Command line arguments

Introduction

If the program is executed with `-h` or `--help` option, the following quick help will be displayed:

```
Usage:
  GCodeGenerator.exe [OPTION...]

  -j, --json-file arg           Project JSON file
  -o, --output-directory arg    Output folder
  -t, --material-thickness arg  Material thickness to cut in mm (default:
                                0)
  -b, --box-height-3d arg       Box height in 3D in mm (default: 0)
  -d, --cut-depth-per-pass arg  Depth per pass to cut in mm
  -p, --bit-shape arg           Bit shape for drill size compensation:
                                straight, or v-shaped (default: straight)
  -m, --bit-diameter arg        Bit diameter in mm for drill size
                                compensation (default: 0.01)
  -k, --bit-angle arg           Bit angle in degrees for v-shaped bits for
                                drill size compensation (default: 0)
  -f, --bit-cutter-height arg   Bit cutter height in mm at which the
                                maximum diameter is reached (default: 0)
  -g, --outer-sizing            Box sizes are for outside borders (inner
                                area will be smaller)
      --finger-joint            Add finger joints (box joints) to all 6 sides
                                so panels can be assembled without glue.
                                When enabled all 6 sides default on; use
                                --no-finger-<side> to disable a specific side
      --finger-size arg         Finger width in mm (0 = material thickness)
                                (default: 0)
      --finger-count arg        Number of fingers on an edge (0 = automatic
                                from finger size) (default: 0)
```

```
    --finger-clearance arg    Extra clearance added to finger slots in mm
                              (default: 0)
    --no-finger-top           Disable finger joints on the Top panel
    --no-finger-bottom        Disable finger joints on the Bottom panel
    --no-finger-front         Disable finger joints on the Front panel
    --no-finger-back          Disable finger joints on the Back panel
    --no-finger-left          Disable finger joints on the Left panel
    --no-finger-right         Disable finger joints on the Right panel
-r, --recess-depth arg        The depth of recess in mm (0 = no recess)
                              (default: 0)
-x, --feedrate-x arg          Feedrate to use for x-axis (default: 200)
-y, --feedrate-y arg          Feedrate to use for y-axis (default: 200)
-z, --feedrate-z arg          Feedrate to use for z-axis (default: 100)
-l, --outline                 Enable side outline cutting (default: true)
-c, --components              Enable component cutting (default: true)
-e, --screw-size-top arg      Screw diameter for top side in mm (0 = no
                              screws) (default: 0)
-w, --screw-size-bottom arg   Screw diameter for bottom side in mm (0 =
                              no screws) (default: 0)
-i, --screw-head-diameter arg
                              Screw head diameter in mm (default: 0)
-a, --screw-head-height arg   Screw head height in mm (default: 0)
-n, --screw-extra-margin arg  Screw extra margin in mm (default: 0)
-s, --simulate                Simulate, do not write NCs
-h, --help                    Show this help message and quit
```

Both short and long versions of the arguments can be used.

The arguments `--json-file`, `--output-directory`, `--cut-depth-pas-pass`, `--material-thickness`, and `--box-height-3d` are mandatory. The last two arguments can also be given in the JSON file. If both JSON and the command-line has these arguments, the command line values will be used. . Other arguments have default values as mentioned above. To set an argument to false, use the long version and assign the value `false`. For example, to disable outline cut, use `--outline=false`. Similarly, for activation of options, which are disabled by default, only use the argument. For example, to enable simulation, use either `-s` or `--simulate`. Argument values can be provided with a space or an equal sign if long versions are used. For instance, both `--json-file test.json` and `--json-file=test.json` are valid usage. For short versions, only space allowed, e.g., `-b 30`.

`--json-file`

A valid path to JSON file to be used as input. Can be a relative path (starting from the working directory) or an absolute path. You can use online visual box designer, JSON Creator or refer to MIDILLI JSON Definition document if you need help.

`--output-directory`

The directory to write the output files to. Using `.` (dot) will use the current working directory. The final files will be written into a new folder having the name of the `--json-file`.

`--material-thickness`

This value is used to calculate the depth required for creating holes for components and/or screws, in conjunction with the `--cut-depth-per-pass` argument. The value is in millimeters (mm).

Additionally, this value is used to determine the dimensions of the left, right, front, and bottom sides (if enabled) based on whether the `--outer-sizing` parameter is active. See *Coordinate system and effects of sizing parameters* for more info.

This value is mandatory.
It can be given in the JSON (under Generic, as value "`material_thickness`") as well as in the command line. Command line will override the value if provided.

`--box-height-3d`

The height of the box in millimeters (mm). If `--outer-sizing` is used, this will be the outer height of the box. Otherwise, it is the inner height of the box.

This value is mandatory.
It can be given in the JSON (under Generic, as value "`box_height_3d`") as well as in the command line. Command line will override the value if provided.

`--bit-shape`

The shape of the endmill/bit/cutter. Currently `straight` and `v-shaped` cutters are supported. Read this page to learn more about the effect of this parameter.

Default: straight

`--bit-diameter`

The diameter of the bit or cutter can affect not only the size of drilled holes but also the overall dimensions of the cuts. This may result in slightly larger or smaller dimensions than intended. G-Code already supports compensation for cutter diameter using specific commands. This argument adjusts the coordinates to account for the bit diameter, ensuring accurate cuts and dimensions in case native compensation is not desired. Read this page to learn more about the effect of this parameter.

Default: 0, no compensation

`--bit-angle`

Angle in degrees which forms the v-shape. Only effective for v-shaped bits. Read this page to learn more about the effect of this parameter.

Default: 0, straight cutter

`--bit-cutter-height`

The height of the cutter in mm at which it reaches its maximum cut width. After this height (or after reaching this depth), always `--bit-diameter` value will be used. Only effective for v-shaped bits. *Note that this is not the total height of the bit itself.*

Read this page to learn more about the effect of this parameter.

Default: 0, straight cutter, starting directly with `--bit-diameter` width.

`--outer-sizing`

If used, the sizes defined in the JSON file as well as the `--material-thickness` and `--box-height-3d` arguments will be used to create the outer volume with the given dimensions. Otherwise, these values will be used to create the inner volume with the given dimensions.

The value can be given in the JSON (under Generic, as value "`outer_sizing`") as well as in the command line. Command line will override the value if provided.

Default: false, use inner dimensions.

`--recess-depth`

The depth of the recess for components in millimeters (mm).

Recesses also take the sizing from *visible_diameter* (priority) or *visible_width* and *visible_height* properties. Recesses may be helpful to have slightly lowered shapes to e.g., stabilize or limit the movement of button caps. This value does not change the behavior of the screw head recess (See `--screw-head-height`).

Default: 0 mm, no recess for the components

Recesses also take the sizing from *visible_diameter* (priority) or *visible_width* and *visible_height* properties. Recesses may be helpful to have slightly lowered shapes to e.g., stabilize or limit the movement of button caps. This value does not change the behavior of the screw head recess (See `--screw-head-height`).

Default: 0 mm, no recess for the components

`--feedrate-x`

The speed at which the tool moves during cutting or engraving on x-axis, measured in units per minute (e.g., millimeters per minute). This value is crucial for controlling the precision and quality of the cut, with higher feedrates generally resulting in faster cuts but potentially lower accuracy or finish quality.

Default: 200

`--feedrate-y`

The speed at which the tool moves during cutting or engraving on y-axis, measured in units per minute (e.g., millimeters per minute). This value is crucial for controlling the precision and quality

of the cut, with higher feedrates generally resulting in faster cuts but potentially lower accuracy or finish quality.

Default: 200

`--feedrate-z`

The speed at which the tool moves during cutting or engraving on z-axis, measured in units per minute (e.g., millimeters per minute). This value is crucial for controlling the precision and quality of the cut, with higher feedrates generally resulting in faster cuts but potentially lower accuracy or finish quality.

Default: 100

`--outline`

Enables side outline cuts, which adjust the dimensions of the sides according to the given sizes, based on the `--outer-sizing` property.

Default: true

`--components`

Enables the component output to cut circles and/or rectangular shapes through the `--material-thickness`.

Default: true

`--screw-size-top`

Screw hole diameter to be drawn as hole in millimeters (mm) on the top side of the box.

Default: 0 mm, no screws.



Brown: Screw diameter (or screw size)

`--screw-size-bottom`

Screw hole diameter to be drawn as hole in millimeters (mm) on the bottom side of the box.

Default: 0 mm, no screws.



Brown: Screw diameter (or screw size)

`--screw-head-diameter`

If the screws must be counterbore/recessed, any value given in millimeters (mm) (preferably greater than `--screw-size-top` or `--screw-size-bottom`) will create a circular shape to bury the head.

Default: 0 mm, protruding screw head.



Red: Screw head diameter

`--screw-head-height`

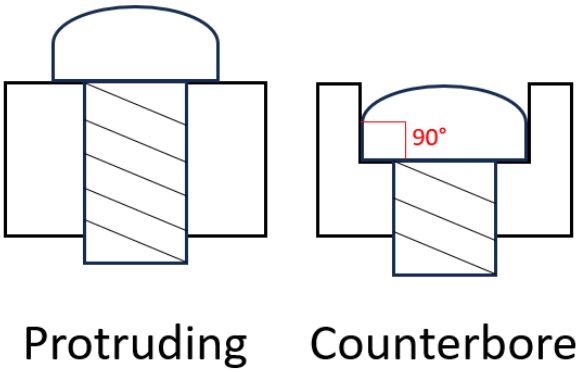
The depth of the screw-head to create counterbore/recessed screws given in millimeters (mm).

Default: 0 mm, protruding screw head.



Gray: Screw head height

The images below show how `--screw-head-diameter` and `--screw-head-height` affect the creation of screw head related recesses.



`--screw-extra-margin`

By default, screws are added at the four corners of the top and/or bottom side of the box, leaving a margin of `--material-thickness` from the sides. If an additional margin is desired, any value given in millimeters (mm) will increase this gap.

Default: 0 mm, no additional margin.



Green: Screw extra margin

`--finger-joint`

Enables finger joints (box joints) on all 6 sides of the box so panels can be assembled without glue. By default, all 6 sides are enabled. To disable finger joints on specific sides, use the `--no-finger-<side>` arguments.

Default: false, no finger joints.

`--finger-size`

The width of each finger in millimeters (mm). If set to 0, the `--material-thickness` value will be used as the finger width.

Default: 0 mm (uses material thickness).

`--finger-count`

The number of fingers on an edge. If set to 0, the number of fingers will be calculated automatically based on the `--finger-size` value and the panel dimensions.

Default: 0 (automatic).

`--finger-clearance`

Extra clearance added to finger slots in millimeters (mm) to ensure smooth assembly.

Default: 0 mm.

`--no-finger-*`

Disable finger joints per side.

When `--finger-joint` is enabled, all 6 sides have finger joints by default. Use the following arguments to disable finger joints on specific sides:

- `--no-finger-top` — Disables finger joints on the Top panel
- `--no-finger-bottom` — Disables finger joints on the Bottom panel
- `--no-finger-front` — Disables finger joints on the Front panel
- `--no-finger-back` — Disables finger joints on the Back panel
- `--no-finger-left` — Disables finger joints on the Left panel
- `--no-finger-right` — Disables finger joints on the Right panel

`--simulate`

If used, simulates the settings, without writing to actual files.

Default: false, write to actual files.

`--help`

Shows the quick help with the list of arguments and their short descriptions.

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