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Device Manager Manual

# Teleshake (95) AC USB

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# 1 Introduction

This user manual is dedicated to guiding users through the process of installing, operating, and maintaining the Teleshake (95) AC USB device efficiently. Before connecting and operating the device, it is essential to read the safety instructions carefully and familiarize yourself with the device's various components and functionalities.

The “Teleshake (95) AC USB Device Manager” facilitates the discovery and management of devices on the Microsoft Windows operating system through its Plug 'n Play capability, ensuring devices are instantly recognized and integrated. This guide provides detailed insights into effectively navigating the “Device Manager” for monitoring and adjusting key features such as heating, shaking, and clamp operations. By delving into this manual, users will learn how to optimize the use of their Teleshake (95) AC USB device for peak performance.

# 2 Software Installation

To install the “Teleshake (95) AC USB Device Manager” software, or in this context the “Device Manager”, please follow the following steps:

**Download and Install the Software**: It is recommended to choose the latest version of the “Device Manager” by downloading the latest MSI package for Microsoft Windows operating systems. Downloads are provided in the “Inheco Customer Area” on the Inheco website. This streamlined process ensures you have free access to the most up-to-date features and improvements for optimal device functionality.

**Installation Process**: Run the downloaded MSI package and follow the on-screen instructions to complete the installation. The installer will guide you through the necessary steps to ensure the “Device Manager” is correctly set up on your system, including all necessary drivers. After a successful installation on the supported Microsoft Windows operating systems a desktop icon as well as an entry in the start menu will be created.

# 3 Device Setup Overview

Before starting the “Device Manager” software to manage your device, ensure the device is appropriately installed and prepared for operation. Here is a brief overview of the necessary steps is provided. For detailed instructions please refer to the general “Manual” of the Teleshake (95) AC USB product family:

**Device Fixation**: Secure the device to a solid base using screws. Utilize alignment pins if available to ensure stability and proper orientation.

**Mounting the Device**: Follow the manual's instructions to mount the device securely on a stable platform, ensuring it is well-fixed and aligned.

**Connecting DC Wires**: Attach the DC wires to the device for power supply. The device requires a 24 Vdc input with a maximum current of 8 A.

**Power Supply Connection**: Link the power supply unit to an AC power source, making sure the electrical specifications match the device's requirements.

**USB-C Connection**: Connect the device to your host computer using the USB-C port on the device. This step is crucial for the “Device Manager” software to recognize and interact with the device.

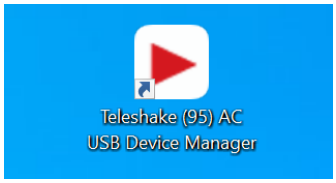
Completing these setup steps is essential for the successful use of the “Device Manager” software, facilitating effective management and monitoring of the device's features. Once the device is correctly installed and connected, you are ready to proceed with launching and utilizing the “Device Manager” software for optimal device operation.

# 4 Device Manager Software

The “Device Manager” software serves as a centralized platform for controlling, monitoring, and updating the Teleshake (95) AC USB device. This chapter provides guidance on navigating the software, configuring device settings, and understanding the status indicators for efficient device management.

**Launching the Software**

Start by navigating to the application folder or desktop (Figure 1a) and opening the “Device Manager” software, or you can also start it by selecting its shortcut from the Windows start menu (Figure 1b).

a) 

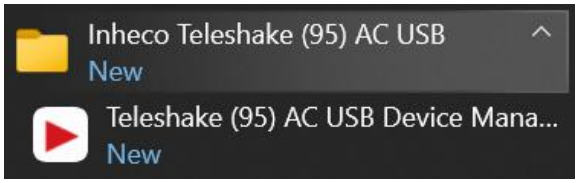
b) 


*Figure 1: Starting the “Device Manager” via a) the desktop icon or b) the Windows start menu entry.*

**Device Discovery and Management**

The application runs in “Plug 'n Play” mode, meaning it will automatically detect any connected Teleshake (95) AC USB devices. Upon launching, the “Device Manager” displays all detected devices as tabs in the “Main View”, with each tab representing a unique device arranged by the serial numbers.

If a device is disconnected, its corresponding tab will disappear from the main view, indicating that it is no longer active.

### Interface Overview

With at least one device connected to the host computer, the main screen of the “Device Manager” will appear (Figure 2). The main parts of the graphical user interface are the side bar to the left (containing several buttons and input elements) and the central main screen that provides access to live data during operation (select functional areas via the inner tabs).

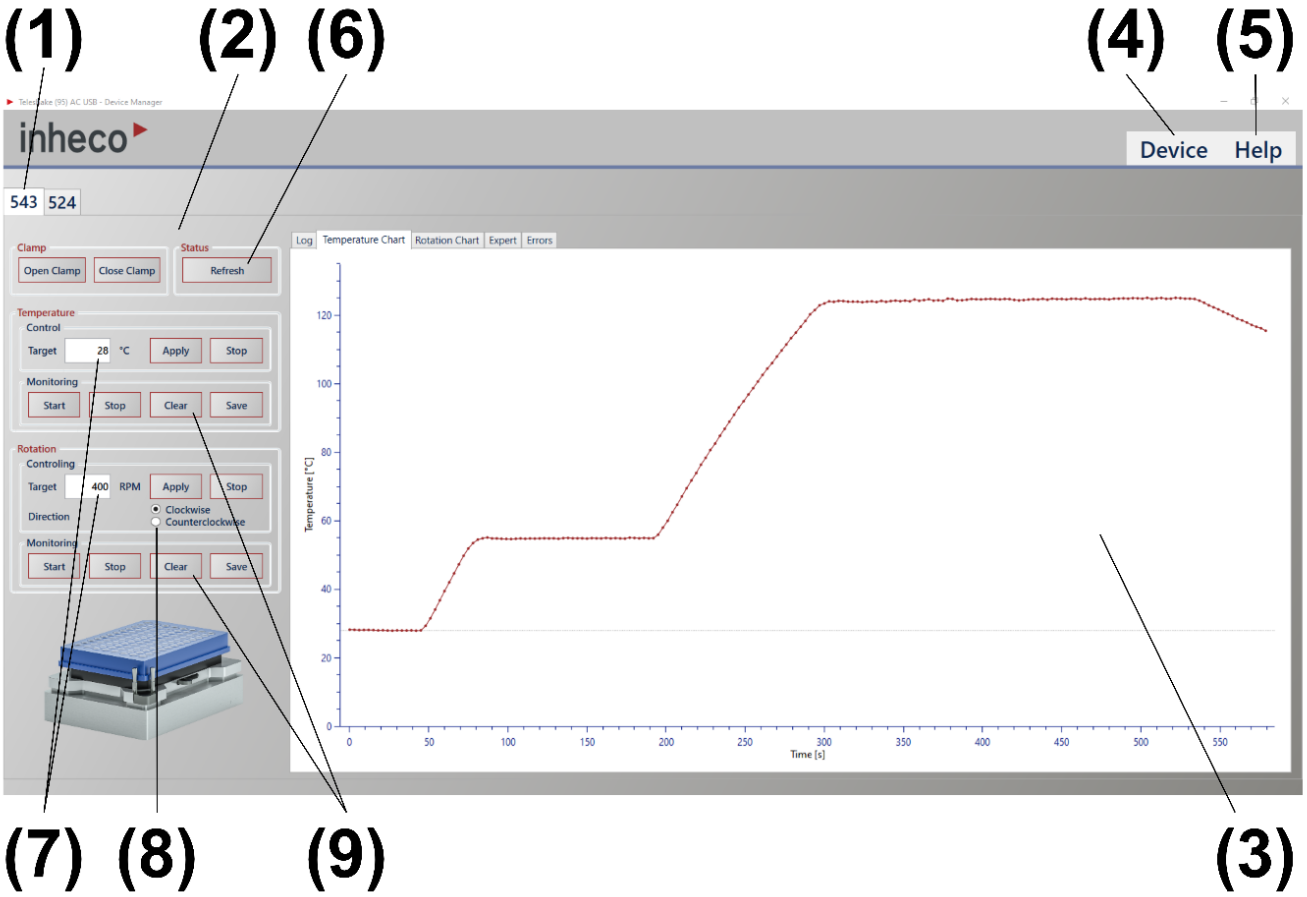



*Figure 2: Interface overview (1-9) of the “Device Manager”, here with two actively connected devices.*

**Tab Bar (1)**: Shows connected devices, each represented by a tab labeled with its unique serial number.

**Side Bar (2)**: Contains functional control elements for device operation.

**Main Screen (3)**: Comprises sections (inner tabs) for Log, Monitor, Expert, and Errors, offering comprehensive device management tools.

**Device Button (4)**: Access logs and find devices (refresh).

**Help Button (5)**: Provides access to device documentation and the integrated Quick Start Guide.

**Refresh Button (6)**: Updates the current device status, ensuring you have the latest information.

**Target Values and Apply Buttons (7):** These controls allow you to set and apply configuration setpoints for device rotation and temperature, tailoring the device's operation to your specific requirements.

**Direction of rotation (8):** Sets the shaking direction, clockwise or counterclockwise.

**Monitoring Cluster (9):** Set up and configure recordings for rotation and temperature, enabling detailed monitoring of device performance.

### Multiple Device Management

The “Device Manager” can control multiple devices within a single instance, with each device represented in its own tab. This functionality simplifies managing several devices simultaneously, making it ideal for environments with multiple Teleshake (95) AC USB devices in use.

### Status Lights

The status light on the device provides immediate feedback on the device's condition:

- Blue (Continuous): Device is not undergoing firmware updates.
- Green (Blinking): Device is initializing.
- Green (Continuous): Normal operation.
- Orange (Continuous): A firmware error has been detected.
- Red (Continuous): Indicates a hardware defect.

For further information or troubleshooting assistance, refer to the general “Manual” of the product or contact Inheco’s Customer Service.

### Clamp Commands

To operate the “Active Clamping” (AC) mechanism the “Device Manager” offers separate buttons for "Open Clamp" (1) and "Close Clamp" (2) (Figure 3). Please note that activating the AC mechanism is only possible with a proper connection to the 24 Vdc power supply. The power provided by the USB connection is not capable to drive the AC mechanism.

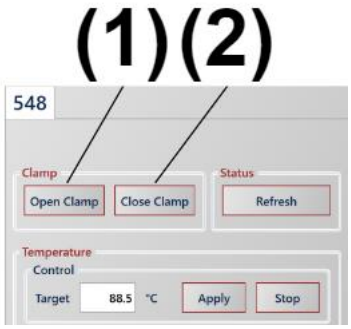



*Figure 2: Operation of the “Active Clamping” mechanism with buttons for opening (1) and closing (2).*

### Device Status

Updating the status of the device can be achieved by clicking the "Refresh" (1) button (Figure 4). This is a helpful function to resynchronize the device with the “Device Manager”, e.g. after a power loss has occurred that was not noticed by the user. Status messages as well as any errors will be presented in the "Log" (2) tab.

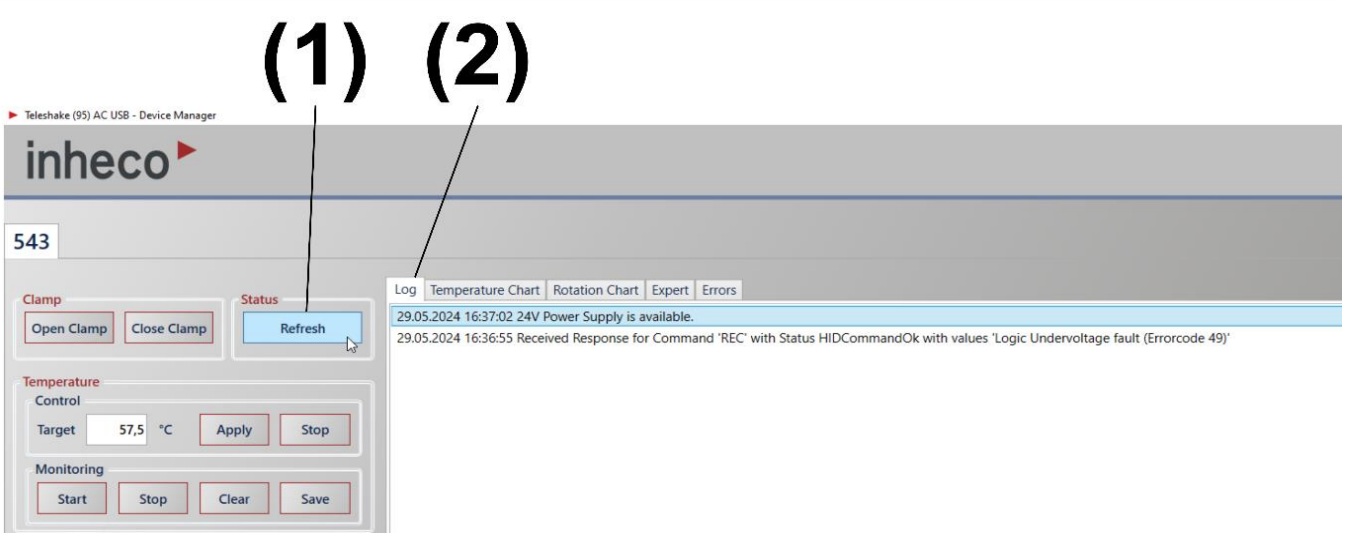



*Figure 3: Possibility (1) to refresh the device status, e.g. after a power loss and (2) to view the updated message stream in the “Log” tab within chronological order (most recent events are located on top, here: power supply is properly connected again).*

### Temperature – Controlling and Monitoring

Please note that the temperature control feature is only available for the “Teleshake 95 AC USB” device variant.

To adjust the temperature of the selected device, input the desired value for the temperature setpoint in the "Target" (1) field and click the "Apply" (2) button to transmit the value to the device (Figure 5). This action can only be executed, if the device is connected to a proper DC power supply with a voltage level of +24 V (±10%) and a maximum current of at least 6.3 A.

Pressing the “Stop” (3) button will cease the heating process. Attention: The heated area might still be hot as there is no active cooling provided within this device family!

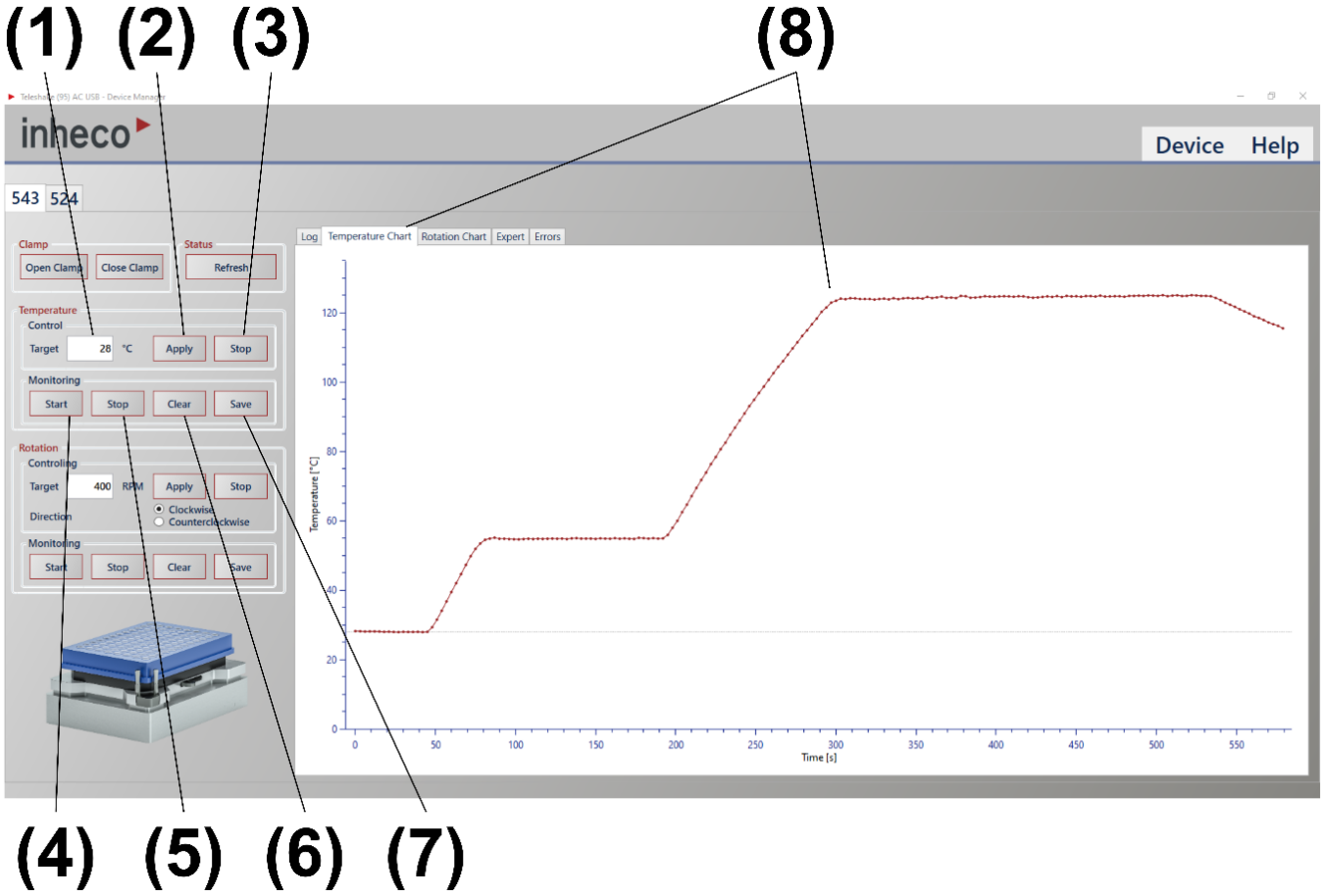



*Figure 4: Temperature control (1-3), temperature monitoring (4-7), and temperature chart (8).*

The “Device Manager” software offers live monitoring capabilities for both heating and shaking functions, allowing for basic tracking of the device's status and performance.

To start or end the monitoring feature, use the "Start" (3) or "Stop" (4) buttons found in the "Monitoring" section (Figure 5). To erase the temperature chart (8), click the "Clear" (6) button. Exporting the temperature readings into a CSV file can be activated by clicking the "Save" (7) button, followed by a dialog box to select a file name and storage location.

### Rotation – Controlling and Monitoring

Start the rotation by entering an RPM value (representing revolutions per minute) in the “Target” (1) field followed by clicking the “Apply” (2) button to transmit the value to the device (Figure 6). This action can only be executed, if the device is connected to a proper DC power supply with a voltage level of +24 V (±10%) and a maximum current of at least 6.3 A.

To choose the shaking direction, press the switch button (4) to select either clockwise or counterclockwise. To monitor the progress, select “Start” (5) in the “Monitoring” section. To halt the rotation, click the “Stop” (3) button. To cease displaying live values in the chart (9), click the “Stop” (6) button in the Monitoring section. Resetting the chart (9) can be done by clicking the “Clear” (7) button, and rotation data can be exported into a CSV file using the “Save” (8) button. A dialog box will appear to select a file name and storage location.

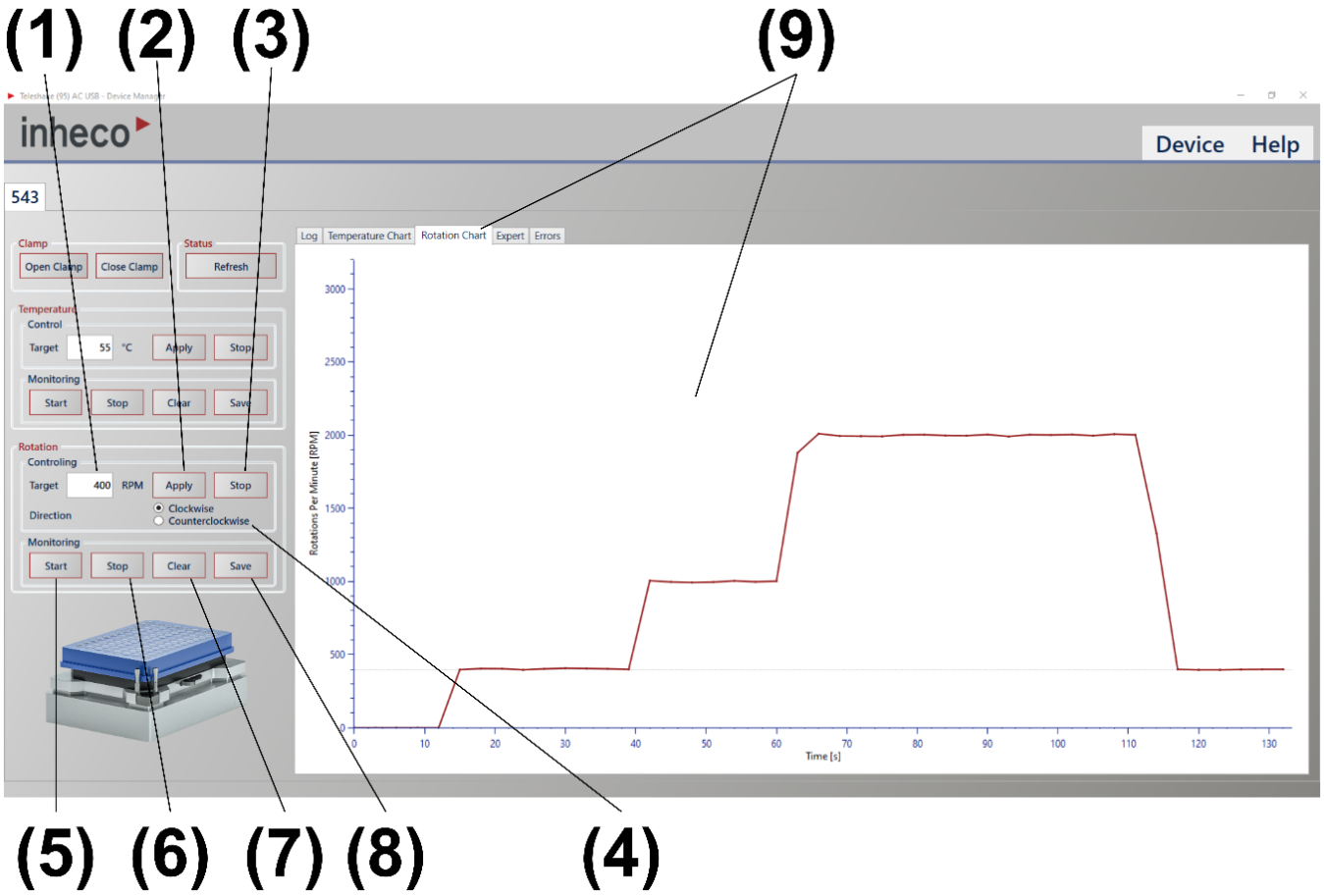



*Figure 5: Rotation control (1-4), rotation monitoring (5-8), and rotation chart (9).*

### Global Features

Device Menu: Use the device menu to scan for new devices by clicking the “Find” (2) button. The "Open Log" (1) button allows for direct access to the operation log file (text file), which records all commands exchanged with the device and can also be stored (Figure 7).

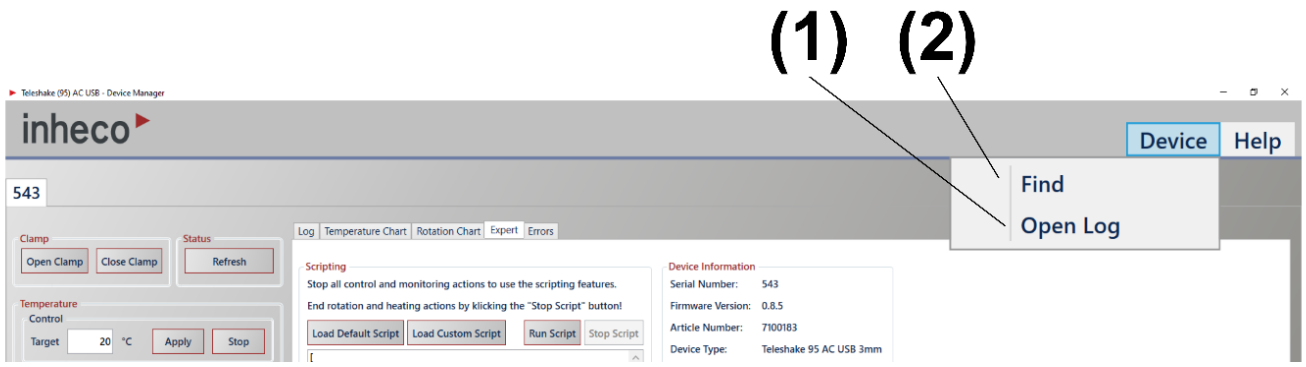



*Figure 6: Device menu to find newly connected devices (1) and to open the log file (2).*

**Help Menu:** Access the integrated Quick Start Guide (2) or view software version details, manufacturer information, and contact options for additional support by selecting the ‘About’ (1) menu item (Figure 8).

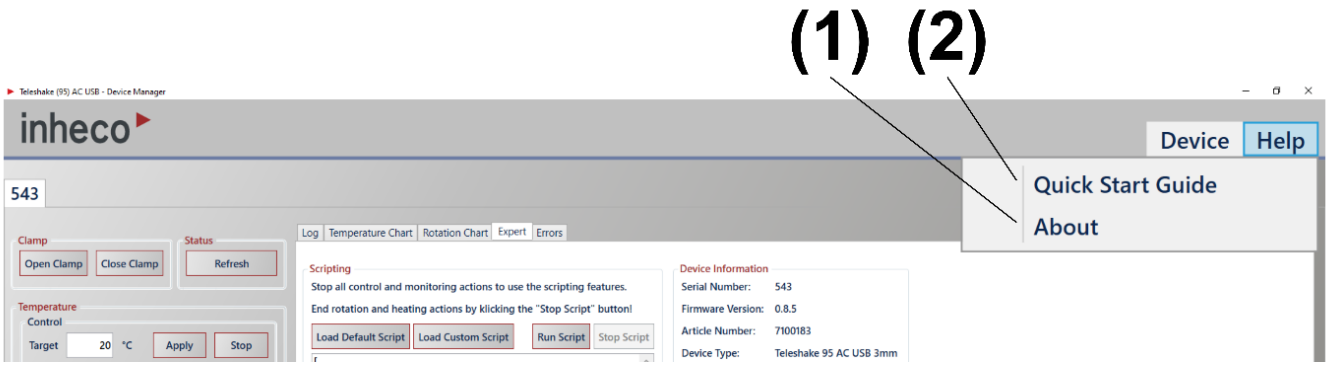



*Figure 8: Help menu to open the Quick Start Guide (2) and manufacturer information (1).*

**Advanced Features in the Expert Tab**

The "Expert" (1) tab is specifically designed for experienced users requiring advanced functionalities within the “Device Manager” software as well as to support Inheco’s Customer Service to diagnose a specific device (Figure 9). The tab includes a dedicated section for managing scripts, allowing for loading a default script (3), loading a customized script (4), executing/running (5), and stopping (6) to enhance device control and customization. Please note that the buttons can only be operated when specific circumstances are given (2). In this case a user must stop all control and monitoring actions to make sure that the scripting features are enabled.

A reference on how to create own automation scripts to operate the device can be found in chapter 5.

Additionally, the expert tab provides detailed device information (9) for the selected device, such as serial number, firmware version, Inheco article number, device type description, and the currently used software version of the “Device Manager”.

To update the device to another firmware version the expert tab facilitates the process of firmware updates, a crucial feature for maintaining optimal device performance and access to the latest functionalities as well as jumping back to previous firmware versions. By clicking the "Update Firmware" (8) button the firmware update process is initiated and a standard dialog box appears to select the new firmware file.

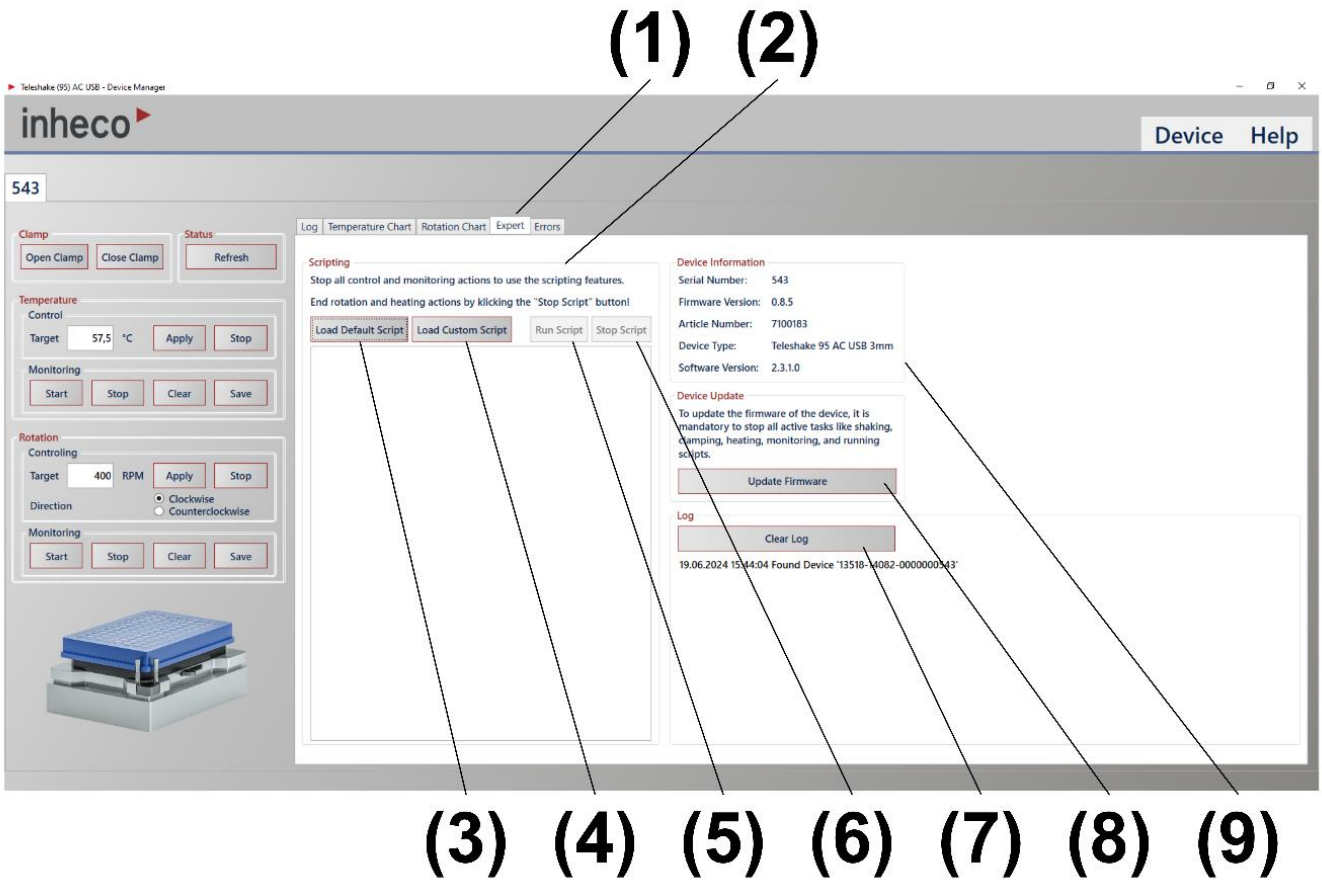



*Figure 9: Expert Tab (1) with important notes for operation (2), script features (3-6), device information (9), firmware update functionality (8) and a function to clear the “Log” frame (7).*

The incorporation of these advanced tools within the “Expert” tab significantly empowers users to maximize their device's capabilities and performance. For reasons of convenience, the “Log” frame for the selected device is also displayed within this tab, including a “Clear Log” (7) button.

### Errors Tab

Errors encountered during operation are recorded by the software and displayed in the “Errors” (1) tab (Figure 10).

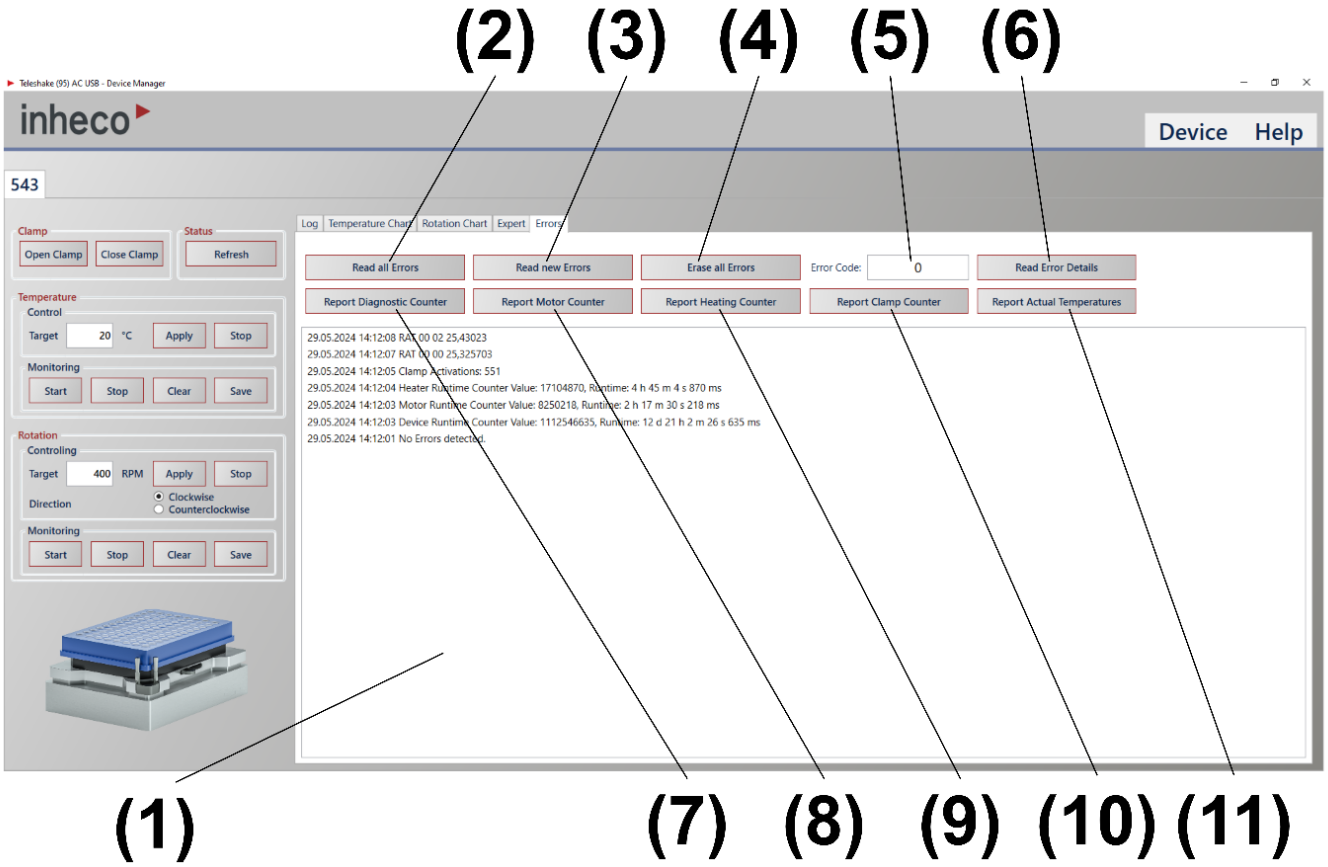



*Figure 10: Errors tab (1) with buttons to manage error-related features (2-6), presenting diagnostic counters (7-10), and reading the integrated temperature sensors of the device (11).*

To view the detected errors on the device, click the “Read all Errors” (2) button. For a list of errors that have occurred since the last power-up or the erase errors command, click on “Read new Errors” (3). Errors stored in the log can be cleared by selecting the “Erase all Errors” (4) button. To obtain details of specific errors, enter the error code in the “Error Code” (5) text field, click the “Read Error Details” (6) button and find the description within the text box below. Clicking on the “Report Diagnostic Counter” (7) button reports the current value of the diagnostic counter summarized in milliseconds (and separated into days, hours, minutes, seconds, milliseconds). Clicking the “Report Motor Counter” (8) button reports the current value of the motor counter summarized in milliseconds (and separated into days, hours, minutes, seconds, milliseconds). Clicking on the “Report Heating Counter” (9) reports the current value of the heating counter, again, summarized in milliseconds (and separated into days, hours, minutes, seconds, milliseconds). Clicking on the “Report Motor Counter” (10) reports the current number of clamp activations. To read the actual temperatures of the installed temperature sensors, klick on the button “Report Actual Temperatures” (11).

To better illustrate the functionality of the 'Errors' tab within the “Device Manager” some examples are provided:

**Read all Errors:** By clicking on “Read all Errors”, the “Device Manager” reports two errors with error codes 43 and 49 (Figure 11).

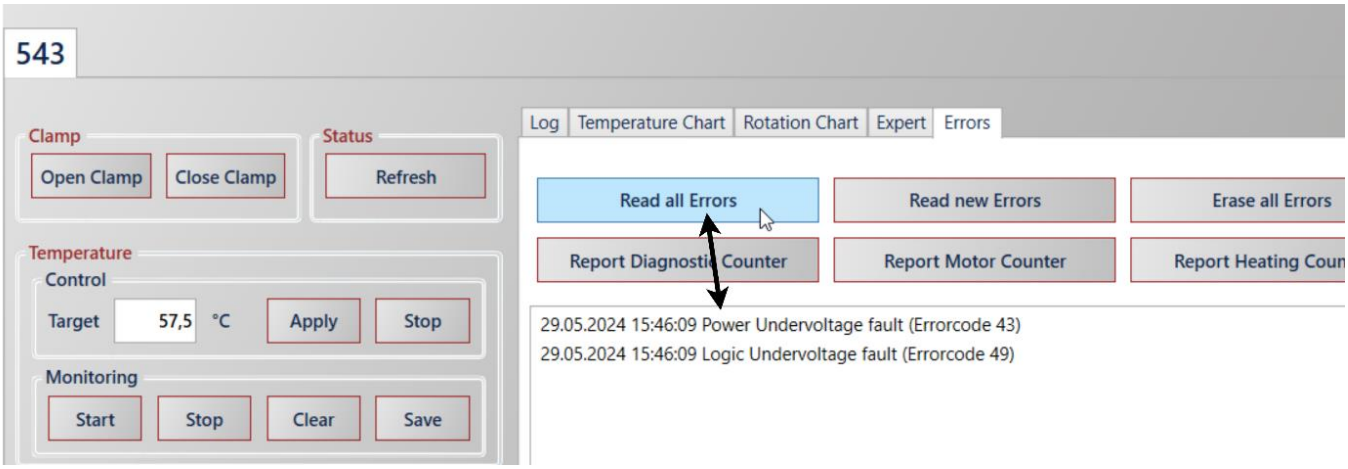



*Figure 11: Errors are listed in the text area after the button “Read all Errors” has been pressed.*

**Erase all Errors**: Clicking on “Erase all Errors” button would reset all errors, ensuring that any subsequent attempts to read errors would not report any (Figure 12). This action would also result in the device displaying a green light, indicating normal operation.

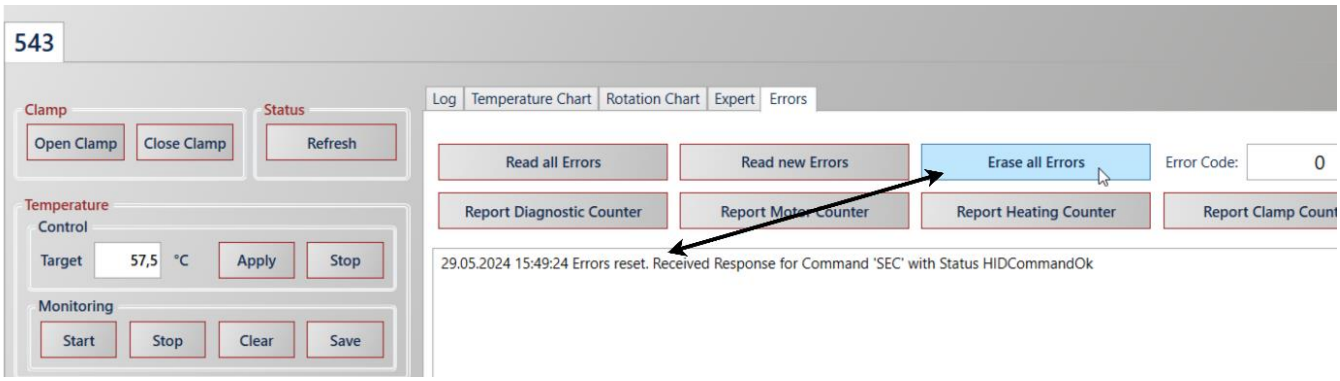



*Figure 12: Clearing of the error memory is commanded by pressing the button “Erase all Errors”.*

**Read Error Details:** In the scenario described previously, where two errors with error codes 43 and 49 are reported, entering the code 43 into the “Error Code” text field and clicking on “Read Error Details” will display only the details for the error associated with the specified code (Figure 13).

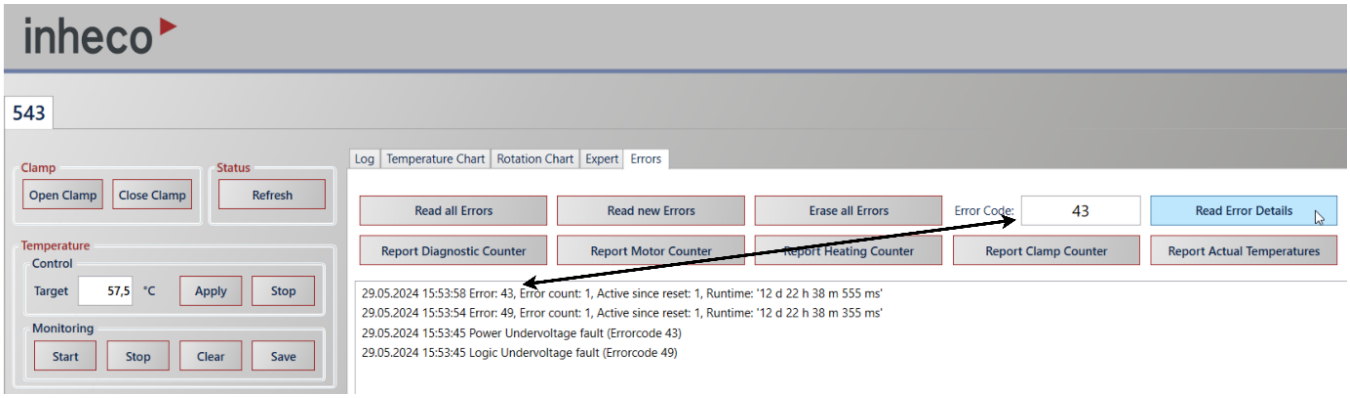



*Figure 13: Additional error descriptions by entering a specific error code and pressing the “Read Error Details”.*

**Report Diagnostic Counter**: Information about the device can be requested via the “Report (…)” buttons for device runtime, motor runtime, heating runtime, clamping operations, and temperature sensors (Figure 14).

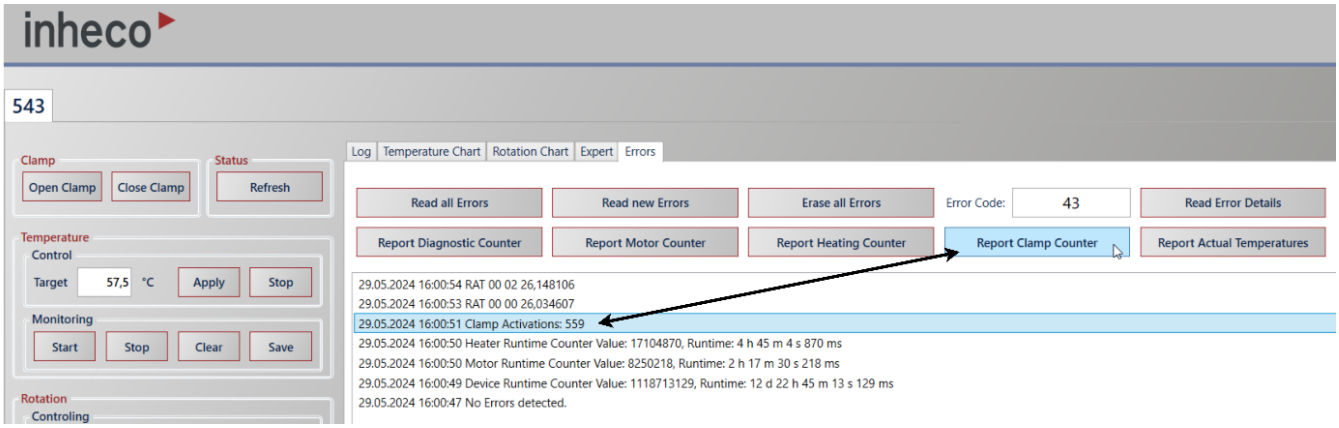



*Figure 7: Request diagnostic information by pressing the dedicated buttons (here “Report Clamp Counter”).*

# 5 Custom Script Generation for Device Control

## 5.1 Introduction to JSON Format and Its Use in Script Generation

JSON (JavaScript Object Notation) is a lightweight data-interchange format that is easy for humans to read and write and for machines to parse and generate.

In the context of script generation, JSON is utilized to define and organize command sequences in a structured and hierarchical manner. The complete set of commands available for the Teleshake (95) AC USB device family is documented in the “Customer Firmware Command Set” (CFWCS).

**Key Components of JSON Notation**

**Objects**: Represented by curly braces { }, objects are collections of key-value pairs. Each key (also called a property) is a string followed by a colon (:), and the corresponding value can be a string, number, boolean, array, object, or null.

**Arrays**: Enclosed in square brackets [ ], arrays are ordered lists of values. An array can contain objects, strings, numbers, and even other arrays.

**Values**: A value in JSON can be a string (text wrapped in double quotes ””), a number (integer or floating point), a boolean (true or false), an object, an array, or null (which represents an empty value).

**Strings**: Textual data in JSON must be enclosed in double quotes. For example, “Some text”.

**Numbers**: JSON supports integer and floating-point numbers without quotes. For example, 100 or 20.5.

**Boolean and Null**: These are special types in JSON used to represent truth (true, false) and emptiness (null), respectively.

## 5.2 Generating JSON Command Scripts

Each JSON object in the script represents a discrete command. The properties of these objects define how each command interacts with the device firmware. These properties are:

**SelectedCommand**: The specific command to execute, as defined by the firmware specification.

**DelayInMilliseconds**: The time in milliseconds to wait before the command is executed, allowing for time-sensitive operations.

**Loops**: The number of times to execute the command, useful for repetitive tasks or tests.

**Parameters**: Any necessary parameters that the command requires to operate correctly.

**Children**: A nested array of commands that execute in sequence after the parent command, allowing for complex, multi-step operations.

**Example Script**

Consider the following JSON script:

```
[
  {
    "SelectedCommand": "RSN",
    "DelayInMilliseconds": 0,
    "Loops": 1,
    "Parameters": null,
    "Children": []
  },
  {
    "SelectedCommand": null,
    "DelayInMilliseconds": 0,
    "Loops": 5,
    "Children": [
      {
        "SelectedCommand": "REC",
        "DelayInMilliseconds": 0,
        "Loops": 1,
        "Parameters": null,
        "Children": []
      },
      {
        "SelectedCommand": "",
        "DelayInMilliseconds": 0,
        "Loops": 1,
        "Parameters": "",
        "Children": [
          {
            "SelectedCommand": "ACE",
            "DelayInMilliseconds": 5000,
            "Loops": 1,
            "Parameters": "1",
            "Children": []
          },
          {
            "SelectedCommand": "SSR",
            "DelayInMilliseconds": 0,
            "Loops": 1,
            "Parameters": "400",
            "Children": []
          }
        ]
      }
    ]
  }
]
```

The first JSON object in the script specifies the **RSN command**:

```
  {
    "SelectedCommand": "RSN",
    "DelayInMilliseconds": 0,
    "Loops": 1,
    "Parameters": null,
    "Children": []
  }
```

This command is configured to execute immediately, as indicated by “DelayInMilliseconds”: 0. It is set to run only once, as shown by “Loops”: 1. Additionally, it requires no parameters (“Parameters”: null) and contains no nested commands (“Children”: [ ]).

According to the firmware documentation, the **RSN command** returns the device serial number. It executes immediately without any delay (“DelayInMilliseconds”: 0) and without repetition (“Loops”: 1)

Next in the script are **Looped Commands**. The sequence here is designed to run five times:

```
"SelectedCommand": null,
   "DelayInMilliseconds": 0,
   "Loops": 5,
   "Children": [
    {
      "SelectedCommand": "REC",
      "DelayInMilliseconds": 0,
      "Loops": 1,
      "Parameters": null,
      "Children": []
    },
                ...
  ]
```

The command that will run as part of the sequence is **REC Command**.

**REC Command** checks and reports any errors accumulated in the device's memory, crucial for diagnostics and ensuring the device starts operations without pre-existing issues.

**Nested Commands in the Sequencea**

After the REC command, another set of commands is executed, consisting of a sequence that includes calls to both the **ACE** and **SSR commands**:

```
{
   "SelectedCommand": "",
   "DelayInMilliseconds": 0,
   "Loops": 1,
   "Parameters": "",
   "Children": [
    {
      "SelectedCommand": "ACE",
      "DelayInMilliseconds": 5000,
      "Loops": 1,
      "Parameters": "1",
      "Children": []
    },
    {
      "SelectedCommand": "SSR",
      "DelayInMilliseconds": 0,
      "Loops": 1,
      "Parameters": "400",
      "Children": []
    }]
}
```

**ACE Command** activates the clamps and is delayed by 5000 milliseconds.

After that the **SSR Command** is executed, without any delay and with parameter 400.

# 6 Maintenance and Troubleshooting

Please read the User and Installation Manual for information regarding maintenance and troubleshooting.

In terms of software compatibility with future operating systems and troubleshooting of such other issues, please navigate to the Inheco Customer Area on the website. For direct support you will also find contact details to get in contact with our Customer Service or Sales Representatives.

# 7 Appendix

Please read the User and Installation Manual for information regarding warranty and legal information.