User Manual of xFactory System

Version: 2020.3 1st Version
Author: Product Supporting Department

1 About WEIHONG IIoT Solution

WEIHONG Industrial Internet of Things Solution (hereinafter referred to as **WEIHONG IIoT Solution**) is independently developed by **Shanghai Weihong Electronic Technology Co., Ltd** (hereinafter referred to as **WEIHONG**). Based on monitoring of CNC systems, it offers a solution to production management, device management and business innovation.

WEIHONG IIoT Solution includes the following:

- **NcGateway** (Formally known as **NcCloud Assistant**.)
  - It provides data interfaces and communication protocols for the CNC system to connect to the Internet.
  - At present, it is built in most of WEIHONG CNC systems.
- **xFactory System** (Formally known as **NcCloud Smart Factory**. Hereinafter referred to as **xFactory**.)

  A standard solution for CNC systems to connect to the Internet.

  It provides the following:
  - The standard MES (Manufacturing Execution System).
  - The data interfaces for all information systems.
- **NcCloud Industrial Internet Platform** (Formally known as **NcCloud Service**. Hereinafter referred to as **NcCloud**.)

  It provides the following:
  - Remotely monitoring machine tools based on the public cloud.
  - Production management and device maintenance.
  - Technical support, equipment leasing and other functions for cooperation among multiple enterprises.
  - Cloud data interfaces for system integrators and service providers to use advanced applications.
  - Two versions, Web and WeChat, for production monitoring.

    Your NcCloud account can be used on both Web and WeChat. And you can monitor added machine tools on both Web and WeChat.

2 Introduction

This part introduces basic functions, system framework, topology of **xFactory**.

2.1 Basic Functions

This part introduces the basic functions of **xFactory**.

After connecting CNC systems to the Internet, you can collect all data about machine tools. And matched with increasingly popular mobile working, **xFactory** can help to achieve management about routine production, technic procedures and device maintenance, so as to dramatically improve efficiency.

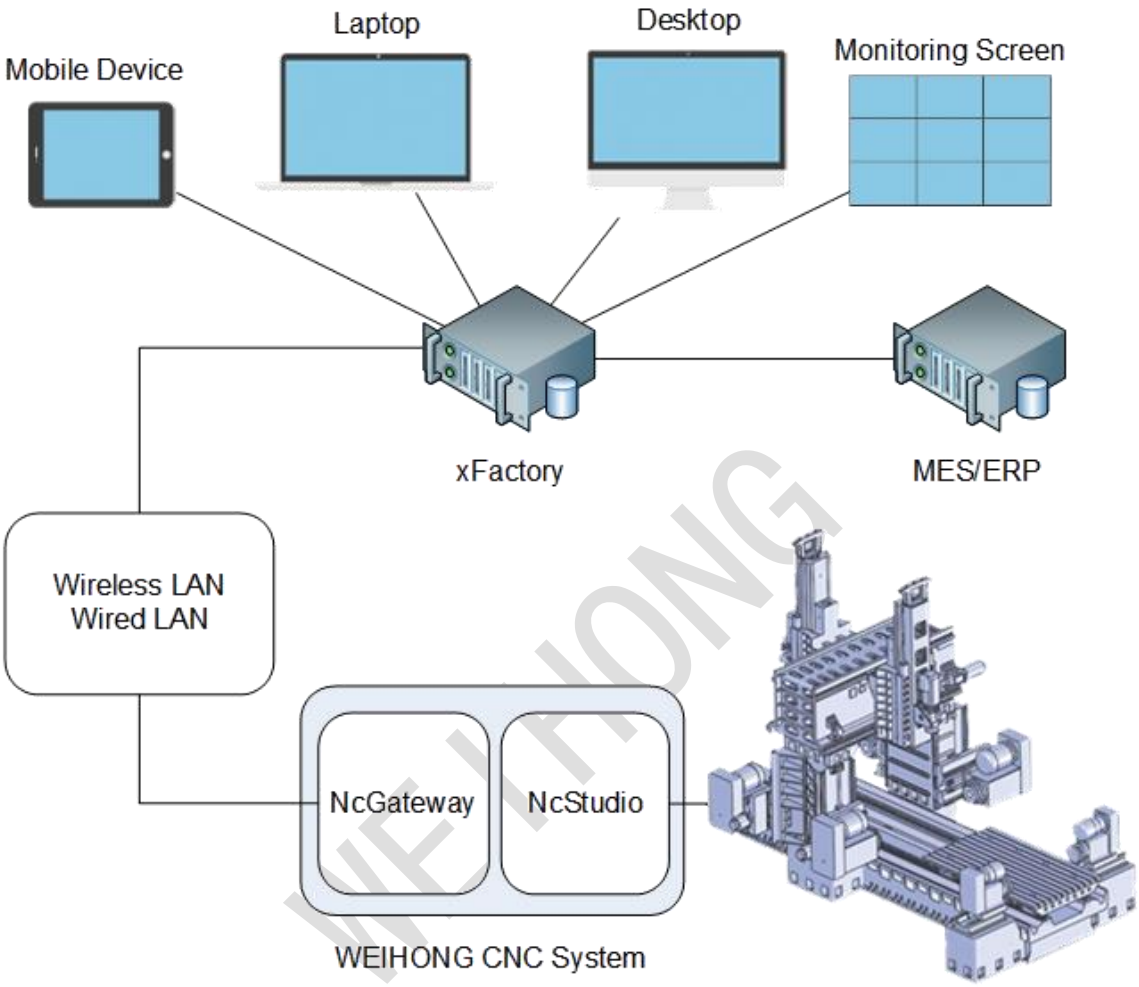
In addition, you can take good use of the networked CNC system to provide basic data and means of implementation for the information system of the upper enterprises, like MES and ERP (Enterprise Resource Plan System), so as to dramatically improve the running condition and efficiency of your factory.

With network management, **xFactory** owns the following advantages:

- It collects all real-time information of machine tools about machining progress, running condition, alarms and utilization of tools and wearing parts.
- It provides the basic statistical analysis about utilization, the scientific basis for routine production and device maintenance and the basic data for the further planning of resources.
- It can distribute tasks, start / end task and so on. Those operations can reduce stand-by time, increase utilization, reduce labor intensity and provide more advanced means of implementation.
- Through centralized management on technic files, it will efficiently avoid trash files produced from misoperations, such as uploading, downloading, saving and distributing files. Meanwhile, it can save time to prepare for machining.
- It adopts B/S frame (Browser/Server frame) and supports the mobile working. It means that you can access **xFactory** by a browser, do not need to install the client software.
- It provides sound role management and authority management, which can ensure the security of operators, machine tools and **xFactory**.
- Based on the calculation of utilization and overall equipment efficiency (OEE), it makes an assessment about personnel performance and asset utilization.

2.2 System Framework

The schematic diagram of **xFactory** is as follows:



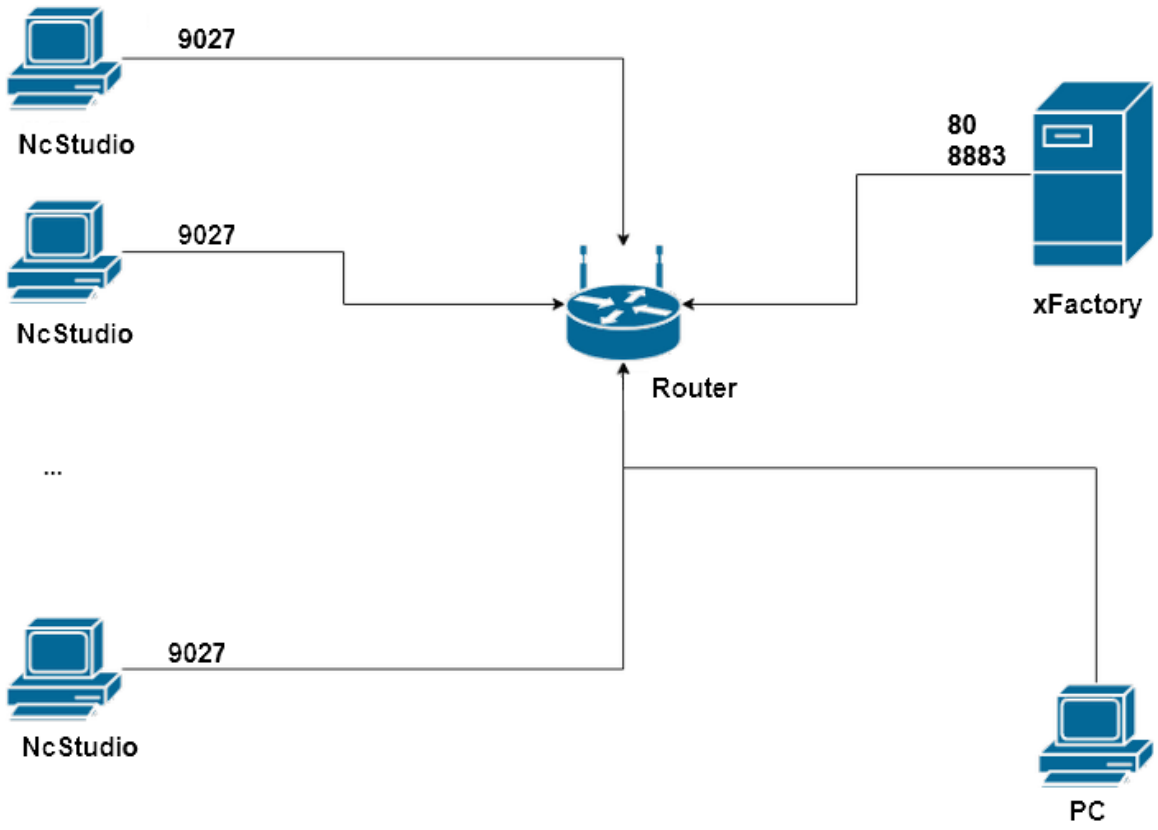
Through the wired or wireless LAN (Local Area Network), the CNC system transmits its data to the **xFactory** server and receives commands of the **xFactory** server. As a result, **xFactory** can monitor machine tools.

Through the web version of **xFactory**, you can monitor machine tools by opening the browser and inputting the URL of **xFactory** into it.

Meanwhile, the **xFactory** server can provide data resources for information systems, such as MES, ERP and so on.

2.3 Topology

The **xFactory** topology is as follows:



Note: Before using **xFactory**, NcStudio firewall should allow **xFactory** to visit the 9027 opcua port, and **xFactory** should allow external devices to visit 80http port and 8883mqtt port.

3 Quick Start

Through this part, you can quickly know how to use **xFactory** to monitor and control machining.

The basic procedure is as follows:

1. Log in xFactory.
2. Authorize xFactory.
3. Create an account.
4. Add machine tools.
5. Monitor one / multiple machine tool(s).
6. Add program files.
7. Execute machining tasks.

3.1 Log in xFactory

Before logging in **xFactory**, inquire your supplier and related people and do the following:

1. Check the **xFactory** deployment and its running conditions.
2. Get the following information of **xFactory**:
   - The IP address or the domain name deployed by **xFactory**.
   - The valid account and password.

To log in **xFactory**, do the following:

1. To access **xFactory**, do one of the following:
   - Access **xFactory** with the IP address.
   - Access **xFactory** with the domain name.
2. Input the valid account and password.

   For tests and the first time to log in, the initial account is **Admin** and the password is **123456**.

3.1.1 Access xFactory with the IP Address

To access **xFactory** with the IP address, do the following:

1. Open the browser by the device in the same net segment.
2. Input the IP address deployed by **xFactory** and enter the login interface of **xFactory**.

3.1.2 Access xFactory with the Domain Name

Taking **192.168.12.79** as an example, to access **xFactory** with the corresponding domain name, do one of the following:

- To parse the domain name equivalent to the IP address of **xFactory**, add a rule of parsing the domain name to enterprise network DNS server.

  `Parse dnc.weihong.com.cn or other domain names to 192.168.12.79`

- Modify file `hosts`.

  1. In the target computer, open file `hosts` as an administrator.

     The default path of the file is `C:\Windows\System32\drivers\etc\hosts`.

  2. Add the following line in file `hosts`:

     `192.168.12.79 dnc.weihong.com.cn`

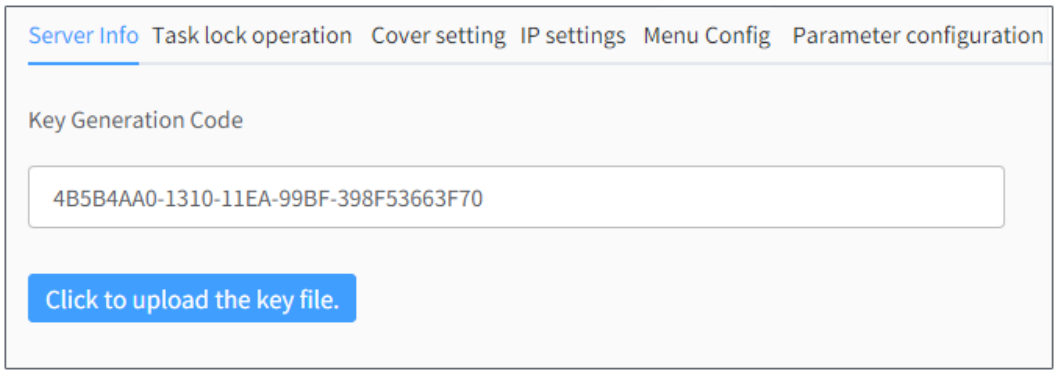
3.2 Authorize xFactory

After authorization, you can use **xFactory**.

Before authorization, ensure **xFactory** correctly deploys.

To authorize **xFactory**, do the following:

1. Log in **xFactory**.
2. To enter **Server Info** interface, click **System Setup** → **System Info** → **Server Info**.
3. Send the key generation code to WEIHONG salespersons:



4. To get the key file, take the business procedure, like payment.

5. To upload the key file, return to **Server Info** interface and click **Click to upload the key file**.

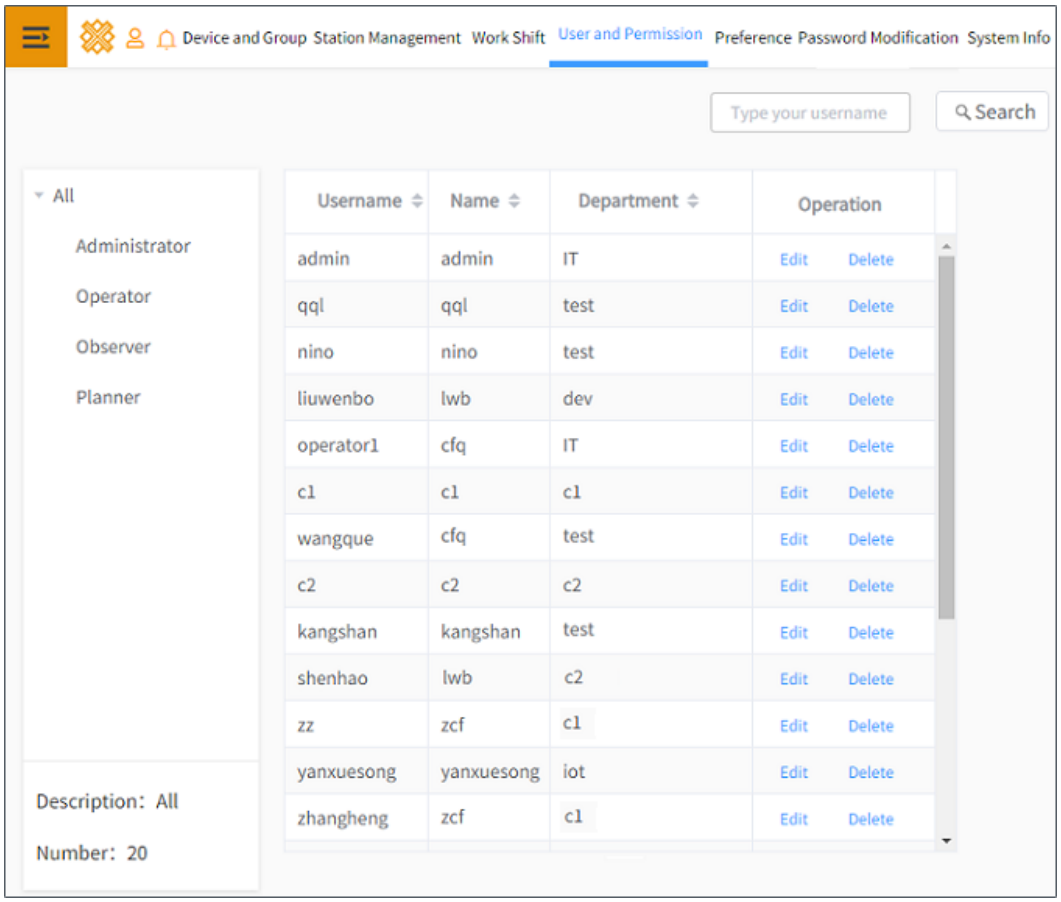
After authorization, log in **xFactory** again and create an account.

3.3 Create an Account

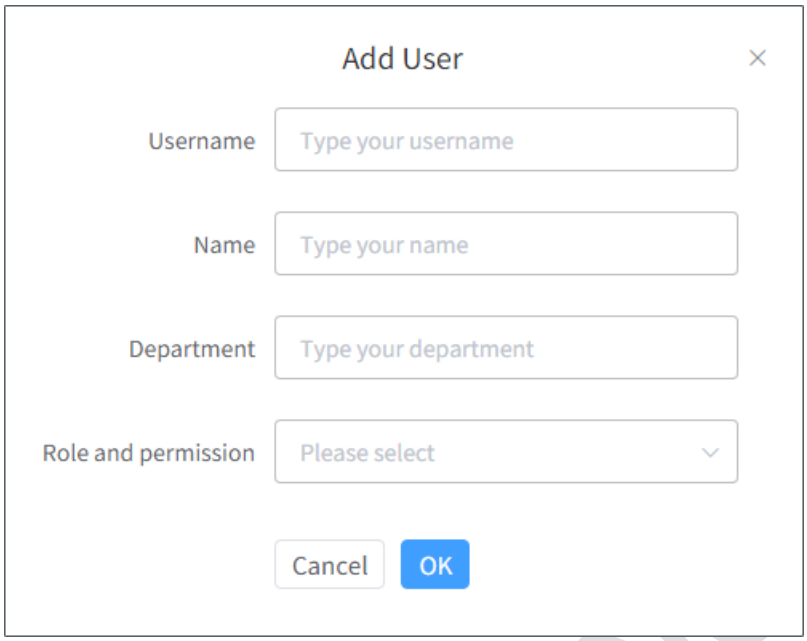
This operation is used to create an account for **xFactory**.

To create an account, do the following:

1. To enter **User and Permission** interface, click  → **System Setup** → **User and Permission**:



2. Click **Add**. **Add User** dialog box pops up:



3. Input the related information and click **OK**.

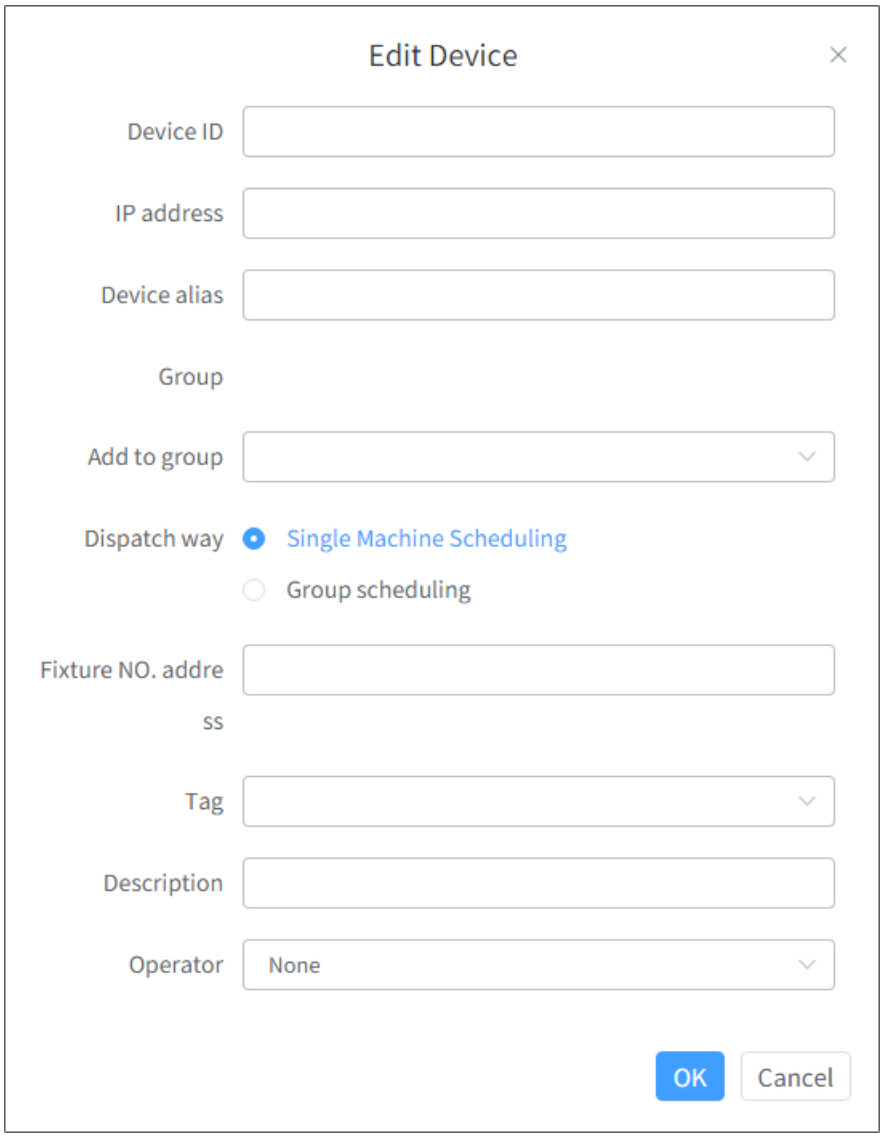
4. **Optional:** To modify the user information, click **Edit** in **User and Permission** interface.

3.4 Add Machine Tools

Permissions are required. About the user permission, see Check Users and Permissions for details.

To add machine tools, do the following:

1. Click  → **System Setup** → **Device and Group** → **Add device**. **Edit Device** dialog box pops up:



2. Input the related information and click **OK**. The machine tool is connected to **xFactory**.

   Note: For the security of machine tools and operators, you can specify at most one operator to a machine tool at a time.

   If you never select a group for that added machine tool, the machine tool is added to **Ungrouped** by default.

3. To add all target machine tools, repeat step 1 ~ 2.

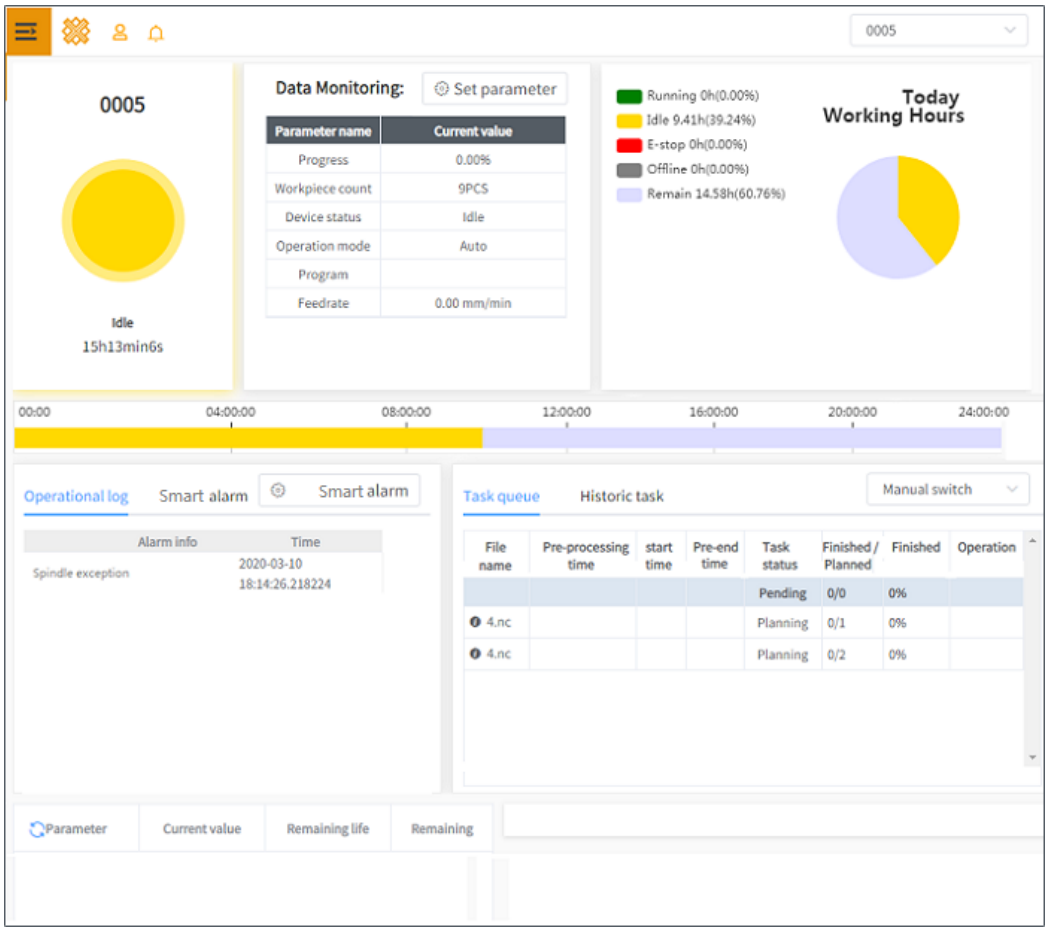
After adding machine tools, to check previously added machine tools, you can click their group name and check their information in the right list of **Device and Group** interface.

3.5 Monitor One/Multiple Machine Tool(s)

This operation is used to monitor a single machine tool or multiple ones according to your need. The machine tool that you can monitor differs in your permission. About the user permission, see Check Users and Permissions for details.

To monitor a single machine tool or multiple ones, do the following:

1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**:



2. Select the target machine tool or group in the upper right corner. The monitoring information is showed in **Device Monitoring** interface.

3. Do one of the following:

   - Monitor a single machine tool.
   - Monitor multiple machine tools.

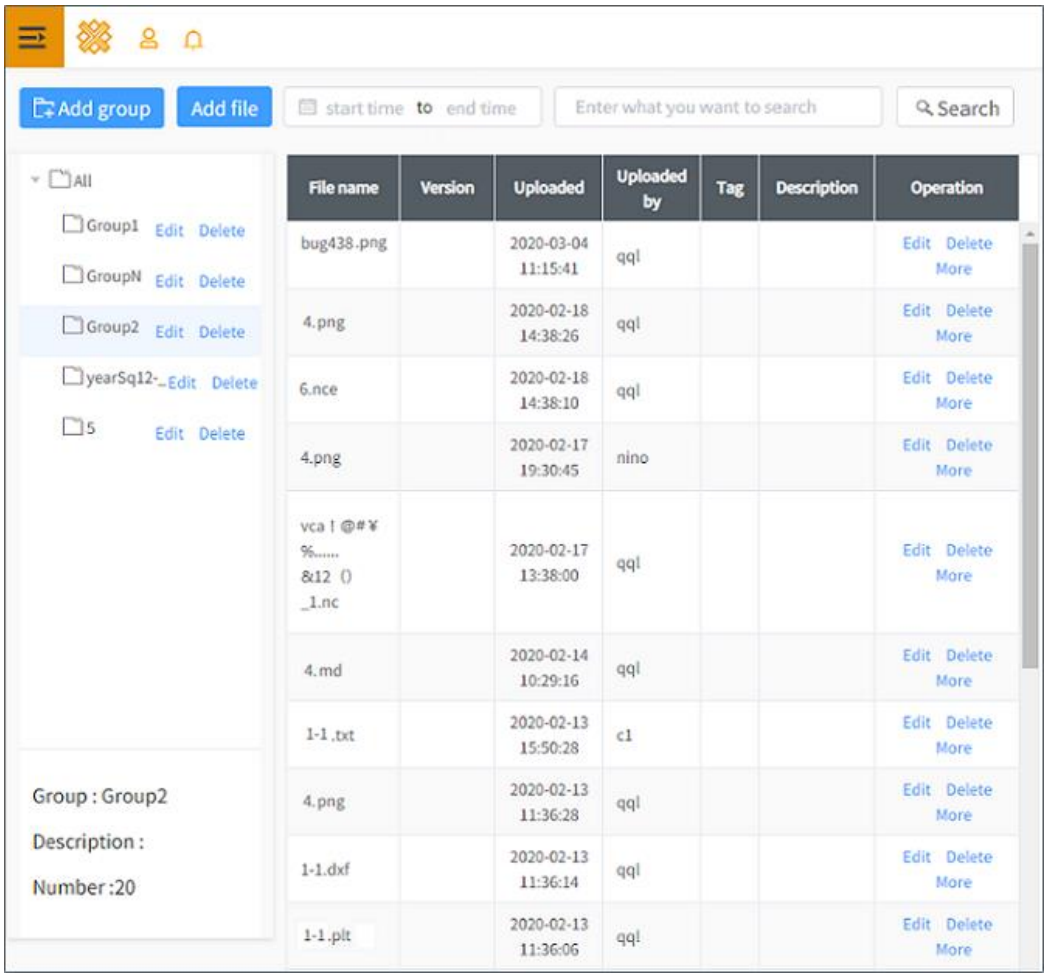
3.6 Add Program Files

This operation is used to create a group and add program files to it.

You can add only one program file in a group at a time.

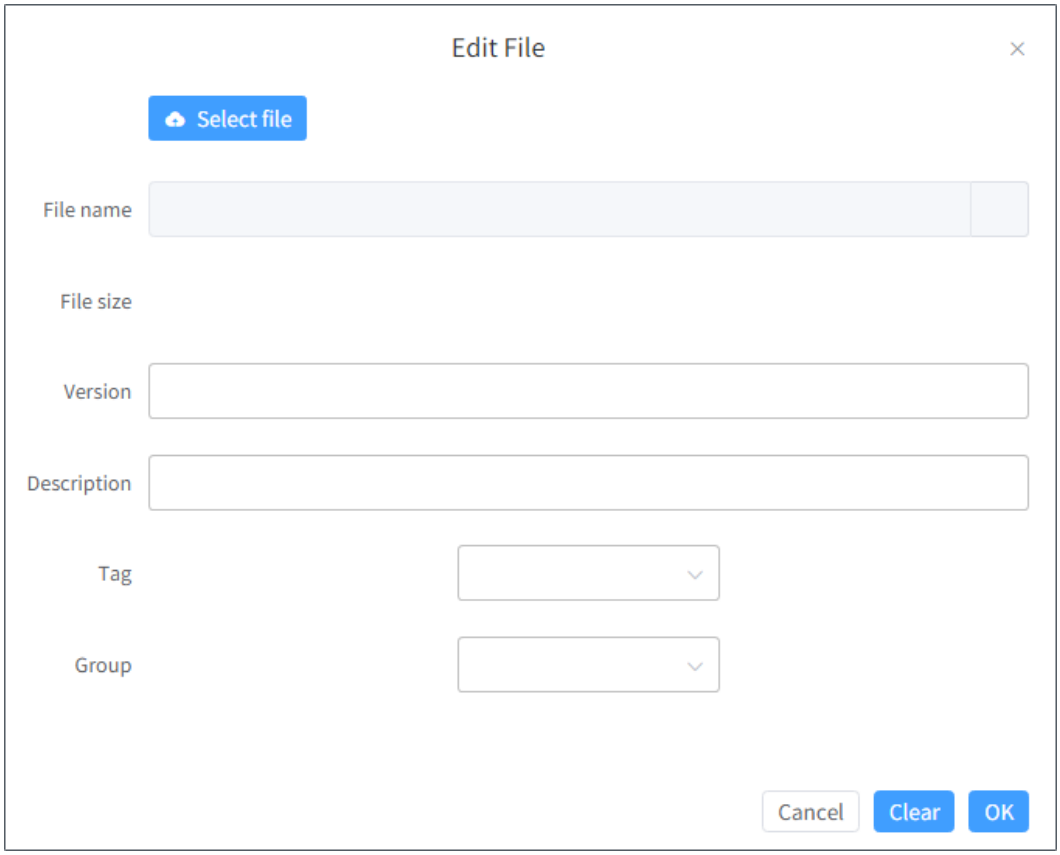
To add program files, do the following:

1. To enter **Process File** interface, Click  → **Process Management** → **Process File**:



2. To create a group for program files, click **Add group** and input the group name and description:

3. To add program files to the group, click **Add file**, input the related information and upload the local program files to the program library of **xFactory**:

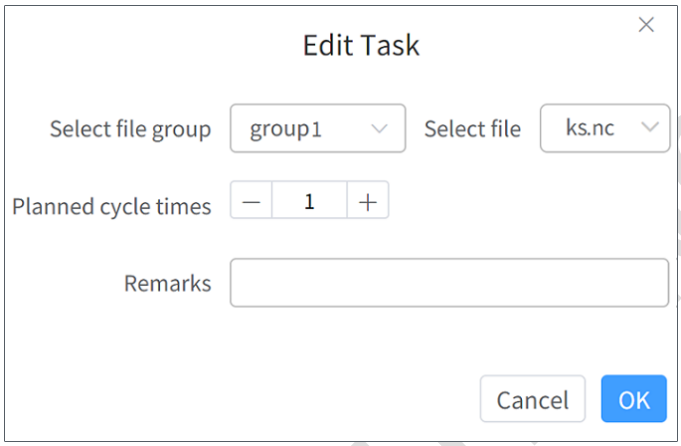


3.7 Execute Machining Tasks

Operators can assign machining tasks to their own machine tools through **xFactory**.

To execute machining tasks, do the following:

1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**.
2. Select the target single machine tool or group in the upper right corner.
3. Click **New** in the task area. **Edit Task** dialog box pops up:



4. To set the machining task, select the uploaded program file and set the planned cycle times.

   New machining task is only in the task list in the **xFactory** server and is not delivered to the CNC system.

5. To execute the machining task, click **Load Program** → **Start** in operation area of **Device Monitoring** interface.

During machining, you can do one of the following:

- To cancel the machining task before the end of machining, click **Cancel**.

  xFactory makes the machine tool stop machining (It means that **xFactory** delivers the stop command to the CNC system) and unload the program file.

- To start / pause / stop / continue the machining task, click **Start** / **Pause** / **Stop** / **Continue** in operation area of **Device Monitoring** interface.

4 Advanced Operations

Including the following:

- Use device monitoring
- Use task management
- Use technics management
- Use device maintenance
- Use station management
- Use quality control
- Use performance appraisal
- Use asset performance
- Use system setup

4.1 Use Device Monitoring

This operation is used to monitor added machine tools.

It Includes the following:

- Monitor a single machine tool.
- Monitor multiple machine tools.
- Check alarms.
- Set smart alarms.
- Check alarm statistics.

Before using device monitoring, do the following:

1. Log in **xFactory** as an administrator.
2. Add the target machine tools.

4.1.1 Monitor a Single Machine Tool

This operation is used to monitor key parameters of a single machine tool.

The operator specified to this machine tool can edit tasks of this machine tool.

To monitor a single machine tool, do the following:

1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**.

2. To enter the interface for details of the machine tool, do one of the following in **Device Monitoring** interface:

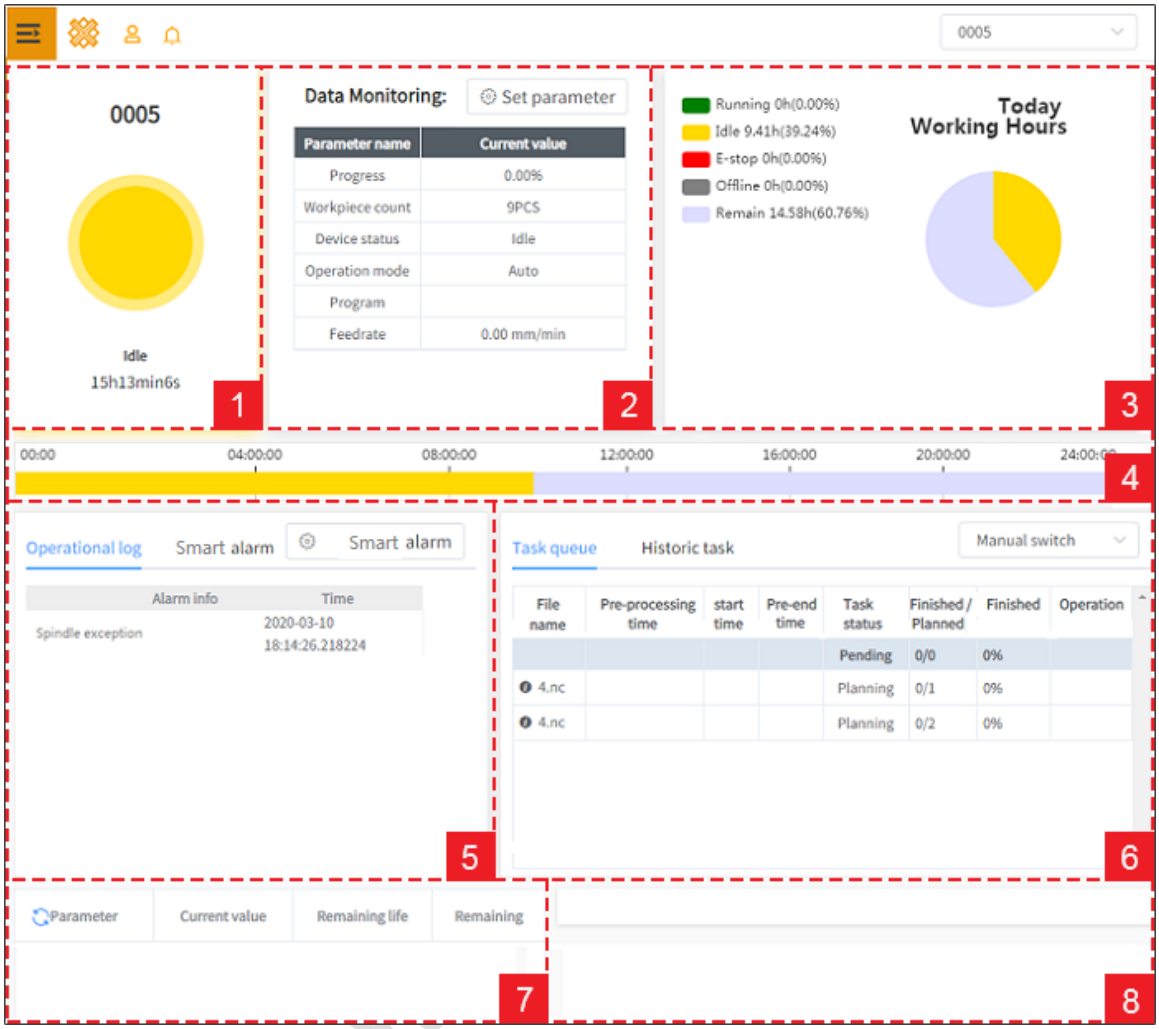
   - Select the target machine tool in the dropdown box in the upper right corner.
   - Click the target machine tool.

   Details of the machine tool includes status area, monitoring area, statistics area, message area, maintenance area, task area and operation area. See Detail Interface for a Single Machine Tool for details.

3. Do one of the following:

   - Check the corresponding information in different areas.
   - To select parameters in monitoring area, click **Set parameter** in this area and set the target parameters.
   - Set smart alarms in message area.
   - Execute machining tasks in operation area.

4.1.1.1 Detail Interface for a Single Machine Tool



1. Status area: It is used to show the running status.

   The color of the circle indicates the running status:

Status	Color
Running	Green
Idle	Yellow
E-stop	Red
Unavailable	Dark gray

2. Monitoring area: It is used to show data variables of the machine tool.

3. Statistics area: It is used to show the time distribution of running status on the day. The color definition of the pie chart is the same with that in the status area.

4. Timeline: It is used to show the distribution of running status on the timeline. The color definition of the time line is the same with that in the status area.

5. Message area: It is used to show operational logs and smart alarms that occur in **xFactory**. Operational logs are identical with those in the CNC system and background colors of operational logs indicate different message types.

   About setting intelligent alarms, see Set Smart Alarms for details.

6. Task area: It is used to show the following types of machining tasks:

   - Historical machining tasks: The start time, end time, name of the program file, number of finished tasks and planned ones.
   - Current machining tasks / planned machining tasks: The name of the program file, estimated machining time, start time, estimated end time, task status, number of finished tasks and planned ones, current machining process, related operations.

   Note: For files that are not machined, their estimated machining time will not show.

7. Maintenance area: It is used to show information about wearing parts, including their used time, remaining time and percent of the remaining time.

   See Manage Wearing Parts for details about managing wearing part.

8. Operation area: It is used to show current available operations. Operator permission is required.

4.1.2 Monitor Multiple Machine Tools

This operation is used to monitor key parameters of multiple machine tools with common features within a group.

To monitor multiple machine tools, do the following:

1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**.

2. Select the following in the dropdown box in the upper right corner:

   - A certain group: Monitor all machine tools within the group.
   - All: Monitor all machine tools.
   - All(groups): Monitor all machine tools according to related groups.

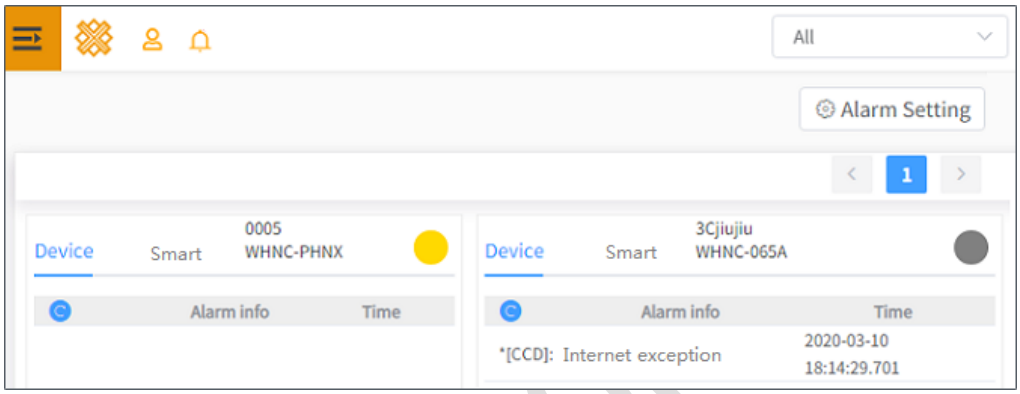
3. Monitor related data of multiple machine tools within a group, including the task status and distribution of working hours.

4.1.3 Check Alarms

This operation is used to check all device alarms that occur in CNC system, smart alarms that occur in **xFactory** and running status of all added machine tools.

To check alarms, do the following:

1. To enter **Alarm Log** interface, click  → **Device Management** → **Alarm Log**:



   The color of the circle in the upper right corner of every column indicates running conditions of this machine tool.

2. To check device alarms or intelligent alarms, click **Device** or **Smart** in the corresponding module.

In other interfaces, dialog boxes that report alarms pop up.

4.1.4 Set Smart Alarms

To set smart alarms, do the following:

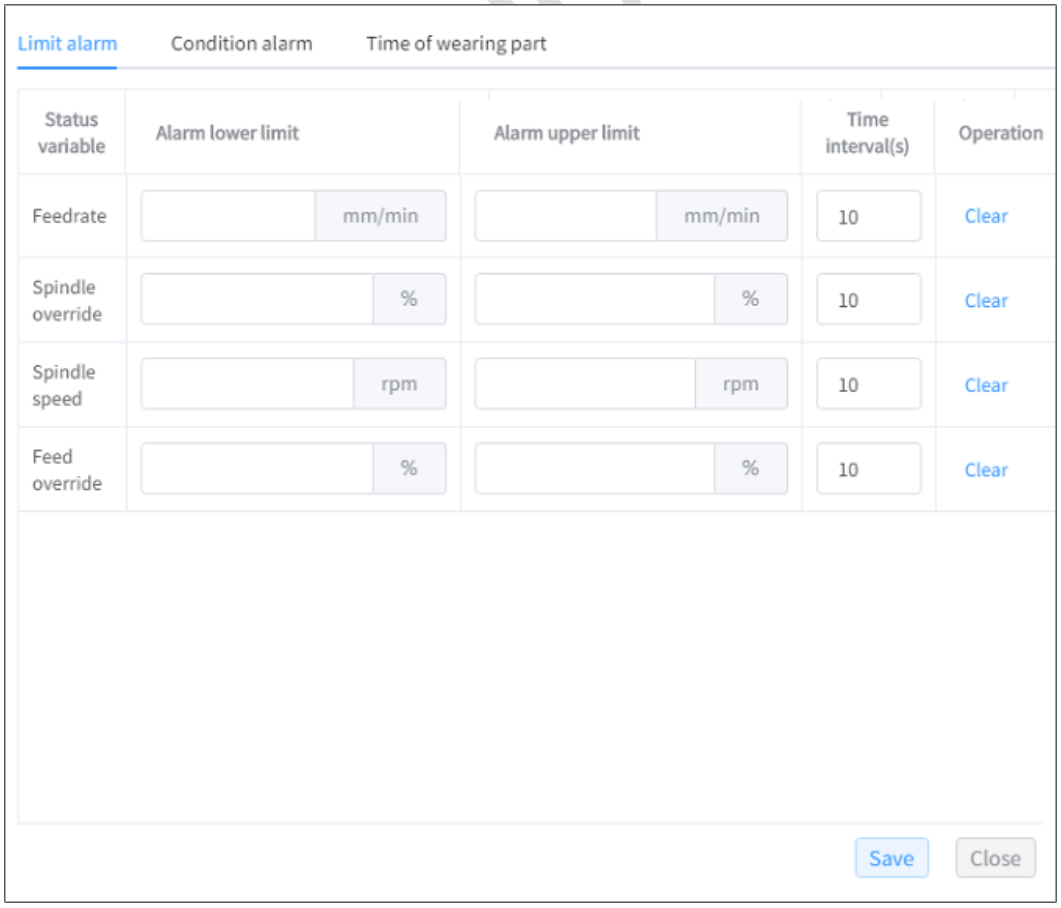
1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**.

2. To enter the interface for details of the machine tool, do one of the following in **Device Monitoring** interface:

   - Select the target the machine tool in the dropdown box in the upper right corner.
   - Click the target the machine tool.

   Details of the machine tool includes status area, monitoring area, statistics area, message area, maintenance area, task area and operation area. See detail Interface for a Single Machine Tool for details.

3. To enter the following interface, click **Smart alarm** in the upper right corner of the message area:



4. Click **Limit alarm**, **Condition alarm** and **Time of wearing part**, and set the following:
   - Limit alarm: The upper limit and lower limit of feedrate, spindle override, spindle speed and feed override to report alarms, and alarm interval.
   - Condition alarm: The alarm conditions and alarm interval.
   - Time of wearing part: The time for alarms in advance, service life, alarm interval.

When an alarm is triggered, a dialog box pops up. Historical smart alarms show in the **Smart alarm** interface of message area.

4.1.5 Check Alarm Statistics

This operation is used to check at most 10 errors and warnings in the period of the target work shift.

Before checking alarm statistics, set the corresponding work shift.

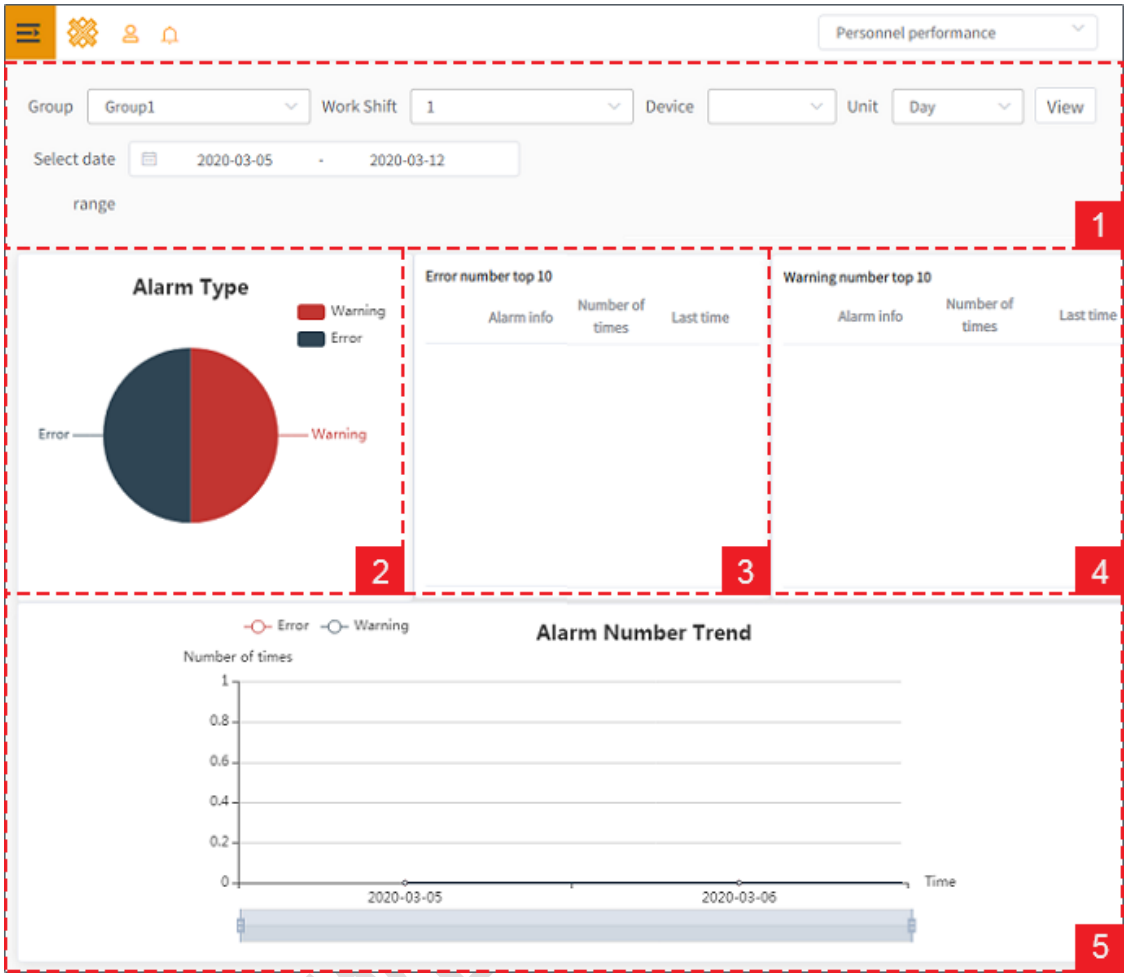
To check alarm statistics, do the following:

1. To enter **Alarm Statistics** interface, click  → **Device Management** → **Alarm Statistics**.

   See Interface of Alarm Statistics for details.

   Note: The statistics only includes device alarms after setting the work shift.
2. To generate the view of alarm statistics, select the target single machine tool or group, date unit and date range, and click **View**.
3. Check alarm statistics.

4.1.5.1 Interface of Alarm Statistics



1. It is used to select the available single machine tool / groups, time unit and date range.
2. It is used to show total errors and warnings, and their proportions in the set work shift within the date range.
3. It is used to show top ten errors with the high frequency, their times and last time to report an alarm.
4. It is used to show top ten warnings with the high frequency, their times and last time to report an alarm.
5. It is used to show the trend of errors and warnings in the set work shift within the date range.

4.2 Use Task Management

This operation is used to manage multiple machine tools through **xFactory**, including creating machining tasks and assigning tasks. And you also can track the machining process of all machine tools with the same machining task. As a result, you can master the whole machining.

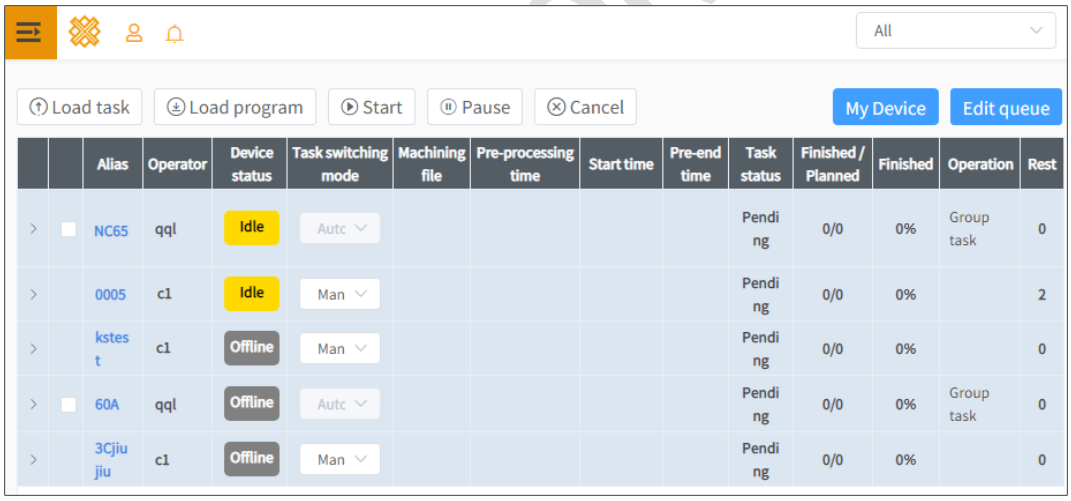
It includes the following:

- Use task assignment.
- Check task records.
- Check progress statistics.

4.2.1 Use Task Assignment

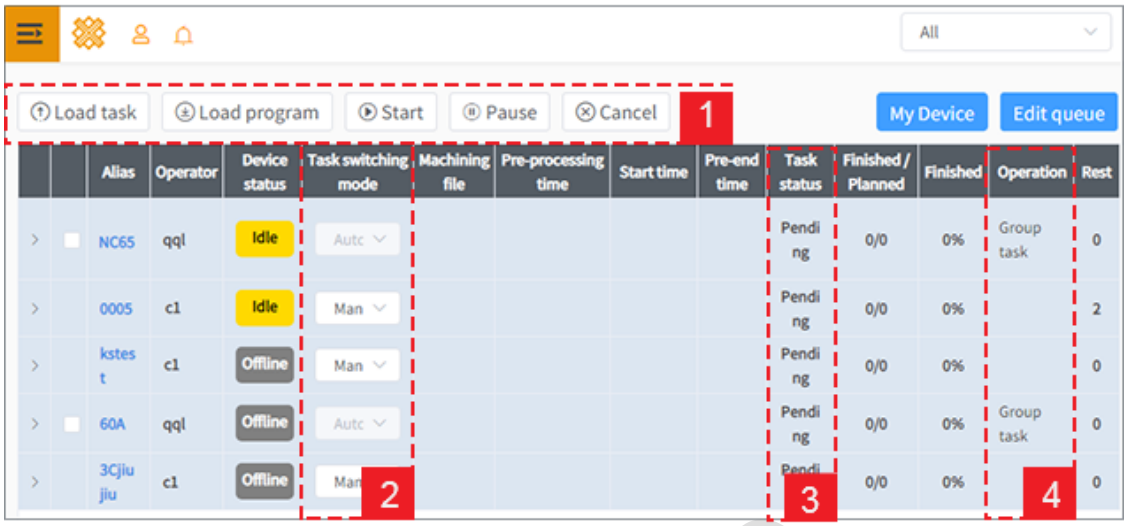
To use task assignment, do the following:

1. To enter **Task Assignment** interface, click → **Production Management** → **Task Assignment**:



2. Select the target single machine tool or group in the upper right corner.
3. Do one of the following:
   - Execute operations for a single machine tool.
   - Execute operations for multiple machine tools.
   - Check the task status.
   - Edit the task queue.

4.2.1.1 Task Assignment Interface



1. Operation buttons: They are used to execute the batch operations, including **New**, **Load task**, **Load program**, **Start**, **Pause**, **Stop**, **Continue**, **Cancel**.
2. Column for task switching modes: It is used to select the task switching mode, including **Manual switching**, **Automatic loading** and **Auto execution**.
3. Task status column: It is used to check the task status of the target machine tool, including **Pending**, **Planning**, **Ready**, **Running**, **Finished** and **Cancelled**.
4. Operation column: It is used to show the available operations according to the current task status and the user permission, including **Start**, **Pause**, **Stop**, **Continue** and **Cancel**.

4.2.1.2 Execute Operations for a Single Machine Tool

This operation is used to make a single machine tool start / pause / stop / continue / cancel machining by clicking **Start**, **Pause**, **Stop**, **Continue** and **Cancel** in **Operation** column, or make the CNC system load machining tasks, load program files by **Load task** and **Load program** on the upper of the task list.

To execute operations for a single machine tool, do the following:

1. To enter **Task Assignment** interface, click  → **Production Management** → **Task Assignment**.
2. To start / pause / stop / continue / cancel machining, click **Start**/ **Pause** / **Stop** / **Continue** / **Cancel** in **Operation** column.
3. To load machining tasks, load program files, click **Load task** and **Load program** on the upper of the task list.

4.2.1.3 Execute Operations for Multiple Machine Tools

This operation is used to make added machine tools start / pause / stop / continue / cancel machining, or make CNC systems load machining tasks, load program files at the same time by operation buttons on the upper of the task list.

To execute operations for multiple machine tools, do the following:

1. To enter **Task Assignment** interface, click  → **Production Management** → **Task Assignment**.
2. To select the target machine tools, do one of the following:
   - Check the target machine tools in the first column.
   - Click **New** and select machine tools in the **Edit task** dialog box.

     You also can select program files, set total cycle times and assign the cycle times to the target machine tools.
3. To load machining tasks, load program files, or start / pause / stop / continue / cancel machining at the same time, click **Load task** / **Load program** /**Start**/ **Pause** / **Stop** / **Continue** / **Cancel** on the upper of the task list.

During execute operations for multiple machine tools, if part of the target machine tools cannot start / pause / stop / continue / cancel machining or their CNC systems cannot load tasks / load programs, a dialog box for reporting the error pops up, and other machine tools and their CNC systems still execute corresponding operations.

4.2.1.4 Check the Task Status

This operation is used to check the task status, including **Pending**, **Planning**, **Ready**, **Running**, **Finished** and **Cancelled**.

To check the task status, do the following:

1. To enter **Task Assignment** interface, click  → **Production Management** → **Task Assignment**.
2. Find the target machine tool and check its task status in **Task Status** column.

   About the task status, see Description about the Task Status for details.

4.2.1.4.1 Description about the Task Status

Task Status	Description	Machine Tool Status	Program Files Loaded/Unloaded
Pending	No machining tasks.	Idle	Unloaded
Planning	The machining task has been set but not loaded.	Idle	Unloaded
Ready	The machining task has been loaded and the cycle times have been set.	Idle	Loaded
Running	The machining task has not been finished or cancelled.	Running or idle (When the machine tool pauses or stops, the status is idle)	Loaded
Finished	The machine tool has finished the cycle times and automatically stopped.	Idle	Unloaded
Cancelled	The machine tool has not finished the cycle times. The machining task has been unloaded or machining has been interrupted.	Idle	Unloaded

4.2.1.5 Edit the Task Queue

This operation is used to edit the task queue. Permissions are required, see Permission for details.

To edit the task queue, do the following:

1. To enter **Task Assignment** interface, click  → **Production Management** → **Task Assignment**.
2. Click **Edit queue** and do one of the following:
   - Check or cancel the machining task that has been loaded or executed.
   - To recover the queue edition that is not saved, click **Recover**.
   - To add the operator's unloaded or machining tasks to the queue, directly drag the target tasks to the queue.
   - Select the task switching mode in the **Task switching mode** column. About task switching modes, see Description about the Task Switching Mode for details.

4.2.1.5.1 Description about the Task Switching Mode

Task Switching Mode	Description	Machine Tool Status	Program Files Loaded/Unloaded
Manual switching	No operations.	Idle	Unloaded
Automatic loading	Program files have been automatically assigned and loaded.	Idle	Unloaded
Automatic Execution	Program files have been automatically assigned, loaded and machined.	Running	Loaded

4.2.1.5.2 Permission

The permission of the task queue differs in roles:

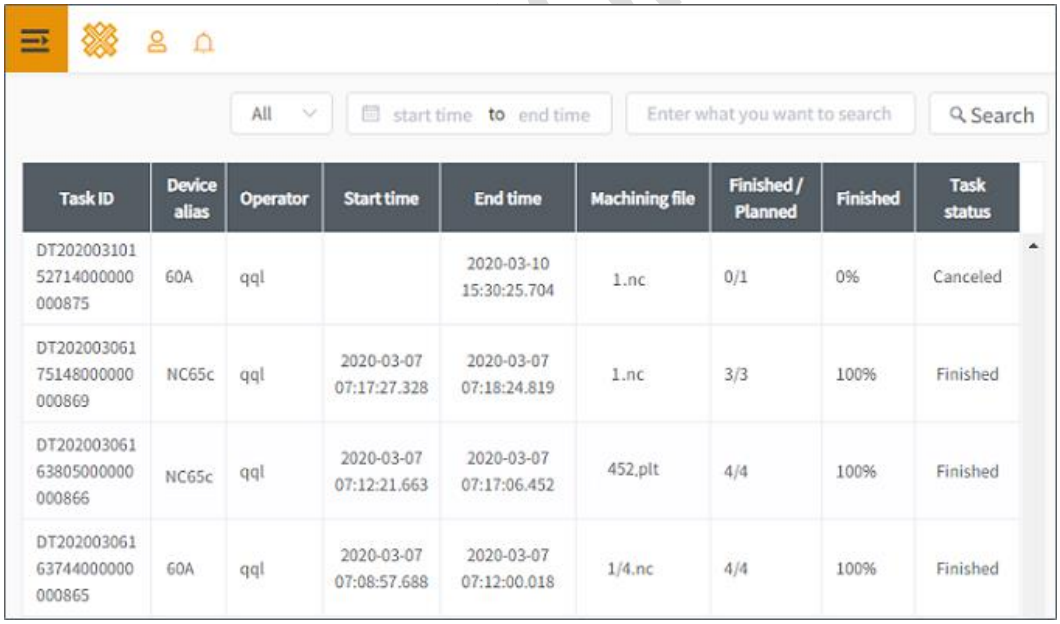
- The role of super administrators cannot edit the task queue. But, this role can delete the task queue created by the role of administrators.
- The role of operators can edit the task queue at the same time.
- The role of operators and the role of planners cannot edit the task queue at the same time, nor can the role of planners. Otherwise, the prompt *The task is edited.* occurs.

4.2.2 Check Task Records

This operation is used to check finished tasks in **Task Assignment** interface.

To check task records, do the following:

1. To enter **Task Record** interface, click  → **Production Management** → **Task Record**:



2. Check the following:

   - Device alias: The name of the machine tool.
   - Operator: The operator who is assigned to the machine tool.
   - Start time / end time: The start time / the end time of tasks.
   - Machining file: The name of program file.
   - Finished/ planned: The number of finished tasks and planned ones.
   - Finished: The current machining process.
   - Task status: Finished/cancelled:

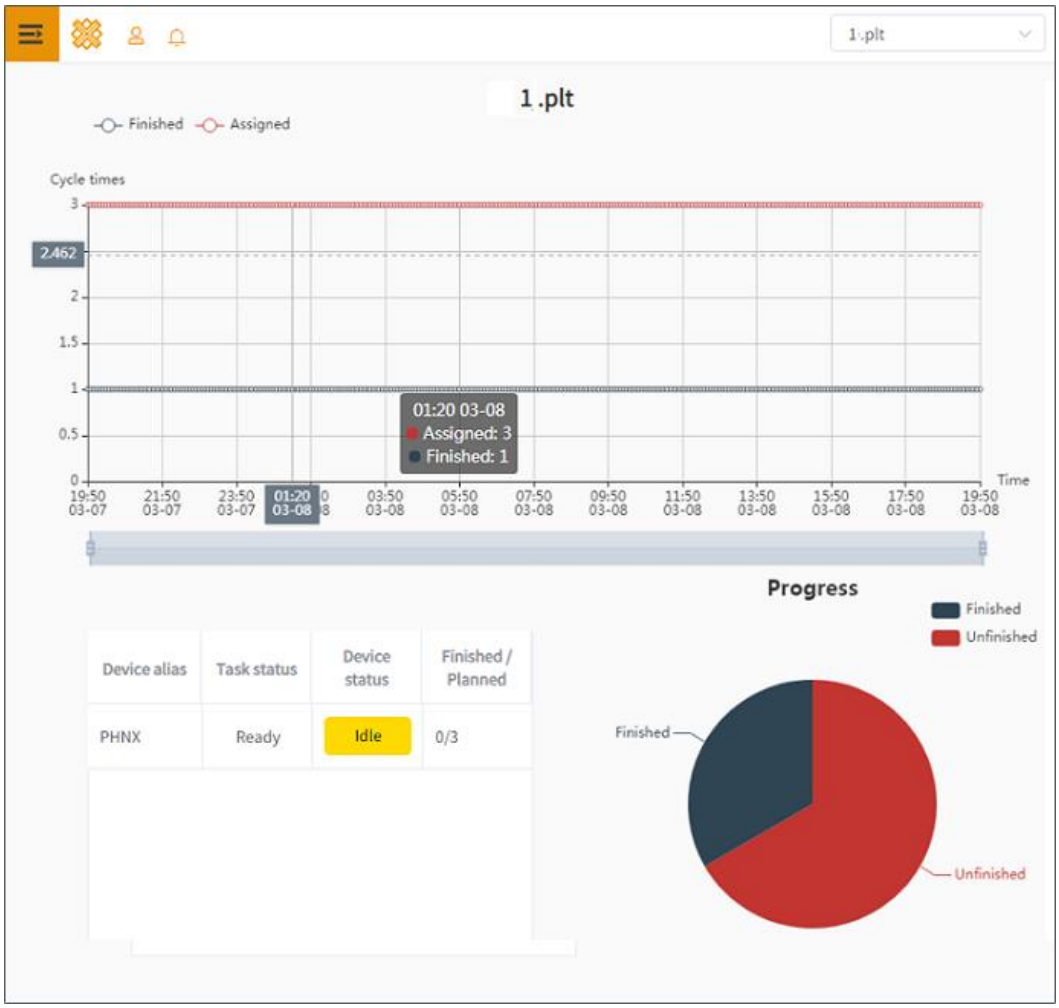
     - Finished: The machine tool has finished the cycle times of the task and automatically stops.
     - Cancelled: The task is interrupted, because user cancels the task by clicking **Cancel** in **Task Assignment** interface.

4.2.3 Check Progress Statistics

This operation is used to check finished tasks and the current machining progress.

To check progress statistics, do the following:

1. To enter **Progress Statistics** interface, click  → **Production Management** → **Progress Statistics**:



2. Select the target program file in the upper right corner and check its process statistics:

   - Line chart: It is used to show the cycle times and machining time.
     - Assigned: The total planned cycle times of all machine tools that machine the target program file.
     - Finished: The total finished cycle times of all machine tools that machine the target program file.

- Pie chart: It is used to show the proportion of finished cycles and unfinished ones.
- Table: It is used to show the name of the machine tool, task status, status of the machine tool and the number of finished cycles and planned ones.

4.3 Use Technics Management

This operation is used to create and maintain the technics library. Then, you can archive, save, assign technics files and create tasks for machine tools at the same time.

It includes the following:

- Manage file groups.
- Manage files.

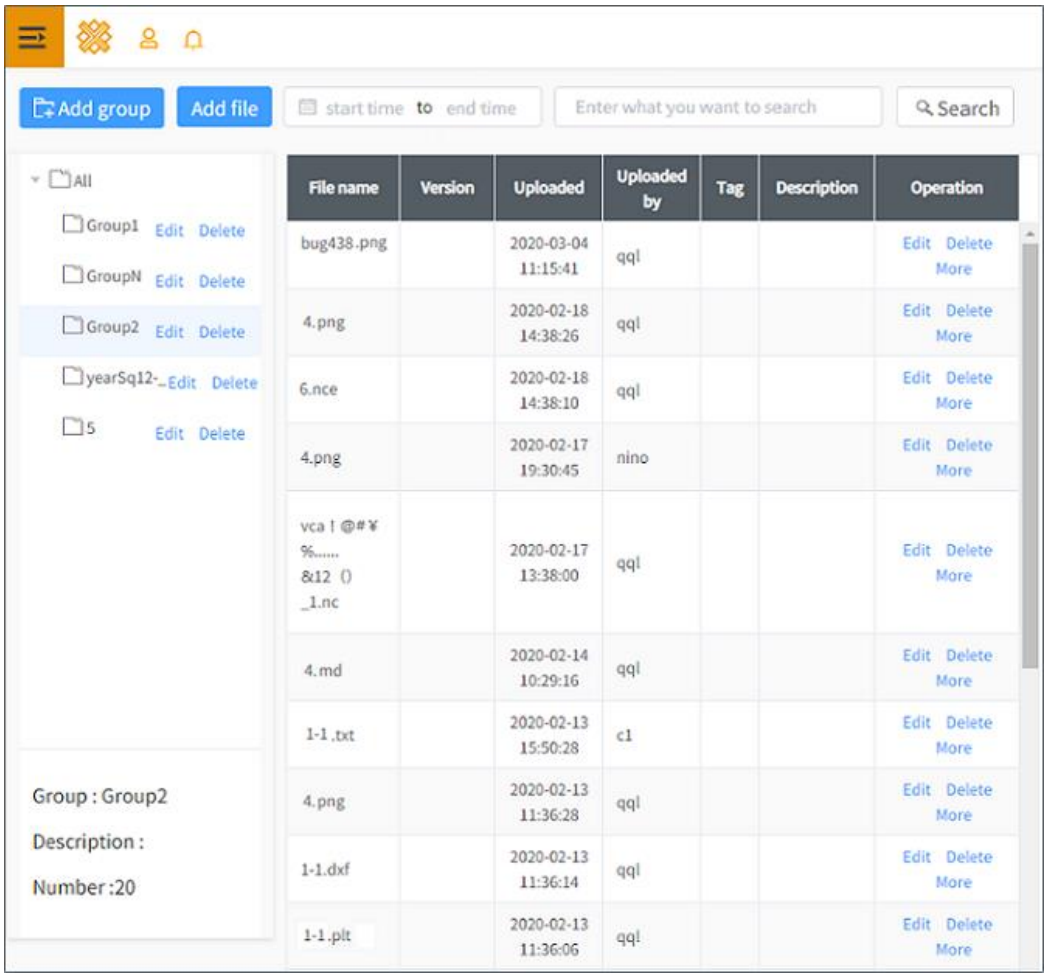
4.3.1 Manage File Groups

This operation is used to manage file groups. Each group is equivalent to a file folder. You can set group attributes for an easy management.

The program file must be saved in a group by default. Therefore, if there is no group, it is recommended to create a group before saving program files. You can create a group according to your habit, such as the client name, order number, department, part type and so on.

To manage file groups, do the following:

1. To enter **Process File** interface, click  → **Process Management** → **Process File**:



2. To add a group, click **Add group**, input the group name and its description and click **OK**.

3. **Optional:** To modify the group name and its description, click **Edit** in the left list.

4. **Optional:** To delete the group, click **Delete** in the left list.

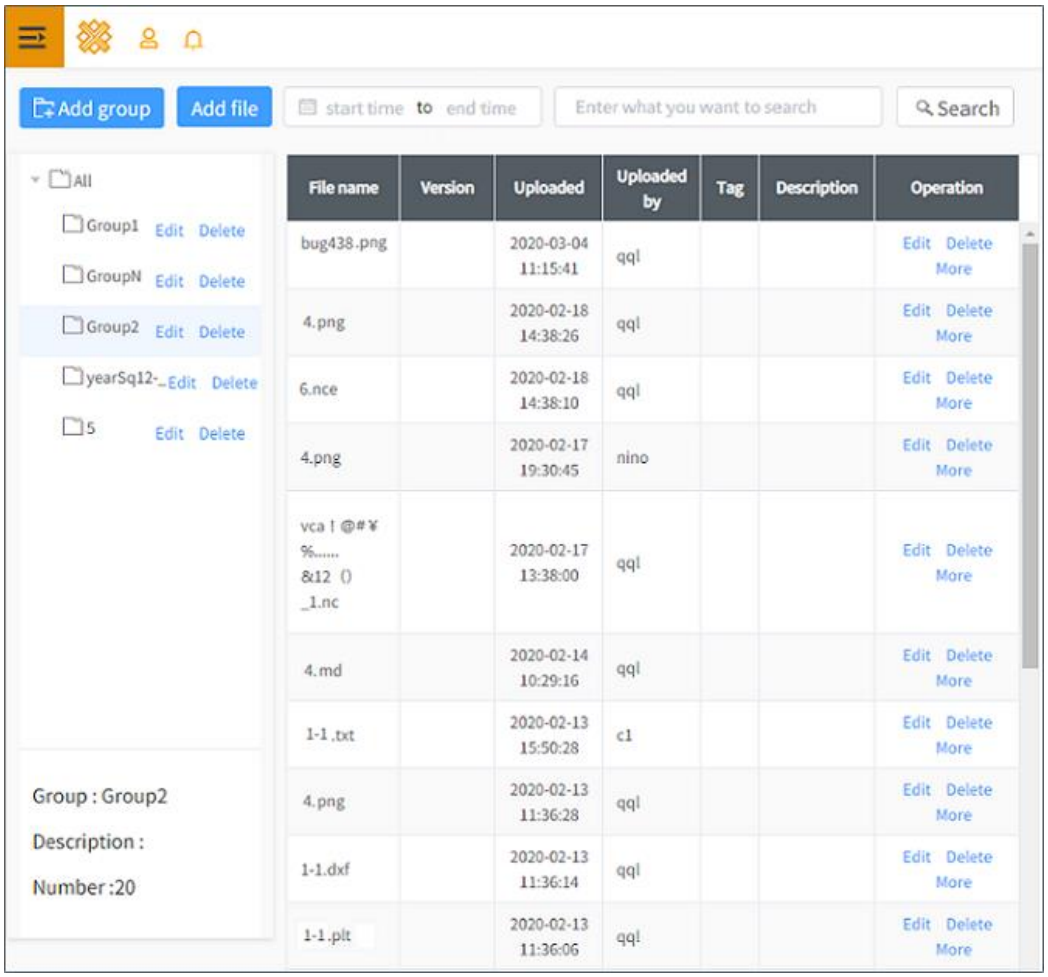
   Note: When you delete the group, the program files in this group are deleted at the same time.

4.3.2 Manage Files

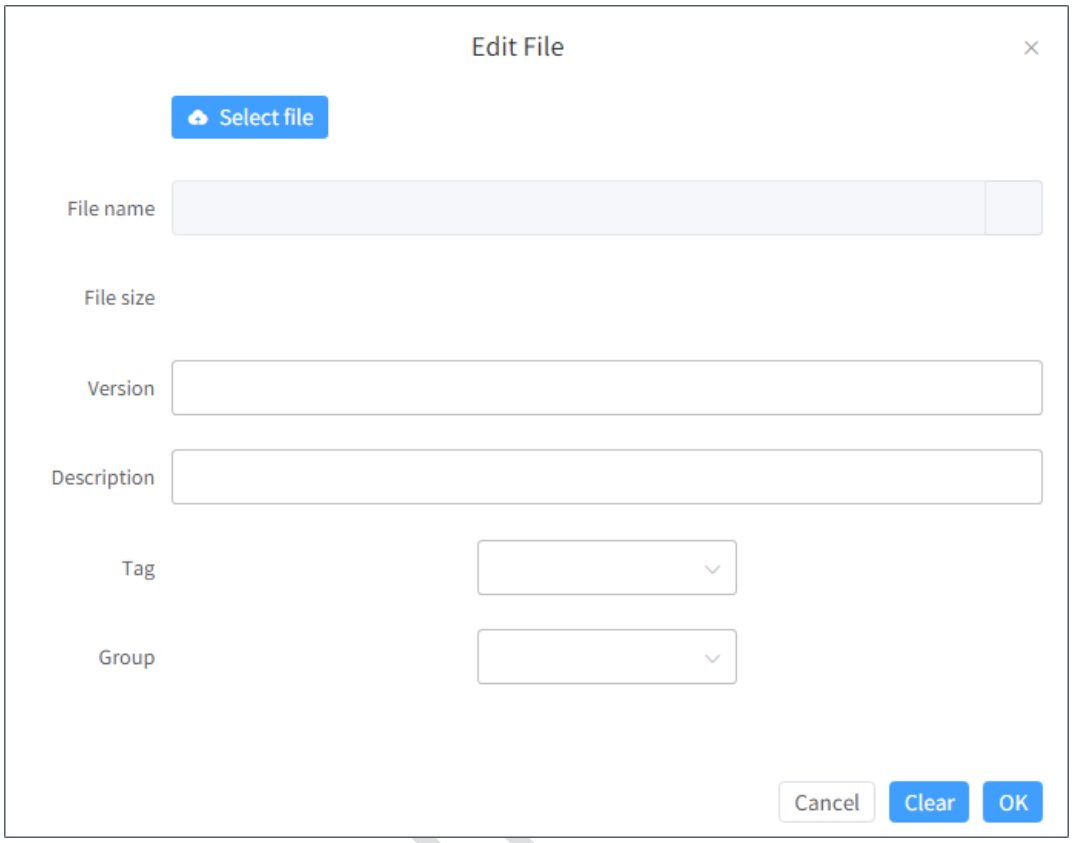
This operation is used to add program files, and review / edit / delete / download program files in the program library.

To manage files, do the following:

1. To enter **Process File** interface, click  → **Process Management** → **Process File**:



2. Click **Add file**. **Edit File** dialog box pops up:



3. To add local program files, click **Select file**, select the program file in the local disk, do related settings and click **OK**.

   The added program file is uploaded to the program library of **xFactory**.

   Program files, temporarily uploaded from **Task Management** interface and other interfaces, are automatically saved in the technics library of **xFactory**.

4. To edit / delete / download the program file, click **Edit** / **Delete** / **Download** in **Operation** column of the file list.

4.4 Use Device Maintenance

This operation is used to maintain or manage wearing parts and tools, and monitor tools.

It includes the following:

- Manage wearing parts.
- Manage tools.
- Monitor tools of spindles.

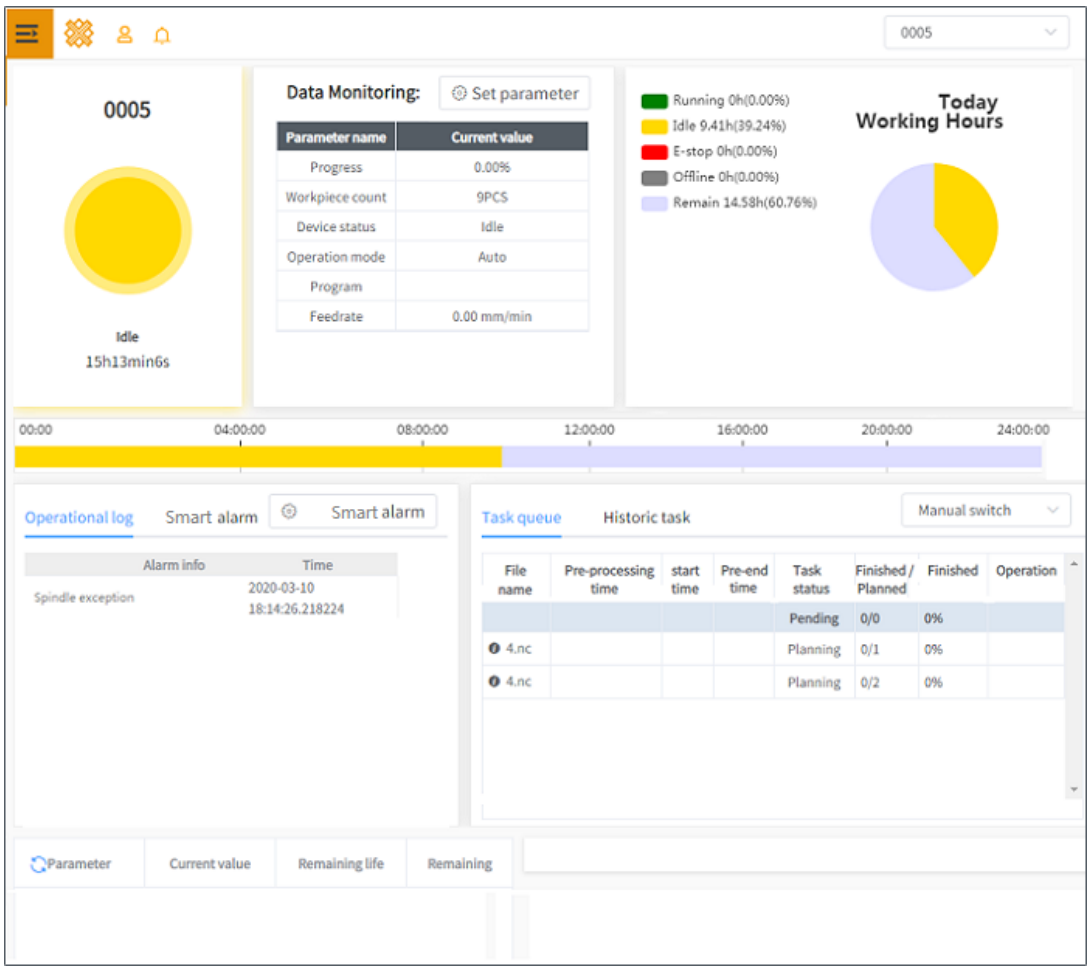
4.4.1 Manage Wearing Parts

This operation is used to manage all wearing parts and replace them in time.

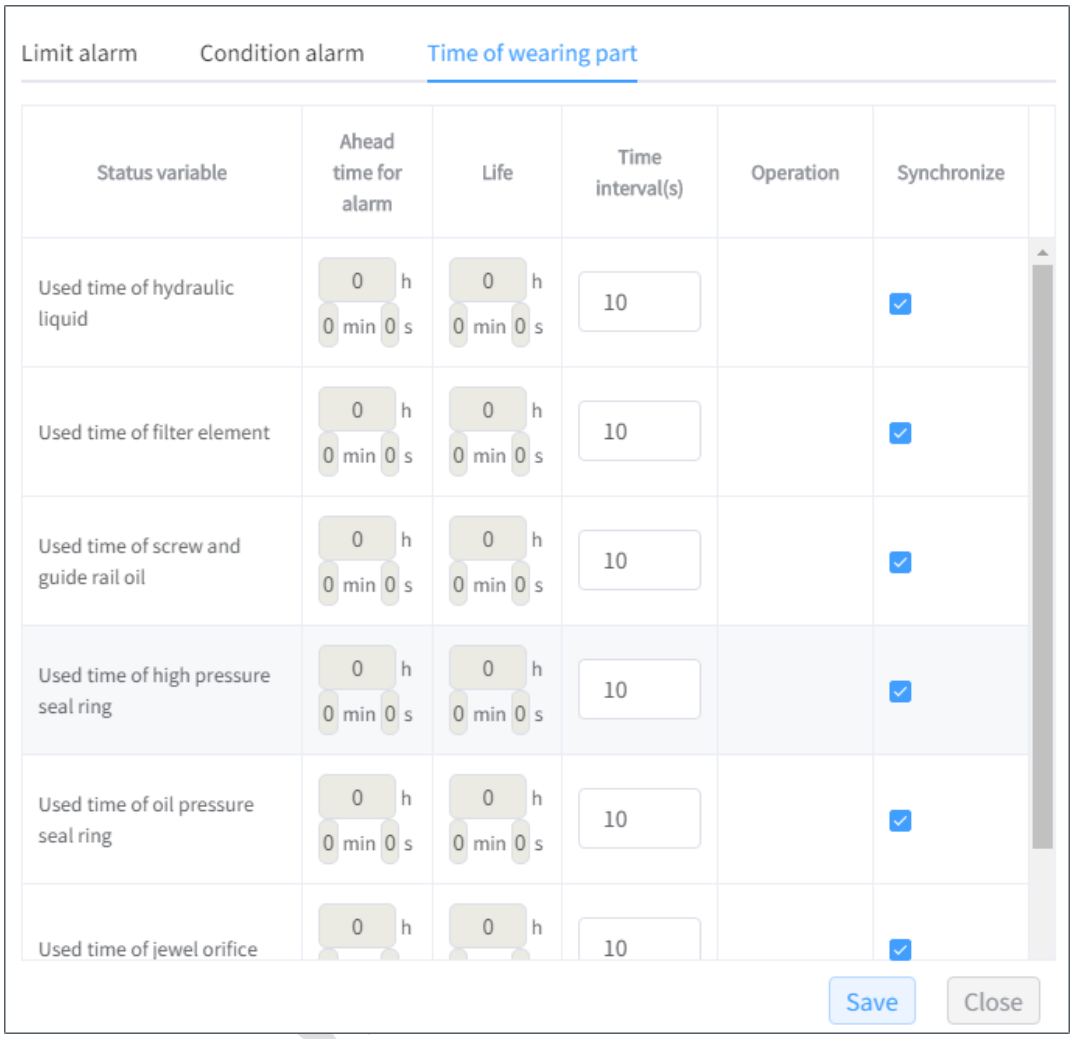
To manage the wearing parts, do the following:

1. To enter **Device Monitoring** interface, click  → **Device Management** → **Device Monitoring**.

2. Select the target single machine tool in the upper right corner:



3. Click **Smart alarm** in the message area and click **Time of wearing part**:



4. Set the following for wearing parts of the target machine tool:

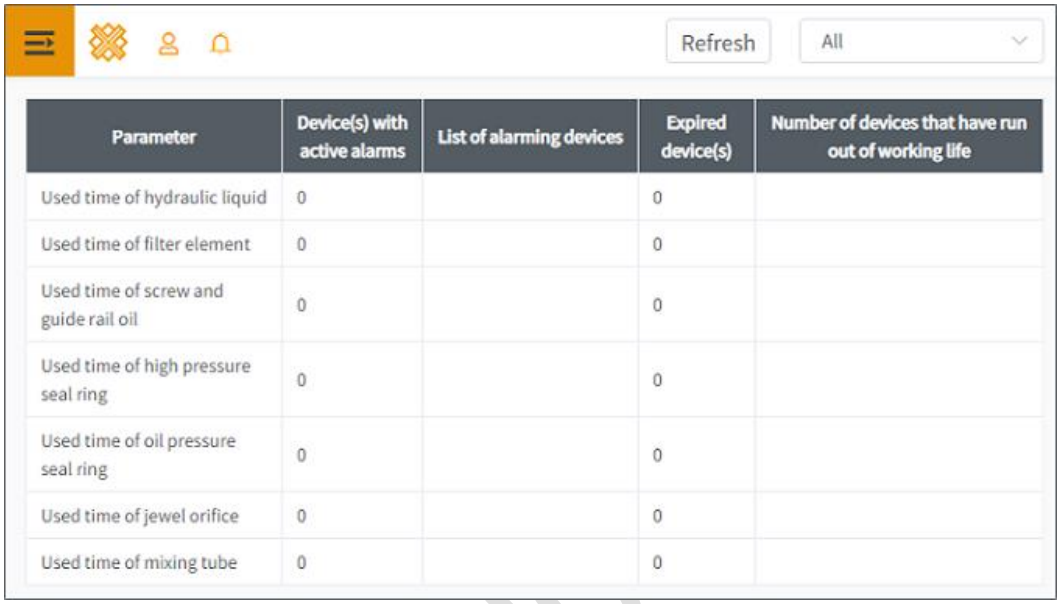
   - Time for alarms in advance
   - Service life
   - Interval(s)

   If a wearing part runs out of service life or reaches the time for the alarm in advance, a prompt pops up in the upper right corner at the set interval.

5. **Optional:** Check **Synchronize**. When the target CNC system updates the data of wearing parts, **xFactory** updates the data at the same time.

6. Check the used time and remaining service life in the maintenance area of **Device Monitoring** interface.

7. To check all machine tools whose wearing parts have run out of their life and reached the time for alarms in advance, click → **Device Management** → **Wearing Parts**:

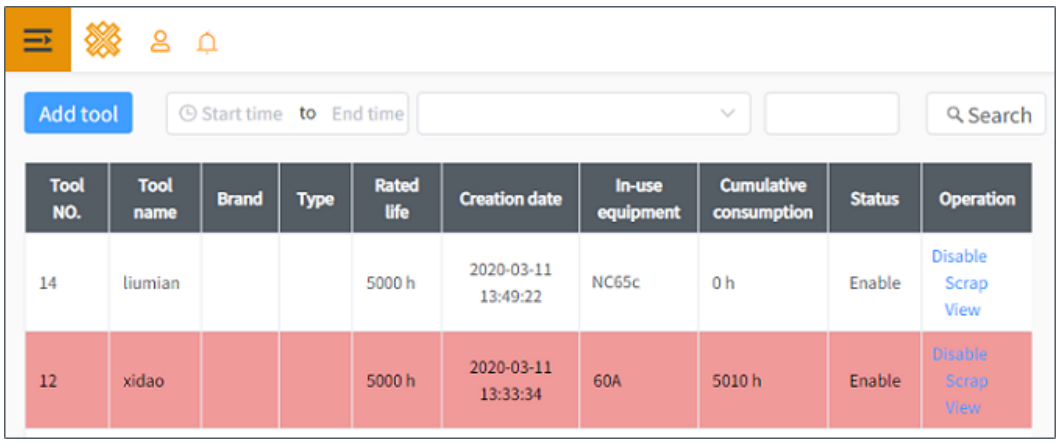


4.4.2 Manage Tools

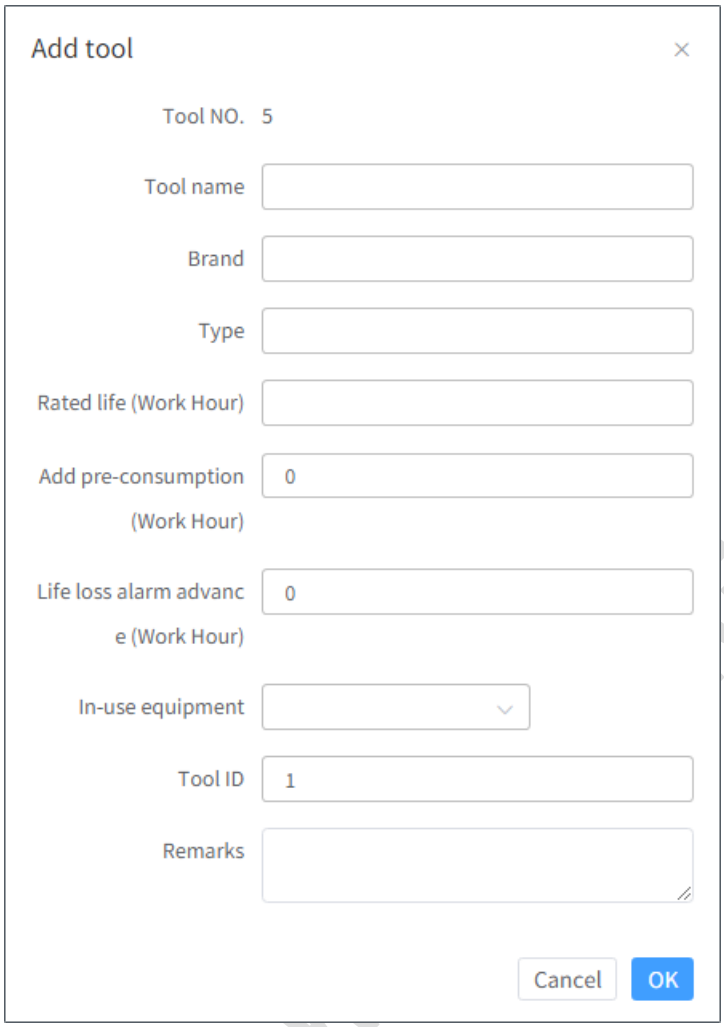
This operation is used to manage all tools, including setting alarms for tools, recording and accumulating the total usage time of tools on the different machine tools.

To manage tools, do the following:

1. To enter **Tool Manager** interface, click → **Device Management** → **Tool Manager**:



2. To add tools, click **Add tool** and do related settings:

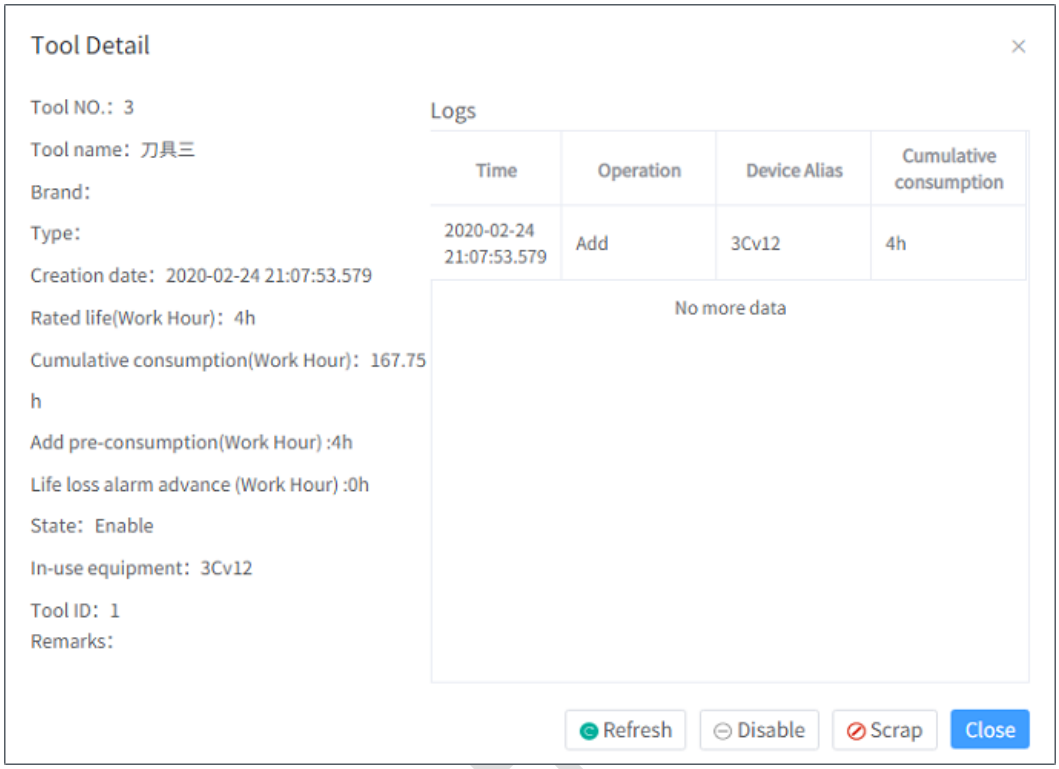


3. To check tool records, set the search conditions and click **Search**.

   For tools that have run out of their life, rows of their records become red.

4. **Optional:** To enable/disable/scrap the target tool, click **Enable** / **Disable** / **Scrap** in **Operation** column.

5. **Optional:** To check details about the target tool, click **View** in **Operation** column. **Tool Detail** dialog box pops up:

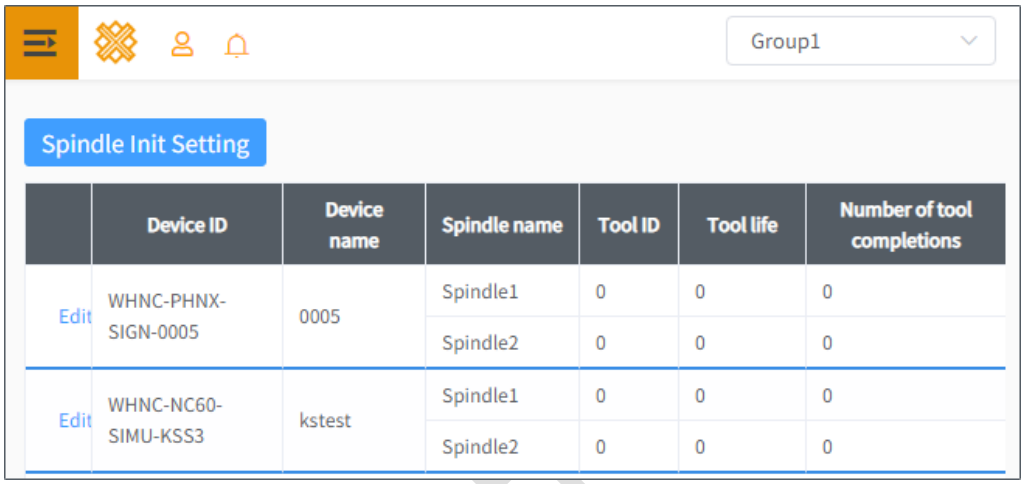


4.4.3 Monitor Tools of Spindles

This operation is used to set tools of spindles and check their status according to the warnings and alarms.

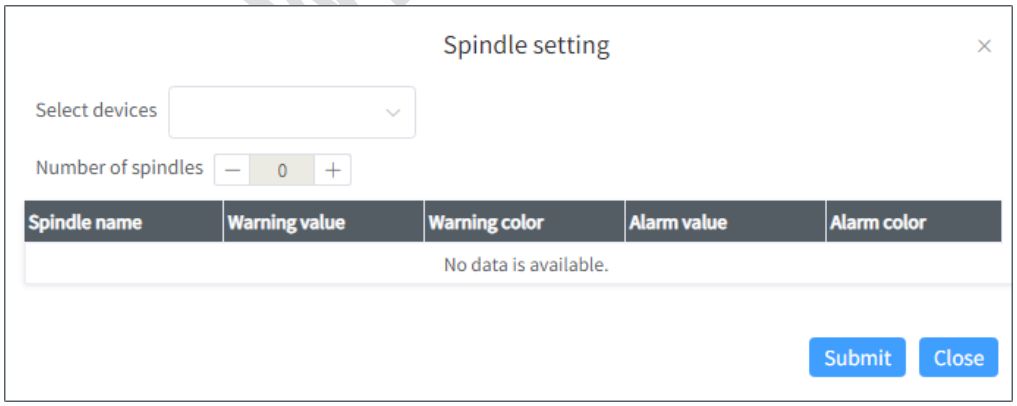
To monitor tools of spindles, do the following:

1. To enter **Tool Monitoring** interface, click  → **Device Management** → **Tool Monitoring**:



2. **Optional:** To check monitored tools within a group, select the target group in the upper right corner.

3. Click **Spindle Init Setting**. **Spindle setting** dialog box pops up:



4. Select a machine tool or more.

5. Set the quantity of spindles.

   The maximum quantity is 5.

6. To set warnings and alarms, set warning values, warning colors, alarm values and alarm colors.

7. Click **Submit**.

When the number of finished workpiece that the tool can machine reaches the value of warning and alarm, the warning and alarm occur with the warning color and alarm color.

After setting tools of spindles, to modify their settings, click **Edit** in Tool Monitoring interface and modify settings.

4.5 Use Station Management

This operation is used to monitor stations, manage station tasks, use station help and check historical tasks.

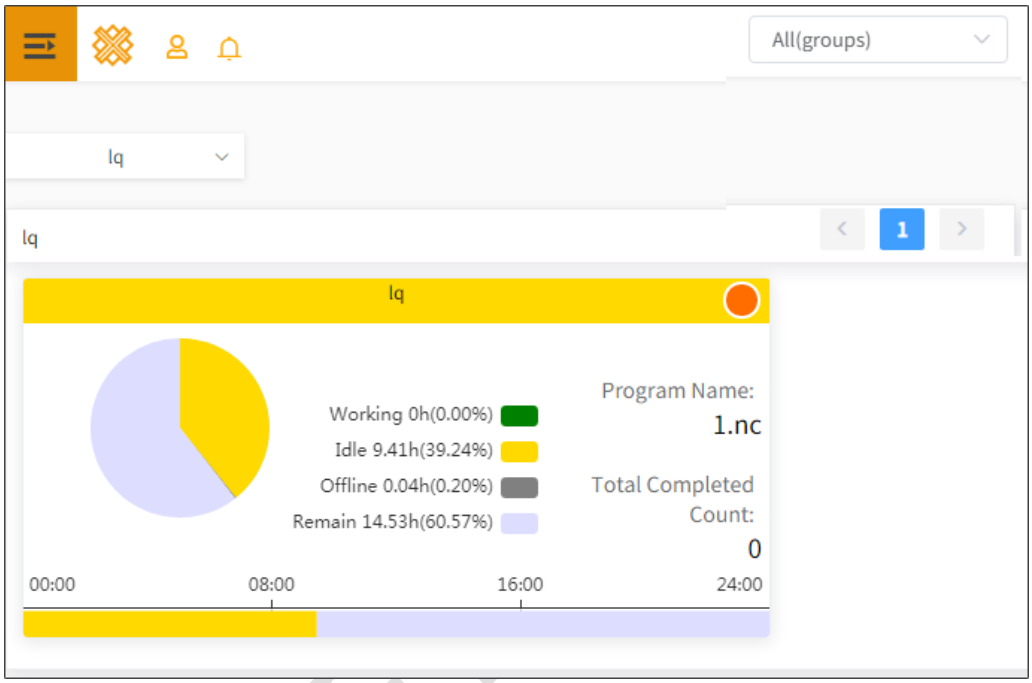
It includes the following:

- Monitor stations.
- Manage station tasks.
- Use station help.
- Check historical tasks.

4.5.1 Monitor Stations

To monitor stations, do the following:

1. To enter **Station Monitoring** interface, click  → **Station Management** → **Station Monitoring**:



2. Do one of the following:
   - To monitor multiple stations, do the following:
     1. To select the target stations, select the following in the dropdown box in the upper right corner:
        - A certain group: Monitor all stations within the group.
        - All: Monitor all stations.
        - All(groups): Monitor all stations according to groups.
     2. Monitor details of the target stations, including the station status, help-seeking status, time distribution of station status on the pie or timeline. See The Interface of Station Monitoring for details.

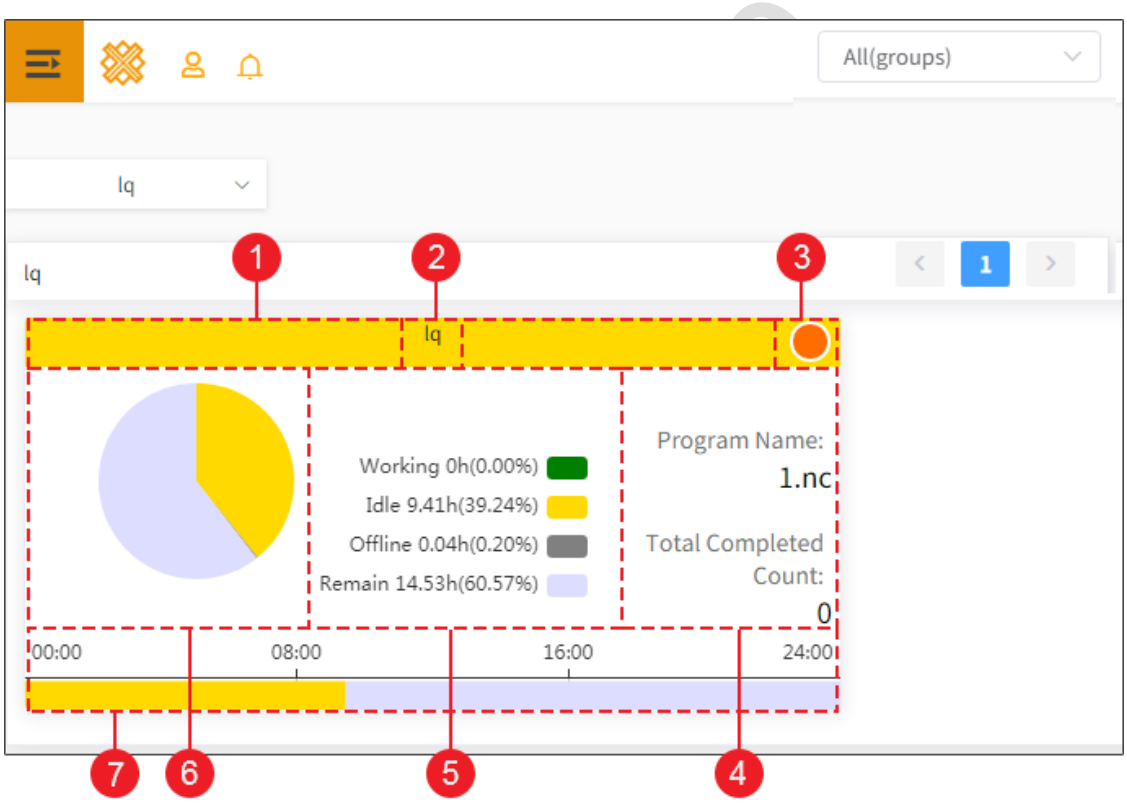
- To monitor a single station, do the following:

  1. To enter the interface for details of the target station, do one of the following in **Station Monitoring** interface:

     - Select the target station in the dropdown box in the upper right corner.
     - Click the target station.

  2. Monitor details of the target station, including the station status, task status, help-seeking status, data of the target station, time distribution of station status on the pie or timeline, data of tasks, preview of program files and available operations. See The Interface for Station Details for details.

4.5.1.1 The Interface of Station Monitoring



1. Station status

   - Green: The station is working, namely, its operator is on the job and the station is executing tasks.
   - Yellow: The station is idle, namely, its operator is on the job and the station is not executing tasks.
   - Dark gray: The station is unavailable.

2. Station name

3. Help-seeking status: When the current station is in help-seeking status, the red indicator light appears. If the current station is not in help-seeking status, the red indicator light disappears.

4. Station parameters: Parameters **Program Name** and **Total Completed Count** show by default.

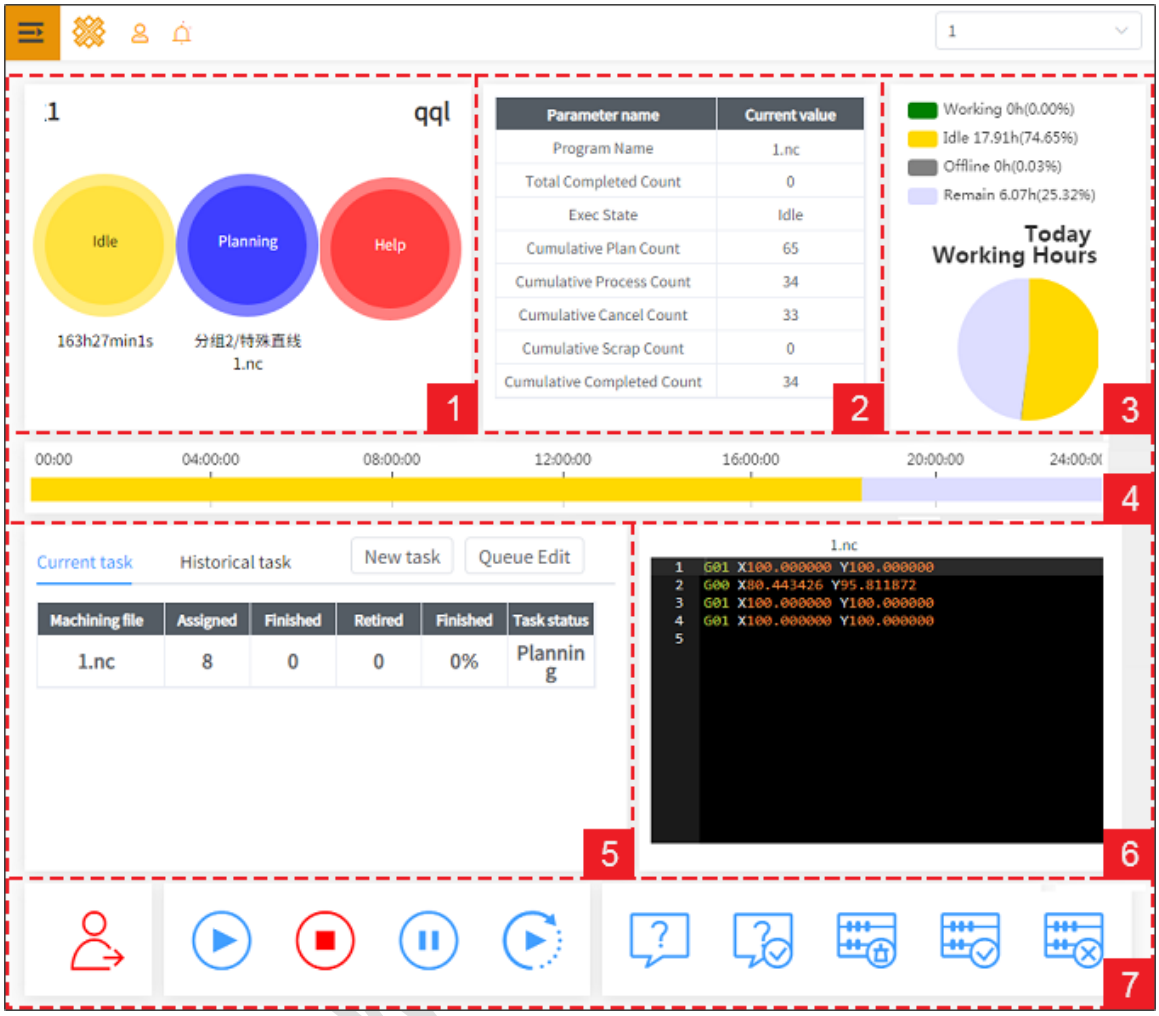
   To select station parameters that show on the **Station Monitoring** Interface, click **System Setup** → **Station Management** → **Edit**, and select parameters in **Edit Station** dialog box. No permission is required.

5. Time distribution of station status: It includes the working time, the idle time, the unavailable time and the remaining time.

6. Pie chart of station status: It is used to show the proportion of the working time, the idle time, the unavailable time and remaining time.

7. Timeline of station status: It is used to show the working time, the idle time, the unavailable time and the remaining time in all periods of the whole day.

4.5.1.2 The Interface for Station Details



1. Status area: It includes the following:
   - Station status
     - Green: The station is working, namely, its operator is on the job and the station is executing tasks.
     - Yellow: The station is idle, namely, its operator is on the job and the station is not executing tasks.
     - Dark gray: The station is unavailable.
   - Task status
     - Green: The task is executed.
     - Blue: The task is planned.
     - Yellow: The task is paused.
     - Dark gray: The task is pended.

- Help-seeking status: When the current station is in help-seeking status, the red indicator light appears. If the current station is not in help-seeking status, the red indicator light disappears.

2. Data monitoring area: It is used to show the following:
   - Program files: Program files of the current station.
   - Machining count: Finished count of the current station.
   - Station status: Idle, running, unavailable.
   - Total planned count: Total planned count of all task queues in the current station from counting:
     - If the task queue is deleted from the station: Total planned count = previous total planned count - planned count of the deleted task queue
     - If a task queue is created on the current station: Total planned count = previous total planned count + planned count of the new task queue
     - If other task queues are dragged to the current station during editing the task queue: Total planned count = previous total planned count + planned count of task queues dragged to the current station
     - If the task queue is dragged to other stations during editing the task queue: Total planned count = previous total planned count - planned count of the task queue dragged to other stations
   - Total machining count: The sum of finished count and scrapped count of all task queues in the current station from counting. Total machining count = finished count + scrapped count
   - Total cancelled count: Total cancelled count of all task queues in the current station after counting:
     - If the current task is cancelled: Total cancelled count = planned count of the cancelled task
     - If the current task is ended and the finished count are less than planned count: Total cancelled count = planned count of the task - finished count
     - If the task queue is deleted in the current station: Total cancelled count = planned count of the deleted task queue

- If the task queue is dragged to other stations during editing the task queue: Total cancelled count = planned count of the task queue dragged to other stations

– Total scrapped count: Total scrapped count of all task queues in the station from counting. After ending or cancelling the task, input the scrapped count of the task in the confirmation box.

– Total finished count: Total finished count of all task queues in the station from counting. After ending or cancelling the task, input the finished count of the task in the confirmation box.

3. Statistics area: It is used to show today's time distribution of station statuses on the pie chart. The color definition of the pie chart is the same with that of the station status.

4. Timeline of the task station: It is used to show today's time distribution of station statuses on the timeline. The color definition of the timeline is the same with that of the station status.

5. Task area: It is used to show the following information of historical tasks and current tasks:

   – Assigned tasks
   – Finished tasks
   – Scrapped tasks
   – Machining process
   – Task status(finished/cancelled)

6. Area for previewing program files: It is used to preview loaded program files in the current station.

   Supported file format: PDF, PNG, JPG, TXT (Encoding format: UTF-8).

7. Operation area: It is used to show available operations. Operator permission is required.

   –  : On the job / off the job. It is available in any station status.
   –  : Start tasks.
   –  : Stop tasks.
   –  : Pause tasks.

-  : Continue tasks.
-  : Seek help.
-  : Cancel the help-seeking status.

  After problems are solved, click it for cancelling the help-seeking status.
-  : Clear the total count.
-  : Accumulate the finished count.

  It is available only when the station is executing tasks. After clicking it, the total finished count is plus 1.
-  : Accumulate the scrapped count.

  It is available only when the station is executing tasks. After clicking it, the total scrapped count is plus 1.

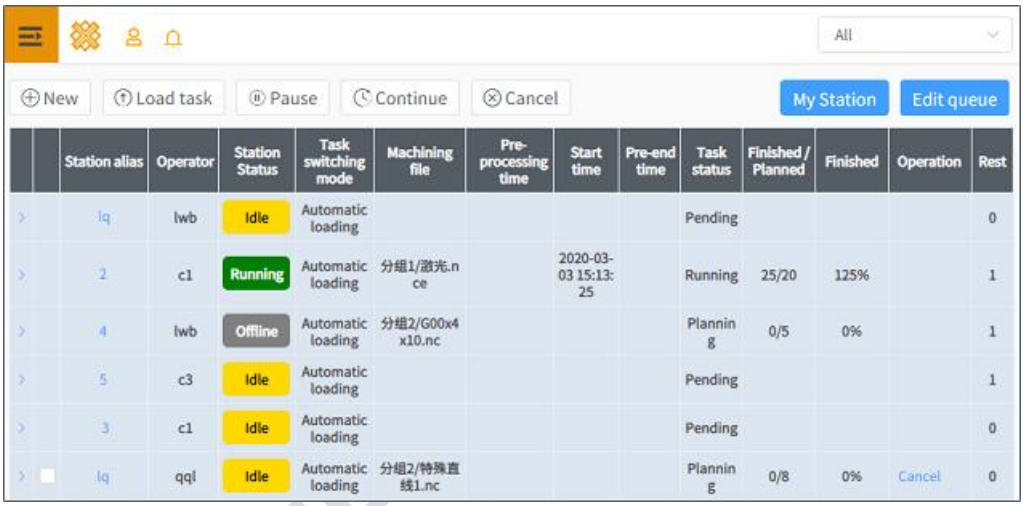
4.5.2 Manage Station Tasks

This operation is used to manage the station tasks, including assigning tasks to stations and checking the task status of all stations.

Permissions are required. See Details for Roles and Permissions for details.

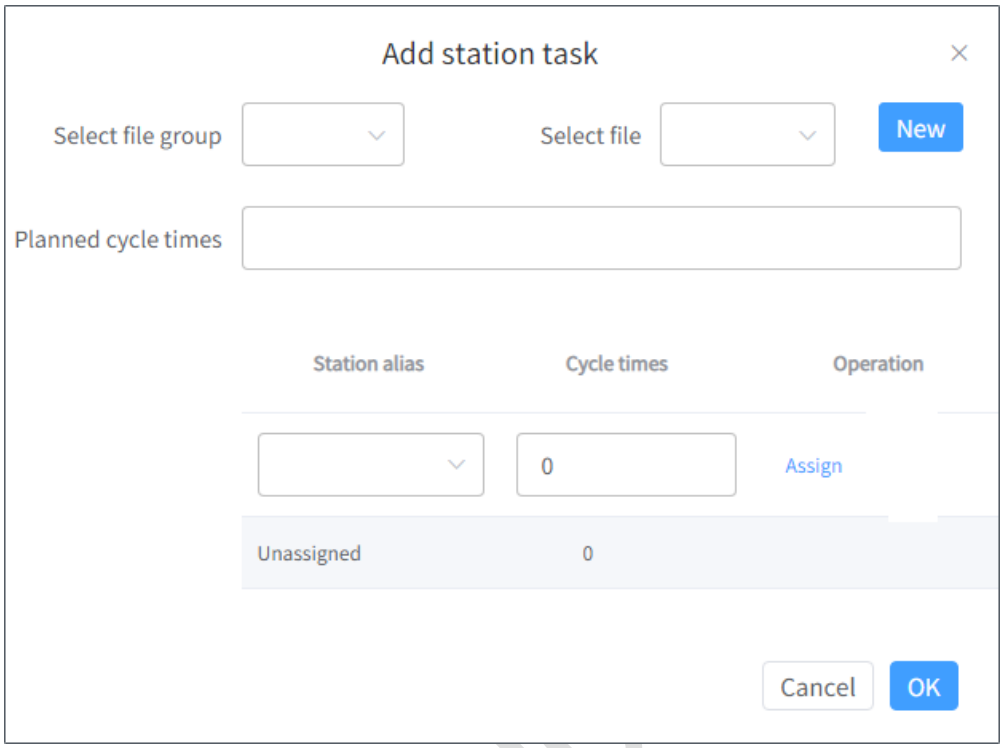
Taking the permission of the operator as an example, to manage station tasks, do the following:

1. To enter **Station Monitoring** interface, click  → **Station Management** → **Station task**:



2. To show the station list of the current operator, click **My Station**.
3. Do one of the following:
   - To assign the task to multiple stations at the same time, select multiple stations.
   - To assign the task to a station, select a single station.

4. To create a task, click **New**, do related settings in **Add station task** dialog box:



The new task shows in task queues of the corresponding stations.

5. Click **Load task**. The task is loaded to a single station, or to multiple stations at the same time.

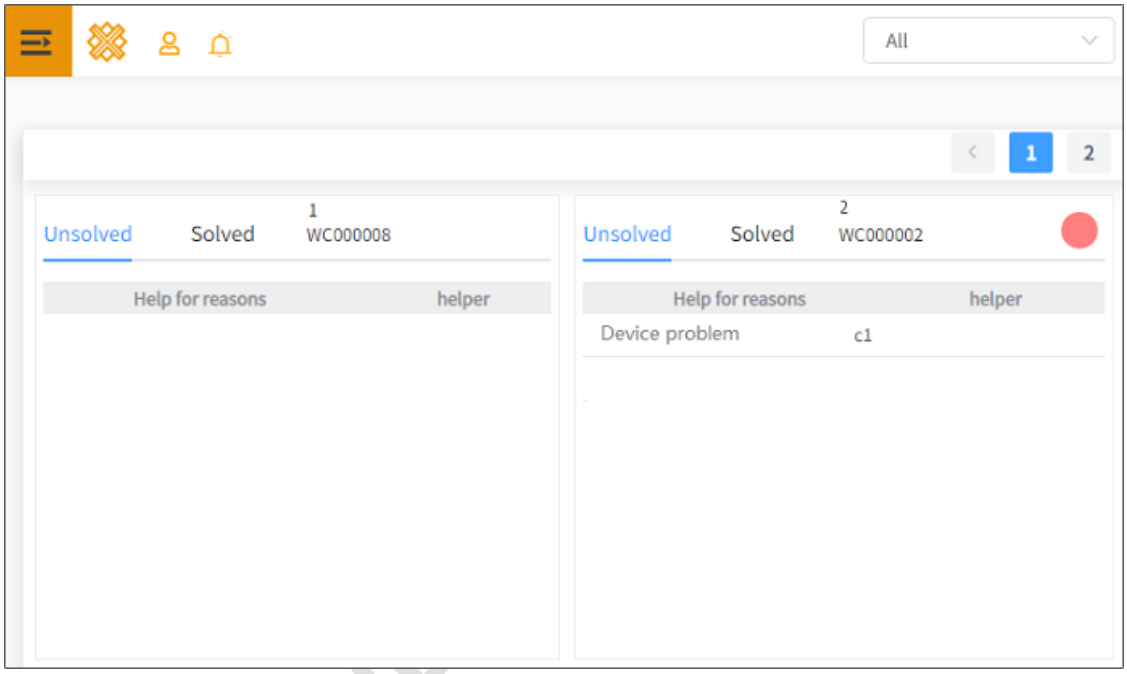
Note: The operator should start the task in the interface of station detail and cannot start the task by batch. When the station is offline, the task also cannot be started.

6. **Optional:** After starting the task, do one of the following:
   - To pause the task, click **Pause**.
   - To continue the task, click **Continue**.
   - To cancel the task, click **Cancel**.
7. **Optional:** To create tasks for the task queue, click **Edit queue**, drag the target tasks to the target queue and click **Save**.

4.5.3 Use Station Help

This operation is used to check help-seeking information of all stations, including help-seeking reasons and helpers.

To enter **Station Help** interface, click  → **Station Management** → **Station help**:



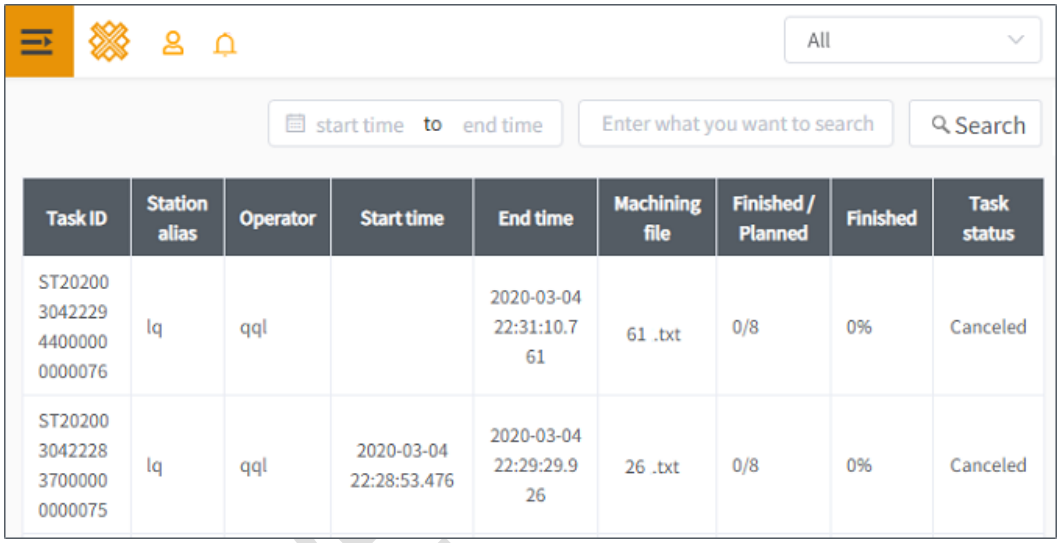
The single station module shows the station name and the station ID. When the station is in seeking help status, the red indicator light appears on its station module.

4.5.4 Check Historical Tasks

This operation is used to check historical tasks of all stations, including the station name, operator name, start time / end time of tasks, name of program file, number of finished tasks and planned ones, machining process, task status(cancelled/finished).

To check historical tasks, do the following:

1. To enter **Station History** interface, click  → **Station Management** → **Station History**:



2. To search the information about the historical task of the target station, do one of the following and click **Search**:
   - Select the start time and end time.
   - Input keywords.

     Supported keywords: Station alias, operator name, name of the program file.

3. Check related information of historical tasks.

4.6 Use Quality Control

This operation is used to control quality by tracing products and executing production statistics.

It includes the following:

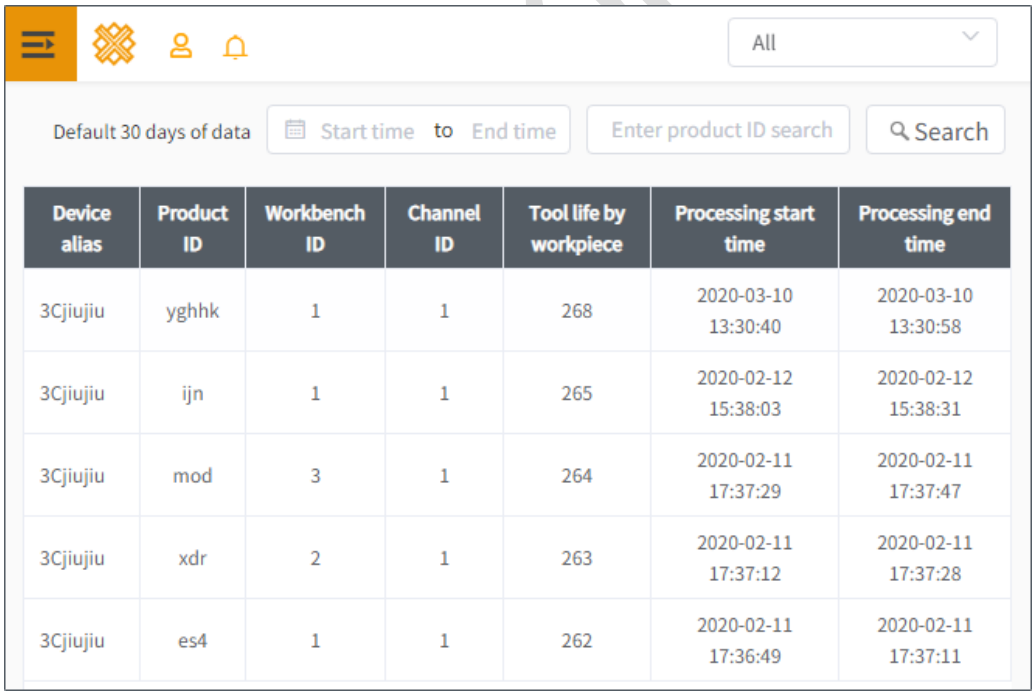
- Trace products.
- Execute production statistics.

4.6.1 Trace Products

This operation is used to trace product, namely, check information of machined products, including the machine tool alias, product ID, workbench ID, channel ID, finished count of tools, start time / end time of products.

To trace products, do the following:

1. To enter **Product Trace** interface, click → **Quality Control** → **Product Trace**:



Device alias	Product ID	Workbench ID	Channel ID	Tool life by workpiece	Processing start time	Processing end time
3Cjiujiu	yghhk	1	1	268	2020-03-10 13:30:40	2020-03-10 13:30:58
3Cjiujiu	ijn	1	1	265	2020-02-12 15:38:03	2020-02-12 15:38:31
3Cjiujiu	mod	3	1	264	2020-02-11 17:37:29	2020-02-11 17:37:47
3Cjiujiu	xdr	2	1	263	2020-02-11 17:37:12	2020-02-11 17:37:28
3Cjiujiu	es4	1	1	262	2020-02-11 17:36:49	2020-02-11 17:37:11

2. **Optional:** Select the target single machine tool or group in the upper right corner.

3. To search information of machined products, do one of the following and click **Search**:

   - Select the start time and end time.
   - Input the product ID.

The information of machined products shows in **Product Trace** interface.

Note: When the machine tool is deleted, the alias of the machine tool cannot show, but the machine tool ID can do.

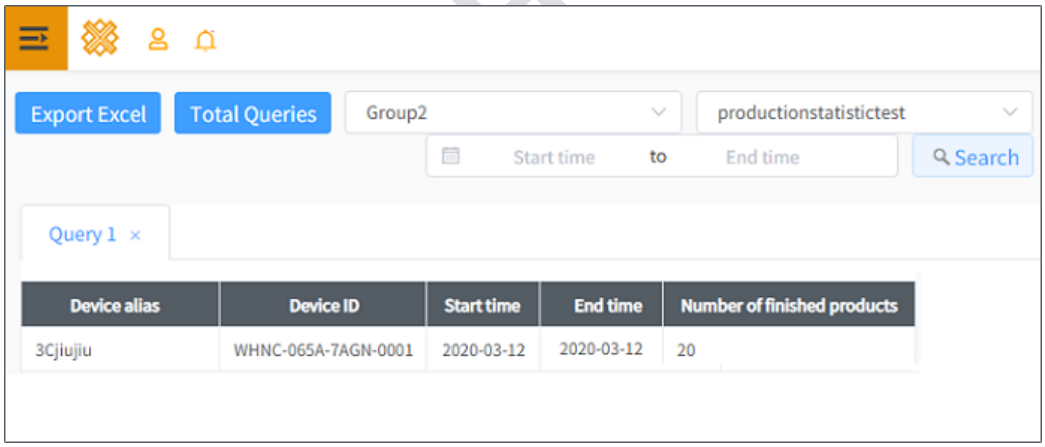
4.6.2 Execute Production Statistics

This operation is used to execute production statistics about machined count according to the target group, work shift and date. You can check results of each query and details of all queries.

To execute the production statistics, do the following:

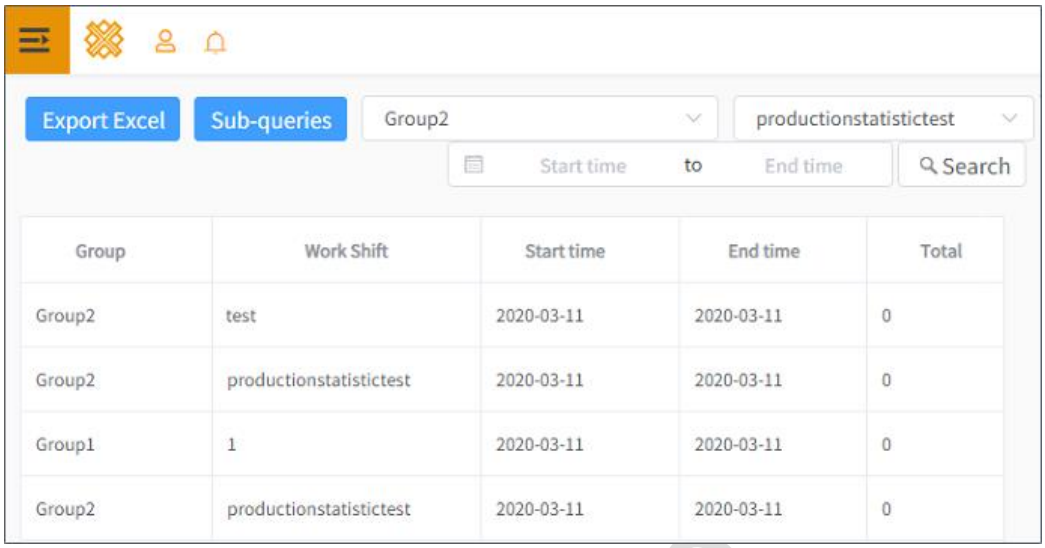
1. To enter **Product Statistics** interface, click → **Quality Control** → **Product Statistics**.

2. Select the target group, work shift, start time, end time and click **Search**:



   It is default to show the result of each query.

3. **Optional:** To show details of all queries, click **Total Queries**:



4. **Optional:** To export the result to an **EXCEL** file, click **Export EXCEL**.

4.7 Use Performance Appraisal

Based on the work shift of every group, **xFactory** computes related data of the target single machine tool or group according to the day, week or month, including the effectiveness (OEE and utilization), distribution of working hour. You can check effectiveness and distribution of working hours by the calendar view and timeline view.

Before using performance appraisal, set the work shift.

It includes the following:

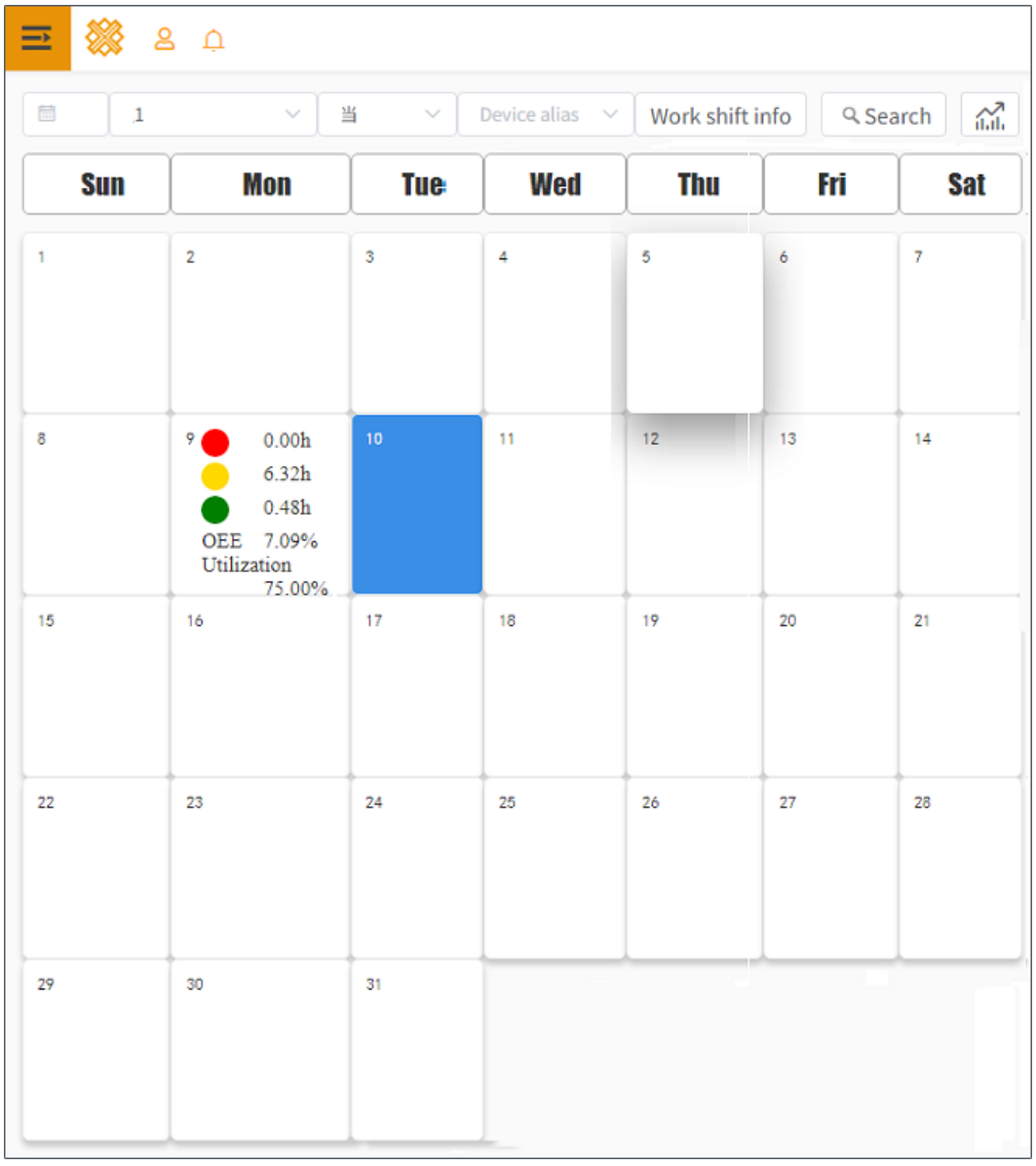
- Check the calendar view.
- Check the timeline view.
- Check deleted data.

4.7.1 Check the Calendar View

This operation is used to check related data of the target single machine tool or group in a certain work shift by the calendar view, including the effectiveness and distribution of working hours.

To check the calendar view, do the following:

1. To enter **Personnel performance** interface, click  → **Performance appraisal** → **Personnel performance**:



The current date is highlighted with blue.

2. Select the target month, group and work shift.
3. Click **Search** and check related information.

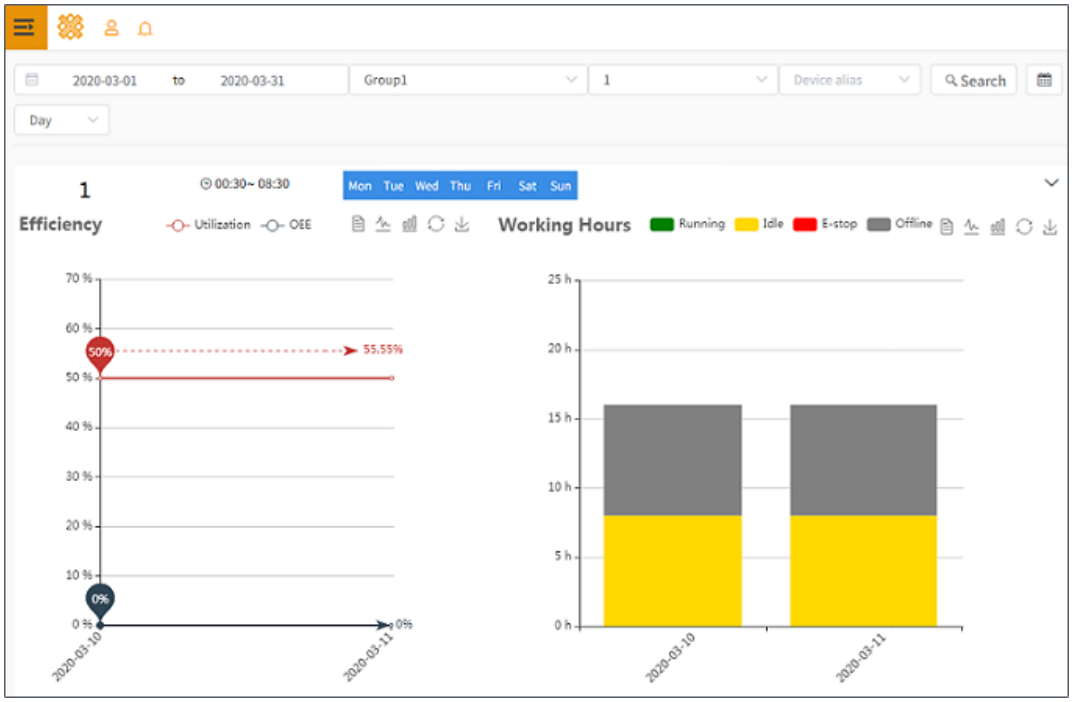
4.7.2 Check the Timeline View

This operation is used to check related data of the target single machine tool or group in a certain work shift by the timeline view, including the effectiveness and distribution of working hours.

To check the timeline view, do the following:

1. To enter **Personnel performance** interface, click  → **Performance appraisal** → **Personnel performance**.

2. To switch to timeline view with date as X-axis from the calendar view, click  :



3. Select the target date (year, month or day), group and work shift.

4. Click **Search** and check related information.

4.7.3 Check Deleted Data

This operation is used to check data of deleted groups, machine tools or work shifts up to the deleting date.

To check deleted data, click  → **Performance appraisal** → **Abandoned**.

4.8 Use Asset Performance

This operation is used to check related data of the target single machine tool or group by statistics charts or comparison charts, including the effectiveness and distribution of working hours. As a result, you can know the target machine tools for asset performance.

It includes the following:

- Check statistics charts.
- Check comparison charts.

4.8.1 Check Statistics Charts

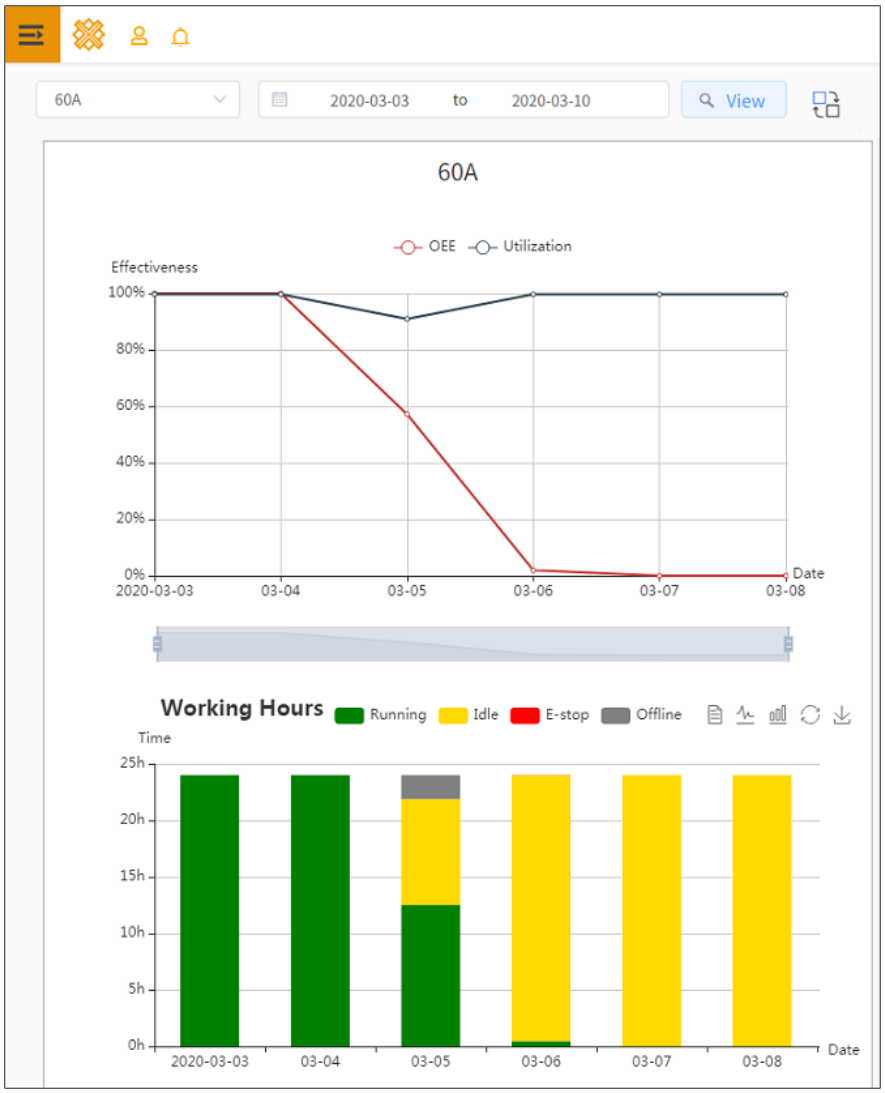
This operation is used to check related data of the target single machine tool or group by statistics charts, including the effectiveness and distribution of working hours.

Statistics charts include a line chart for effectiveness and the following types for the distribution of working hours:

- Bar chart
- Line chart
- Data view

To check statistics charts, do the following:

1. To enter **Asset Performance** interface, click  → **Performance appraisal** → **Asset Performance**:



2. Select the target single machine tool or group, start time and end time.

3. Click **View**. The following charts show:

   - Effectiveness chart

     With date as X-axis, effectiveness as Y-axis, the chart counts OEE and utilization of every machine tool.

     The red line represents OEE, and the dark gray line utilization.

     OEE = Running hours / (Running hours + Idle hours + E-stop hours) * 100%

     Utilization = (Running hours + Idle hours + E-stop hours) / total counting hours * 100%

   - Working hour chart

     With date as X-axis, working hours as Y-axis, the chart counts working hours of every machine tool on the corresponding date.

     Green represents running status, yellow idle status, red E-stop status, dark gray offline status.

     Note: Dates without statistical data do not show.

4. **Optional:** To check the data of the target period, drag the light blue bar under the chart.

4.8.2 Check Comparison Charts

This operation is used to check related data of the target single machine tool or group by statistics charts, including the effectiveness and distribution of working hour.

Comparison charts include the OEE chart, utilization chart and working hour chart. You can check comparison charts at the same time by one click.

To check comparison charts, do the following:

1. To enter **Asset Performance** interface, click  → **Performance appraisal** → **Asset Performance**.

2. To switch to the comparison chart from statistics charts, click  .

3. Select the target machine tool or group in the dropdown box and select the start time and end time.

4. Click **Compare**. The comparison charts show:

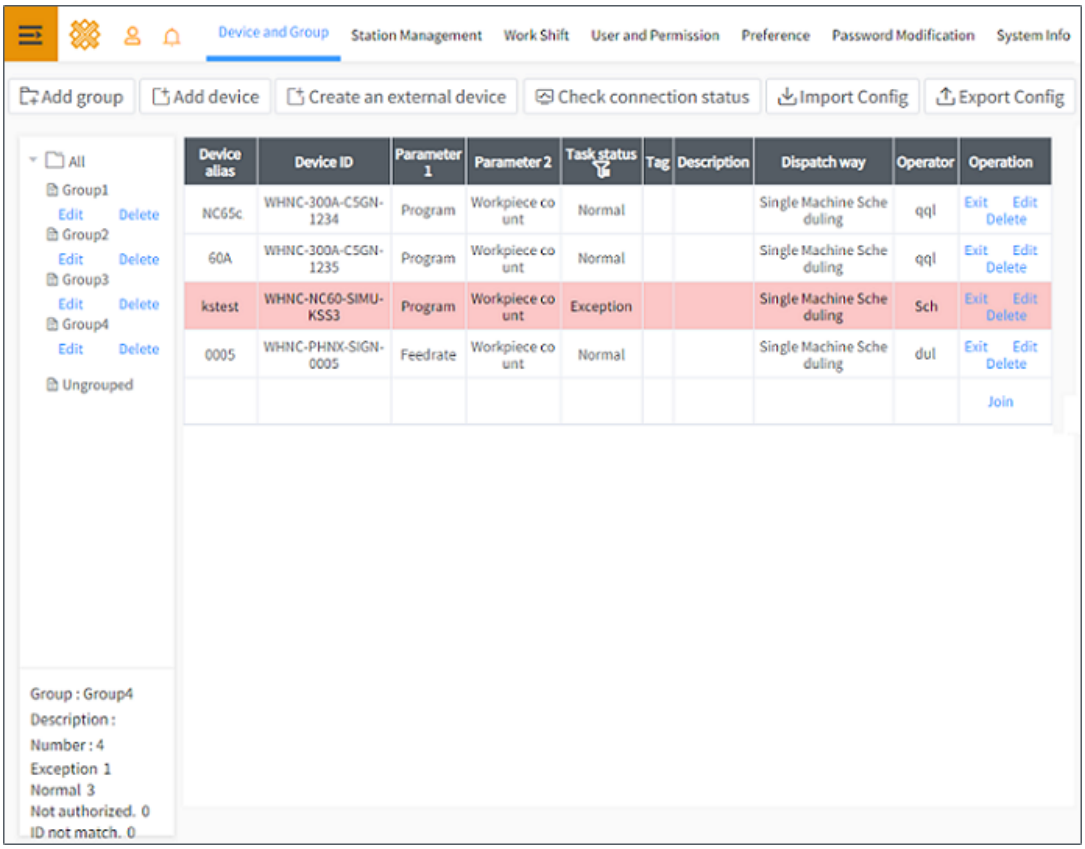
5. **Optional:** To hide the data of a certain machine tool, click its name in the upper of the OEE chart or the utilization chart.

4.9 Use System Setup

This operation is used to manage machine tools and their groups, set the work shift, check users and permissions, set the preference, modify the password and check system information.

To use system setup, do the following:

1. To enter **System Setup** interface, click  → **System Setup**:



2. Do one of the following:

   - Manage machine tools and their groups.
   - Set the work shift.
   - Check users and permissions.
   - Set the preference.
   - Modify the password.
   - Use system information.

4.9.1 Manage Machine Tools and Their Groups

This operation is used to check related information, manage machine tools and their groups and back up configuration of CNC systems. Administrator permission is required.

To manage machine tools and groups, do the following:

1. To enter **Devices and Groups** interface, click **Device and Group** in **System Setup** interface.

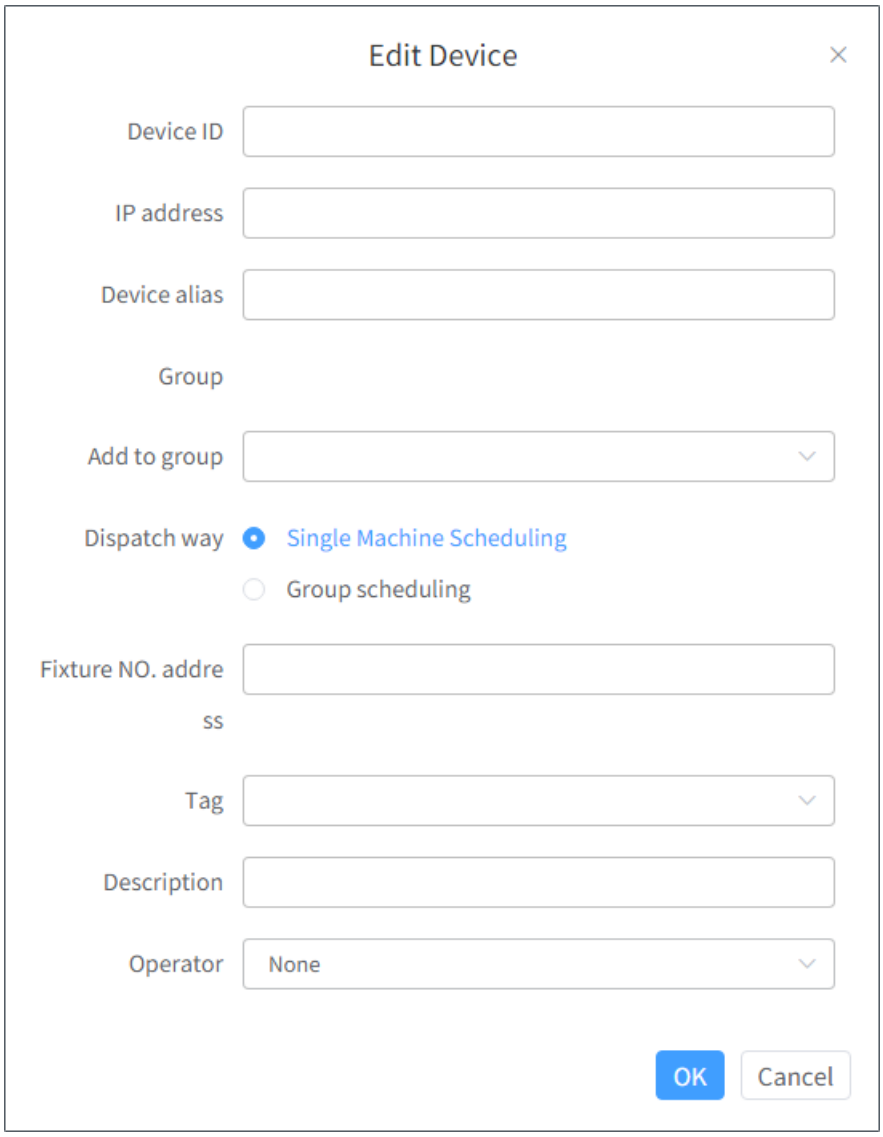
2. Do one of the following:

   - Add machine tools.
   - Add machine tools to a group.
   - Back up the configuration of the CNC system.

4.9.1.1 Add Machine Tools

To add machine tools, do the following:

1. Click **Add Device** in **Devices and Groups** interface, **Edit Device** dialog box pops up:



2. Do related settings and click **OK**. The connection with the machine tool is created.
3. **Optional:** To modify related settings, click **Edit** in the left list.
4. **Optional:** To disconnect the machine tool with **xFactory**, click **Cancel** in the left list.

4.9.1.2 Add Machine Tools to a Group

To add machine tools to a group, do the following:

1. To create a group, click **Add Group**, do related settings and click **OK**.
2. To add machine tools to the group, do one of the following:
   - Drag the target machine tools to the group by your mouse.
   - Click **Join** in **Operation** column and the select target machine tools.

Note: Ungroup is the default group and cannot be deleted. Machine tools within it are not specified to a certain group. And a machine tool can be added to multiple groups. The role of **Administrator** can specify machine tools to groups according to his company.

4.9.1.3 Back up the Configuration of the CNC System

To back up the configuration of the CNC system, do the following:

1. Click **Export Config** and back up the configuration of the CNC system to the target disk.
2. **Optional:** If the configuration of the CNC system is lost, click **Import Config**, select the target configuration file and import it.

4.9.2 Set the Work Shift

This operation is used to set the work shift for the target groups. Administrator permission is required.

To set the work shift, do the following:

1. Click **Work Shift** in **System Setup** interface.
2. Check the target groups.
3. Click **New Shift**. The following dialog box pops up:

4. Select the start time, end time and workday.

   Note: The start time must be earlier than the end time.

   Next day, **That day** and **Pre day** can be set. And **That day** means today, not a specific day.

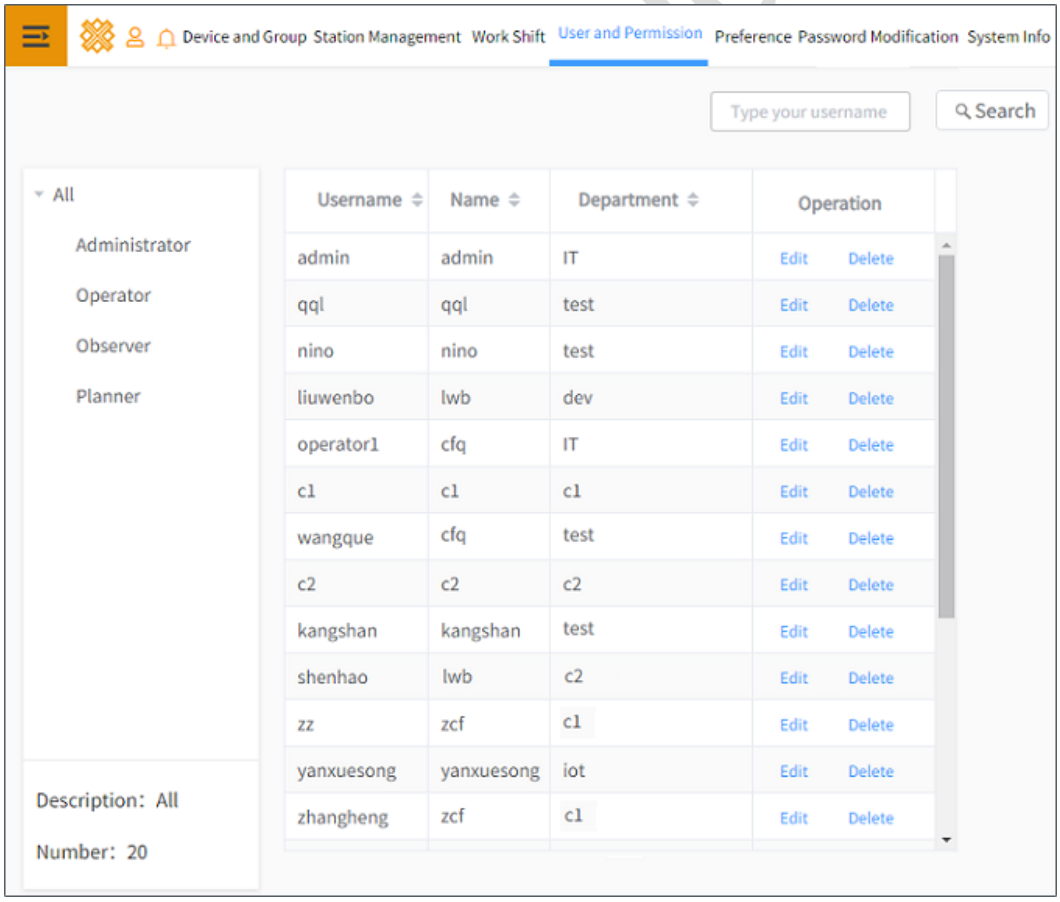
   Workday means that the statistics includes the data on workday. Assuming today is the 24th, Monday, but the work shift has no Monday, the data on the 24th cannot be counted up.

4.9.3 Check Users and Permissions

This operation is used to check information about users and their permissions. The user of **xFactory** can play only one role.

To check users and permissions, do the following:

1. To enter **User and Permission** interface, click **User and Permission** in **System Setup** interface:



2. To check information of the target role, click the target roles in the left list.

   User information includes account names, user names and users' departments.

4.9.3.1 Details for Roles and Permissions

Role	Target Users	Add Machine Tools and Groups	Add Users	Create and Execute Tasks	Create Program Files	Check Data
Administrator	Information managers, production managers, workshop directors, class leaders	√	√	×	√	√
Operator	Operators of machine tool, maintainers, production planners	×	×	√	√	√
Observer	People not in the front line of production	×	×	×	√	√

Tip:

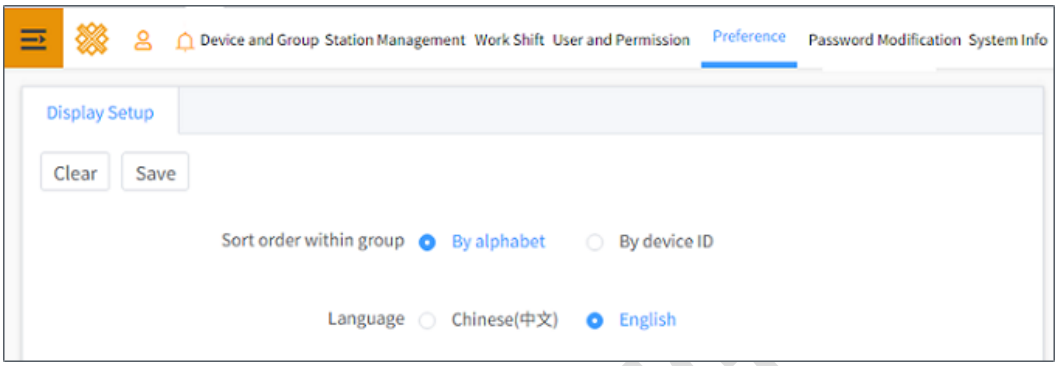
- The role of super administrators cannot edit the task queue. But, this role can delete the task queue created by the role of administrators.
- The role of operators can edit the task queue at the same time.
- The role of operators and the role of planners cannot edit the task queue at the same time, nor can the role of planners. Otherwise, the prompt *The task is edited.* occurs.
- Operators can only create and execute tasks for their own machine tools. In this way, operations between one operator and the other will not be affected.

4.9.4 Set the Preference

This operation is used to set the preference for display interfaces, including the way to sort machine tools in groups and language.

To set the preference, do the following:

1. To enter **Preference** interface, click **Preference** in **System Setup** interface:



2. To set the display according to your preference, set the following:
   - Way to sort machine tools in groups

     Machine tools can be sorted by alphabet or their IDs.
   - Language

     English and Chinese are supported.

4.9.5 Modify the Password

To modify the password, do the following:

1. To enter **Password Modification** interface, click **Password Modification** in **System Setup** interface.
2. Input the old password and the new password.

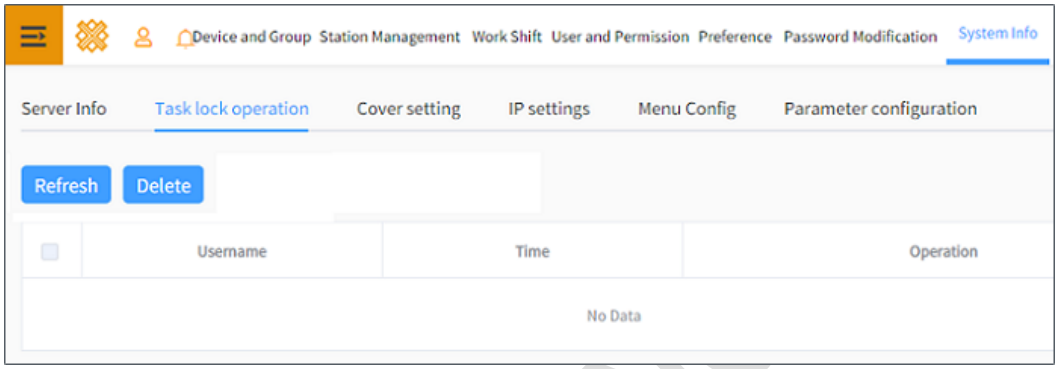
If you forget the old password, contact administrators.

4.9.6 Use System Information

This operation is used to check server information, authorize **xFactory** and execute tasks. Server information includes the IP address, number of authorized machine tools, expiration date, system version and copyright.

To use system information, do the following:

1. To enter **System Info** interface, click **System Info** in **System Setup** interface:



2. Do one of the following:

   - Check server information, including the following:
     - IP address
     - Number of authorized machine tools
     - Expiration date
     - System version
     - Copyright
   - Authorize **xFactory**.
   - With administrator permission, to execute tasks, do the following:
     1. To enter **Task lock operation** interface, click **Task lock operation**.
     2. To delete or refresh task queues of operators and planners, click **Delete** or **Refresh**.

5 Application Scenarios

This part introduces roles of **xFactory** and their permissions.

xFactory has the following roles:

- Executive
- Production manager
- Maintainer
- Production planner
- Operator

Note: Only the administrator can add a role.

5.1 Executive

This role is concerned about the production of machine tools and the working condition of employees. And the use of **xFactory** can effectively solve the problems of information delay and inaccurate information.

After the administrator adds an **executive** role and the role logs in **xFactory**, the role owns the following permissions:

- Device monitoring: Check the production and running status of each workshop and all machine tools in real time.
- Asset performance: Check the distribution of working hours and production efficiency (e.g. OEE, utilization).
- Performance appraisal: Monitor the working condition of machine tools and employees in each shift.

5.2 Production Manager

This role is concerned about the overall production status of the workshop and machine tools, and how to optimize production processes and improve production efficiency by coordinating production. And the use of **xFactory** can effectively solve the problems of insufficient processing of A parts and excessive processing of B parts of the same product, caused by arranging technic processes based on experience.

After the administrator adds a **production manager** role and the role logs in **xFactory**, the role owns the following permissions:

- Task management: Trace the overall progress of all machine tools that execute the same program file by progress statistics of tasks, so as to easily control the overall production.

- Device monitoring: Check the production and running status of each workshop and all machine tools in real-time.
- Asset performance: Check the distribution of working hours and production efficiency (e.g. OEE, utilization).
- Performance appraisal: Monitor the working condition of machine tools and employees in each shift.

5.3 Maintainer

This role is concerned about the maintenance of machine tools. And the use of **xFactory** can effectively solve the problems of tedious process and low efficiency, caused by on-site support.

After the administrator adds a **maintainer** role and the role logs in **xFactory**, the role owns the following permissions:

- Device maintenance: Centrally manage tools (including add, enable, disable, scrap), record the accumulated usage status of tools, and check information of wearing parts for timely replacing wearing parts.
- Alarms Checking: Check alarms in the past, intelligent alarms and data statistics of alarms for timely and quickly solving related problems.

5.4 Production Planner

This role is concerned about production coordination and task distribution. And the use of **xFactory** can effectively solve the problems of low efficiency and error-proneness, caused by the distribution of program files by USB disks and manual statistics of production progress.

After the administrator adds a **production planner** role and the role logs in xFactory, the role owns the following permissions:

- Technics management: Centrally manage program files (including preview, download, delete) to reduce the error rate of file distribution.
- Task distribution: Create a new task by the added program files and deliver the new task to each machine tool.
- Device monitoring: Check the production and running status of all machine tools in real-time.

5.5 Operator

This role is concerned about the execution of program files and machining tasks. And the use of **xFactory** can effectively solve the problems of insufficient machine tools, poor factory environment, and tired work.

After the administrator adds an **operator** role and the role logs in xFactory, the role owns the following permissions:

- Task management: Create new tasks and deliver them in batches, and check the machining progress of program files in real-time.
- Device monitoring: Remotely monitor running status of machine tools in real time, operate machine tools in batches, and manage multiple machine tools at the same time.

6 FAQs

This part includes frequently asked questions that you may have about the IIoT.

6.1 How to know if NcGateway has been installed in the current system?

Phenomenon

It is not sure that **NcGateway** is installed in the current system.

Solution

To check if **NcGateway** has been installed in the current system, do one of the following:

- For integrated CNC devices: Check if there is a **NcGateway** button on the operation interface.
- For control cards: Click **Start** → **All Programs**, and check if there is a **NcGateway** folder.

6.2 What to do when the QR code and the verification code cannot be displayed on the homepage of NcGateway?

Phenomenon

After starting **NcGateway**, the QR code and the verification code cannot successfully be displayed.

Cause

1. The CNC system is not connected to the Internet.
2. Do not run **NcStudio** and **NcGateway** as an administrator.
3. The Internet condition is bad.

Solution

1. Check the networking condition and confirm that the CNC system is properly connected to the Internet.
2. Run **NcStudio** and **NcGateway** as an administrator.
3. Wait for 30 seconds and press **F5** to regain the QR code and the verification code. Or open the manager and end **NcCloudAdapter.exe**, click **Start → All programs →NcGateway**, run **NcCloudAdapter.exe** as an administrator and restart **NcGateway**.

6.3 What to do if NcGateway fails to work after restarting the computer?

Phenomenon

Cannot start **NcGateway** after restarting the computer.

Solution

Check if NcCloudAdapter.exe process exists in the task manager:

- If it exists, see What to do when the QR code and the verification code cannot be displayed on the homepage of **NcGateway**? for details
- If it does not exist, click **Start → All Programs → NcGateway**, and run NcCloudAdapter as an administrator.

  To avoid such problem next time, please check if **NcCloudFirstRun** is prohibited from automatic startup after starting the computer by security softwares, like Tencent PC Manager.

6.4 What to do if the local data interface of NcGateway fails to work?

Phenomenon

The local data service of **NcGateway** fails to work.

Solution

1. Run **NcGateway** as an administrator and import the encrypted authorization file corresponding to the ID of a machine tool.
2. Click **MTC Service** to start the local data service.

6.5 Is reauthorization required when the ID of a machine tool is changed or a new operating system is installed?

Phenomenon

Reauthorization is required when the ID of a machine tool is changed or a new operating system is installed.

Cause

An authorization file is exclusive to the ID of a machine tool.

Solution

Ask for the other authorization file and import it again. See Authorize xFactory for details.

6.6 Which functions of NcGateway can be used without networking?

The following functions of **NcGateway** can be used without networking:

- Data authorization
- Local data interface
- Local data backup
- Registration

To use cloud data interface of NcCloud, online requirement and remote assistance, confirm that the CNC system has been connected to the Internet.

6.7 What to do if the database file is garbled when it is converted to a CSV file.

Phenomenon

Use **DB.Browser.for.SQLite** to export data from the database to a CSV file. But this CSV file is garbled.

Cause

Database files of NcCloud are encoded in UTF-8. However, a CSV file does not specify the encoding format. Therefore, if you open the file in Microsoft Excel in wrong encoding format, Chinese characters may become unreadable characters.

Solution

Manually set or select the encoding format when you open the CSV file.

6.8 Can I access xFactory with a domain name?

Phenomenon

You can access **xFactory** with a domain name.

Solution

Once **xFactory** deploys in working environment, you can access **xFactory** by inputting its IP address in any devices within the same network segment.

Taking **192.168.12.79** as an example, to access **xFactory** with the corresponding domain name, do one of the following:

- To parse the domain name equivalent to the IP address of **xFactory**, add a rule of parsing the domain name to enterprise network DNS server.

  `Parse dnc.weihong.com.cn or other domain names to 192.168.12.79`

- Modify file `hosts`.

  1. In the target computer, open file `hosts` as an administrator.

     The default path of the file is `C:\Windows\System32\drivers\etc\hosts`.

  2. Add the following line in file `hosts`:

     `192.168.12.79 dnc.weihong.com.cn`

7 Software License Agreement

Important—Read Carefully before Using This Product:

The term "Software Product" includes all copies of the licensed software and its documentation. This license agreement is a legal agreement between **You** (either an individual, a legal entity or any affiliated companies or other entities) and Weihong Electronic Technology Co., Ltd. (hereinafter referred to as **Weihong Company**). By installing, copying, or otherwise using the Software Product, you agree to be bound by the terms and conditions of this license. Unless otherwise stated in this agreement, you shall not use, copy, revise, rent, or transfer the Software product or any part of the Software Product for any other purposes.

Description of Further Rights and Restrictions:

1. You may install for use one copy of the Software Product on a single machine;
2. You may make a copy of the Software Product for archive or backup purposes and the copy is to be used on this machine only;
3. You may transfer the Software Product and the license agreement to a third party, provided that the third party accepts the terms and conditions stated in this agreement, with prior express permission from Weihong Company;
4. When transfer confirmed, you shall transfer all the copies of the original documents and the supplementary documents to the third party or destroy all the copies un-transferred.
5. You can use the Software Product on a network server or intranet server only if it is stipulated in explicit terms that you are allowed to use the Software Product on a network server or intranet server, or you have purchased license for each node and terminal using the Software Product;
6. You may NOT sublicense, assign or transfer the license agreement;
7. You may NOT or direct any third party to reverse engineer, decompile or disassemble the Software Product;
8. You may NOT copy or transfer the Software Product or any part of the Software Product unless otherwise expressly stated in this agreement;
9. The license agreement shall be terminated automatically upon you transfer the Software Product or copies of all or part of the Software Product to a third party.

Intellectual Property Rights Notice:

The Software Product and all intellectual property rights therein (including but not limited to any all copyrights, patents, trademarks, and publicity rights) are owned by Weihong Company. The Software Product is protected for Weihong Company on the basis of copyright law and international treaty provisions as well as on the basis of other laws and agreements regarding intellectual property. You are not allowed to remove the copyright statement made in the Software Product, and guarantee that you shall copy the copyright statement in all copies of the Software Product or of any part of the Software Product. You are obliged to stop any form of illegal copying of the Software Product and accompanying materials.

After-sales Guarantee:

Weihong Company guarantees that for 90 days from the date of shipment the software carrier will be free from defects in materials and workmanship. When such a defect has been confirmed, our only responsibility is to replace the software carrier. This remedy is your exclusive remedy. This after-sales guarantee is invalid for any carrier defect caused by accidents, abuses or maloperation. The replaced software carrier enjoys the remaining guarantee time of the original software carrier or of a 30-day guarantee time, whichever is longer.

Except as the after-sales guarantee made above, the Software Product does not enjoy any other form of after-sale guarantee.

Limitation of Liability:

The above guarantee, whether made explicitly or by implication, constitutes the entire contents of the guarantee, including guarantee for the commerciality and applicability of special application aim. Whether you follow other terms in this agreement or not, Weihong Company, as well as its agents and sales staff, will not be responsible for any profits loss, availability loss, business break-off or any forms of indirect, special, accidental or inevitable damage or claim made by any third party, generated from the using of the Software Product, even if Weihong Company has been informed of the possible occurrence of such events in advance.

Termination:

This license may be terminated by Weihong Company at any time once you violate any terms or conditions made in this agreement. Once the license is terminated, you are obliged to destroy all the copies of the Software Product or return them to Weihong Company.

Applicable Law:

Copyright Law, Regulations for the Protection of Computer Software, Patent Law and other relevant laws and regulations.

Now, we affirm that you have already read through this agreement and understood it thoroughly and agreed to comply with all of the terms and conditions of this agreement strictly.

Weihong Electronic Technology Co., Ltd.

SPECIALIZED / CONCENTRATED / FOCUSED

Shanghai Weihong Electronic Technology Co., Ltd.

Address: No. 1590, Huhang Rd., Fengxian, Shanghai, China, 201401

Hot-line: 400 882 9188

Website: www.weihong.com.cn/en