RepRap GCode Cheat Sheet **RRF3.x Specific** **RRF2.x Specific** **https://git.io/JGWSJ**

Gcode	Description	Arguments	Details	Examples	Catagory Flag
G0	Rapid Move	[X/Y/Z/E]Axis [F] Feedrate [H] Move Type [S] Laser Power|Move Type [R]Recall Slot		G0 X12 ;move to 12mm on the X axis	Movement
G1	Controlled Linear move			G0 F1500 ;Set the feedrate to 1500mm/minute	Movement
		Xnnn The position to move to on the X axis		G1 X90.6 Y13.8 E22.4	
		Ynnn The position to move to on the Y axis		; Move to X90.6mm Y13.8mm while extruding 22.4mm	
		Znnn The position to move to on the Z axis			
		Ennn The Extrusion amount			
		Fnnn Feed Rate			
		Hnnn Move type (RRF_2.02 and later, RRF_3)	H0: no special action		
		Snnn Set Laser Power | Move Type (see H)	H1: terminate move on endstop, set axis = M208		
			H2: Individual Motor Mode, use with G91		
			H3: terminate move on endstop, set axis = position		
			H4: terminate move on endstop, update position		
G2	Clockwise Arc Move	[Xnn/Ynn/Znn/Inn/Jnn/Enn/Fnn/Rnn]		G2 X90.6 Y13.8 I5 J10 E22.4 ; Clockwise Arc from Current Position	Movement
G3	Anti-Clockwise Arc Move			G3 X90.6 Y13.8 I5 J10 E22.4	Movement
		Rnn The radius of the Arc (>2.03)		; Clockwise Arc from X+5 & Y+10 from Current Position	
G4	Wait / Dwell	[Pnn/Snn]	Pnn Time in milliseconds, Snn Time in Seconds	G4 P500	Utility
G10	Tool Temperature Setting	[Pnn/Rnn/Snn]		G10 P1 R140 S205	Utility
			Pnn Tool Number	;set standby and active temperatures for tool 1	
			Rnn Standby Temperature		
			Snn Active Temperature		
G10	Set workplace coordinate offset	[Lnn/Pnn/Xnn/Ynn/Znn/Rnn/Snn]		G10 P2 X17.8 Y-19.3 Z0.0	Utility
		Lnn Mode	L1 Default		
		Pnn Toll Number	L2 sets origin of coord system specified by P parameter		
		Xnn X offset	L20 sets origin realtive to current position of tool		
		Ynn Y offset			
		Znn Z offset			
		{U,V,W} axis offset			
G10	Retracts filament then performs any zlift/hop			G10	Utility
G11	Unretracts filament after undoing any zlift/hop			G11	Utility
G28	Home Axis	[X/Y/Z/U,V,W,A,B,C,D]	Axis that is flagged is homed.	G28 X Y	Utility
G29	Mesh Bed Probe	[S0/S1/S2/S3/P"file.csv/Kn]		G29 S0	Utility
			S0 Probe Bed, save heightmap.csv, activate bed comp G29 S0		
			S1 Load heightmap and activate bed comp		
			S2 Clear heightmap		
			S2 Save height map		
			P"file.csv" Optional file name for bed height map		
			Kn Use Z probe number		
			(Define probe grid with M557)		
G30	Single Z Probe	[Pnn/Xnn/Ynn/Znn/Hnn/Knn/Snnn]		G30 ; Probe the bed set Z to the probe trigger height.	Utility
				G30 P0 X20 Y50 Z-99999	
		Pnn Probe point number		; Probe the bed at X20 Y50, save XY coords & height error slot 0	
		Xnn X coordinate	S1: report only, do not adjust Z	G30 S-1	
		Ynn Y coordinate	S2: adjust offset of current tool Z=0	G30 S-2	
		Znn Z coordinate	S3: sets Z probe trigger height to the height it stopped at		
		Hnn Height correction			
		Knn Z probe number			
		Snn set parameter			
G31	Set or Report Probe Status	[Pnn/Xnn/Ynn/Znn/Cnn/Snn/Tnn/Knn/Hnn]	Pnnn Trigger value	G31 X16.0 Y1.5	Utility
			Xnnn Probe X offset from noxxle	G31 P500 Z2.6	
			Ynnn Probe Y offset from nozzle	G31 X16.0 Y1.5	
			X,Y,U,V,W,A,B,C...nnn Probe Offsets for all axes except Z1 (RRF >=3.3beta2)		
			Znnn Trigger Z height		
			Cnnn Temperature coefficient2		
			Tnnn Temperature coefficient2		
			Snnn Calibration temperature2		
			Tnnn Z probe type (see M558)		
			Knnn Z probe number (current Z probe)Z probe 0 at startup.		
			Hnnn Selects the sensor for temp comp when C & S used		
G32	Run bed.g			G32	Utility
G38.2-5	Striaght Probe				Utility

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G60	Save current position to slot	[Snn}	Snn memory slot to save current coordinates to S0 Slot 1 S1 Slot 2 S2 Slot 3	G60 S2 (recall with G1 R0 / R1 / R2)	Movement
G90	Set to Absolute Positioning				Movement
G91	Set to Relative Positioning				Movement
G92	Set Axis to current position	[Xnn/Ynn/Znn/Enn]	Xnn X coordinate Ynn Y coordinate Znn Z coordinate	G92 Z0.10 G92 E0.0	Movement

Mcode	Description	Arguments	Details	Examples	Catagory Flag
M0	Stop, Unconditional Stop	[Hnn}	Finishes moves in buffer, Heaters off, Motors Idle If Homed & Printing-> cancel.g | else stop.g executed Hnn - keep heaters on	M0 M0 H1	General
M1	Sleep, Conditonal Stop		Finishes moves in buffer, Heaters off, Motors Idle If Homed & Printing-> cancel.g | else stop.g executed Next send command will wake	M1	General
M17	Enalbe Steppers	[X/Y/Z/U/V/W/E]Axis	Enable all steppers, Enable specific axis	M17 M17 X E0	General
M18	Enalbe Steppers	[X/Y/Z/U/V/W/E]Axis	Enable all steppers, Enable specific axis	M17 M17 X E0	General
M24	Start/resume SD print		Resumes a paused print -> resume.g	M24	General
M25	Pause SD print		Pauses the current print -> pause.g	M25	General
M32	Select file and start SD print	"filename.gcode"	Prints the file 'filename.gcode"	M32 "filename.gcode"	General
M37	Simulation Mode	[Snn/Pnn]	Simulates printing a file from SD card S1: enter simulatio mode S0: Leave simulation mode P:"filename"	M37 P"MyModel.g"	
M80	ATX Power On		Toggles PS_ON pin via the External 5V header	M80	General
M81	ATX Power Off	Snn	Toggles PS_ON pin via the External 5V header S0: turns off power immediatley S1: Turns off power after themostatic fans are off	M81 M81 M81 S1	General
M82	Set extruder to absolute mode			M82	General
M83	Set extruder to relative mode			M83	General
M84	Stop idle hold				General
M92	Set axis steps per unit	[Xnn/Ynn/Znn/Unn/Vnn/Wnn/Enn/Snn]	Xnnn The steps per mm on the X axis Ynnn The steps per mm on the Y axis Znnn The steps per mm on the Z axis Ennn The steps per mm on the E extruder drive Snnn Defines the microstepping the units are given. (if none, defaults to those given in M350)	M92 X80 Y80 Z80 M92 E420:500	
M98	Call Macro/Subprogram	[P"nnn"]	P"nnn" Macro filename	M98 P"mymacro.g"	General
M111	Set Debug Level	[Pnn/Snn]	P: Debug Modeul number S: Debug ON(S1), OFF(S0)	M111 without parameters lists all the modules, their numbers, and whether debugging is enabled for each M111 P1 S1 ; enable debugging for module 1	
M112	Emergency Stop		Any moves in progress are immediately terminated, then RepRap shuts down	M112	General
M114	Get Current Position		Rreports the configured axis and E coordinates	M114	General
M115	Get Firmware Ver. & Capabilities	[Pnn/Bnn]	Request the Firmware Version and Capabilities P:Electronics Type B:Baord Number		General
M119	Get Endstop Status		Returns the current state of configured endstops	M119	General

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Mcode	Description	Arguments	Details	Examples	Catagory Flag
M108	Cancel Heating			M108	Thermal
M104	Set Extruder Temp Fast (Depricated- use G10/M568 +M116)	[Snn / Tnn]	Snnn Temperature Value Tnn Tool Number	M104 S220 T0 ; sets Tool 0 to Temp 220 and resumes	Thermal
M109	Wait for Extruder Temperature (Depricated- use G10/M568 +M116)	[Snn/Rnn/Tnn]	Snnn Minimum Temperature Value, +/- 2.5C Rnn Accurate Temperature Value, +/- 2.5C Tnn Tool number	M109 S215 ; sets temp to minimum of 215 waits till reached M109 R215 ; sets temp to 215 +/-2.5 waits till reached	
M140	Set Bed Temp Fast	[Pnn/Hnn/Snn/Rnn]	Pnn Bed Heater Index Number, Default 0 Hnn Heater Number Snn Target Temp Rnn Standby Temp	M140 S75 ; sets bed heater to 75C and resumes M140 S65 R45 ; sets bed heater to 65C, standby 45C and resumes	Thermal
M190	Wait for bed temperature	[Snn / Pnn /Rnn]		M190 S60	Thermal
M141	Set Chamber Temp Fast	[Pnn/Hnn/Snn/Rnn]	Pnn Chamber Heater Index Number, Default 0 Hnn Heater Number Snn Active/Target Temp Rnn Standby Temp	M141 S30 ; set chamber temp tp 30C resume commands M141 H3 ; chamber heater 0 uses heater 3	
M191	Wait for chamber temperature	[Pnn / Snn / Rnn]			
M105	Get Extruder Temperature	[None /Rnn/Snn]	Rnn Response Sequence Number Snn Response Type	M105 M105 S2	
M108	Cancel Heating			M108	Thermal
M144	Bed Standby	[Pnn / Snn}	Pnn Bed Index Snn 0=standby, 1=heater active	M144	Thermal
M302	Allow Cold Extrudes	[Pnn / Snn / Rnn]	No Option: Report State Pnn Cold Extrude Allow State 0=No, 1=Yes Snn Minimum extrusion temp Rnn Minimum retractions temp	M302 ; Report current state M302 P1 ; Allow cold extrusion M302 S120 R110 ; Allow extrusion at 120°C and retractions at 110°C	Thermal
M303	Run Heater tuning	[Hnn/Pnn/Snn/Tnn/Ann/Ynn/Fnn]	Hnn Heater Number Pnn PWM to use: 0 or 1 Snn Target Temp Tnn Tool Number Ann Ambiernt Temp Ynn Tuning Cycle Hysterisis Fnn Fan PWM	M303 H1 P1 S240 ; tune heater 1, 100% PWM, target temp 240C M303 T0 S205 ; tune the primary heater of tool 0 (RRF 3.2beta3.2 and later) M303 T0 P1 S250 F1 ; tune tool 0, to 250 Fan 100%	Thermal
M304	Set PID parameters - Bed	[Pnn/Inn/Dnn]	Pnnn proportional (Kp) Innn integral (Ki) Dnnn derivative (Kd)	M304 P1 I2 D3 M304 ; Report parameters	Thermal
M307	Set/report heating process parameters	[Hnn/Ann/Cnn/Dnn/Inn/Rnn]	Hnn Heater Number Ann gain: ratio of Utimate Temp / PWM Power Cnn Dominant Time Dnn Dead Time Inn Invert PWM Signal Rnn Heating Rate Bnn Bang-Bang Control 0- Extruder, 1-Bed Heater Fnn PWM freq to use Snn max PWM to use	M307 H0 ; report the process parameters for heater 0 M307 H1 A346.2 C140 D5.3 B0 S0.8 V23.8; set process parameters for heater 1, use PID, and limit heater 1 PWM to 80% M307 H2 R2.186 C202.1:155.0 D5.67 S1.00 V24.0 ; set the process parameters (RRF 3.2beta3.2 or later)	Thermal
M106	Fan On	[Snn/Pnn]*		M106 S255 M105 S1.0	Cooling
M107	Fan Off (depricated)			M107	Cooling
M201	Set max accleration	[Xnn/Ynn/Znn/Unn/Vnn/Wnn/Enn/Snn]	Sets the maximum axis acceleration in mm/sec^2	M201 X1000 Y1000 Z100 E2000	Control & Config
M203	Set max feedrate	[Xnn/Ynn/Znn/Unn/Vnn/Wnn/Enn/Snn]	Sets the maximum feedrates in mm/min	M203 X6000 Y6000 Z300 E10000	Control & Config
M204	Set print & travel acceleration	[Pnn/Tnn]	Sets acceerations to move, observes limits of M201	M204 P500 T2000	Control & Config
M205	Set max instant speed change	[Xnn/Ynn/Znn/Unn/Vnn/Wnn/Enn/Snn]	Sets max instantaneous speed change per axis, mm/sec		Control & Config
M207	Set retract length	[Pnn/Snn/Rnn/Fnn/Tnn/Znn]	Sets the retract length used by G10 & G11	M207 S4.0 F2400 Z0.075	Control & Config
M220	Set speed factor override, %	[Snn]	Speed Factor Override Percentage (0..100,or more)	M220 S80 ; sets speed factor overide to 80%	Control & Config
M221	Set extrude factor overrider, %	[Snn/Dnn]	Extruder Factor Override Percentage (0..100,or more)	M221 S95 D1 ; sets extrude factor overide to 95% Extruder 1	Control & Config
M290	Baby Stepping	[Snn/Znn/Xnn/Ynn/Rnn]	Apply offset to the axis, defaults to Z, REL or ABS	M290 S-0.02; baby step 0.02 closer	Control & Config
M302	Allow Cold Extrudes	[Pnn/Snn/Rmm]	Allow cold extrude, set min extrude & retract temps	M302 P1 ; Allow cold extrusion	Control & Config
M552	Set IP, enable/disable network interface	[Pnn / Snn/ Rnn]	P(IPV4 address) S(0|1 enable|disable,	M552 S1 P192.168.1.43	Control & Config
M562	Reset Temperature Fault	[Pnn]	Reset temp fault on all heaters or on heater Pnn	M562	Control & Config
M564	Limit Axes	[Hnn/Snn]	Limit Axis travel H(homed state 0|1), S(boundaries 0|1)	M564 S0 H0 ; Allow axis moves not homed & outside boundary	Control & Config
M701	Load Filament	[Snn]	Load filament	M701 S"PLA"	Control & Config
M701	Unload Filament		Unload Filament		Control & Config

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