Table of Content

1.Overview

1.1 Software Introduction

This software is a Windows-based application designed for the configuration of **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** (also known as **the Controller** below), used to set relevant operational parameters for the Controller. **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** comes with a **Main Console ISN-24 G** and a **NFC Reader IFC 136 R**. All features and options of the program have been thoroughly considered.

Trademark Notice:

Product names, company names, and terms mentioned in the instructions may be trademarks or registered trademarks of other companies (e.g., Windows®). They are referenced herein solely for explanatory purposes, with no intent of infringement.

1.2 User Profile

This manual is designed for users with prior system training. Proficiency in basic Windows GUI operations is required.

1.3 Safety Regulation

Read all warnings and instructions!

Failure to follow the warnings and instructions may result in electric shock, fire, and/or other serious injuries.

Retain all warnings and instructions for future reference.

- All personnel involved in configuring **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** must be familiar with the operating instructions, especially the safety information and guidelines contained therein.

- Configuration of **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** may only be performed by properly authorized and trained personnel.

1.4 Intended Use

The **Bosch Smart Controller Configurator** program is solely intended for configuring **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R**.

1.5 System Operations

- Operating system: Windows 7 or later
- USB port 2.0
- Installed drivers: Corresponding 485-to-serial port driver
- Administrator permission

Additional hardware requirement:

- USB 2.0 Type A / 485 DB9 cable, double-shielded, maximum length 1 meter.
- Minimum PC display resolution: 1024×768.

1.6 Terms and Definitions

Terms	Definitions
Tool pairing	Refers to binding production line smart tools (e.g., electric screwdrivers) with the system through software, enabling parameter configuration and status monitoring.
Job table	A list of tightening jobs in manufacturing, containing information such as Job ID, name, and execution parameters.
Job source	The input source of job data, including manual entry, MES system integration, file import, etc.
Barcode setup	Configuring barcode rules to associate barcodes with tightening jobs, tools, and other data.
I/O configuration	Setting up input/output ports to enable the system to respond to sensor signals or trigger external device actions.
Buzzer	Configuring audible alarm logic to alert operators during abnormal operations.
Network setup	Configuring wired or wireless network parameters to ensure stable communication between devices and upper-level systems.

2. Software Installation and Launch

This software is a **portable version** that requires no additional installation. Users simply need to copy the software from the MicroSD card included in the package to their computer to start using it.

2.1 Installation Procedure

Prepare MicroSD card
Remove the MicroSD card from the packaging and connect it to your PC. The **Bosch Smart Controller.zip** compressed package can be found in the root directory.

Copy the software
Copy the ZIP file from the MicroSD card to any directory on your local computer (recommend to select D: drive or other non-system drives).

Extract the file

- Right-click the ZIP file and select "Extract Here" or "Extract to specified folder".
- Ensure all software files and configuration files are completely extracted.

2.2 Software Launch

1. Navigate to the extracted software directory.
2. Right-click the `Bosch Smart Controller Configurator.exe` icon and select "Run as administrator".
3. During **initial launch**， the software will automatically load default configuration files.

> **Important**: Do not run the software directly from the MicroSD card to avoid performance degradation and potential data corruption.

2.3 Connect with the controller

- Open the back cover of the Main Console and set dip switch `2` to the `ON` position to enable RS485 **Configuration** mode.
- Power on the Main Console.
- Connect the Main Console's 485 interface to your computer using the USB 2.0 Type A/485 DB9 cable.
- Check the assigned COM port in **Windows Device Manager**.
- In the **Bosch Smart Controller Configurator** software interface, select the corresponding COM port and click "Connect". Once successfully connected, you may begin the configuration.

3. Functional Module Description

3.1 Tool pairing

Bosch Industrial tools communicates with **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** via NFC communicaiton protocol (NFC - 13.56MHz, ISO/IEC 14443 & ISO/IEC 15693)

The **Tool pairing** feature serves two purposes:

- Configuring already paired tools.
- Ensuring the correct tools are used at the right workstations.

Tool pairing procedures

1. Plug the NFC reader into the USB port labeled `NFC` on the Main Console.
2. Open the back cover of the Main Console and set dip switch `1` to the `ON` position.
3. Power on the Main Console. The process LED on the Main Console will flash blue, indicating it has entered **Tool pairing** mode.
4. Place the tool's NFC chip near the NFC reader.
5. The process LED of the Main Console will flash green, indicating a successful pairing.
6. Switch off the Main Console. Set dip switches `2` and `3` on the Main Console to the `ON` position, then turn it on.
7. Use a USB 2.0 Type A / 485 DB9 cable to connect the Main Console’s 485 interface to the computer.
8. Under the **Tool pairing** page of the software, click "Read tool information" to retrieve the information of paired tools. Read to confirm that the correct tool is paired.

Manual pairing

The Controller can be paired with the power tools manually.

1. Enter the power tool PTID and UUID on the **Tool pairing** page of the software.
2. Click "Update to controller" to update the tool information to the Controller.

3.2 Job table

Job table displays all the tightening jobs created. Upon initial software launch, the default configuration file will be loaded. All subsequently created jobs will be saved to this configuration file. Below is the definition of the parameters:

Parameters	Definition
Job ID	Unique incremental code for the job.
Job name	User-defined name.
Tool model	Model number of Bosch Industrial tools.

Parameters	Definition
Number of screws	Specifies the required number of screws to be tightened. The system will trigger an alarm if the count is not reached.
Execution time (s)	The target execution time for this process. The system will trigger an alarm if the duration is exceeded.
Torque level	IDS series Industrial tools allow the setting of torque level.
Operation mode	Consists of 2 options: **Repeat** and **By command**. **Repeat** : After the tool returns to the holder, you can lift the tool and repeat the job. **By command**: The tool is locked after job done. The tool can only be activated by command via barcode scanning, 485 port input, I/O signal or reset button.
HMI lock	Lock the HMI panel on the tool to prevent operators from modifying tool parameters through the panel. Only IDS series Industrial tools have this feature.
Lock after finish	Lock tools after job completion. Only EXACT NFC series Industrial tools have this feature.
Extra screws count strategy	Define how the extra screws can be counted. 2 options available: **Increment on OK** or **Increment on OK and NOK**. Only EXACT NFC series Industrial tools have this feature.
Extra screws	Apart from the number of screws needed, extra screws allow operators to perform extra tightening as a buffer for error correction. Only EXACT NFC series Industrial tools have this feature.
Joint mode	2 options available: **Soft joint** or **Hard joint**. Only IDS series Industrial tools have this feature.

Create/ Edit/ Delete job

(a) Create job

- On the job table, click "Create job" button, then you can see the form for job creation.
- The content of the job will change according to the tool model. Below are the parameters that can be setup by tool model.

Parameters	ISR 18V-30P/PHX	IDS 18V-200 T	EXACT NFC
Number of screws	Y	Y	Y
Execution time (s)	Y	Y	Y
Torque level		Y	

Parameters	ISR 18V-30P/PHX	IDS 18V-200 T	EXACT NFC
Operation mode	Y	Y	Y
HMI lock		Y	
Lock after finish			Y
Extra screws count strategy			Y
Extra screws			Y
Joint mode		Y	

(b) Editing and deleting job

- After creating a job, you can edit or delete it. Simply select the "Edit" or "Delete" option on the job that needs modification or removal.

3.3 Job source

There are two types of job sources:

- **Static job**: Assigns a fixed job to the power tool. The tool will continuously execute this job until the job source is changed.
- **Dynamic job**: The job source comes from external signals, such as I/O input commands or barcode scanning. Once the Controller receives a signal, it will replace the job on the tool.

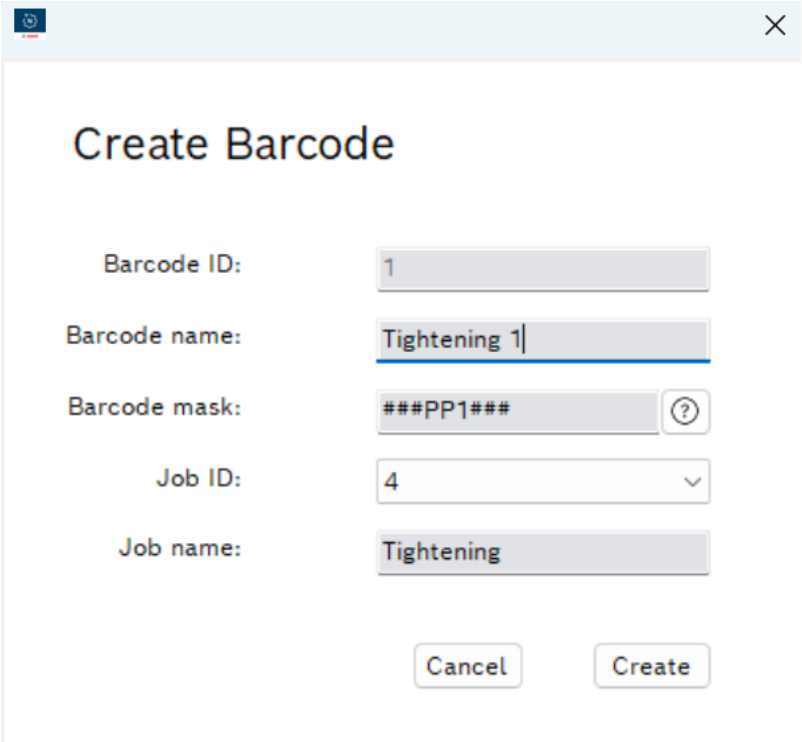
3.4 Barcode settings

Bosch Industrial Smart Controller supports switching job by scanning 1D barcodes or QR codes using a barcode scanner.

> **Prerequisites**: The barcode scanner must be set to "USB-HID" mode and add a carriage return after scanning. This can usually be done by scanning codes on the user manual of the scanner. Please note that different brands of barcode scanner may have different way of setting up. Please refer to the user manual of the scanner.

- The barcode scanner must be connected to the USB port labeled USB on the Main Console.
- In **Bosch Smart Controller Configurator** software, select "Dynamic" as the job source.
- On the barcode settings page, configure the barcode mask and associate it with a job. This means that when a barcode is scanned, the tool will switch to the corresponding job linked to that barcode.
- The barcode mask length must match the barcode length. The # symbol represents a placeholder. Example: ###PP1### means the mask has 9 characters, where "PP1" is the segment recognized by the barcode scanner. If the scanned barcode has 9 characters, and

the 4th to 6th characters are "PP1", the Controller will switch the job based on the barcode rule set.



3.5 I/O settings

The Controller is equipped with 12 digital I/O interfaces, including 4 input ports, 6 output ports and 2 GND. The input and output ports can handle 24V digital signals (high/low level) and are used for job switching, process reset etc. The output ports are wet contacts, which can be connected to indicator lights, PLCs, etc.

Both input and output ports can be configured through this software.

Input port settings

Each input port can be assigned with one event/ status. The Controller will respond to the input signal according to the event/ status assigned.

Event/status	Definition
Hold, no action	The Controller will not perform any actions.
Controller disabled	The Controller is disabled.
Controller enabled	The Controller is enabled.
Start a job	The Controller will execute the next job defined.

Output port setting

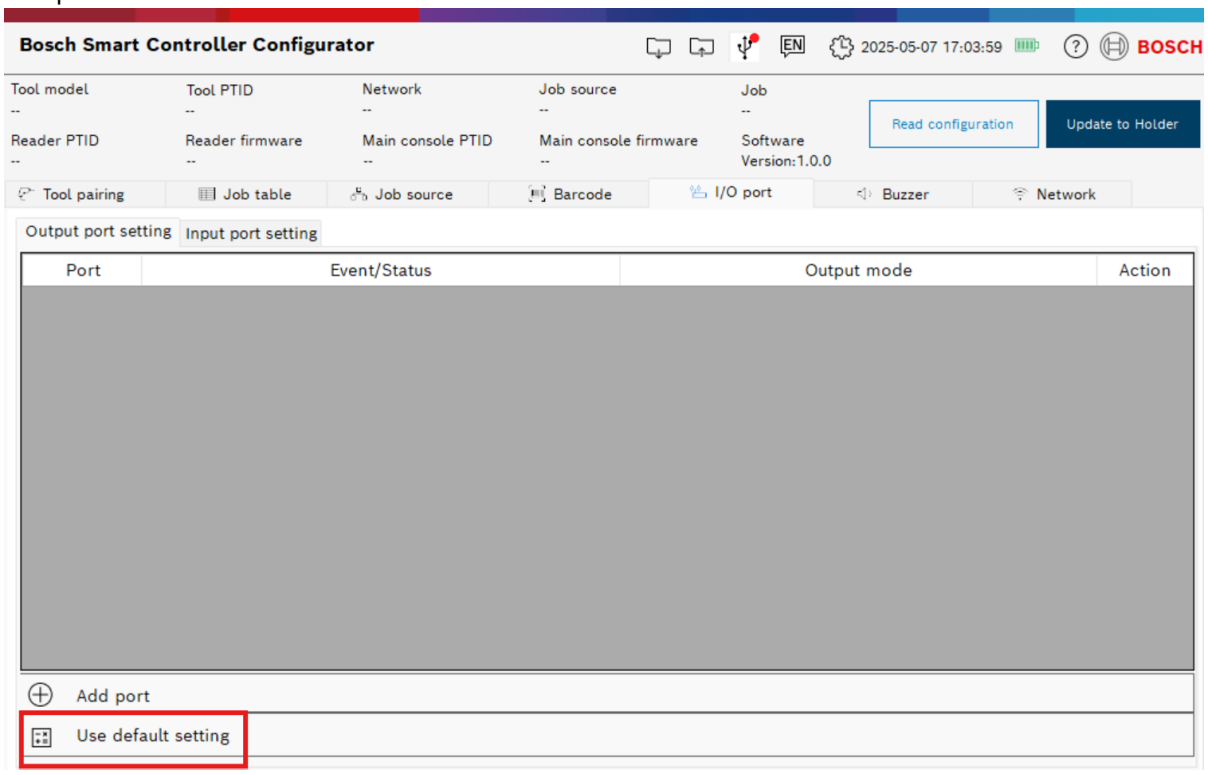
- There are 3 settings on output port:

Settings	Definition
Port	Select the port according to the port number and location indicated on the label of the Main Console.
Event/ Status	Specify the events or conditions that the port must handle or respond to.
Output mode	There are a total of 7 pulse output modes. Each event/ status can only has one output mode.

- One output port can support multiple events/ statuses.
- Every event/ status can only has one output mode.
- The I/O output port supports a maximum current of 200 mA. It is recommended to connect a relay to ensure circuit isolation.

Default settings for output ports

The software provides one default template for output port settings to assist users on the initial setup.



Port	Event/ Status	Output mode
Port 1	Detect correct tool	Constant on
Port 1	Job completed	Constant on
Port 1	Job reset	Constant pulse 300 ms

Port	Event/ Status	Output mode
Port 2	Job not completed	Constant pulse 300 ms
Port 3	Job overtime	Constant pulse 300 ms

- Take the tri-color indicator light as an example, Port 1 can be connected to green light to indicate the tool is correct and the job has completed.

3.6 Buzzer setting

The buzzer of the Controller will be triggered under different conditions of the job. The following are the buzzer's trigger conditions and response patterns.

Buzzer	Trigger condition
1 long beep	Job not completed
1 short beeps	Job completed/ The Controller has been reset successfully/ Data writing via NFC is successful
2 short beeps	The tool is not connected to the NFC reader during data writing.
3 short beeps	The tool ID does not match with the tool ID paired with the Controller.
4 short beeps	The tool model does not match with the tool model paired with the Controller.
5 short beeps	Data writing via NFC has failed.

The buzzer setting for job not completed

If the job is not completed due to missing screws, stripped screws, or improperly tightened screws, the buzzer will sound continuously until the job is completed and the tool is returned to the holder. You can switch the buzzer on or off for this job condition in this software.

- On the buzzer setting page, choose "ON" or "OFF".

3.7 Network setting

The Controller can connect to **Bosch Management Hub** via wireless or wired network.

- Before setting up the network, make sure the dip switch 3 is in the ON position.
- Before setting up the network, the network status LED on the Controller will be Red continously.

Connect to Wi-Fi network

- On the network setting page, select "Wi-Fi".
- Enter Wi-Fi SSID and password.

Connect to wired network

- On the network setting page, select "NET".
- For IP type, you can choose "Static" or "Dynamic". For static IP, fill in IP address and netmask (optional).

Setting the IP address of targeted device

- Enter the IP address, port and gateway IP for the server that hosts **Bosch Management Hub**.

Check network status

After completing the above network settings, if the network status LED of the Controller shows `Green` continously, it means the network has been connected successfully. If the network status LED on the Controller shows `Red` continously, it means the network connection has failed. You can try the following to resolve the issue.

- Check if the information of the network is correct, then click "Update to Controller" to ensure the network setting has been updated to the Controller.
- Restart the Controller.
- Check if the network router is turned on.

WPS network configuration

1. Make sure the WPS button on the router is pressed.
2. Press the WPS button on the Controller and wait for the wireless network to connect automatically.

3.8 Upload configuration to the Controller

When there is a need to configure multiple Controllers, you can download the configuration file of one Controller, then upload the configurtion file into the other Controllers.

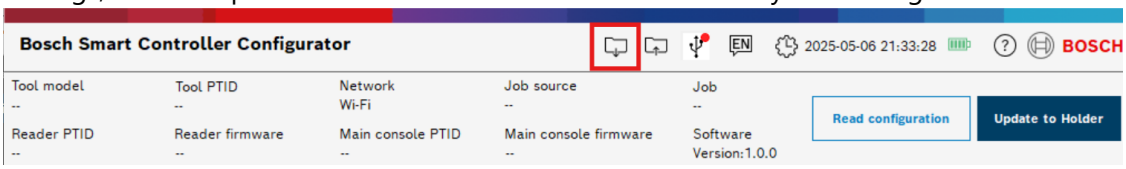
The following are the settings that can be done via the configuration file upload:

- Job source - when the job source is static, the configuration file will include the information of the static job.
- Output port setting
- Input port setting
- Buzzer setting
- Network setting

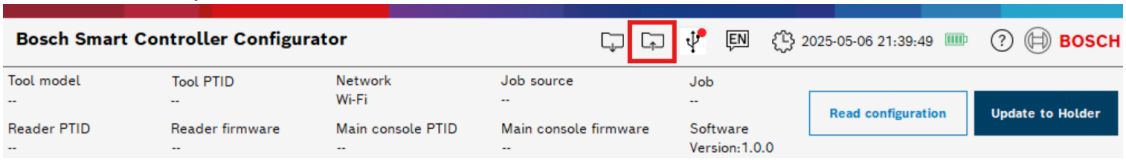
The configuratio file is in `ini` format. Please do not change the content of the configuration file to avoid upload failure.

Steps of uploading configuration file

1. Click on the "Download configuration file" icon in the menu. Review the preview of the configuration file to make sure that the content is correct. If you need to change the settings, close the preview and return to the software to modify the settings.



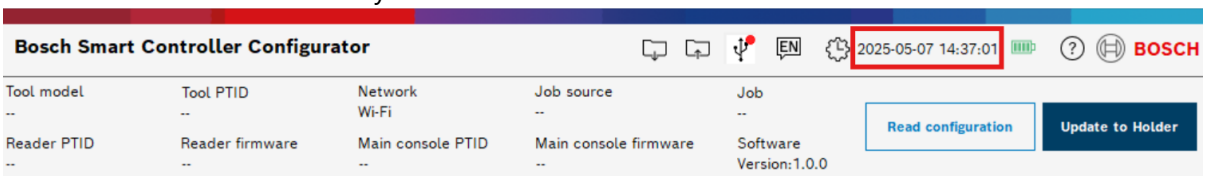
2. After confirming the configuration file is correct, click "Confirm" to save the configuration file.
3. **The new Controller must be paired with a tool first before uploading the configuration file.** Please refer 3.1 Tool pairing for the procedures.
4. Place the dip switch 2 of the new Controller to the `ON` position. Connect the new Controller to PC using a 485/USB connector.
5. Click on the "Upload configuration file" icon in the menu. Select the saved configuration file and click "Upload file".



6. After the file has been uploaded successfully, click "Upload to Controller". The content of the configuration file will be uploaded to the new Controller.

3.9 Time synchronization between the Controller and the software

Click on the date and time on the menu bar for time synchronization. The date and time of the Controller will be the same as your PC.



3.10 Coin cell status of the Controller

The coin cell power of the Controller can be checked via the battery icon on the menu bar.

- Green battery icon: the battery power is normal.
- Red battery icon with an indicator of less than 30%: The Controller does not have coin cell installed or the coin cell pwoer is too low. Please change the coin cell.

4. User Operating Guide

4.1 First-time configuration

When using **Bosch Industrial Smart Controller ISN-24 G + IFC 136 R** for the first time, please follow the below steps：

1. Open the back cover of the Main Console. Install the MicroSD card and coin cell.
2. Place the dip switch `1` to the `ON` position, then switch on the Controller. The process LED of the Controller flashes `Blue` light, which signaling the Controller has entered the **Tool pairing** mode.
3. Place the power tool on the NFC reader. The process LED of the Controller flashes `Green`, indicating the tool pairing is successful.
4. Switch off the power of the Controller. Place the dip switch `1` to the `OFF` position, then dip switch `2` and `3` to the `ON` position. The Controller enters **Configuration** and **Network setting** mode.
5. Connect the 485/USB cable to the RS485 port of the Controller and the USB port of your PC. Turn on the Controller. You can now use the software to configure the Controller.

4.2 General operating procedures

The following are the general operating procedures of using this software.

- Place the dip switch `2` and `3` of the Controller to `ON` position. The Controller enters **Configuration** and **Network setting** mode.
- Connect the 485/USB cable to the RS485 port of the Controller and the USB port of your PC. Turn on the Controller.
- Start the software on your PC and select the COM port connecting with the Controller. Once COM port has been connected successfully, you can configure the Controller using the software.
- After the configuration is set, click "Update to Controller" to upload the configuration to the Controller. The process LED of the Controller flashes `Green`, signaling it is in **Standby** mode.
- Click "Read configuration" to check the configuration, making sure that the configuration has been updated to the Controller.
- Place the power tool on the NFC reader and click on the reset button on the Main Console. The process LED shows `Green` with one short beep from the buzzer, indicating the configuration has been updated to the tool.

4.3 Troubleshooting

Problem	Possible reasons	Suggested solutions

Problem	Possible reasons	Suggested solutions
COM port connection failure	1.Select the wrong COM port	Check the COM port in the **Window Device Manager**
	2. The power of the Controller is off	Switch on the Controller
Configuration update failure	1. COM port disconnected	Re-connect COM port
	2. The power of the Controller is off	Switch on the Controller
Wrong I/O output	Wrong port number selection	Make sure the port number on the software matches the one on the Controller
I/O output has no response	Insufficient drive capability	Add an external driver circuit
Unable to connect to network（Network LED of the Controller shows `Red`）	1. Network configuration has not updated to the Controller successfully	Click "Update to Controller"
	2. Unstable network	Restart the Controller or try other network
	3. Wrong network information	Check the network parameters and update configuration

5. Software maintenance and upgrades

Software maintenance and upgrades will be carried out by Bosch. Your dealer will inform you about software maintenance and upgrades and provide the latest software package.

5.1 Software update procedures

Please contact your dealer to obtain the latest software package.

Procedures of updating the software

- After getting the latest software package, uncompress the folder and save the folder named `Release` to your desktop.
- Copy **barcode.xls** and **JobTable.xls** from the **old** software package to the new `Release` folder. Select copy and replace directly.

5.2 Log management

The operation log of the Controller will be saved to the MicroSD card. The file format is CSV.

The following is the content of the log:

Log items	Description
Event Type	The ID of the event
Device ID	The unique identifier (PTID) of the Controller
Timestamp	The timestamp of the event. It follows the time synchronization of the Controller and PC.
Cloud Serial No.	The data serial number of the data interaction with Bosch Management Hub
Source	The source of event
Data	The content of the data
Description	The description of the data

6. Contact information

If you have any questions or encounter any technical issues, please contact Bosch Service Center through your dealer.

目录

1.概述

1.1 软件简介

本软件是一款用于**Bosch Industrial Smart Controller 博世智能控制器 ISN-24 G + IFC 136 R**（也被称为**博世智能控制器**和**控制器**）配置的Windows 平台应用，用于设置**博世智能控制器**的相关使用参数。**博世智能控制器**有**主控机 ISN-24 G**和**NFC读取器 IFC 136 R**两个组件。程序的所有功能和选项都被考虑在内。操作说明中的产品名称，公司名称和名称可能是其他公司（例如WINDOWS®）的商标或注册商标，在本手册中仅以解释性方式提及，不存在侵权意图。

1.2 用户资料

操作说明是为接受过系统培训的用户所创建，必须了解Windows图形用户界面的基本功能。

1.3 安全规章

阅读所有警告和说明！ 不遵照以下警告和说明会导致电击、着火和/或其他严重伤害。 **请保存所有警告和说明书以备查阅。**

- 每个参与配置**博世智能控制器 ISN-24 G + IFC 136 R**的人员都必须熟悉操作说明，尤其是其中包含的安全信息和说明。
- **博世智能控制器 ISN-24 G + IFC 136 R**的配置只能由经过相应授权和培训的人员进行。

1.4 按照规定使用

Bosch Smart Controller Configurator 程序仅用于配置**博世智能控制器 ISN-24 G + IFC 136 R**。

1.5 系统前提条件

- 操作系统：Windows 7 以上的操作系统
- USB接口（2.0）
- 已安装相应485-串口驱动程序

- 管理员权限

另外需要的硬件有

- USB 2.0 A型/485 DB9 型， 双屏蔽，最大长度1米。
- 最低电脑显示要求：1024×768分辨率。

1.6 术语与定义

术语	定义
工具配对	指通过软件将生产线使用的智能工具（如电动螺丝刀）与系统绑定，实现参数配置与状态监控。
工序表	生产过程中各项作业步骤的清单，包含工序编号、名称、执行参数等信息。
工序来源	工序数据的输入来源，如手动录入、MES 系统对接、文件导入等。
条码设置	设定条码规则，使条码与工序、工具等数据关联，实现自动化匹配。
I/O设置	配置I/O输入输出端口，使系统能响应传感器信号或触发外部设备动作。
蜂鸣器	设定声音报警逻辑，以便在操作异常或任务完成时提醒操作人员。
网络设置	设定有线或无线网络参数，确保设备与上层系统稳定通信。

2. 软件安装与启动

本软件为**绿色免安装版本**，无需额外安装步骤，用户只需从包装盒内的 MicroSD 卡拷贝软件至电脑上，即可使用。

2.1 安装流程

准备 MicroSD 卡
从包装盒中取出MicroSD 卡，接入PC，在根目录下可看到 **Bosch Smart Controller.zip** 压缩包。

拷贝软件
将该 ZIP 文件从 MicroSD 卡复制到本地计算机的任意目录（建议选择 D 盘或其他非系统盘）。

解压文件

- 右键 ZIP 文件，选择“解压到当前文件夹”或“解压到指定目录”。
- 确保解压后包含完整的软件文件和配置文件。

2.2 软件启动

1. 进入解压后的软件目录。
2. **右键 `Bosch Smart Controller Configurator.exe` 图标，以管理员身份启动软件。**
3. **首次启动**时，软件会自动加载默认配置文件。

> **注意**：请勿直接在 MicroSD 卡上运行软件，以避免性能下降和数据损坏。

2.3 连接博世智能控制器 ISN-24 G + IFC 136 R

- 将主控机的后盖打开，将拨码开关2号置于ON位置，主控机进入RS485**配置模式。**
- 打开主控机的电源。
- 使用**USB 2.0 A型/485 DB9型线材**分别连接主控机的RS485接口和电脑。
- 进入 Windows电脑的**设备管理器**查看对应的COM端口。
- 在 **Bosch Smart Controller Configurator** 的COM端口界面选择对应的COM端口后，点击"连接"。连接成功后即可开始使用软件进行配置。

3. 功能模块说明

3.1 工具配对

博世电动工具通过NFC通信协议（NFC - 13.56MHz, ISO/IEC 14443 & ISO/IEC 15693） 与**博世智能控制器 ISN-24 G + IFC 136 R**进行通信。

工具配对有两个目的：一，对已配对工具进行配置。 二，确保正确的工具在对的工位上。

1. 将**NFC读取器**接入主控机上带有NFC 标识的USB接口， 将主控机的后盖打开，将拨码开关1号置于ON位置。
2. 打开主控机电源。主控机的工序LED显示蓝灯闪烁即进入**与工具配对的模式。**
3. 将工具的NFC芯片位置放到NFC读卡器上。主控机的工序LED显示绿灯闪烁即配对成功。
4. 将主控机的拨码开关2号和3号打开至ON位置。
5. 使用**USB 2.0 A型/485 DB9 型线材**分别连接主控机的RS485接口和电脑。将主控机电源打开。
6. 在工具配对页，点击 "读取工具信息"，即可获得已配对工具信息，可确认配对的工具型号正确。

手动配对

博世智能控制器和工具也可以进行手动配对。

1. 将工具PTID直接输入工具配对表的PTID输入框。
2. 点击 "更新配置"，将工具配对信息更新至控制器。

3.2 工序表

工序表展示已创建的所有工序。 初次使用软件时会加载默认**配置文件**，后续创建的工序均会保存在配置文件里。

以下是工序表上的参数和定义：

参数	定义
工序ID	工序的唯一编码，自增。
工序名称	自定义名称。
工具型号	博世电动工具的型号。
拧紧次数	可理解为该工序应该拧紧的螺钉数量。拧紧数量未达到即工序未完成, 控制器发出警报。
执行时间（秒）	该工序的目标执行时间。超过时长控制器便会发出警报。
扭矩档位	IDS系列工具可以设置扭矩档位.
执行模式	分为**重复执行**和**按命令执行**两项。**重复执行**是当工序完成将工具放入托架后，即可继续拿起工具执行同一个工序。 **按命令执行**是控制器需要收到来自网络/按钮/扫码枪/I/O口所发出的执行下一道工序的命令，才可提起工具进行操作。
HMI锁定	锁定工具上的HMI面板，不允许操作员通过面板更改工具参数。仅IDS系列工具有此功能。
完成后锁定	工序完成后锁定工具。仅EXACT NFC 系列工具有此功能。
额外拧紧数计数策略	定义如何计算额外拧紧次数，可选择仅计算OK的拧紧，或是OK和NOK均计数。仅EXACT NFC 系列工具有此功能。
额外拧紧数	除了工序所需的拧紧次数，是否允许操作员额外拧紧几颗螺丝作为操作缓冲或改进措施。仅EXACT NFC 系列工具有此功能。
动力模式	可选择**软连接**或**硬连接**动力模式。仅IDS系列工具有此功能。

添加/编辑/删除工序

(a)添加工序

- 工序列表上点击 “创建工序”按钮，即可看到创建工序的表格。
- 工序表格的参数根据工具型号的功能有所改变。以下为各个工具型号可设置的参数：

参数	ISR 18V-30P/PHX	IDS 18V-200 T	EXACT NFC
拧紧次数	Y	Y	Y

参数	ISR 18V-30P/PHX	IDS 18V-200 T	EXACT NFC
执行时间（秒）	Y	Y	Y
扭矩档位		Y	
执行模式	Y	Y	Y
HMI锁定		Y	
完成后锁定			Y
额外拧紧数计数策略			Y
额外拧紧数			Y
动力模式		Y	

(b)编辑和删除工序

- 工序创建之后进行编辑和删除。在需要更改或删除的工序上，选择“编辑”或“删除”操作即可。

3.3 工序来源

工序来源有两种：

- **固定工序**：即为电动工具指定一个固定工序。该电动工具将会持续执行该工序，直到工序来源被切换为止。
- **动态工序**：工序来源于外部信号，如I/O输入命令、条形码扫描等。只要控制器接到任一信号，便会替换工具上的工序。

3.4 条码设置

博世智能控制器 ISN-24 G + IFC 136 R支持通过扫码枪扫描一维码或二维码切换工序。

> **前置条件：** 扫码枪需设置工作模式为USB-HID模式。 扫码后确保自动添加回车。不同品牌的扫码枪可能有不同的配置方式。请参考扫码枪的使用手册。

执行步骤

- 扫码枪需要接到主控机上的带有USB标识的USB接口。
- **Bosch Smart Controller Configurator** 软件上选择工序来源“动态”。
- 条码页面上设置条码的掩码，并选择条码对应的工序。这意味着当该条码被扫描的时候，工具会切换到该条码对应的工序。
- 条码掩码的长度必须和条码的长度一致。# 是占位符。例子：###PP1###表示掩码有9位数， PP1是扫码枪识别的字段。当扫描的条码拥有9位数，并且第4到6位为“PP1”，控制器将根据条码规则切换工序。

3.5 I/O设置

博世智能控制器带有12路数字I/O接口，其中4路输入口，6路输出口，以及2路GND。输入和输出口可输入或输出24V数字信号（高/低电平），用于切换工序、工序复位、锁定或解锁工序等事件/状态。输出口为湿节点，可以接入指示灯，PLC等。输入和输出口均可在此软件上进行配置。

输入口设置

- 每个输入口可选择一个输入事件。 当收到收入信号后，控制器会根据所设置的事件做出响应。

事件	定义
不执行任何操作	控制器不做任何响应。
控制器禁用	控制器被锁定。
控制器启用	控制器被解锁。
开始一个工序	控制器开始执行下一道工序。在设置上可选择要执行的工序。

输出口设置

- 输出口有三个设置项：

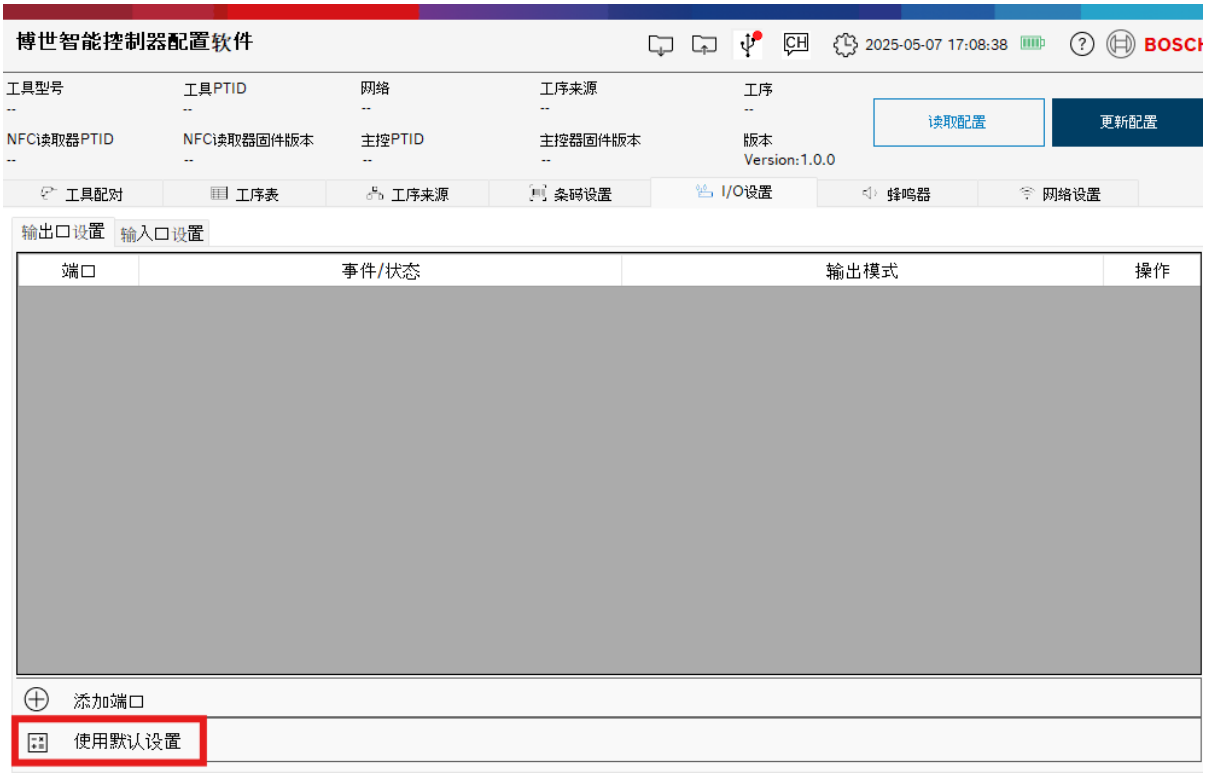
设置	定义
端口	按照主控机的标签上显示的端口编码和位置，选择需要配置的端口。
事件/状态	选择端口需要响应的事件、工具或工序的状态。

设置	定义
输出模式	共有7种脉冲输出模式。每个事件/状态仅可选择一种输出模式。

- 一个输出口可以支持多个事件/状态。
- 每个事件/状态只能选择一种输出模式。
- I/O输出口支持最大电流200毫安，建议接继电器使用，确保电路隔离。

输出口默认设置

软件提供了一个I/O输出口默认设置模板， 帮助用户快速设置I/O输出口。



端口	事件/状态	输出模式
Port 1	识别正确的工具	常亮
Port 1	工序完成	常亮
Port 1	工序重置	持续脉冲300毫秒
Port 2	工序未完成	持续脉冲300毫秒
Port 3	工序超时	持续脉冲300毫秒

- 以三色指示灯为例， Port 1可以接至绿灯，以显示工具正确和工序完成状态，以此类推。

3.6 蜂鸣器

博世智能控制器的蜂鸣器会在不同的工序执行场景下被触发。以下是蜂鸣器的触发条件和表现形

式。

蜂鸣器	触发条件
长鸣	工序未完成。
短鸣 x 1	工序已完成/ 控制器重置成功/ NFC数据写入成功
短鸣 x 2	NFC数据写入时工具不在位。
短鸣 x 3	工具ID与控制器所配对的工具ID不匹配。
短鸣 x 4	工具型号与控制器所配对的工具型号不匹配。
短鸣 x 5	NFC数据写入失败。

工序未完成的蜂鸣器设置

当工序因漏拧、拧花或未拧紧导致工序未执行完成时，控制器的蜂鸣器便会响起，并且持续长鸣，直到工序完成，工具放回托架上为止。工序未完成的蜂鸣器状态可通过此软件进行**静音**或**启用**的设置。

- 在蜂鸣器设置页上，选择“开启”或“关闭”。

3.7 网络设置

博世智能控制器可连接无线和有线网络，以连接**博世智能控制中心 Management Hub**。

> 在配置网络前，确保主控机上的拨码开关3号打开至ON位置。在未完成网络配置前，主控机上的网络状态LED将显示红灯常亮。

使用无线Wi-Fi连接

- 在网络设置页，选择“Wi-Fi”。
- 输入Wi-Fi SSID（无线网络名称）和密码。

使用网线连接

- 在网络设置页，选择“NET”。
- IP类型可选“静态”或 “动态”。若选择静态IP，需填写IP地址，并且根据需求填写子网掩码。

目标设备IP设置

- 此处设置安装**博世智能控制中心 Management Hub**的服务器IP地址、端口和网关IP地址。

网络状态检查

完成以上网络配置后，若主控机上的网络状态LED显示绿灯常亮， 即网络**连接成功**。若网络LED为红灯常亮，则网络**未连接成功**，可尝试通过以下步骤解决问题：

- 检查网络配置信息是否正确，重新点击 “更新配置”， 以确保网络配置成功更新至控制器。
- 重启控制器。
- 检查网络路由器是否打开。

WPS配网

1. 确保路由器的**WPS**按钮被按下。
2. 按下主控机的WPS按钮，等待无线网络自动连接。

3.8 上传配置至博世控制器

当需要同时对多个**博世控制器**进行配置时，可以下载其中一个控制器的配置文件，然后将配置文件上传至其他控制器，对控制器进行配置。可通过配置文件配置的项目有：

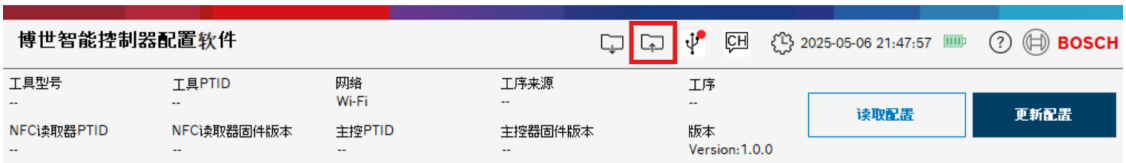
- 工序来源 - 若工序来源是固定工序，配置文件将包含所选择的固定工序信息。
- 输出口设置
- 输入口设置
- 蜂鸣器设置
- 网络设置

配置文件为ini格式。请勿修改配置文件的内容，以免配置文件上传失败。

上传配置文件的步骤

1. 点击菜单条上的“下载配置文件”图标后，通过配置文件预览确认配置内容是否正确。若需要修改配置，关闭配置文件预览，回到软件中进行配置。

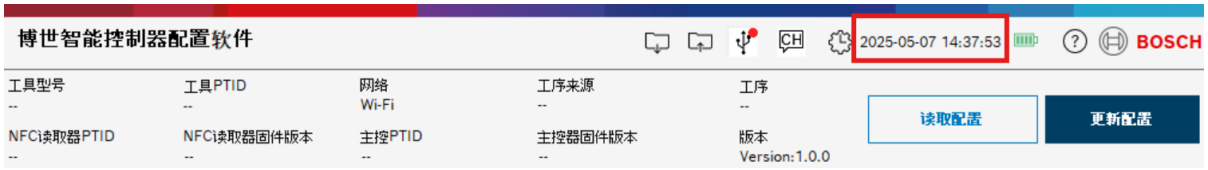
2. 确认配置内容无误后，点击“确认”保存配置文件。
3. 新的控制器必须先与工具进行配对，再上传配置文件。工具配对请参照 3.1 工具配对。
4. 新控制器的拨码开关2号打开至ON位置，通过485/USB线材将新控制器接到电脑上。
5. 点击菜单条上的“上传配置文件”图标。选择配置文件后，点击 “上传文件”。



6. 文件上传成功后， 点击“更新配置”。配置文件中的配置便会更新到新控制器上。

3.9 博世智能控制器与软件对时

点击菜单条的日期和时间，即主控机与软件对时成功。主控机的日期与时间将和电脑的日期与时间一致。



3.10 博世智能控制器的电量显示

博世智能控制器的纽扣电池电量可通过菜单条上的电池图标查看。

- 绿色电池图标：电量正常。
- 红色电池图标，并且显示电量少于30%：控制器没有安装纽扣电池，或电池电量过低。请及时更换纽扣电池。

4. 用户操作指南

4.1 设备首次配置

Bosch Industrial Smart Controller 博世智能控制器 ISN-24 G + IFC 136 R 在首次使用的时候，需执行以下步骤以进行配置:

1. 打开主控机后盖，装上MicroSD卡和纽扣电池。
2. 将拨码开关1号打开至ON位置，打开控制器的电源。控制器的工序灯蓝灯闪烁即进入**工具配对**模式。
3. 将工具放到**NFC读取器**上，控制器的工序灯绿灯闪烁，即工具配对成功。
4. 关闭控制器的电源，将拨码开关1号关闭，打开2号和3号至ON位置， 控制器即进入RS485软件**配置模式**和**网络设置模式**。
5. 将USB/485线材接入主控机的RS485接口和电脑的USB接口，打开控制器的开关，便可连接配置软件，对控制器进行配置。

4.2 常规操作步骤

以下是使用此软件的常规操作步骤：

- 将主控机的拨码开关2号和3号至ON位置，控制器进入RS485**软件配置模式**和**网络设置模式**。
- 将USB/485新材接入主控机的RS485接口和电脑的USB接口，打开控制器的开关。
- 打开此软件，并连接COM接口。COM接口连接成功后，便可开始使用此软件对控制器进行配置。
- 配置设置好后，点击“更新设置”，将设置更新到控制器上。控制器的工序灯保持绿灯闪烁，处于**待机**状态。
- 点击“读取设置”，查看当前设置， 确保配置已经成功更新到控制器上。
- 将工具放到**NFC读取器**上，点击控制器上的重置按钮，工序灯绿灯常亮以及蜂鸣器短鸣一声表示配置已经更新到工具上。

4.3 故障排查

问题现象	可能原因	解决方案
COM 接口连接失败	1.COM接口选择错误	Windows的**设备管理器**里查看对应的COM端口
	2. 控制器电源未打开	打开控制器开关
配置更新失败	1. COM接口连接断开	重新连接COM接口
	2. 控制器电源未打开	打开控制器开关
I/O输出错误	接口编号配置错误	确认软件和实际的接口编号配置一致
I/O输出无响应	驱动能力不够	增加外部驱动电路
网络设置无响应（控制器的网络LED红灯常亮)	1. 网络配置未更新成功	点击"更新配置"
	2. 网络不稳定	重启控制器。若仍无法连接上网络，请使用其他网络。
	3. 网络配置信息错误	检查网络配置参数，并重新配置。

5. 软件维护与升级

软件维护与升级将由博世进行操作。您的经销商将通知您软件的维护与升级，并提供最新的软件包。

5.1 软件更新方式

请与您的经销商联系，获取最新的软件包。

软件更新步骤

- 获得新的软件包后，解压软件压缩包，并将名为 `Release`的文件夹保存至桌面。
- 将**旧软件包**中的`barcode.xls`和`JobTable.xls`拷贝至新软件包的文件夹里，并选择直接覆盖。

5.2 日志管理

博世智能控制器的操作日志会保存至MicroSD卡上。文件格式为CSV。

日志的内容如下：

记录项	描述
Event Type	事件ID
Device ID	**博世智能控制器**的唯一标识码（PTID）
Timestamp	事件发生的时间戳，根据控制器与电脑对时的时间。
Cloud Serial No.	和**博世智能控制中心Management Hub**数据交互的数据流水号。
Source	事件来源
Data	数据内容
Description	数据描述

6. 联系方式

若您对于软件的使用方法有疑问或遇到技术问题，请通过您的经销商联系博世售后服务中心。