 ASCII Characters
	264-265	20
Identifier B	266-329	64 ASCII Characters
	330-331	21
Identifier C	332-395	64 ASCII Characters
	396-397	22
Reservation	398-4493	4K Buffer Zone
	4494-4495	23
Reservation 2	4496-8591	4K Buffer Zone

14 UPS Power Management Function

The integration of the controller into the UPS (Uninterruptible Power Supply) power management module is primarily to prevent irreversible damage to the working data of the controller's system software due to sudden power outages.

Controllers equipped with UPS power management modules are internally furnished with energy storage batteries, ensuring the normal operation of the controller for up to 30 minutes. Typically, the controller automatically detects the power supply voltage. If it detects a power failure in the external input power, it will save the current data within 30 seconds and automatically shut down after counting down. If power is restored within 30 seconds, the automatic shutdown will be halted. The system power supply voltage can be checked on the device information interface. The alert prompt box is shown in the figure below:

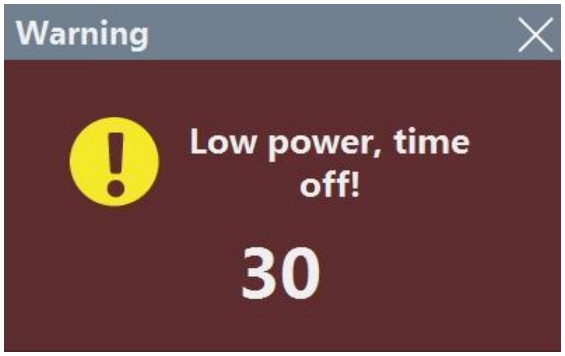


Figure 14-1 Warning Notification

15 Software Update

Users can import the update file we provide to a USB flash drive, plug it into the controller, and then retrieve the new version. The detected new software version will be displayed in the list.

If you want to update the software, you can click on the version you wish to update in the list and select the update option.

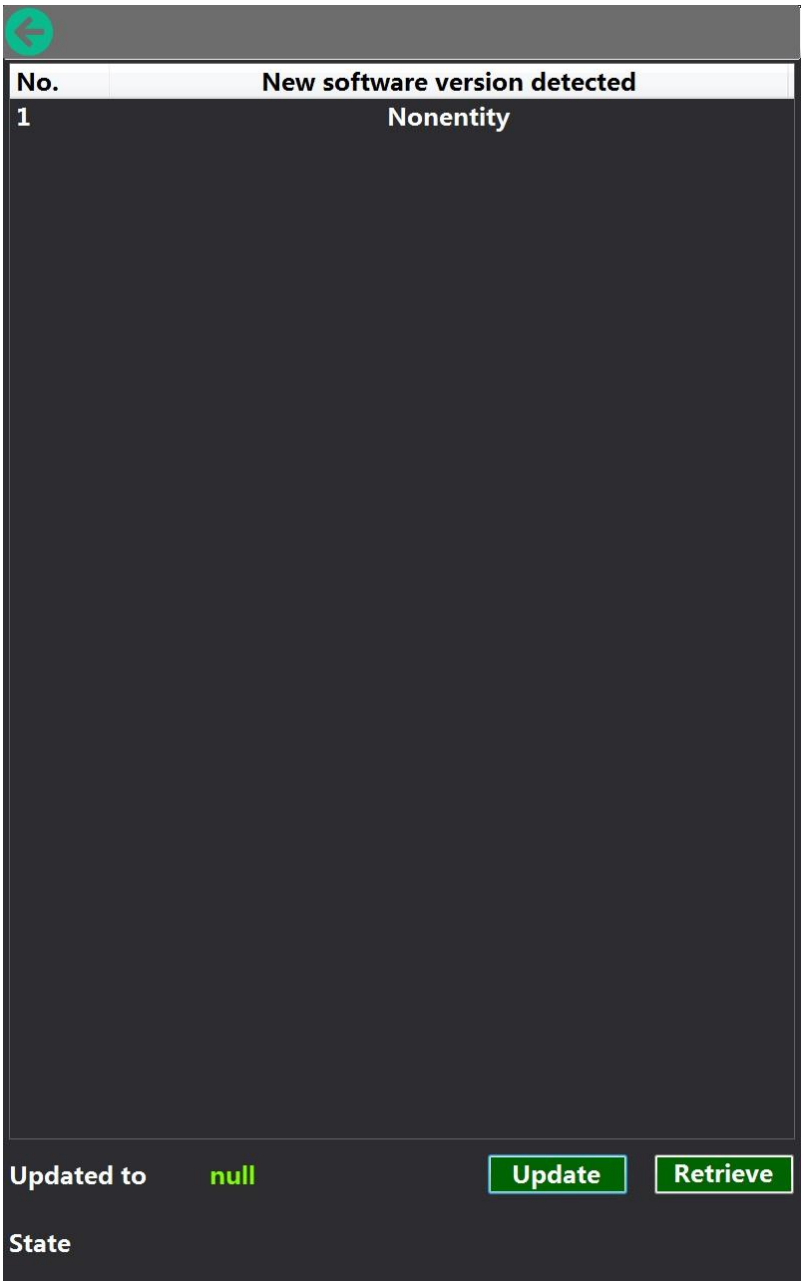


Figure 15-1 Update software

Appendix A: Diagram of Job, Group, and Program Relationships

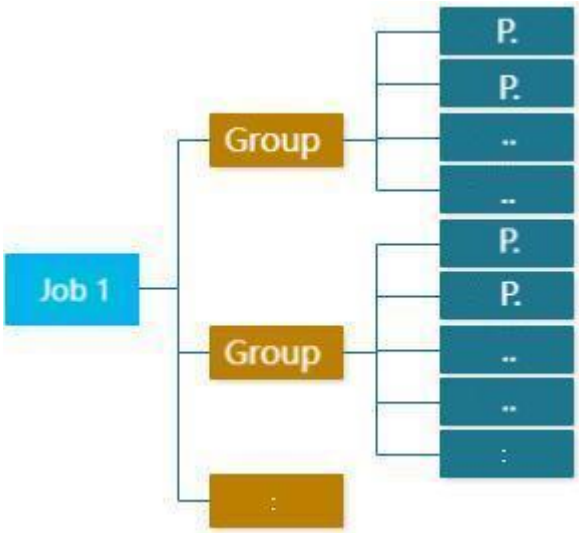


Figure A-1 Diagram of Job, Group, and Program Relationships

Appendix B: Description of IO and Bus Input/Output Signals

Table B-1 Summary of Input Signals

Signal	Signal Type	Description
Enable	Input	The signal to enable the tightening machine control
Start	Input	(Unused) Signal for Controlling Tightening Machine Tightening
Reverse	Input	(Unused) Control Signal for Reversing the Tightening Machine
Program 1	Input	If true, increment the program number by 1.
Program 2	Input	If true, increment the program number by 2
Program 4	Input	If true, increment the program number by 4
Program 8	Input	If true, increment the program number by 8
Program 16	Input	If true, increment the program number by 16
Program 32	Input	If true, increment the program number by 32
Program 64	Input	If true, increment the program number by 64
Program 128	Input	If true, increment the program number by 128
Group 1	Input	If true, increment the group number by 1.
Group 2	Input	If true, increment the group number by 2
Group 4	Input	If true, increment the group number by 4
Group 8	Input	If true, increment the group number by 8
Group 16	Input	If true, increment the group number by 16
Group 32	Input	If true, increment the group number by 32
Group 64	Input	If true, increment the group number by 64
Group 128	Input	If true, increment the group number by 128
Reset	Input	Not currently in use
Reverse Enable	Input	Not currently in use
Job_1	Input	If true, increment the Job number by 1.
Job_2	Input	If true, increment the Job number by 2
Job_4	Input	If true, increment the Job number by 4
Job_8	Input	If true, increment the Job number by 8
Job_16	Input	If true, increment the Job number by 16
Job_32	Input	If true, increment the Job number by 32
Job_64	Input	If true, increment the Job number by 64
Job_128	Input	If true, increment the Job number by 128
Sleeve Selection 1	Input	Input Signal for Sleeve Selector in 8421 BCD Format
Sleeve Selection 2	Input	Input Signal for Sleeve Selector in 8421 BCD Format
Sleeve Selection 4	Input	Input Signal for Sleeve Selector in 8421 BCD Format
Sleeve Selection 8	Input	Input Signal for Sleeve Selector in 8421 BCD Format

Table B-2 Output Signal Summary

Signal	Signal Type	Description
OK	Output	Program qualified
NOK	Output	Program unqualified
OK(Group)	Output	Group qualified
NOK(Group)	Output	Group unqualified
Program 1	Output	If true, increment the output program number by 1
Program 2	Output	If true, increment the output program number by 2
Program 4	Output	If true, increment the output program number by 4
Program 8	Output	If true, increment the output program number by 8
Program 16	Output	If true, increment the output program number by 16
Program 32	Output	If true, increment the output program number by 32
Program 64	Output	If true, increment the output program number by 64
Program 128	Output	If true, increment the output program number by 128
Group 1	Output	If true, increment the output group number by 1
Group 2	Output	If true, increment the output group number by 2
Group 4	Output	If true, increment the output group number by 4
Group 8	Output	If true, increment the output group number by 8
Group 16	Output	If true, increment the output group number by 16
Group 32	Output	If true, increment the output group number by 32
Group 64	Output	If true, increment the output group number by 64
Group128	Output	If true, increment the output group number by 128
Job_1	Output	If true, increment the output Job number by 1
Job_2	Output	If true, increment the output Job number by 2
Job_4	Output	If true, increment the output Job number by 4
Job_8	Output	If true, increment the output Job number by 8
Job_16	Output	If true, increment the output Job number by 16
Job_32	Output	If true, increment the output Job number by 32
Job_64	Output	If true, increment the output Job number by 64
Job_128	Output	If true, increment the output Job number by 128
Torque exceeds the upper limit	Output	The resulting torque exceeds the set upper limit
Torque falls below the lower limit	Output	The resulting torque does not meet the set lower limit
Angle exceeds the upper limit	Output	The resulting angle exceeds the set upper limit
Angle falls below the lower limit	Output	The resulting angle does not meet the set lower limit
Operation status	Output	The tightening machine is in operation
Group completed	Output	Group completion output
Tightening completed	Output	Current tightening completed, results-based
Ready for operation	Output	Indicates that the controller and tightening machine are ready

Group not completed	Output	Indicates that the set time for the group has expired without completion
During the group process	Output	Indicates that the group is currently being executed
The tightening machine's battery is low	Output	Indicates low battery level of the tightening machine
OK(Job)	Output	Job qualified
NOK(Job)	Output	Job unqualified
During the Job process	Output	Indicates that the Job is currently being executed
Job completed	Output	Job completed
Job not completed	Output	Job not completed
Group timeout	Output	Group exceeds set time
Job timeout	Output	Job exceeds set time

Appendix C: FCC Caution

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.