321 LX Data Logger

User Manual & README

Table of Contents

1. Introduction
2. System Requirements
3. Installation
4. First Run & Setup
5. Connecting to a Scale
6. Using the Data Logger
7. Data Export and File Management
8. Email Integration
9. Crash Recovery
10. Preset Management
11. Troubleshooting
12. Support & Contact

Introduction

The **321 LX Data Logger** is a Python-based application for logging weight data from analytical balances via RS232/USB or RJ45 (Ethernet/TCP).
It features real-time data acquisition, preset management, CSV export, email integration, and robust crash recovery.

System Requirements

- **Operating System:** Windows 10/11 (also compatible with macOS/Linux)
- **Python Version:** 3.8 or later
- **Required Python Packages:**
- pyserial
- pandas
- (Optional) ttkbootstrap for modern themes

Installation

Install Python

- Download and install Python from python.org.
- During installation, check the box **"Add Python to PATH"**.

1.1. Install Required Packages

- Open **Command Prompt** and run:

pip install pyserial pandas
(If you want modern themes, also run: pip install ttkbootstrap)

Download the Application

- Place the 321lx_data_logger.py script and all provided files in a folder of your choice.

(Optional) Create an Executable – preprepared and found in the dist folder

To run without needing Python installed or to avoid a CMD window:
1. Install PyInstaller:
text
pip install pyinstaller
2. Build the executable:
text
python -m PyInstaller --onefile --windowed 321lx_data_logger.py
3. The .exe will appear in the dist folder.

First Run & Setup

- Double-click 321lx_data_logger.py (or the .exe if you built one).
- The main window will appear with tabs for **Data Logger** and **Settings**.
- On first run, default presets and email settings files will be created if they do not exist.

Connecting to a Scale

Preset Selection

- At the top, select a scale preset (e.g., "Precisa 321 LX").
- To add or edit presets, use the "+" button.

Serial (RS232/USB) Connection

- Select **Serial** as connection type.
- Click the **refresh (↻)** button to list available COM ports.
- Choose your port (e.g., COM3).
- Set baud rate, data bits, parity, stop bits, and flow control as per your scale's documentation.
- Click **Connect**.

Ethernet (RJ45/TCP) Connection

- Select **Ethernet (RJ45)** as connection type.
- Enter the scale's IP address and port.
- Click **Connect**.

Connection Status

- The colored indicator and status label show connection state.

Using the Data Logger

Viewing and Logging Data

- Once connected, weight readings from the scale will appear in the table.
- Each row includes: **Sample Name | Weight | Units | Device | Comments**.
- Only **Sample Name** and **Comments** are editable (double-click to edit).

Resetting Data

- Click **Reset** to clear all data and reset sample numbering.

Data Export and File Management

Export to CSV

- Set the export file path or use the **Browse** button.
- Click **Export Results** to save the current table to a CSV file.

Open Exported File

- Click **Open File** to open the CSV in your default spreadsheet application.

Email Integration

Configure Email Settings

- Go to the **Settings** tab.
- Enter your SMTP server, port, username, password, sender, and default recipient details.
- For Gmail and similar services, you may need to use an **App Password** (see note in the app).

Sending Data via Email

- Click **Email Data** in the Data Logger tab.
- Enter recipient, subject, and message (defaults are pre-filled).
- Click **Send**. The current CSV file will be attached.

Crash Recovery

- The application automatically saves session data to a temporary file after each reading.
- If the app is closed unexpectedly, you will be prompted to restore the previous session on next start.
- Clicking **Reset** will clear this recovery file.

Preset Management

- Use the preset dropdown to select or manage scale connection profiles.
- Right-click the dropdown for options to delete a preset.
- Presets store all serial connection parameters and device name.

Troubleshooting

Problem: PyInstaller not found
Solution: Run python -m pip install pyinstaller and use python -m PyInstaller ... to build the executable.

Problem: No COM ports listed
Solution: Ensure your scale is connected and drivers are installed. Click **refresh (↻)**.

Problem: Email sending fails
Solution: Double-check SMTP settings, use an App Password for Gmail, and ensure your network allows SMTP connections.

Problem: App crashes or data lost
Solution: On restart, choose to restore the last session if prompted.

Support & Contact

For bug reports, feature requests, or support, contact:

- **Developer:** [yaniv/psygabio]
- **Email:** [yaniv@psygabio.com]
- **GitHub:** [link if public]

Appendix: Quick Start Checklist

- ☐ Install Python 3.8+ and required packages (pyserial, pandas)
- ☐ Connect your scale and note its COM port or IP address
- ☐ Run the script or executable
- ☐ Select or create a preset matching your scale
- ☐ Connect and start logging data
- ☐ Export or email your results as needed