

Advanced Topics

- [X1C Specific G-Code](#)

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Bambu Labs has partially implemented [Marlin G-Code](#) commands and have added their own custom G-Code commands to perform functions that are not implemented in Marlin. It is also important to note that the X1C runs their own G-Code engine and does not use the open-source Marlin Firmware on their MC Board.

Hardware Control

Printer

Code	Description	Example
G29.1	Set Z-trim value to # <div style="background-color: #e0f2f1; padding: 5px; margin-top: 5px;">Use 0 to clear Z-trim</div>	Squish for Textured PEI <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">G29.1 Z-0.04</div>
G29.2	Bed leveling compensation (ABL)	Disable ABL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">G29.2 S0</div> Enable ABL <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">G29.2 S1</div>
G29.4	High frequency z compensation	Turn off high frequency z compensation <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">G29.4 S0</div> Turn on high frequency z compensation <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">G29.4 S1</div>
M205	Sets the jerk limits in mm/sec for the X Y Z and E motions <div style="background-color: #e0f2f1; padding: 5px; margin-top: 5px;">If you are not changing an jerk limit axis you do not need to explicitly list it</div>	<div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;">M205 X0.5 Y1.01 Z2.02 E3.03</div>

Code	Description	Example
M17 X/Y/Z#.#	Set X/Y/Z Stepper Motor Current <div style="background-color: #ffe6e6; padding: 5px; border: 1px solid #cc0000; margin-top: 5px;"> Be EXTREMELY careful using this command as it is VERY EASY to cause hardware damage with it should you set it too high!!! </div>	set Z stepper current to 0.4 Amps <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M17 Z0.4</div>
M106 P1 S0-255	Part cooling fan off-full***	Sets the part fan on at 70% <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M106 P1 S180</div> Sets the Aux fan on at 100% <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M106 P2 S255</div> Sets the chamber fan on at 0% <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M106 P3 S0</div> Sets the part fan on at 70% <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M106 A1 S180</div>
M142	Chamber Fan Temp Control	Set chamber fan to min start rpm @35° and ramp to full speed at 40° <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M142 P1 R35 S40</div>
M400	Pause	Pause until all movement completes <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M400</div> Pause for 10 seconds <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M400 S10</div> Pause for User Interaction <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M400 U1</div> Pause for 500 milliseconds <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M400 P500</div>
M220	Set feed rate to percent of normal. <div style="background-color: #e0f0ff; padding: 5px; border: 1px solid #00aaff; margin-top: 5px;"> Default Speed is 100 </div>	Set print rate to Ludicrous Speed. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px; width: fit-content;">M220 S166</div>

Code	Description	Example
M221	Set Flow rate	disable the X endstop and enable them on Y and Z) <div data-bbox="951 264 1485 331" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M221 S100</div>
	Disable endstop <div data-bbox="373 427 916 539" style="background-color: #e0f0ff; padding: 5px; margin-top: 5px;"> If you are not changing an endstop you do not need to explicitly list it </div>	disable the X endstop and enable them on Y and Z) <div data-bbox="951 472 1485 539" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M221 X0 Y1 Z1</div>
M622	Conditional code block and execute if selected flag is True, otherwise skip to the end of the code block <div data-bbox="373 757 916 837" style="background-color: #e0f0ff; padding: 5px; margin-top: 5px;"> Used with M1002 </div>	Execute if false <div data-bbox="951 696 1485 763" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M622 J0</div>
		Execute if true <div data-bbox="951 842 1485 909" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M622 J1</div>
M623	End of the conditional code block	<div data-bbox="951 976 1485 1043" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M623</div>
M710 A1 S0-255	Motor Control (MC) Board fan off-full <div data-bbox="373 1173 916 1357" style="background-color: #ffe0e0; padding: 5px; margin-top: 5px;"> Be EXTREMELY careful using this command as it is VERY EASY to cause hardware damage with it should you set it too high!!! </div>	Sets the part fan on at 70% <div data-bbox="951 1178 1485 1245" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M106 A1 S180</div>
M900	Set Pressure Advance, also known as Bambu Labs call this the K-value.	<div data-bbox="951 1391 1485 1458" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">M900 K0.023</div>

Code	Description	Example
M960 S0 P0	Toolhead Lighting and Lazars	<p>Turn off all Leds</p> <div data-bbox="951 232 1485 297" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S0 P0</div> <p>Turn on all Leds</p> <div data-bbox="951 376 1485 441" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S0 P1</div> <p>Horizontal Laser Off</p> <div data-bbox="951 519 1485 584" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S1 P0</div> <p>Horizontal Laser On</p> <div data-bbox="951 663 1485 728" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S1 P1</div> <p>Vertical Laser Off</p> <div data-bbox="951 806 1485 871" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S2 P0</div> <p>Vertical Laser On</p> <div data-bbox="951 949 1485 1014" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S2 P1</div> <p>Toolhead Light Off (micro-lidar)</p> <div data-bbox="951 1093 1485 1158" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S4 P0</div> <p>Toohead Light On</p> <div data-bbox="951 1236 1485 1301" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S4 P1</div> <p>Toolhead Logo Light Off</p> <div data-bbox="951 1379 1485 1444" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M960 S5 P0</div> <p>Toolhead Logo Light On</p> <div data-bbox="951 1523 1485 1588" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px;">M960 S5 P1</div>
M970.3	Play mech mode test vibrations	<div data-bbox="951 1659 1485 1724" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; margin-bottom: 10px;">M970.3 Q0 A7 B30 C90 Q0 H15 K0</div> <div data-bbox="951 1760 1485 1825" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px;">M970.3 Q1 A7 B30 C80 H15 K0</div>

Code	Description	Example
M971	Internal Camera Control	Take photo <input data-bbox="951 232 1484 297" type="text" value="M971 S11 C10 O0"/>
M972	Calibrate Micro-Lidar	Move Lidar to calibration sticker <input data-bbox="951 436 1484 501" type="text" value="M972 S5 P0"/>
M973	Toolhead Camera	Enable Auto Exposure <input data-bbox="951 624 1484 689" type="text" value="M973 S1"/> Camera Off <input data-bbox="951 770 1484 835" type="text" value="M973 S3"/> Camera On <input data-bbox="951 916 1484 981" type="text" value="M973 S3"/> Turn off Micro-Lidar <input data-bbox="951 1061 1484 1126" type="text" value="M973 S4"/> Set Auto Exposure for Horizontal :Laser <input data-bbox="951 1207 1484 1272" type="text" value="M973 S6 P0"/> Set Auto Exposure for Vertical Laser <input data-bbox="951 1352 1484 1417" type="text" value="M973 S6 P1"/>
M974	Set Mech Mode Suppression Values	<input data-bbox="951 1480 1484 1545" type="text" value="M974 Q0 S2 P0"/> <input data-bbox="951 1581 1484 1646" type="text" value="M974 Q1 S2 P0"/>

Code	Description	Example
M975	Mech Mode Supression	<p>turn off mech mode supression</p> <div data-bbox="951 232 1485 300" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M975 S0</div> <p>turn on mech mode supression</p> <div data-bbox="951 412 1485 479" style="border: 1px solid #ccc; padding: 5px;">M975 S1</div>
M976		<div data-bbox="951 560 1485 627" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M976 S3 P2</div> <p>Scan Heatbead before printing</p> <div data-bbox="951 703 1485 770" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M976 S2 P1</div> <p>First Layer Scan</p> <div data-bbox="951 846 1485 913" style="border: 1px solid #ccc; padding: 5px;">M976 S1 P1</div>
M977	first layer scanning	<p>Enable first layer scanning</p> <div data-bbox="951 1025 1485 1093" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M971 S11 C10 O0</div> <div data-bbox="951 1128 1485 1196" style="border: 1px solid #ccc; padding: 5px;">M971 S11 C10 O0</div>
M981	Spaghetti detector	<p>Spaghetti detector off</p> <div data-bbox="951 1321 1485 1388" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M981 S0 P20000</div> <p>Spagetti detector on</p> <div data-bbox="951 1464 1485 1532" style="border: 1px solid #ccc; padding: 5px;">M981 S1 P20000</div>
M982.2	Motor Noise Cancelation	<p>Turn off motor noise cancelation</p> <div data-bbox="951 1711 1485 1778" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M982.2 C0</div> <p>Turn on motor noise cancelation</p> <div data-bbox="951 1854 1485 1921" style="border: 1px solid #ccc; padding: 5px;">M982.2 C1</div>

Code	Description	Example
M991	Layer Change	Notify Printer of Layer Change where # is the current layer number <div data-bbox="951 264 1485 331" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">M991 S0 P#</div> Finish Smooth timelapse <div data-bbox="951 409 1485 477" style="border: 1px solid #ccc; padding: 5px;">M991 S0 P-1</div>
M620 C#	calibrate AMS by AMS index	
M620 R#	refresh AMS by tray index	
M620 P#	select AMS tray by tray index	
M620 S#	select AMS by tray index	Pull Filament back into AMS <div data-bbox="951 840 1485 907" style="border: 1px solid #ccc; padding: 5px;">M620 S255</div>
M621 S#	load filament in AMS by tray index	
M1002	Select flag for conditional commands from slicer	Check to see if extrusion calibration was set in the slicer <div data-bbox="951 1149 1485 1216" style="border: 1px solid #ccc; padding: 5px;">"M1002 judge_flag extrude_cali_flag"</div>

Code	Description	Example
Update Printer Status on Slicer / LCD	Clear (Set to printing)	
	M1002 gcode_claim_action: 0	
	Auto bed levelling	
	M1002 gcode_claim_action: 1	
	Heatbed preheating	
	M1002 gcode_claim_action: 2	
	Sweeping XY mech mode	
	M1002 gcode_claim_action: 3	
	Changing filament	
	M1002 gcode_claim_action: 4	
	Pause (M400)	
	M1002 gcode_claim_action: 5	
	Paused due to filament runout	
	M1002 gcode_claim_action: 6	
	Heating hotend	
M1002 gcode_claim_action: 7		
Calibrating extrusion		
M1002 gcode_claim_action: 8		
Scanning bed surface		
M1002 gcode_claim_action: 9		
Inspecting first layer		
M1002 gcode_claim_action: 10		
Identifying build plate type		
M1002 gcode_claim_action: 11		
Calibrating Micro Lidar		
M1002 gcode_claim_action: 12		
Homing Toolhead		
M1002 gcode_claim_action: 13		
Cleaning Nozzle Tip		

Code	Description	Example
M1003	Power loss recovery	<p data-bbox="951 197 1267 226">Disable power loss recovery</p> <div data-bbox="951 232 1485 300" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 259 1102 288">M1003 S0</p> </div> <p data-bbox="951 340 1262 369">Enable power loss recovery</p> <div data-bbox="951 376 1485 443" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 403 1102 432">M1003 S1</p> </div>
M1004	External Camera Shutter Control	<p data-bbox="951 524 1326 553">Actuate External Camera Shutter</p> <div data-bbox="951 560 1485 627" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 586 1139 616">M1004 S5 P1</p> </div>
M1005	set skew correction	<p data-bbox="951 696 1171 725">Set skew correction</p> <div data-bbox="951 732 1485 891" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 759 1477 833">M1005 X##.#Y##.# ; input values from printed calibration stl</p> <p data-bbox="979 851 1262 880">M500 ; save the values</p> </div> <div data-bbox="951 927 1485 1111" style="background-color: #ffe4c4; padding: 5px; border: 1px solid #ccc;"> <p data-bbox="1018 958 1465 1088">Add the above Gcode to the last line of the "Machine start Gcode" and only run it once as the compensation will compound each time it is run.</p> </div> <p data-bbox="951 1155 1289 1184">Set skew correction in radians</p> <div data-bbox="951 1191 1485 1303" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 1218 1123 1247">M1005 I500</p> <p data-bbox="979 1265 1050 1294">M500</p> </div> <div data-bbox="951 1339 1485 1487" style="background-color: #add8e6; padding: 5px; border: 1px solid #ccc;"> <p data-bbox="1018 1370 1442 1464">Unlike the first example this is not iterative, and will overwrite any skew value set</p> </div> <p data-bbox="951 1532 1198 1561">Reset skew correction</p> <div data-bbox="951 1568 1485 1727" style="border: 1px solid #ccc; padding: 5px;"> <p data-bbox="979 1594 1406 1668">M1005 I0 ; reset the compensation value</p> <p data-bbox="979 1686 1251 1715">M500 ; save the value</p> </div>

Code	Description	Example

References:

1. <https://forum.bambulab.com/t/bambu-lab-x1-specific-g-code/666>
2. <https://github.com/Doridian/OpenBambuAPI/blob/main/gcode.md>
3. <https://github.com/jphannifan/x1plus-testing/blob/main/Gcode.md>