RepRap GCode Cheat Sheet

Gcode & Arguments RRF3.x Specific RRF2.x Specific				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 of material	
		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 Clockwise Arc from X+5 & Y+10 formCurrent Position	Movement
		Rnn The radius of the Arc (>2.03)			
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 ;set standby and active temperatures for tool 1	Utility
			Pnn Tool Number		
			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 coordinates & height error as point 0	
		Xnn X coordinate			
		Ynn Y coordinate			
		Znn Z coordinate			
		Hnn Height correction			
		Knn Z probe number			
		Snn set parameter	S1: report only, do not adjust Z	G30 S-1	
			S2: adjust offset of current tool Z=0	G30 S-2	
			S3: sets Z probe trigger height to the height it stopped at		
G31	Set or Report Probe Status	[Pnn/Xnn/Ynn/Znn/Cnn/Snn/Tnn/Knn/Hnn]		G31 X16.0 Y1.5	Utility
			Pnnn Trigger value	G31 P500 Z2.6	
			Xnnn Probe X offset from noxxle	G31 X16.0 Y1.5	
			Ynnn Probe Y offset from nozzle		
			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
G60	Save current position to slot	[Snn}	Snn memory slot to save current coordinates to	G60 S2	Movement
			S0 Slot 1	(recall with G1 R0 / R1 / R2)	
			S1 Slot 2		
			S2 Slot 3		
G90: Set to Absolute Positioning					Movement
G91: Set to Relative Positioning					Movement
G92	Set Axis to current position	[Xnn/Ynn/Znn/Enn]		G92 Z0.10	Movement
			Xnn X coordinate	G92 E0.0	
			Ynn Y coordinate		
			Znn Z coordinate		

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Gcode & Arguments RRF3.x Specific RRF2.x Specific				**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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Gcode	**& Arguments** RRF3.x Specific RRF2.x Specific			**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 command interpretation	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 command interpretation M140 S65 R45 ; sets bed heater to 65C, standby 45C and resumes commands	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 using 100% PWM, target temperature 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 paramet	[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 Vnn VIN supply voltage for A calibration	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

Common Gcodes	Parameters	Description	Example	
M20	[Snn/P"path"/Rnn]	List SD card	M20 S2 P"/gcodes/subdir"	File
M21	None [P(0,1)]	Initialize SD card	M21 P1	File
M22	None [P(0,1)]	Release SD card	M22	File
M23	[filename.gco]	Select SD file	M23 filename.gco	File
M24		Start/resume SD print	M24	File
M25		Pause SD print	M25	File
M26	[S(Bytes(s)/Pnn]	Set SD position	M26 S49315	File
M27		Report SD print status	M27	File
M28	[Filename]	Begin write to SD card	M28 filename.gco	File
M29		Stop writing to SD card	M29	File
M30	[Filename]	Delete a file on the SD card	M30 filename.g	File
M32		Select file and start SD print	M32 filename.g	File
M36	[Filename]	Return File Information	M36 filename.g	File
M37		Simulation mode	M37	Ops
M39	[Snn/P(0,1)]	Report SD Card Status	M39 P1 S2	File
M99		Return fom Macro/Subprogram	M99	File
M110	[Nnn]	Set Current Line Number	M110 N123	
M111	[Pnn / Snn]	Set Debug Level P(module) S(on /off)	M111 P1 S1	Ops
M112		Emergency Stop	M112	Ops
M115	[None / Pnn / Bnn]	Get Firmware Version and Capabilities	M115 P2	Ops
M116	[None/Pnn/Hnn/Cnn/Snn]	Wait	M116 M116 P1 M116 H0 S5	Ops
M119		Get Endstop Status	M119	Ops
M122	[None/Pnn/Bnn/DSF]*	Diagnose	M122 P1	Ops
M150	[Rnn / Unn / Bnn / Pnn / Snn / Fn / Xn / Yn / Qnn]	Set LED Colours	M150 R255 P128 S20 F1	Ops
M201	[Xnn/Ynn/Znn/Enn]	Set max acceleration	M210 X1000 Y1000 Z100 E2000	Config
M203	[Xnn/Ynn/Znn/Enn]	Set maximum feedrate	M203 X6000 Y6000 Z300 E10000	Config
M204	[Pnn / Tnn]	Set printing and travel accelerations	M204 P500 T2000	Config
M205	[Xnn/Ynn/Znn/Enn]	Set max instantaneous speed change in mm/sec		Config
M206	[Xnn/Ynn/Znn/Wnn/Vnn/Wnn]	Offset Axis	M206 X10.0 Y10.0 Z-0.4	Config
M207	[Pn/Snn/Rnn/Fnn/Tnn/Znn]	Set retract length	M207 S4.0 F2400 Z0.075	Config
M220	Snn	Set speed factor override percentage	M220 S80	Ops / Config
M221	[Snn / Dnn]	Set extrude factor override percentage	M221 S95 D1	Ops / Config
M280	[Pnn/Snn/I1]	Set Servo Position	M280 P1 S50	Ops / Config
M290	[Snn / Znn / X/Y/U...]	Baby stepping	M290 S0.05 M290 R0 S0	Ops / Config
M302	[None / Pnn/Snn/Rnn]	Allow cold extrudes	M302 M302 P1	Ops / Config
M350	[Xnn / Ynn / Znn / Enn / Inn]	Set Microstepping Mode	M350 E4:4:4	Config
M374	[None / Filename]	Save height map	M374 P"MyAlternateHeightMap.csv"	Ops
M375	[None / Filename]	Load height map	M375 P"MyAlternateHeightMap.csv"	Ops
M376	[Hnn]	Set bed compensation taper	M376 H10	Ops
M400		Wait for Current moves to finish	M400	Ops
M401	[None / Pnn]	Deploy Z-Probe	M401 M401 P1	Ops
M402	[None / Pnn]	Retract Z-Probe	M402 M402 P1	Ops
M470	[Directory name]	Create Directory on SD-Card	M470 P"/sys/config.d"	File
M471	[S"name" / T"name" / Dnn}	Rename File/Directory on SD-Card	M471 S"source/name" T"dest/name" D1	File
M486	*	Object cancellation		Ops
M500	[None/P31/P10/M665/M666/M208	Store parameters	M500 M500 P31 M500 M665	Ops
M501		Read stored parameters	M501	Ops
M502		Revert stored parameters	M502	Ops
M503		Report Print Settings	M503	Ops
M552	[Pnn / Snn/ Rnn]	Set IP address, enable/disable network interface	M552 S1 P192.168.1.43	Network
M553	[Pnn]	Set Netmask	M553 P255.255.255.0	Network
M554	[Pnn]	Set Gateway	M554 P192.168.1.1	Network
M555	[P(0,1,2,3,4,5,6)	Set Firmware Emulation / Compatibility	M555 P1	Network
M557	[Xaa:bb/Yaa:bb/Raa/Saa/Pxx:yy]	Set Z probe point or define probing grid	M557 X0:100 Y0:120 S50:60	Ops / Config
M558	*	Set Z probe type RRF 2.x & earlier	M558 P4 H5 F120 T3000	Ops / Config
M558	*	Set Z probe type RRF 3.x & later	M558 P5 C"e0stop" H5 F120 T3000	Ops / Config
M562	[Pnn]	Reset temperature fault	M562 P2	Thermal
M563	[Pnn/S"name"/Dnn/Hnn/Fnn /Xnn/Ynn/Lnn]*	Define or remove a tool	M563 P0 D0:2:3 H1:3 M563 P2 D0:1 H1:2 X0:3 F0:2	Ops / Config
M564	[Hnn/Snn]	Limit axes	M564 S0 H0	Ops / Config
M566	[Xnn/Ynn/Znn/Enn/Pn]	Set allowable instantaneous speed change	M566 X600 Y600 Z50 E600	Ops / Config
M567	[Pnn/Enn]	Set Tool Mix Ratios	M567 P2 E0.1:0.2:0.1:0.6	Ops / Config
M568	[Pnn/Enn]	Turn off/on tool mix ratios	M568 P2 S0	Ops / Config
M569	[Pnn/Snn/Rnn]*	Set motor driver direction, polarity and step pulse timing	M569 P0 S0 M569 P0 S1	Ops / Config
M572	[Dnn / Snn]	Set or report extruder pressure advance	M572 D0 S0.1	Ops / Config
M574	[Xnn/Ynn/Znn/Enn/Snn]*	Set endstop configuration RRF 2.x and earlier	M574 X1 Y2 Z0 S1	Ops / Config
M574	[Xnn/Ynn/Znn/Enn/P"name"/Snn]*	Set endstop configuration RRF 3.x and later	M574 Z1 S1 P"zstop"	Ops / Config
M575	[Pnn/Bnn/Snn]	Set Serial Commnunication Parameters	M575 P1 B57600 S1	Ops
M585	*	Probe Tool	M585 X100 F600 E3 L0 S0	Ops
M585	*	Probe Tool	M558 K1 P5 C"!e0stop"	Ops
M587	[S"SSID"/P"pwd"/I(IP)/J(GW)/K(NM)]*	Add WiFi host network to remembered list		Network