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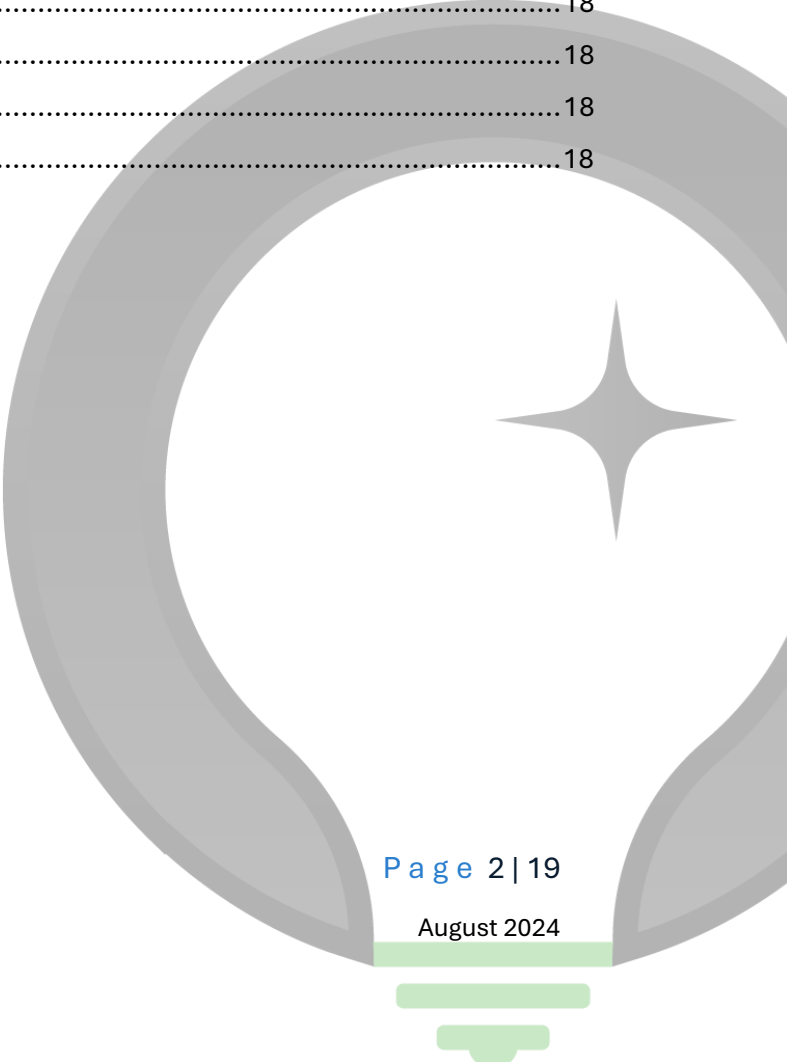
# The *Universal Bluetooth Tool*

## *Installation & Instruction Manual*

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# Introduction

## LCO Technologies Presents: The Universal Bluetooth Tool Kit

Upgrade your legacy systems with cutting-edge simplicity. LCO Technologies is proud to introduce our Patent Pending Universal Bluetooth Tool Kit, a groundbreaking solution designed to modernize your interaction with aging equipment without the need for costly replacements.

### Seamless Modernization

Many legacy devices lack modern interfaces like Wi-Fi, Ethernet, or USB, making them difficult to work with in today's tech-driven world. Our Universal Bluetooth Dongle is the answer to this challenge, transforming the way you interact with equipment that relies on RS-232 serial ports. No longer will you need to hunt for outdated laptops with serial ports or struggle with cumbersome wired connections.

### Effortless Integration

With the Universal Bluetooth Tool Kit, the complex becomes simple. This innovative dongle allows any modern computer to wirelessly connect to legacy devices with an RS-232 port. It's universally compatible—no matter the protocol or product type. If you encounter a device that doesn't seem to work, our support team is ready to assist, ensuring seamless integration across the board.

### Minimal Setup, Maximum Impact

Connecting is as easy as matching the Transmit, Receive, and Ground pins (2, 3, 5) with the corresponding pins on your equipment, and ensuring a matching baud rate. That's it—no external power sources, batteries, or complex configurations needed. Our device supports BLE 5.0 and registers as a Comm Port in Windows, allowing you to continue using your existing configuration software just as you would with a direct serial connection.

### Future-Proof Your Operations

Don't let outdated interfaces hold your operations back. With the LCO Technologies Universal Bluetooth Tool Kit, you can bring your legacy equipment into the modern era, enhancing efficiency, safety, and ease of use. Say goodbye to the limitations of RS-232 connections and welcome a future where innovation meets simplicity.

### Get Started Today

Join the growing number of professionals who are revolutionizing their workflows with LCO Technologies. Contact us today to learn more or to get your Universal Bluetooth Tool Kit.

# Included in the Box

## The Universal Dongle

- **Part Number: BT5-UNI**
- DB9 Female
- 232 → BLE5 Conversion
- Bluetooth ID Rename for Easy Identification
- No External Power Necessary
- Universal Communications Across Devices
- 1200 Baud → 230400 Baud



## USB-232-BT Adaptor

- **Part Number: BT5-USB**
- USB → RS-232 → Bluetooth Adaptor
- Pairs the Computer to the Universal Dongle
- One Click Easy and Simple Pairing
- Registers in Windows as a Comm Port
- Use Existing Serial Software Configurations



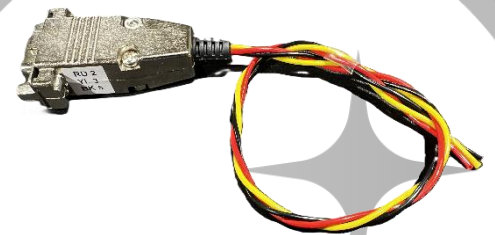
## The Programming Tool

- **Part Number: BT5-ADAPTER**
- Quick and Easy Baud Rate and Speed Control Configuration
- Null Modem Adaptor
- Optional USB-C Power Supply Capability



## The General Adaptor

- **Part Number: BT5-UNI-GEN**
- Composed of Three Flying Leads Easily Distinguished by Colour
- An Easy Termination Solution should there be no DB9
- Facilitates Wire Connection to the Universal Dongle
- Easily Implemented, Flexible Install



## RJ45 → DB9 Female Adaptor

- **Part Number: BT5-ROC800**
- DB9F → RJ45 Connection
- Created for Devices that use RJ45 for Local Operator Interfaces such as ROC800, SCADAPack, FreeWave Radios and others.



# Product Differentiation

## Universal Bluetooth Tool Kit: Bridging Legacy and Modern Technology

The Universal Bluetooth Tool Kit from LCO Technologies is a groundbreaking solution that modernizes legacy equipment without the need for costly replacements. It offers an easy and innovative way to connect your existing devices to the technology you want to use, whether that's your current laptop or a smartphone.

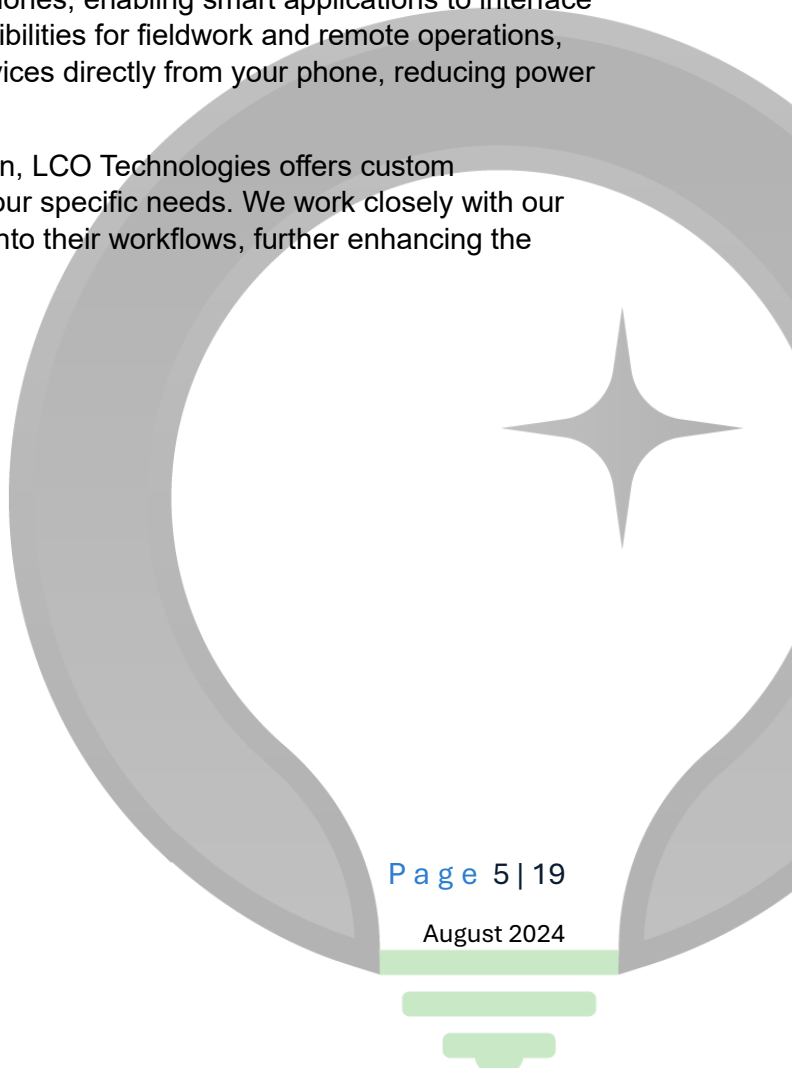
### Simplicity with Your Existing Laptop

Our tool kit allows you to wirelessly interact with legacy devices using your current laptop and software. The Universal Bluetooth Dongle, powered by Bluetooth 5.0 Low Energy (BLE), registers as a Comm Port in Windows, making it a seamless extension of your existing setup. No external power sources, complex configurations, or additional software are needed. Simply match the necessary pins, and you're ready to go. This straightforward process allows you to continue using the tools and programs you're familiar with, while benefiting from wireless convenience.

### Smartphone Integration with BLE and Custom App Development

But we don't stop at laptops. The Universal Bluetooth Tool Kit, with its Bluetooth 5.0 Low Energy capability, is also compatible with modern smartphones, enabling smart applications to interface with your legacy equipment. This opens new possibilities for fieldwork and remote operations, allowing you to manage and interact with your devices directly from your phone, reducing power consumption while extending battery life.

Even if you don't currently have a smart application, LCO Technologies offers custom development services to create apps tailored to your specific needs. We work closely with our customers to design solutions that fit seamlessly into their workflows, further enhancing the versatility and utility of our Bluetooth tool kit.



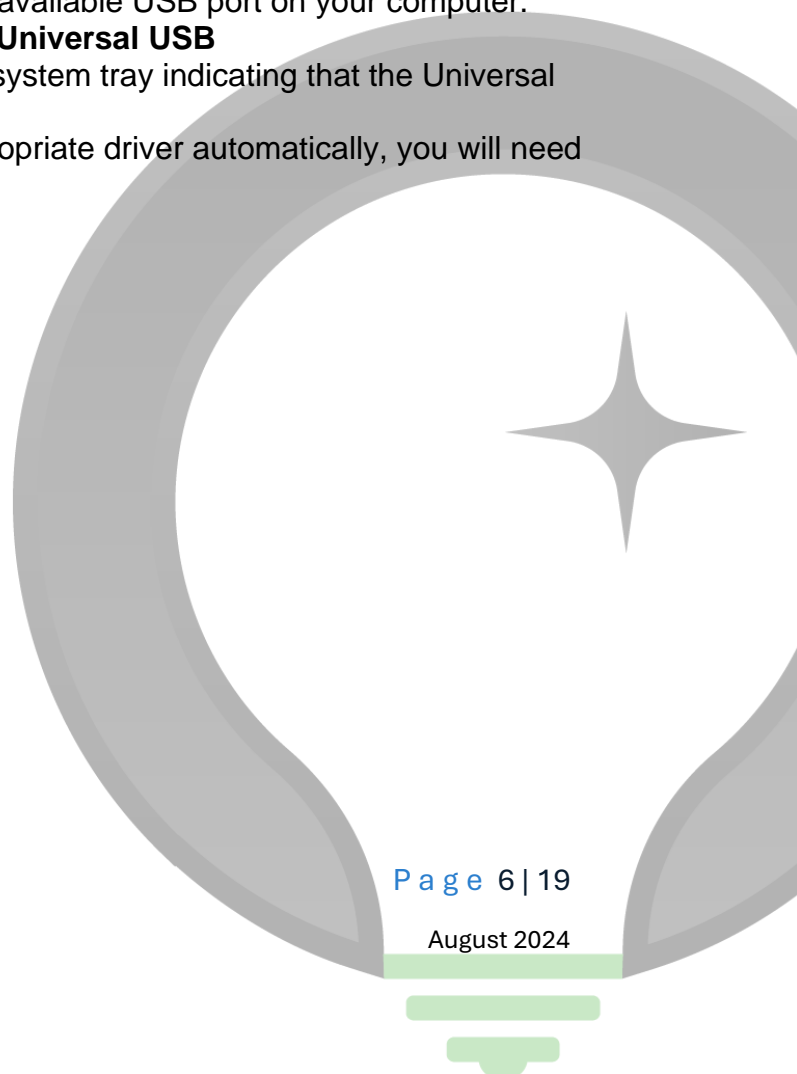
# User Manual: Installing the Universal USB and Configuring Comm Port

## Preliminary Information

- **Administrator Rights Required**
  - Installing drivers may require administrative privileges.
  - If you experience difficulties, please contact your IT department for help and approval.
- **Driver Requirement**
  - The driver provided does the dynamic conversion of RS232 serial port communication into Bluetooth.
  - Windows does not natively support this functionality; hence, the driver is essential.
  - LCO Technologies has ensured that the driver is virus-free, but always make sure to download from a reputable source.

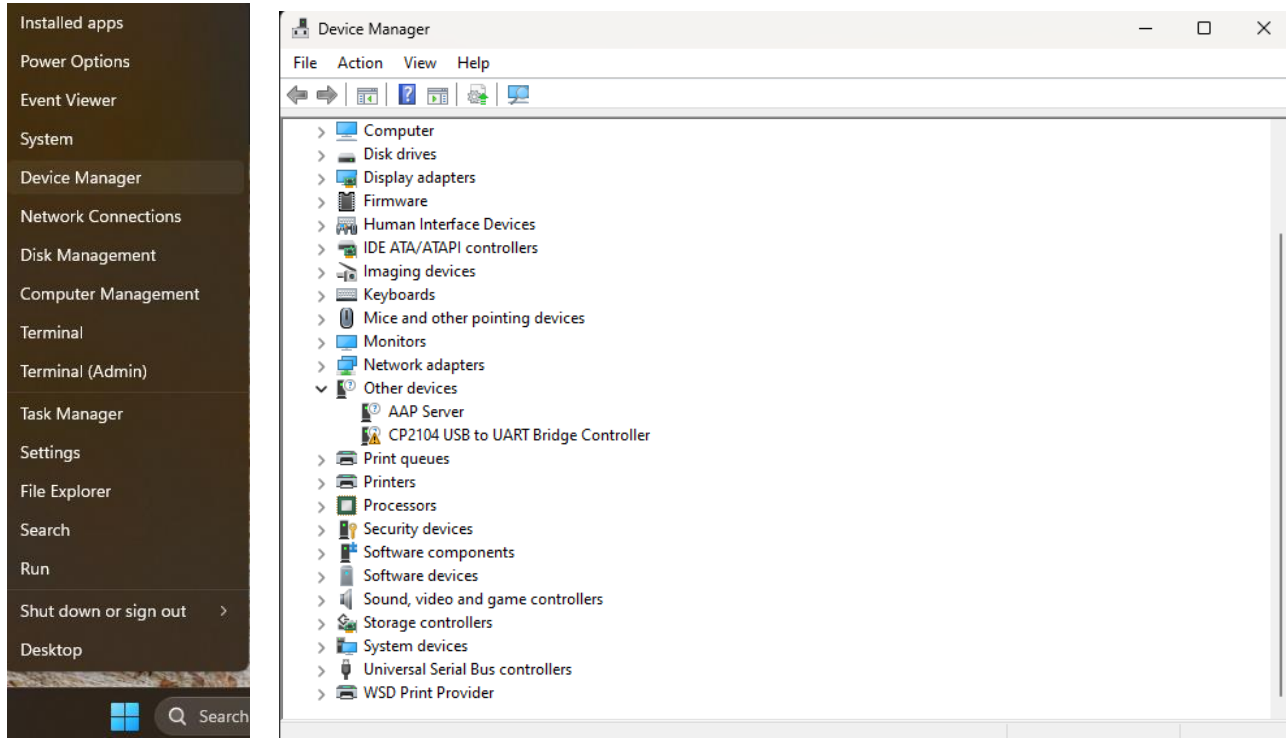
## Plugging in the Universal USB

- **Connect the Universal USB**
  - Plug the Universal USB into an available USB port on your computer.
- **Wait for Windows to Recognize the Universal USB**
  - A notification will appear in the system tray indicating that the Universal USB is being installed.
  - If Windows cannot find the appropriate driver automatically, you will need to manually install the driver.



## Opening Device Manager

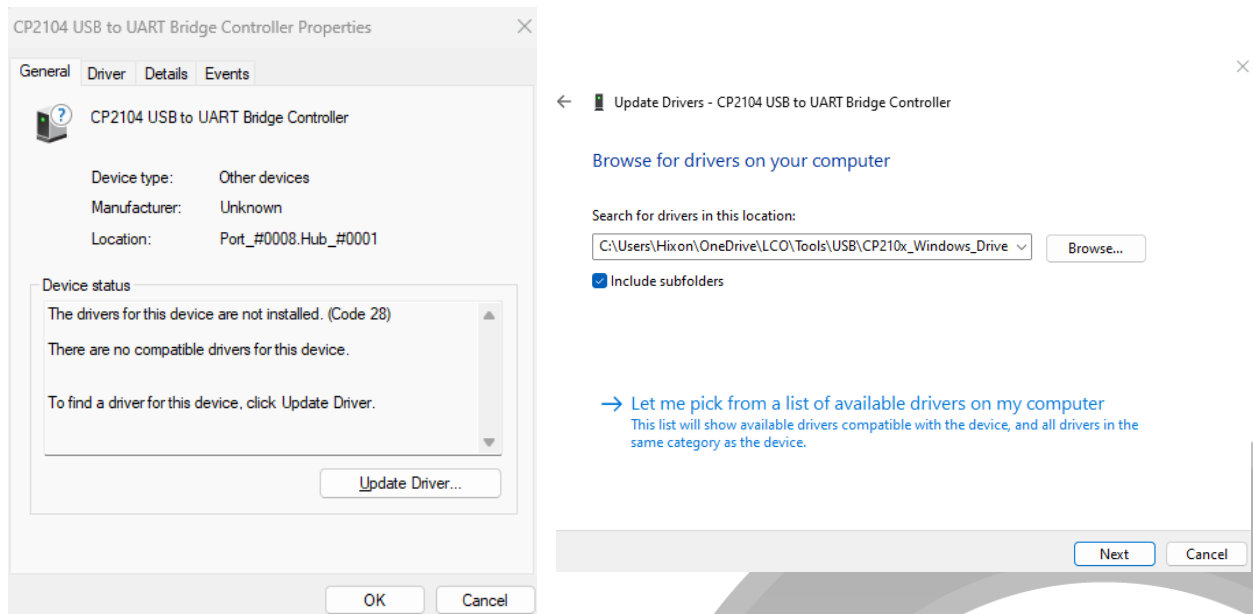
- **Access Device Manager**
  - Right-click on the Start button (or press Win + X) and select Device Manager from the menu.



- **Locate the Universal USB in Device Manager**
  - In Device Manager, find the connected Universal USB.
  - It may appear under Other devices or Universal Serial Bus controllers.
  - If the driver isn't installed, it might have a yellow exclamation mark as seen above.

## Installing the Universal USB to the Driver

- **Driver Download**
  - Download the driver [here](#), unzip it to a location of your choice, and use that location when pointing Windows to the new Universal USB device.
- **Right-click on the Universal USB**
  - Select Update driver from the context menu.

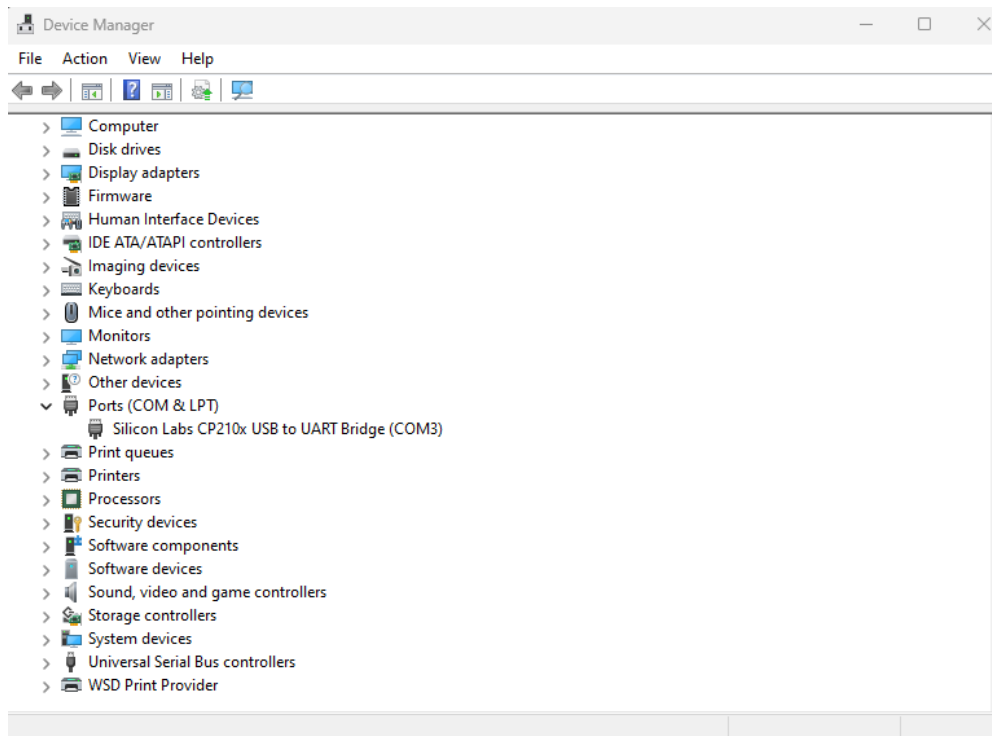


- **Choose How to Search for Drivers**
  - In the Update Drivers window, select Browse my computer for drivers and select the directory where you unzipped the files.
- **Wait for Installation**
  - Windows will install the driver, once completed, the Universal USB should be recognized correctly.
  - If you want to manually change the Comm Port Number you can do so under Advanced Settings.



## Confirming the Universal USB as a Comm Port

- **Check in Device Manager:** Once the driver is installed, the Universal USB should be listed under Ports (COM & LPT) with an assigned Comm Port number.



## Manually Changing the Comm Port Number

- **Open Device Properties**
  - Right-click on the Universal USB listed under Ports (COM & LPT) and select Properties.
- **Navigate to Port Settings**
  - In the Properties window, go to the Port Settings tab.
  - Click the Advanced button. In the COM Port Number dropdown, select a custom port number of your choice. Click OK to apply the changes.
  - The Universal USB should now appear with the new Comm Port number in Device Manager.
  - If you change it, ensure it does not overlap with an existing utilized port and reboot after making changes

## Verifying the Setup

- **Confirm Registration**
  - Verify that the Universal USB is correctly registered as both a Comm Port and an LPT in Device Manager.
- **Set the Correct Baud Rate**
  - Ensure the correct baud rate is set to match the device you intend to communicate with.
  - To do this, return to the Port Settings tab in the device's Properties window.
- **Use an Existing USB-to-Serial Cable to Verify Baud Rate**
  - If you are unsure of the correct baud rate, you may need to use an existing USB-to-serial cable that is known to work with the device to verify the baud rate settings.
  - Connect the known cable to the device and check the baud rate settings used.
- **Test the Device**
  - Open any application that uses serial communication to test the connection and ensure it works correctly with the set baud rate.
  - Now that you have verified that the end device is working correctly with your USB to Serial Cable, and you know the baud rate it is time to setup the LCO software and configure the Universal Bluetooth Tool.



# LCO Programming Software Installation Guide

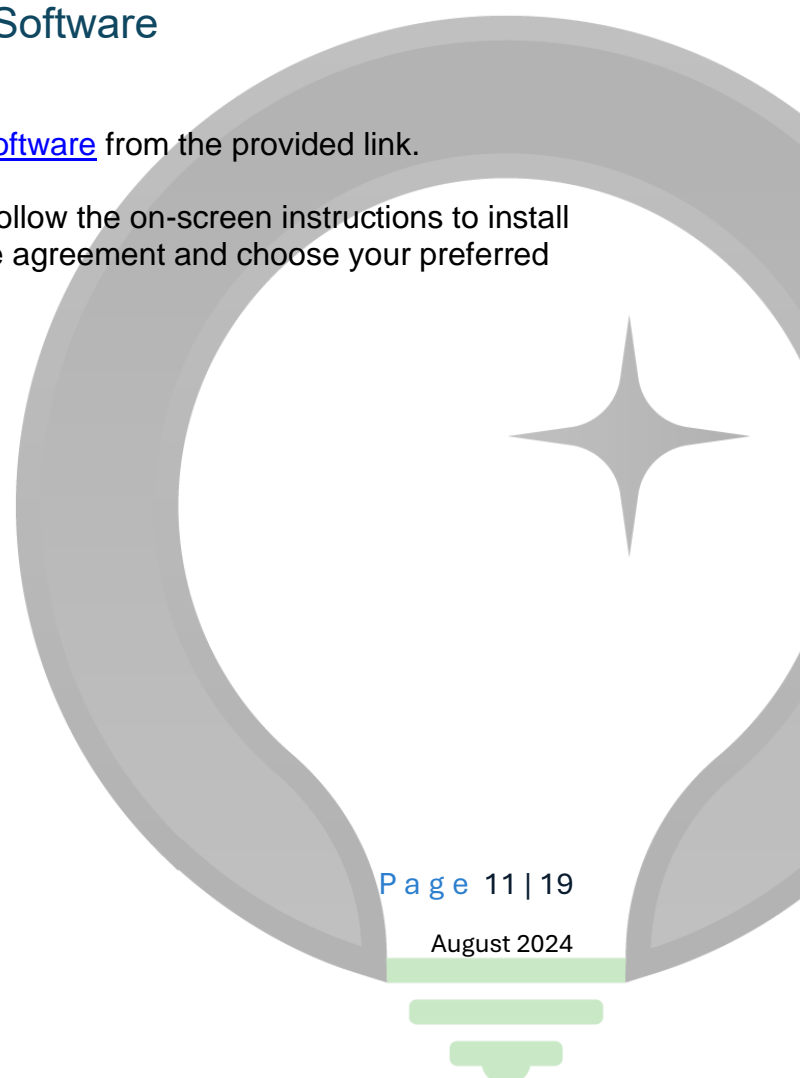
This guide provides detailed instructions on installing and setting up the LCO Programming software, which allows for configuration of the Universal Bluetooth Tool and other LCO hardware components.

## Important Note

- The programming tool is exclusively for programming the Universal Bluetooth Tool when changes to the baud rate or Bluetooth broadcasting name are needed. It is not intended for normal communications with equipment in the field.
- It is crucial to know the COM port number assigned to your USB to Serial adapter and select it accordingly in the software. This ensures that the programming tool can correctly communicate with the Universal Bluetooth Tool.
- Ensure that the USB to Serial adapter used must supply sufficient power through the USB connection to power up the Universal tool.
- Not all brands provide sufficient power. A commonly purchased brand like [Startech](#) is recommended.

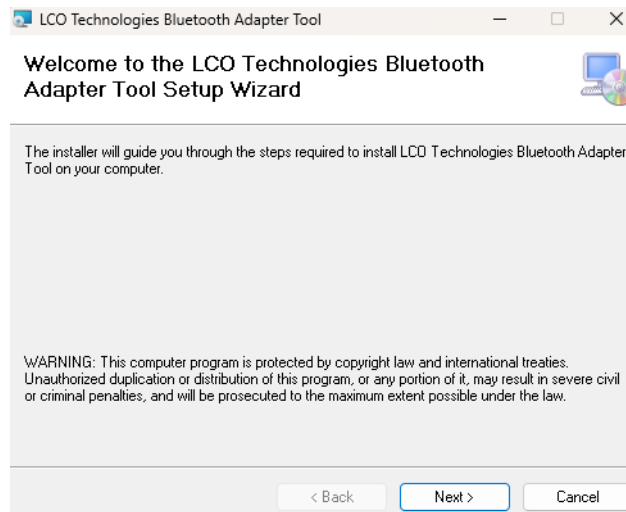
## Installation of LCO Programming Software

1. **Download the Software**
  - Download the [LCO Bluetooth software](#) from the provided link.
2. **Start the Installation**
  - Open the downloaded file and follow the on-screen instructions to install the software. Accept the license agreement and choose your preferred installation directory.



### 3. Complete the Installation

- After selecting the installation settings, click Install to begin the software setup. Once completed, click Finish to exit the installer.



## 2. Hardware Setup

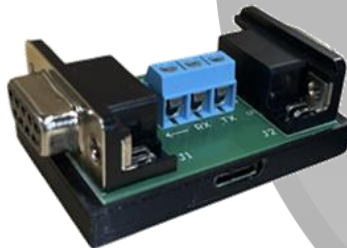
### 1. Connect the USB to Serial Cable

- Ensure your computer is powered on and log in. Connect the USB to Serial cable to a free USB port on your computer.



### 2. Attach the Programming Tool

- Plug the programming tool into the other end of the USB to Serial cable.



## Optional USB-C Power Connection

- For older LCO Only Bluetooth modules, connect a USB-C cable to the programming tool for separate power. Note: The Universal Bluetooth Tool is self-powering via the USB connection and does not require this step.

### 3. Connect the Universal Bluetooth Tool

- Attach the Universal Bluetooth Tool to the programming tool.



## 3. Programming the Universal USB & Universal Bluetooth Tool

### 1. Match Baud Rates

- The baud rate of the Universal USB Tool (master unit) must match the baud rate of the Universal Bluetooth Tool (slave unit).
- If they do not match, communication will fail.

### 2. Set the Baud Rate on the Universal USB Tool

- Ensure that the baud rate on the Universal USB Tool is configured to match the Universal Bluetooth Tool.
- This is done through the LCO Programming software by selecting the COM port assigned to the Universal USB Tool.

### 3. Verify COM Port for Each Device

- Note that the master unit has its own COM port in Windows, which will not be the same as the COM port number of your USB to Serial adapter.

## 4. Software Configuration

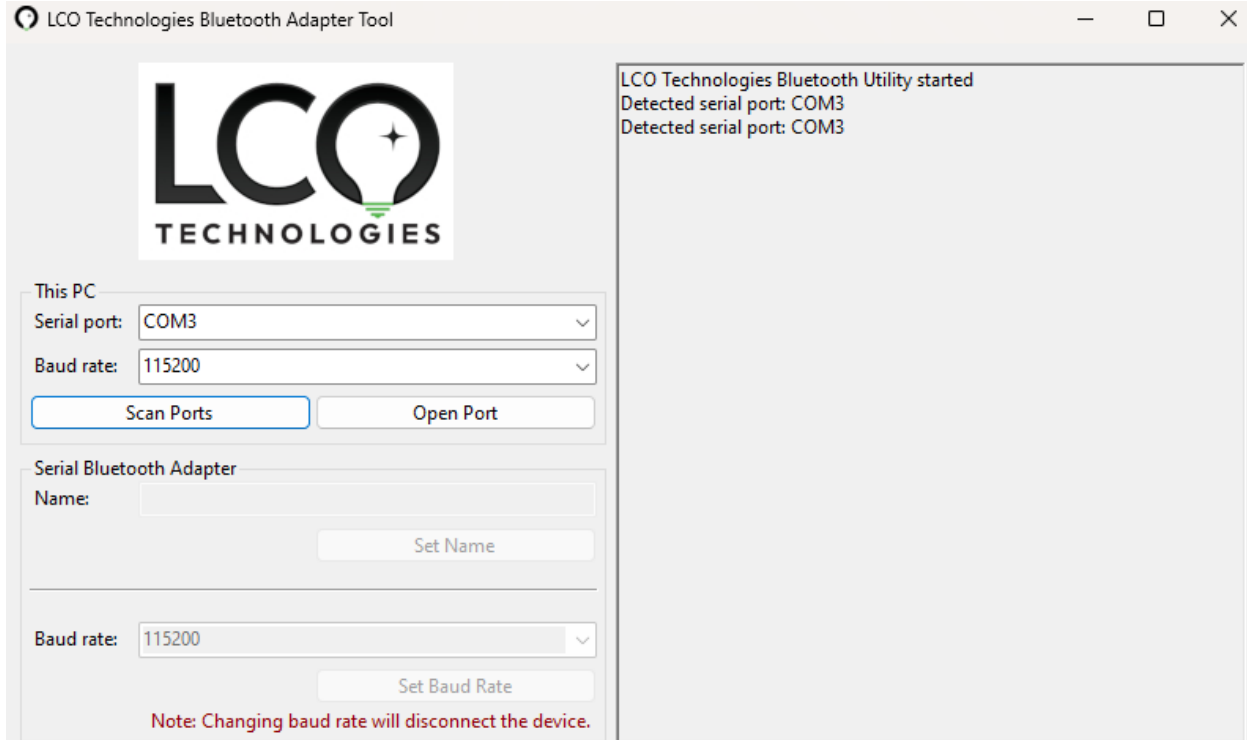
### 1. Launching the Software

- Open the LCO Programming software from the desktop shortcut or start menu.



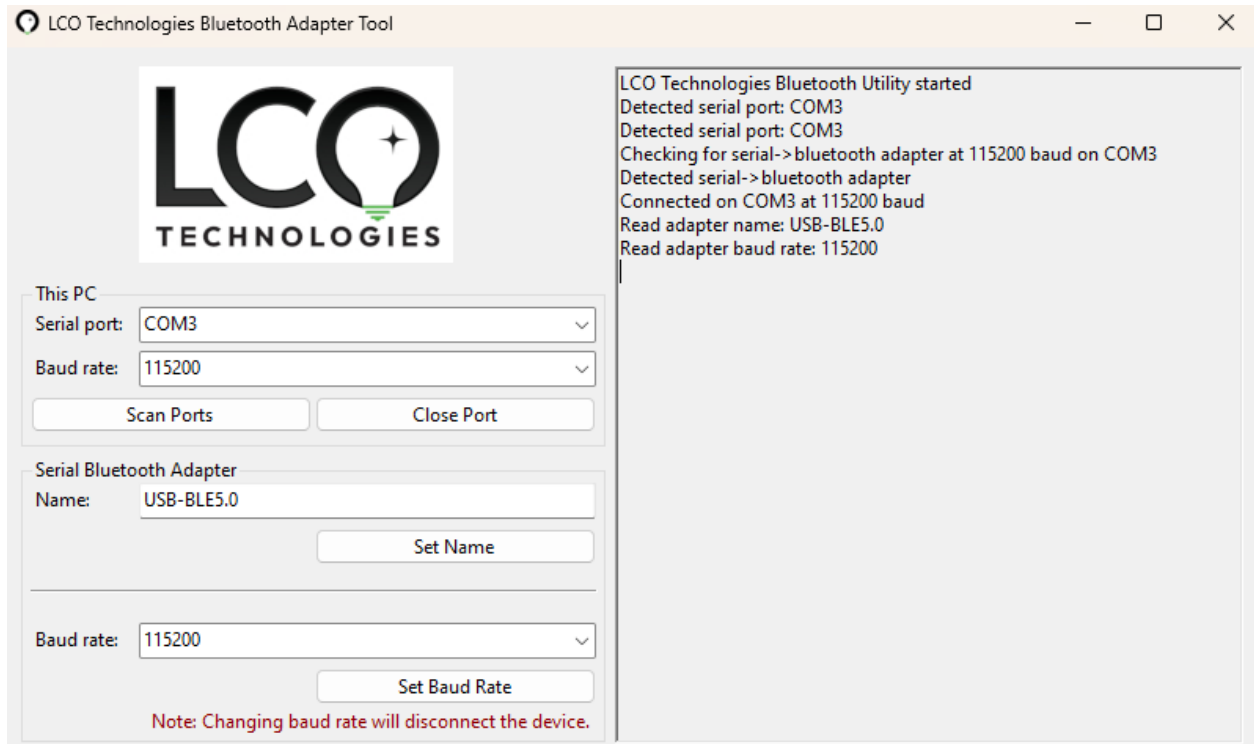
### 2. Scanning for Available COM Ports

- Go to the Tools or Settings' menu and select Scan for COM Ports.
- Ensure your connected devices are recognized and listed.



### 3. Connecting to the Universal USB Tool

- Click Open Port
- The software should find your new Universal USB tool as seen on this image

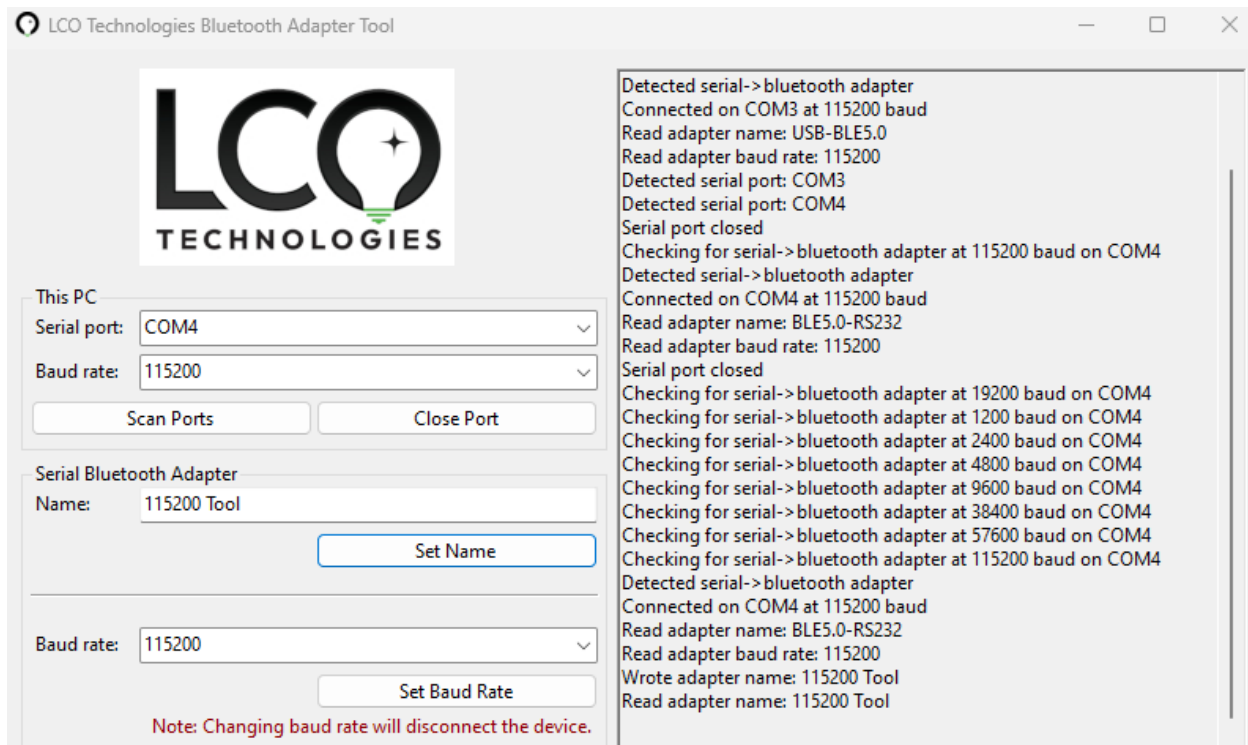


### 4. Connecting to the Universal Bluetooth Tool

- The default baud rate will be set to 115200, but if the tool is set at a different speed, the software will auto-poll to find the correct baud rate. If no connection is made, check for a flashing LED light to ensure that the unit is powered up and ready to accept a connection. Refer to the troubleshooting section for further steps if a connection is not properly made.

## 5. Setting the Bluetooth Broadcasting Name

- Navigate to the Bluetooth settings within the software.
- Enter a new broadcasting name up to 10 characters long. Note that special characters such as \$%^ are not permitted.



## 6. Changing the Baud Rate

- In the same settings menu, adjust the baud rate to match your requirements for communication. Upon setting the new baud rate, the connection to the port will automatically close as the speed has now changed. A new connection is required to make further changes.



## 5. Saving Settings and Testing Configuration

### 1. Apply Changes

- After making your adjustments, click Apply or Save to update the settings.

### 2. Close the Software

- Once changes are saved, close the software to ensure that the COM port is released for other applications.

### 3. Disconnect and Test with Field Device

- Disconnect the Universal Bluetooth Tool from the programming tool and connect it to the field device you wish to communicate with to test the configuration.

## 6. Troubleshooting

### Handling USB Peripherals

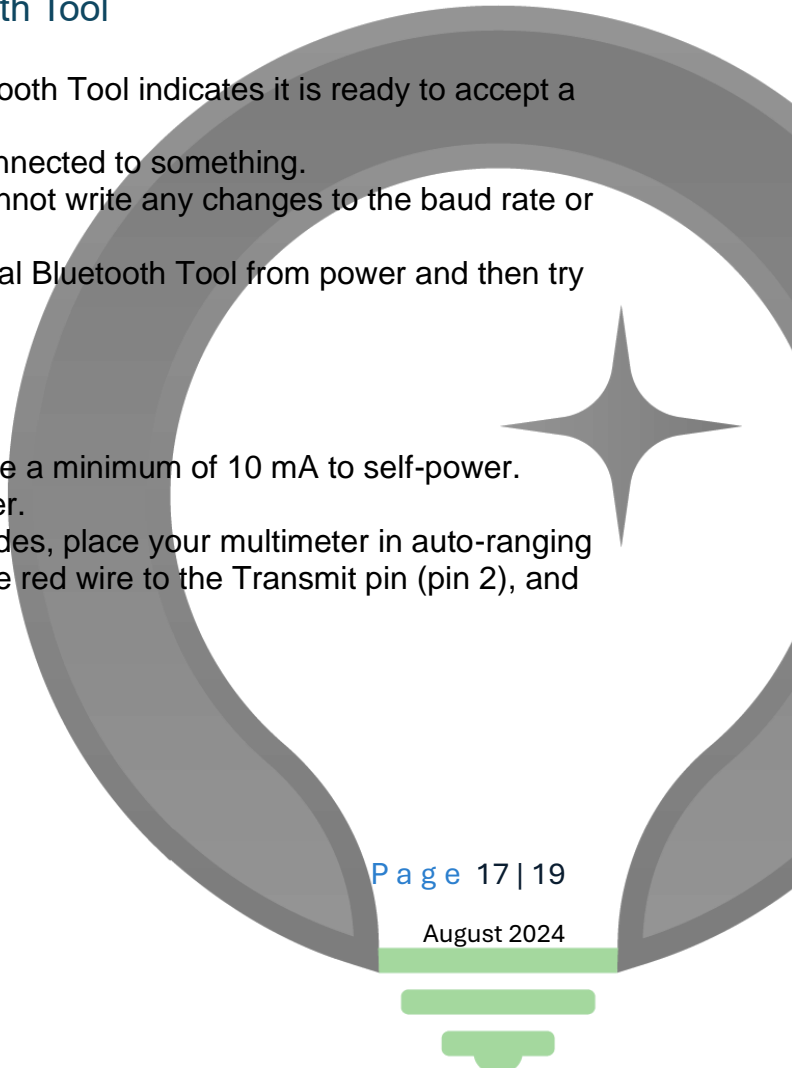
- The LCO Programming Software does not correctly handle the plugging in and unplugging of USB peripherals while it is running.
- Do not insert or remove any equipment while the software is active.
- If you accidentally insert or unplug a USB device while the software is open, close the software completely and restart it to continue.

### LED Indicators on Universal Bluetooth Tool

- A **flashing LED** on the Universal Bluetooth Tool indicates it is ready to accept a connection.
- A **solid LED** indicates it is currently connected to something.
- When the light is solid, the software cannot write any changes to the baud rate or broadcast name.
- To resolve this, disconnect the Universal Bluetooth Tool from power and then try writing to it again.

### Power Requirements

- The Universal Bluetooth Tool must have a minimum of 10 mA to self-power.
- Most brands provide 10-40 mA of power.
- To check how much power a unit provides, place your multimeter in auto-ranging current detection mode and connect the red wire to the Transmit pin (pin 2), and the black wire to Ground (pin 5).
- This measures the short circuit current.



## No Successful Connection

- If no successful connection is made, ensure that nothing else is utilizing the comm port and close all other associated software. Ensure that you are selecting the correct comm port for the USB to Serial adapter when programming the tool and select the comm port for the USB Universal tool separately.

## 7. Known Limitations

### Device Specific Limitations

- Not all devices will have their RS-232 ports enabled by default. Some units, like the ABB XFC G3-G5, require a 'jolt' to 'wake up'. These units currently only wake up at 2400 baud. LCO is actively working with ABB to find a solution to this limitation.

### Software and Serial Port Limitations

- External USB to serial converters cannot dynamically change baud rates due to limitations in Windows and the hardware. This necessitates manual setting of baud rates.

### Connector Limitations

- Not all pinouts or connectors (such as military connections) are included in the kit.

## 8. Technical Support

LCO Technologies is open to comments, suggestions, and will gladly create new adapters to support other technologies in the field.

For requests or support, contact us at [info@lco technologies.com](mailto:info@lco technologies.com) or [jordan@lco technologies.com](mailto:jordan@lco technologies.com). We would be happy to help!

If any bugs or issues are found, please send us feedback.



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