# **📘 Drill File Merger – User Guide**

## **Overview**

The **Drill File Merger** is a Python utility that automates the process of consolidating multiple Excellon drill files (.drl) into a single, sorted file. It is primarily designed for PCB fabrication workflows where drill data is distributed across several files within a Gerber archive.

This tool:

* Automatically extracts .drl files from a selected ZIP archive
* Parses and categorizes drill holes based on size
* Groups and organizes coordinate data by tool
* Produces a clean, manufacturer-ready .drl file

## **Features**

✅ **ZIP-Based Input** → Accepts a compressed ZIP archive containing your PCB project files.

🔍 **Automated Parsing** → Detects and reads all .drl files, including those nested within folders.

📏 **Hole Size Deduplication** → Merges tools with the same drill size to eliminate redundancy.

🧠 **Coordinate Format Support** → Compatible with both:

* Standard Excellon: X...Y...
* Extended format (e.g., plated slots): X...Y...G85X...Y...

🖥 **User-Friendly Interface** → Simple file selection dialog via GUI – no command-line input required.

📂 **Organized Output** → Output file is saved in the same directory as the original ZIP file with the same base name (e.g., MyPCB.zip → MyPCB.drl).

🛠 **Testing-Ready Format** → Output includes proper M48 header and M30 footer, uses METRIC,TZ format.

🧯 **Error Handling** → Alerts the user for common issues:

* Invalid ZIP file
* Missing .drl files
* No valid drill coordinates

## **How to Use**

1. **Run the script**: merge\_drill\_files.py
2. **Select a Gerber ZIP archive** when prompted.
3. The tool will:  
   * Extract the ZIP to a folder named extracted\_gerber\_final
   * Locate and process all .drl files
   * Create a merged .drl file with hole data sorted by size
4. **Check the output**:  
   * File saved in the same location as the input ZIP
   * Example: Design\_v1.zip → Design\_v1.drl

## **Output Format Example**

excellon

CopyEdit

M48

; Auto-generated drill file

; FORMAT=2:4

METRIC,TZ

%

T01C0.600

T02C0.800

%

T01

X138.430Y-41.275

X180.594Y-20.447

T02

X211.836Y-43.180

X169.545Y-53.340

M30

## **System Requirements**

* Python 3.x
* Required Modules: tkinter, zipfile, os, re, collections

No additional installation required – pure Python standard libraries are used.

## **Notes**

* **Unit Format**: Metric (mm), Trailing Zeros omitted.
* **Tool Mapping**: One tool assigned per unique drill size.
* **Safety**: Original files are not modified or deleted.