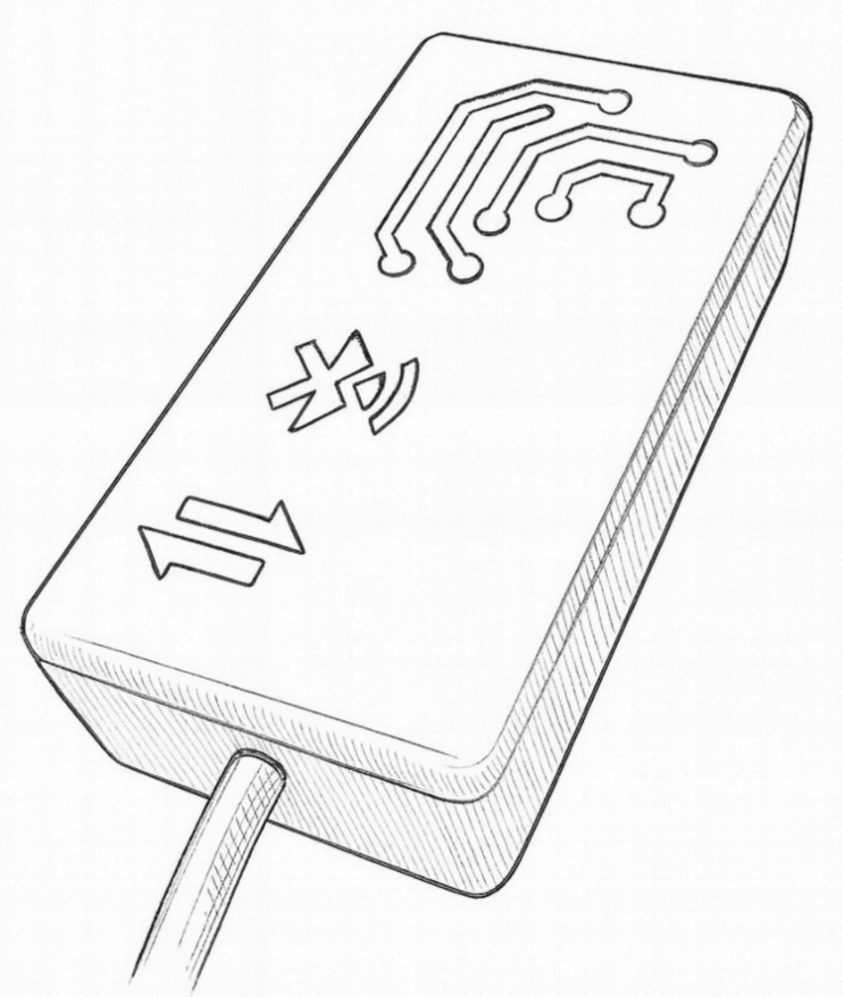
CHELIDON DIAGNOSTIC TOOL

with Cranematic Diagnostics Software



User Manual for Hardware and Software

Tool Version: Chelidon v3.1
Software Version: Cranematic Diagnostics v1.0.0 ***July 2025***

CRANEMATIC

TABLE OF CONTENTS

1. INTRODUCTION

This document provides instructions for installing, setting up, and using the **Chelidon Diagnostic Tool**, a custom-made solution for servicing and diagnosing crane systems.

The Chelidon Diagnostic Tool comes with the **Cranematic Diagnostics Software**, which is used to communicate with the crane via the tool. The tool supports both **USB (wired)** and **Bluetooth (wireless)** connections and features built-in LED indicators for power, connection, and data transfer.

1.1 What You Can Do with the Tool and Software

Together, the Chelidon Diagnostic Tool and Cranematic Diagnostics Software allow to:

- Monitor crane operation in real time
- Diagnose errors and issues quickly
- View and test input/output signals
- Read and clear error codes
- Reset service intervals and view service history
- Configure new components (e.g., sensors, remotes, relays)
- Adjust system features and user preferences

1.2 This Guide Will Help You

- Install the **Cranematic Diagnostics software**
- Connect the **Chelidon diagnostic tool**
- Understand LED indicators and connection modes
- Perform basic diagnostics and communication with the crane system

● **NOTE:** The software operates entirely **offline**, making it ideal for field use, remote areas, and workshops without internet access.

1.3 Supported Crane Systems

The Cranematic Diagnostics Software is designed to work with **HIAB crane systems up to model year 2022**.

Supported Control Systems:

- Space
- Space 3000
- Space 4000
- Space 5000
- Space 6000
- Space X4

2. SYSTEM REQUIREMENTS

To ensure stable operation of the **Chelidon Diagnostic Tool** and **Cranematic Diagnostics Software**, please make sure your computer meets the following minimum system requirements:

2.1 Operating System

- Windows 10 (64-bit)
- Windows 11 (64-bit)

● **NOTE:** Other operating systems (e.g., macOS or Linux) are not supported.

2.2 Hardware Requirements

- Processor: 1.5 GHz dual-core Intel or AMD
- Memory (RAM): Minimum 4 GB (8 recommended)
- Free Disk Space: At least **500 MB** (includes installation and log files)
- USB Port: One free USB-A port (for wired connection)
- Bluetooth: Required if using wireless (Bluetooth) mode

2.3 Display Resolution

- Minimum: 1024 × 768
- Recommended: 1366 × 768 or higher for better usability

3. PACKAGE CONTENTS

This section describes the physical components included with the diagnostic tool. Please refer to the numbered diagram below for part identification.

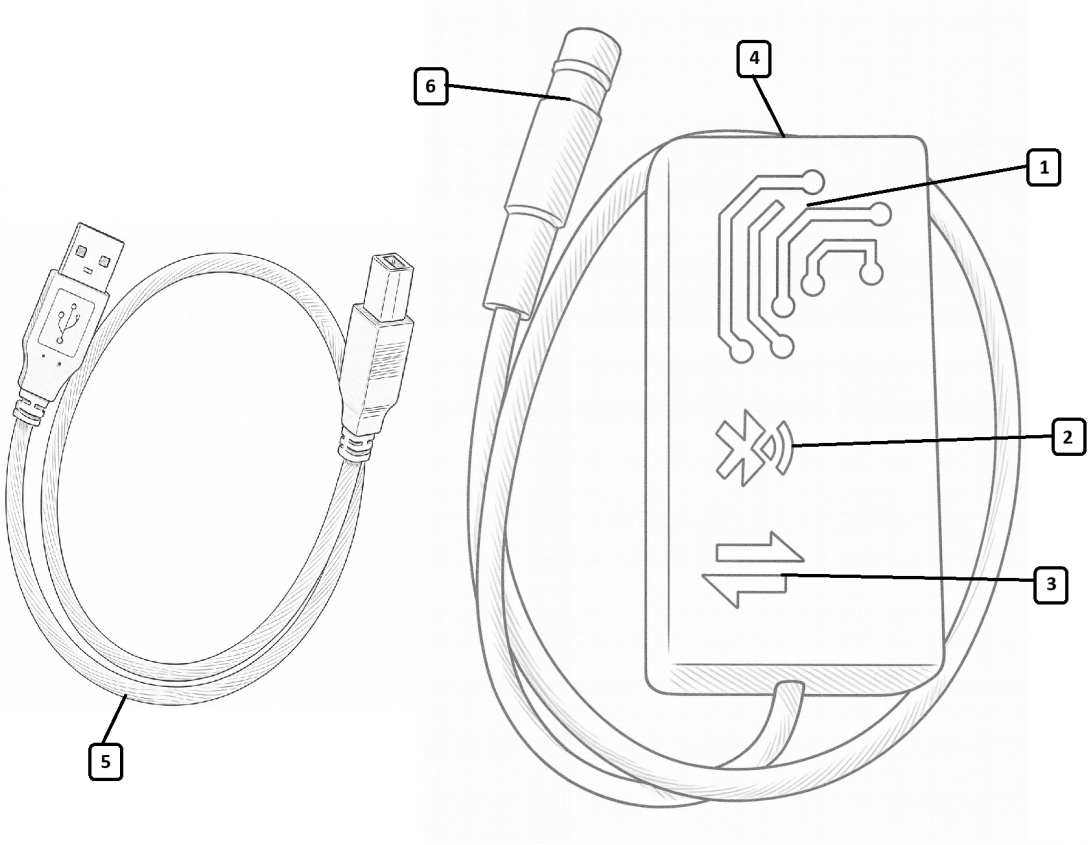


Figure 1: Chelidon Diagnostic Tool - Hardware Overview

3.1 Overview of Components

1) **Green LED (Power Indicator)**
2) **Blue LED (Bluetooth Status Indicator)**
3) **Amber LED (Data Transmission Indicator)**
4) **USB Type B Connector**
5) **USB Cable (Type A-B)**
6) **Crane Connector Cable (4 pin)**

● **NOTE:** For detailed LED behavior, see ***Table 1 – LED Behavior Reference*** in the Troubleshooting section **8.7 Led Status Description**.

3.2 Included Software

In addition to the hardware, the package includes the **Cranematic Diagnostics Software**, which is required to operate the tool.

- Supplied as an installer file
- Must be installed on a Windows 10 or 11 PC
- Used to interact with the crane via the Chelidon tool for diagnostics, configuration, and monitoring

⬤ **NOTE:** For installation steps, see **Section 4 – Installation Guide**

4. INSTALLATION GUIDE

To install the **Cranematic Diagnostics Software** on your computer, follow these step-by-step instructions.

4.1 Installation file

1. Download the Installer

- Download the setup file: **CranematicDiagnosticsSetup_1.x.x.exe**

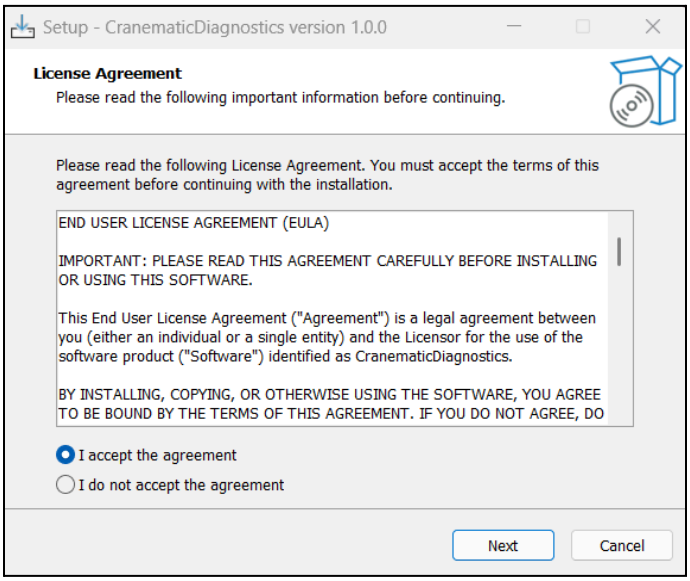
2. Run the Installer

- Run the installer

● **NOTE:** If prompted by Windows SmartScreen or User Account Control, click **Yes** to allow installation.

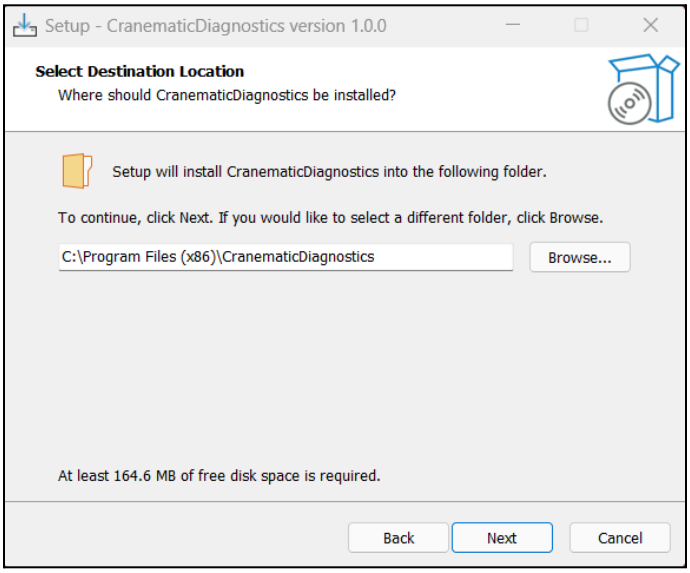
4.2 Installation Steps

Step 1. **License Agreement**



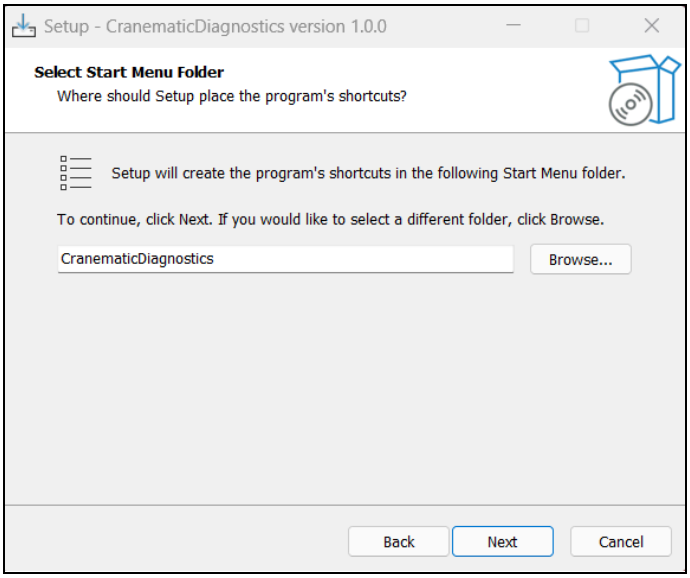
- Review and accept the license terms
- Click **Next**

Step 2. **Choose Destination Folder**



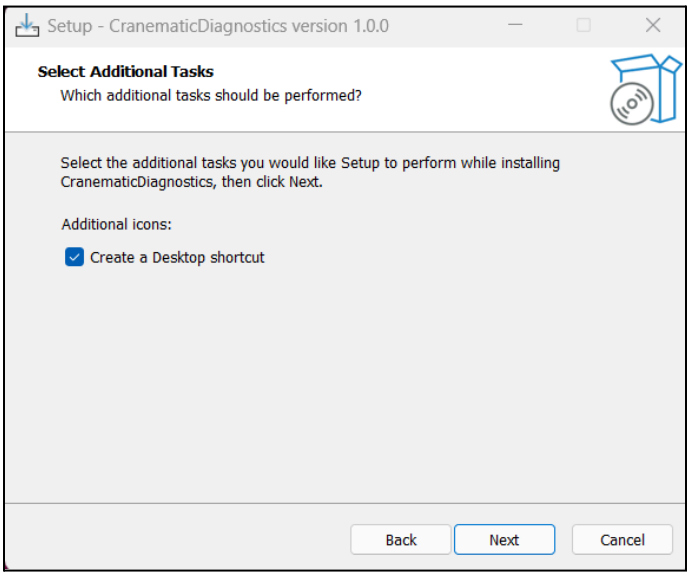
- Select where to install the software
- Click **Next**

Step 3. **Start Menu Folder**



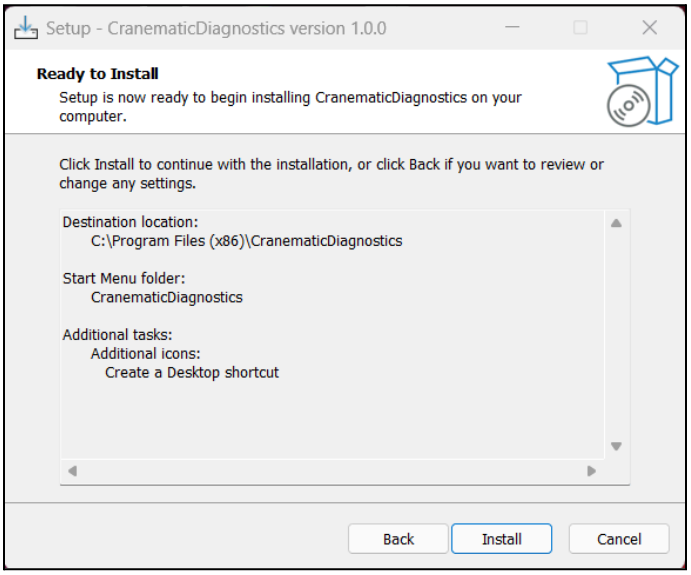
- Choose the Start Menu folder name
- Click **Next**

Step 4. **Create Desktop Shortcut** *(Optional)*



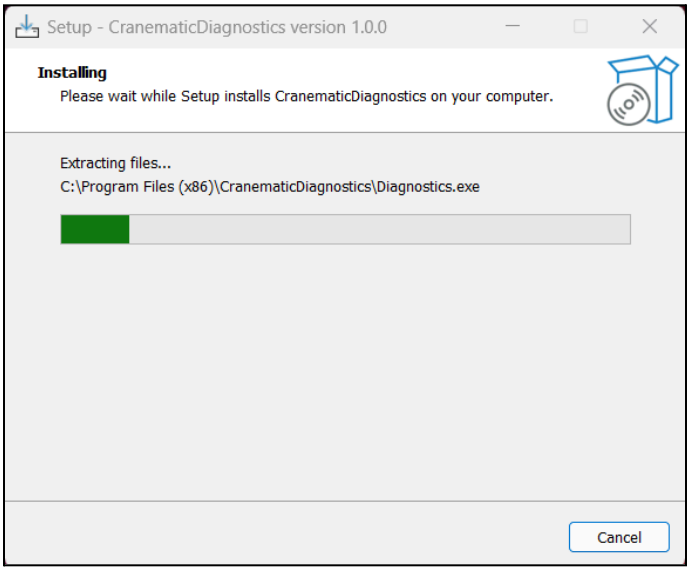
- Check the box if you want a shortcut on your desktop
- Click **Next**

Step 5. **Ready to Install**



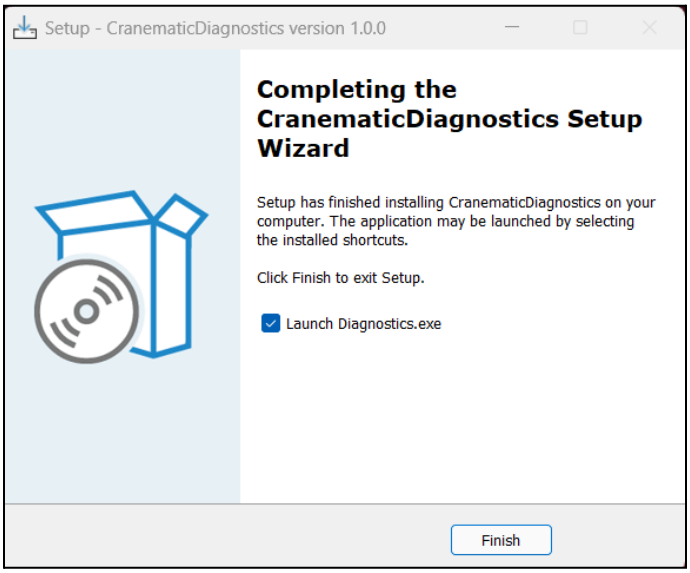
- Review your choices in the summary screen
- Click **Install**

Step 6. **Installation Progress**



- Wait for the program to be installed

Step 7. **Completing the Setup Wizard**



- Check **“Launch Cranematic Diagnostics.exe”** if you want to open the program immediately
- Click **Finish**

Step 8. Cranematic Diagnostics is now **Ready to Use**

5. SETTING UP CONNECTION WITH THE CHELIDON DIAGNOSTIC TOOL

The diagnostic tool supports two communication methods: **Bluetooth** and **USB cable**. Before connecting, make sure the tool is properly connected to the **crane** and the crane is **powered on**.

● **NOTE:** Only one connection method can be used at a time — Bluetooth is disabled when USB is connected.

5.1 Connecting via Bluetooth

Before using the diagnostic tool in Bluetooth mode, you must pair it with your computer. This only needs to be done once per computer. After pairing, the tool can be connected automatically by the program whenever Bluetooth is selected.

● **NOTE:** Make sure this pairing process is completed before attempting to connect to the crane through the software.

● **NOTE:** The Bluetooth connection is reliable up to approximately **15 meters** in open space. Walls, metal structures, or other obstacles between the diagnostic tool and the computer may reduce the effective range.

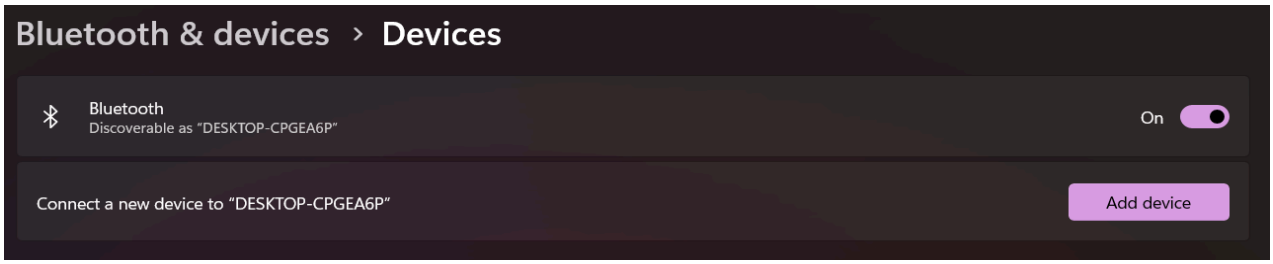
Step-by-Step Bluetooth Setup:

Step 1 . Connect the Diagnostic Tool to the Crane:
Plug the tool into the crane's diagnostic connector and power on the crane.

● **NOTE:** DO NOT connect the USB cable to the computer during this step.

Step 2. Check the Blue LED:
The blue LED on the tool should start **blinking**, indicating that the tool is powered on and **waiting for a Bluetooth connection**.

Step 3. Open Bluetooth Settings on the Computer:

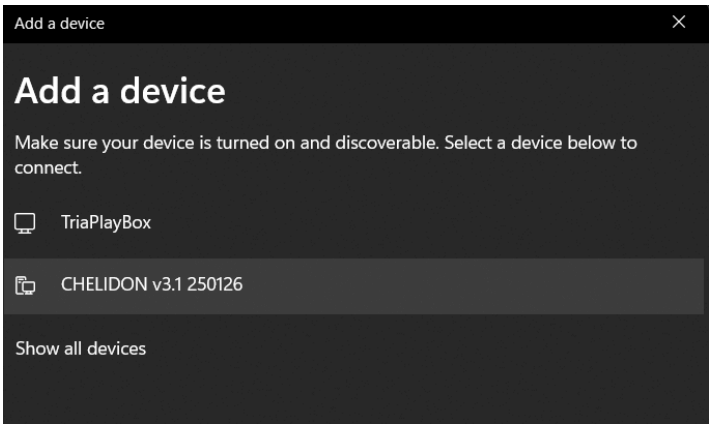


- Go to **Settings > Bluetooth & devices**
- Click **"Add device"**

Step 4. Start Pairing Process:

- In the **Add a device** window, choose **"Bluetooth"** (not other types).
- Wait a few seconds for the tool to appear in the list.

Step 5. Select the Device:

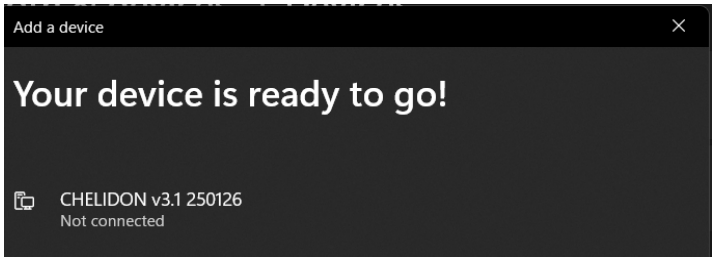


- Look for a name like: **CHELIDON V[version] [serialnumber]**
- Click on the device name to start pairing.

● **NOTE:** If the device does not appear:

- Make sure no USB cable is connected to the tool (Bluetooth is disabled in cable mode).
- **Unplug the tool from the crane connector and reconnect it** to restart Bluetooth broadcasting.
- Then try searching for Bluetooth devices again or **refresh the device list** in your PC's Bluetooth settings.

Step 6. Wait for Connection Status:



- The PC may briefly show **“Connected”**, then switch to **“Not connected”**
- This is **normal behavior** — press **“Done”**

Step 7. Confirm Device is Paired:

- Go back to the **Bluetooth & devices** list
- Confirm that **CHELIDON** now appears in your list of known Bluetooth devices

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Step 8. The tool is now **ready for use** with the diagnostic software in Bluetooth mode.

5.2 Connecting via USB Cable

To use a direct USB connection:

Step 1. Plug in the **USB A-B cable** between the diagnostic tool and your PC.

Step 2. Ensure the tool is also **connected to the crane** and the crane is **powered on**.

● **NOTE:** If your PC is connected to the internet, Windows should automatically install the required USB drivers.

● **NOTE:** If there is no internet connection, you may need to install the driver manually — see Section **9.1.1 Driver Manual Installation** for instructions.

6. USING THE CRANEMATIC DIAGNOSTICS SOFTWARE

This section explains how to use the **Cranematic Diagnostics Software** in combination with the **Chelidon Diagnostic Tool** to communicate with and configure the crane.

6.1 First Launch and License Activation

When the diagnostic program is opened for the first time, it will prompt the user to activate a license in order to access its full functionality. A dedicated license window will appear automatically.(*Figure 2. License Activation Window*)

● **NOTE:** During the license process, it is **not necessary to be connected to the crane**. You can activate the software entirely from your computer.

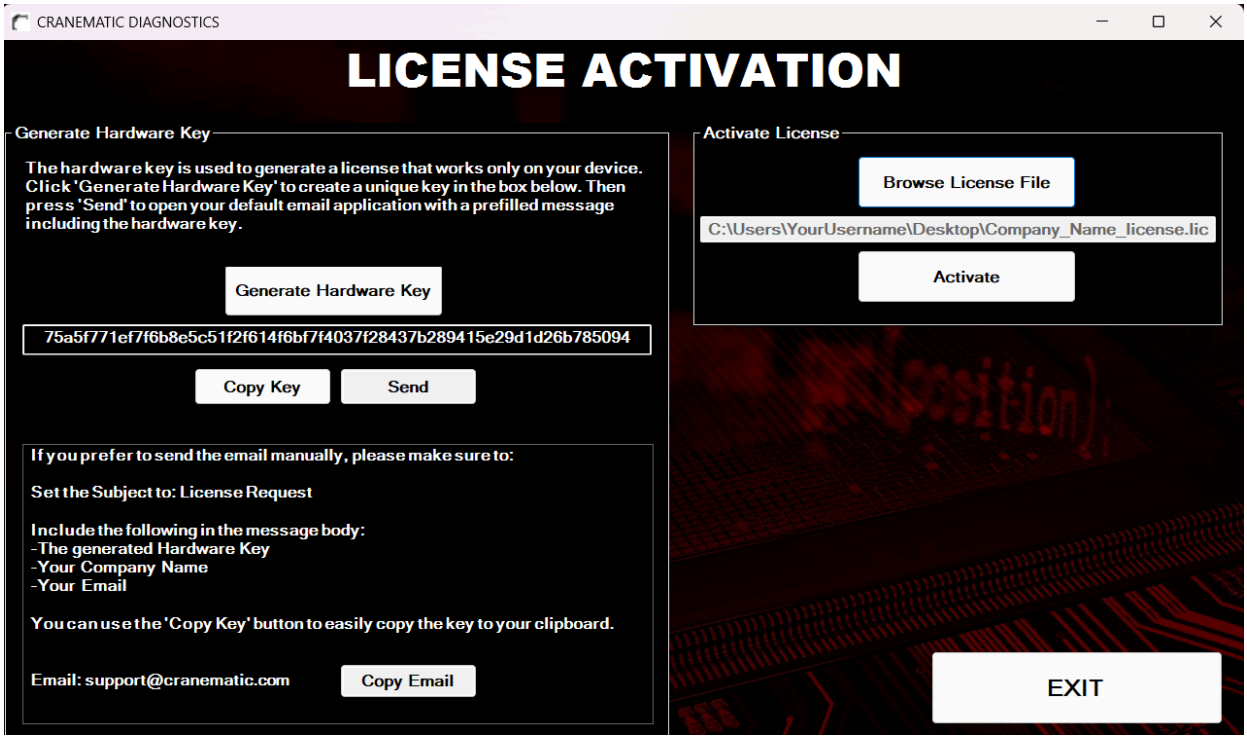

Figure 2: License Activation Window

Step 1. Generate Hardware Key:

- Click the **“Generate Hardware Key”** button.
- The program generates a unique hardware ID based on your system.

● **NOTE:** The hardware key will always remain the same on the same computer. You can safely **close the program and continue later** — the same key will still be available when you reopen it.

Step 2. Requesting a License:

Option 1: Automatic Email via Windows Mail App

- Click **"Send"**
- This opens your default Windows email application (e.g., Outlook or Mail).
- A pre-filled message addressed to **support@cranematic.com** appears.
- You only need to fill in:
    - **Company Name**
    - **Your Email Address**
- Then click **Send** to complete the request.

Option 2: Manual Email via Web Browser

- Click **"Copy Key"** to copy the generated hardware key.
- Send email:
    - **To:** support@cranematic.com
    - **Subject:** License Request
    - **Body:** Hardware Key: [paste your hardware key here]

      Company Name: [your company name]

      Email: [your email address]

Step 3. Receiving the License File:

Once the support team receives your request, they will generate a license file named:

Company_Name_license.lic

This file will be sent to your provided email address. Save this file to your computer.

● **NOTE:** Depending on support availability, sending the license file may take **up to** 1 business day. You can safely **close the program** and return to activate the license later using the same hardware key.

Step 4. Activating the License:

1. Open the diagnostic program again — the License window will appear.
2. Click **"Browse License File"**.
3. Locate and select the **Company_Name_license.lic** file you received.
4. Click **"Activate"** to complete the activation process.

● **NOTE:** If the license is valid, the software will unlock and continue to the main interface. You only need to activate the license **once per computer**, and future launches will skip this step automatically — **as long as the license remains valid**.

● **NOTE:** If activation fails, please double-check that the license file matches your hardware and was not renamed or altered.

6.2 Setting Up Connection

Once the license is successfully activated, the program will automatically open the **Connection** View(*Figure 3: Connection View*). This window will also appear every time the program is launched — as long as a valid license is present.

● **NOTE:** The License window will only appear again if no valid license file is found.

Before attempting to connect, make sure the following conditions are met:

- The diagnostic tool is connected to the **crane** via the crane connector cable

- The crane is powered on

● **NOTE:** Without power from the crane, the diagnostic tool cannot operate, and connection will fail.

CONNECTION OPTIONS

The connection window offers **two options** to select the preferred communication method:

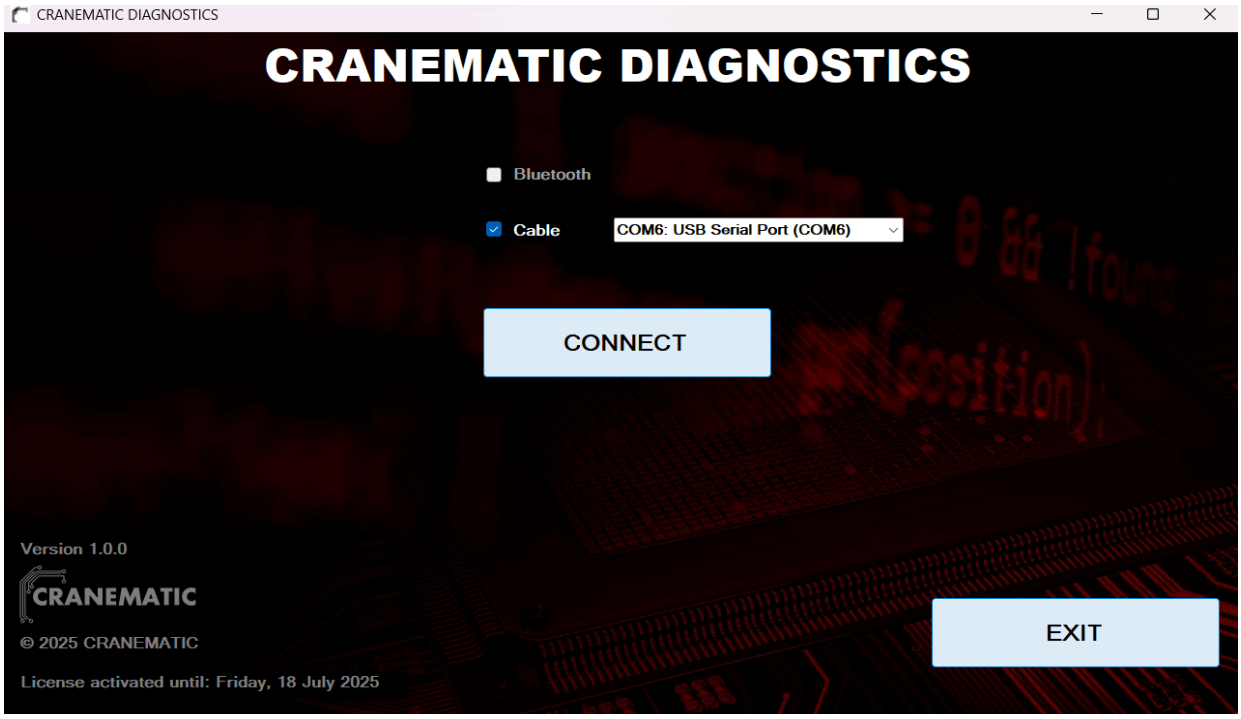

Figure 3: Connection View

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1) Bluetooth Connection

1. Check the **"Bluetooth"** checkbox.
2. Click the **"Connect"** button.
3. The program will automatically attempt to connect with the tool by bluetooth.
4. Once connected, the program will proceed to the main interface.

2) Cable (USB) Connection

1. Check the **"Cable"** checkbox.
2. A **dropdown selection** will appear showing available COM ports.
3. Select the port labeled similar to:
   COM?: USB Serial Port (COM?)
4. Click the **"Connect"** button.
5. If the selected port is correct and the tool is properly connected, the program will proceed to the main interface.

● **NOTE:** If no COM ports appear, make sure the USB cable is connected and that drivers are correctly installed. See Section **9.1.1 Driver Manual Installation** for instructions.

7. SOFTWARE QUICK GUIDE

This quick guide provides an overview of the **Cranematic Diagnostics software** interface, explaining the purpose of each main menu option and what users can do in each section.

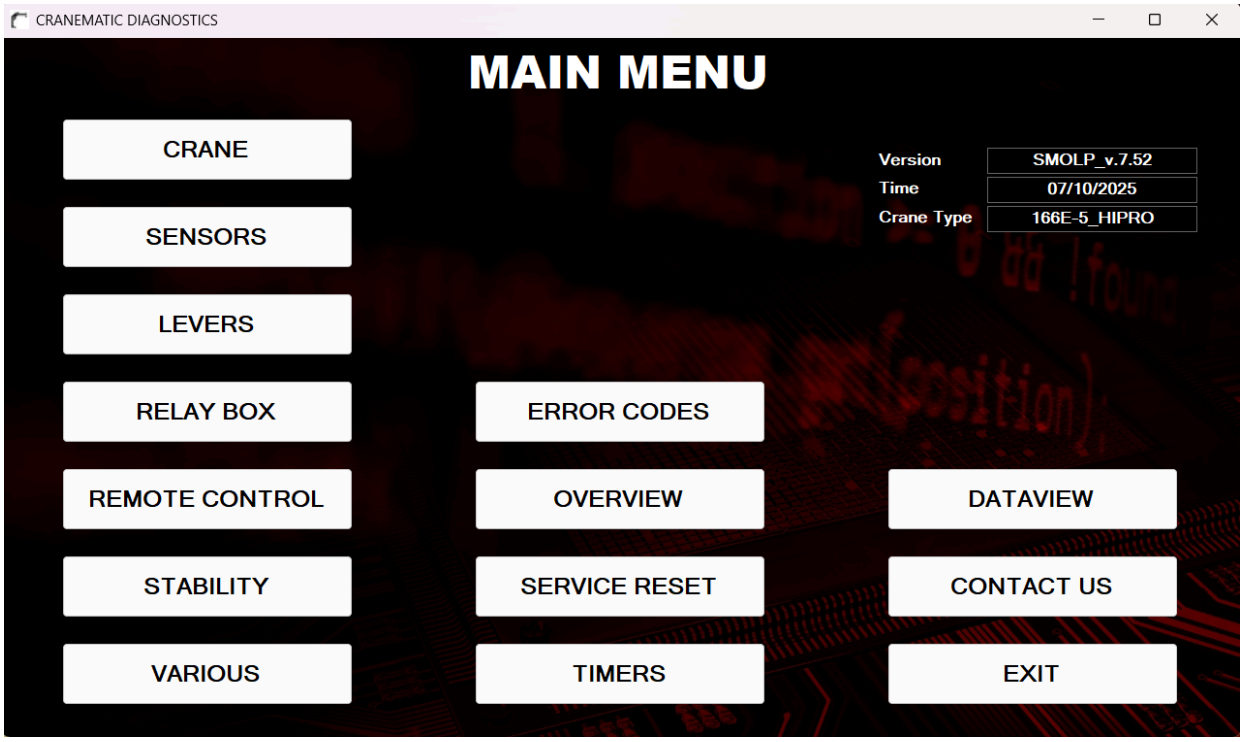

Figure 4: Cranematic Diagnostics Main Menu

** **Feature availability may vary** depending on crane model and control system version*

7.1 Crane

- **System Type** – Displays what functions and features are active in the current crane system.
- **Overload Protection*** – Shows overload limits and sensor values for calculations.
- **Winch*** – Access winch parameters and monitor winch-related variables.
- **User Interface*** – Configure CAN-based UI modules connected to the system.
- **Vehicle Information*** – View crane/vehicle dimensions, weight, crane and support leg placement.

7.2 Sensors

- **Pressure Sensors** – Monitor pressure-related parameters in real time.
- **Tilt Sensors** – View tilt angles and values from inclination sensors.
- **Slew Sensor*** – Monitor rotation sensor values and perform sensor calibration.
- **LegBox*** – Configure and test connected LegBoxes.
- **Length Sensors*** Configure and test Length Sensors.

7.3 Levers

- **Lever Position** – Shows real-time lever position as read by the crane.
- **Lever Functions** – Assign specific functions to each lever.
- **Lever Calibration** – Calibrate analog lever signals for accurate reading.

7.4 Relay Box*

- Configure function for each relay output and monitor real-time relay activation.

7.5 Remote Control*

7.5.1 CombiDrive Remote

- **Automatic Speed Control** – Enable and configure dynamic speed adjustment based on lever input or load.
- **Function Speeds** – Set custom speed levels for individual crane functions.
- **Hand Controller Configuration** – Assign functions to buttons, configure additional controls, enable special features, and customize the remote display — including icons and text.

7.5.2 XSDrive Remote

- **Automatic Speed Control** – Adjust parameters related to automatic speed control.
- **Function Speeds** – Adjust speed levels per function.
- **Hand Controller Setup** – Configure button assignments and advanced features.
- **Change Direction** – Switch control direction (e.g., operator orientation).
- **Pair New Remote** – Start pairing mode to connect a new XSDrive Controller.

7.6 Stability*

- Select sectors/zones where crane lifting capacity is reduced due to support position or other conditions.

7.7 Various

- Configure additional and custom system functions.

7.8 Error Codes

- View and clear current active error codes.
- Access historical error log with timestamps and descriptions.

7.9 Overview

This section provides a quick snapshot of the entire crane system and is especially useful for fast diagnostics when the crane isn’t working correctly.

Use the overview to:

- See real-time readings from all sensors and inputs
- Quickly identify missing or incorrect signals
- Monitor lever positions, pressure sensors, tilt sensors, and more

- View analog inputs, stabilizer leg inputs, and other sensor states
- Check the Limits & Warnings list to spot active restrictions or blocked operations

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7.10 Service Reset

- View service history and reset service intervals after maintenance.

7.11 Timers

- Displays total operating hours, function use time, and event counters.

7.12 Contact Us

- Information on how to get in touch with Cranematic for support, licensing, and feedback.

8. TROUBLESHOOTING

This section provides solutions to common issues related to the installation, connection, and operation of the **Chelidon Diagnostic Tool** and the **Cranematic Diagnostics Software**.

If problems persist after following the instructions, please contact support (see **Chapter 11 – Contact & Support**).

8.1 Problem: No COM ports appear in the cable connection mode

Cause: The USB driver may not be installed or the USB cable is not properly connected.
Solution:

- Make sure the diagnostic tool is connected to the PC via USB.
- Check that the tool is also connected to the crane and the crane is powered on.
- Install Chelidon Diagnostics Tool Driver manually - see *9.1.1 Driver Manual Installation*
- Try reconnecting the USB cable and restarting the program.

8.2 Problem: Bluetooth device not found during pairing

Cause: The tool is not powered or not in Bluetooth discovery mode.
Solution:

- Make sure the PC is within Bluetooth range (max 15 m with no obstacles)
- Make sure the diagnostic tool is **connected to the crane and powered on**.
- Ensure the **USB cable is not connected**, as Bluetooth is disabled in cable mode.
- Look for **“CHELIDON V...”** in the Bluetooth device list.
- Turn Bluetooth off and on again in your PC settings.
- Try updating your Bluetooth drivers.
- Restart your computer.

8.3 Problem: Blue LED keeps blinking and connection fails

Cause: The tool is in Bluetooth mode but no connection has been established.
Solution:

- Ensure the Bluetooth device is **paired** (see Chapter 5.1).
- Try using cable mode instead.
- Restart the tool by disconnecting it from the crane and reconnecting.

8.4 Problem: Amber LED never lights up

Cause: No data is being transmitted.
Solution:

- Make sure the tool is successfully connected (via cable or Bluetooth).
- Confirm that the crane is powered on and communication is active.
- Try restarting the connection or re-opening the program.

8.5 Problem: Program shows License screen again after activation

Cause: License file is missing, expired, or not yet activated properly.
Solution:

- Open the Cranematic Diagnostics program.
- Use the **“Browse License File”** button to locate your .lic file again.
- Press **Activate** to apply the license.
- If the issue continues (e.g., new computer or expired license), request a new license from support.

8.6 Problem: Connection succeeds but data is missing or incorrect

Cause: Connection established, but communication with crane is incomplete.
Solution:

- Check all physical connections.
- Verify that the crane system is operating correctly.
- Try both cable and Bluetooth modes.
- If the issue persists, contact support.

8.7 Led Status Description

LED Color	Function	State	Description
Green	Power Indication	**On (Solid)**	Tool is connected to the crane and receiving power
		Off	Tool is not powered (crane is off or not connected)
Blue	Bluetooth Status	**Blinking**	Tool is powered on and searching for Bluetooth connection
		On (Solid)	Connected via Bluetooth to the computer and ready for communication
		Off	Tool is in USB mode (Bluetooth disabled while USB is connected)
Amber	Data Transmission	**Flashes (Blinking)**	Data is being transmitted between crane and computer
		Off	No active communication at the moment

Table 1. LED Behavior Reference

9. MAINTENANCE & UPDATES

9.1 Hardware Handling

- Store the diagnostic tool in a clean, dry location, protected from dust, vibration and direct sunlight.
- Avoid dropping or applying physical force to the device, cables, or connectors.
- Periodically check the condition of:
    - USB cable
    - Crane connector cable
    - Tool casing and LED indicators
- Do not attempt to open or modify the device — this may void warranty and affect functionality.

Cleaning

- Use a soft, dry cloth to clean the tool.
- Do not use water, alcohol, or cleaning chemicals.
- Ensure all connectors are free of dirt and debris before connecting to a crane or computer.

9.1.1 Driver Manual Installation

Step 1: Download the Chelidon Diagnostic Tool USB driver from www.cranematic.com — available under the Downloads menu.

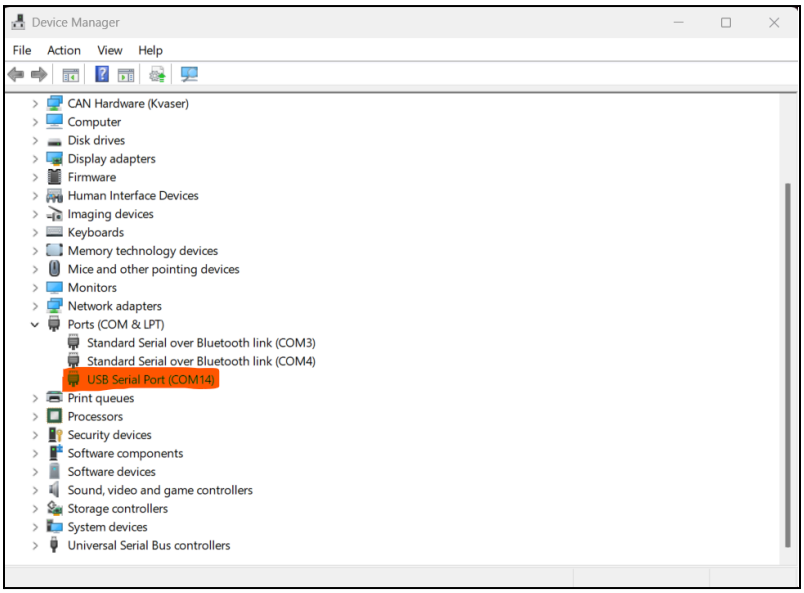
Step 2. Extract the downloaded ZIP file.

Step 3. Plug in your Chelidon tool via USB

- Wait for Windows to detect it (even if as an unknown device)

Step 4. Open Device Manager

- Press **Windows + X** → choose **Device Manager**
- Expand **Ports (COM & LPT)** or **Other Devices**

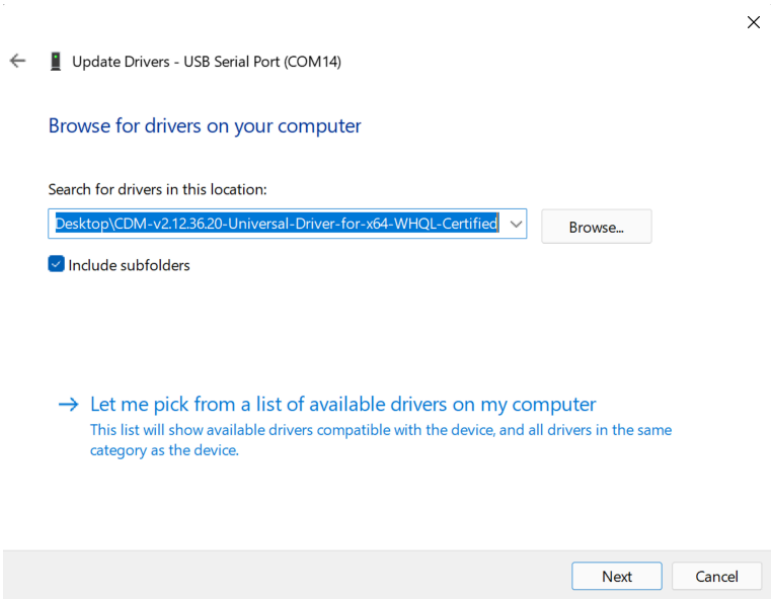


- Look for something like:
  - "USB Serial Port"
  - "USB Serial Device"
  - "Unknown Device"
  - "FTDI device" with yellow warning

Step 5. Right-click the device → choose Update driver

Step 6. Select: "Browse my computer for drivers"

Step 7. Click “Browse...” and point to the extracted folder



(e.g., where your ftdibus.inf and ftdiport.inf files are)

Make sure the checkbox **"Include subfolders"** is checked.

Step 8. Click “Next”

- Windows will search for the correct .INF file and install the driver.
- You should see **USB Serial Port** devices show up afterward.

9.2 Software Updates

9.2.1 Checking for Updates

- Software updates are provided by Cranematic and may include:
  - Bug fixes
  - New diagnostic features

- Compatibility with new crane models

- Updates are distributed:
  - The official **Cranematic website**:
    www.cranematic.com
    Click the **“Downloads”** button in the top menu to get the latest version.

9.2.2 How to Update

You can download the latest version of the **Cranematic Diagnostics Software** from the official website: www.cranematic.com
Click on the **“Downloads”** button in the top menu and select the latest available version.

To update:

- **Close the application** if it’s currently running.
- **Launch the new installer** and follow the steps described in **Section 4 – Installation Guide.**
- Make sure you **install the update to the same folder** as your previous version.
- Once installed, **open the program** and verify the version number.

⬤ **NOTE:** Your existing license will still be valid — activation is **not required again** on the same computer.

10. SAFETY NOTES

Please follow these safety guidelines when using the diagnostic tool to prevent equipment damage, avoid communication failures, and ensure operator safety.

10.1 Electrical Safety

- Only connect the diagnostic tool to cranes that are powered and within their **normal operating voltage range(24V)**.
- Never attempt to connect or disconnect the tool while the crane system is experiencing faults, power surges, or shutdown conditions.
- Ensure all connectors and cables are **dry, undamaged, and properly inserted** before use.

10.2 Crane Systems

- This diagnostic tool is designed to interface with **crane systems**. Always ensure proper clearance from moving machinery.
- Stay clear of **lifting zones** or hoists during diagnostics.
- If live monitoring is required during crane operation, ensure another person is controlling the crane and communication is maintained at all times.

10.3 During Crane Operation

- Only trained personnel should operate the crane while diagnostics are running.
- Do not touch internal crane components or exposed wiring during operation.
- Avoid standing under loads or in areas where crane movement is possible.

10.4 When Using USB or Bluetooth

- Ensure a **stable connection** before performing any read/write operations.
- When using USB, avoid sudden disconnection during active data transmission.

10.5 General Use

- Store the diagnostic tool in a **dry, dust-free location**, away from vibration and direct sunlight.
- Disconnect the tool from both the **crane** and **computer** when not in use.
- Do not disassemble or modify the tool — this may void warranty and compromise safety.

11. CONTACT & SUPPORT

If you experience issues with the diagnostic tool, need help with installation, or require a new license, please don’t hesitate to get in touch.

11.1 Technical Support

Email: support@cranematic.com

When contacting support, please include the following information to speed up the process:

- Company name
- Contact person name
- Email address
- Serial number of the diagnostic tool
- Description of the issue
- Screenshots or error messages (if possible)

11.2 License Requests

To request a new license, follow the instructions in **Section 6.1**, or send your hardware key manually to:
Email: support@cranematic.com
Subject: License Request

Body:

- Company name
- Email address
- Hardware Key

11.3 Additional Resources

- Website: www.cranematic.com
- Firmware or software update pages