**G-Code\_Commands**

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Calibration Commands

|  |  |
| --- | --- |
| G21 | Sets units to millimeters |
|  |  |
| G90 | Use absolute coordinates |
| G91 | Incremental positioning |
|  |  |
| M82 | Set extruder to absolute positioning |
| M83 | Set extruder to relative positioning |
| M84 | Disable motors |

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Movement Commands

|  |  |
| --- | --- |
| G0 | Rapid linear move |
| G1 | Linear move |
| G2 | Move clockwise arc |
| G3 | Move counter-clockwise arc |
| G4 P*X* | Pause for *X* milliseconds (dwell) |

|  |  |
| --- | --- |
| X | Move in X-direction |
| Y | Move in Y-direction |
| Z | Move in Z direction |
| F | Set speed for movement |
| I | X-offset for arcs |
| J | Y-offset for arcs |
| K | Z-offset for arcs |
| R | Radius of circle for arcs, *e.g.*, G02 X+2.00 Y+0.00 R2.00 |

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The special M codes for the INKREDIBLE(+) 3D Bioprinter

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M712 to M732 are used to set the offset between the printheads. Printhead 1 and 2 are the cartridge holders and printhead 3 is the LED.

Note: This will not place the chosen printhead in the active position

|  |  |
| --- | --- |
| M712 | Set offset from 1 to 2 |
| M713 | Set offset from 1 to 3 |
| M721 | Set offset from 2 to 1 |
| M723 | Set offset from 2 to 3 |
| M731 | Set offset from 3 to 1 |
| M732 | Set offset from 3 to 2 |

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|  |  |
| --- | --- |
| M750 | Homes the printheads |

This needs to be done before any automatic switching of the printheads can occur. After this command, Printhead 1 will be in the active position.

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|  |  |
| --- | --- |
| M751 | Places Printhead 1 in the active position |
| M752 | Places Printhead 2 in the active position |
| M753 | Retracts both printheads, making way for the LED to be used |

|  |  |
| --- | --- |
| T1 | Change extruder |

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|  |  |
| --- | --- |
| M760 | Opens the valve for Printhead 1 |
| M761 | Closes the valve for Printhead 1 |
| M762 | Opens the valve for Printhead 2 |
| M763 | Closes the valve for Printhead 2 |
| M764 | Turns on the UV LED |
| M765 | Turns off the UV LED |