

## Line-Us GCode Specification V1.0.4a (firmware 1.0.4 and lower)

GCode	Description	Parameters	Example	Details
<b>G00</b>	Rapid Positioning	X Y Z	G00 X1200 Y1300 Z0	Move from current position to X,Y,Z at full speed. Does not necessarily move in a straight line as each servo moves at full speed. In some circumstances the arm could hit the body so use with caution. G00 is rarely used. G01 is the preferred command for most operations.
<b>G01</b>	Linear Interpolation	X Y Z	G01 X1200 Y1300 Z1000 G01 Z1000	This is the command to use for drawing. The arm will move from its current position to X,Y,Z in a straight line at the speed set using the Drawing Speed command. Note that the command can be used with a single coordinate. This leaves the other two coordinates unchanged and would most commonly be used to lift the pen without moving the arm using G01 Z1000.
<b>G28</b>	Home	None	G28	Return to the home position, which is (1000, 1000, 1000). Equivalent to G01 X1000 Y1000 Z1000
<b>G54</b>	Set Scale and Origin	X Y S	G54 X100 Y0 S2.5	Sets a new offset and scale for subsequent commands. The scale is applied first, and then the offset added. For example, the point (200, 100) would translate to (350, 100) using the Example G54 shown to the left. The calculation for the X value is: $(100 * 2.5) + 100 = 350$ . The parameter is set independently for each connection to Line-us, and is set to the default (X0 Y0 S1) for new connections.
<b>G94</b>	Drawing Speed	F	G94 S3	Not really quite speed, but sets the maximum size (in drawing units) of a step in an interpolated move. For example, if you move from (0, 0) to (100, 100) using a G01 command with this parameter set to 3 the arm will make the move in 34 steps. This only affects speed in the pen down (drawing) position (i.e. $Z < 500$ ). The default speed is 5 and the parameter can be set to between 1 and 30. The value is set back to the default when Line-us restarts.
<b>M114</b>	Get Position	None	M114	Returns the current position of the Line-us arm, for example: X:1200 Y:900 Z:0 This command can be used as a heartbeat to check that Line-us is connected.
<b>M115</b>	Get capabilities	None	M115	Returns machine capabilities. CONNECTMODE is either ST if Line-us is a WiFi Station or AP is it is an Access Point.

				MACHINENAME is the network name of the machine. For example: CONNECTMODE:ST MACHINENAME:line-us
<b>M122</b>	Diagnostics	None	M122	Returns diagnostic information.
<b>M170</b>	Reserved			Reserved for internal use.
<b>M374</b>	Save/clear Calibration	None	M374 M374 Sclear	Without parameters this command sets the calibration. The arm must be moved to the calibration point before this operation is performed. With the Sclear option the current calibration will be cleared.
<b>M550</b>	Set Machine Name	P	M550 Probs-lineus M550	Sets or retrieves the name of your Line-us machine. The name can include upper and lower case letters, numbers and hyphens. The example sets the name to “robs-lineus”. M550 without parameters returns MACHINENAME:robs-lineus

<b>M587</b>	Store/List WiFi Network	S P	M587 M587 Smy-ssid Pmypassword M587 Smy-ssid	<p>M587 without parameters lists the currently visible WiFi networks, returning SSID:PASSWORDKNOWN pairs for each network. PASSWORDKNOWN is a single digit indicating whether Line-us has a password for that network. So it reads “my-ssid”:1 for a network that is visible and the password is known, “another-ssid”:2 for a network that is visible but we don’t have the password and “yet-another-one”:3 for a network that we have the password for but is not visible.</p> <p>M587 can also be used to store a WiFi network in Line-us using the S and P parameters. If you are connected to Line-us in Setup (Red) mode, immediately following receipt of new WiFi details Line-us will attempt to connect to the new network. If the connection is successful the SSID and password will be stored (Line-us will attempt to connect to this network when next re-started). If the connection fails because of an incorrect password the network will not be stored and Line-us will return to Setup (Red flashing) mode.</p> <p>If is used M587 to store a WiFi network when Line-us is connected to a WiFi network (Blue mode). Line-us currently switches to Setup (Red flashing) mode and stores the SSID and password without checking them. When you press Line-us’s button it will return to Blue mode and attempt to connect to the new network. In a future release this behaviour will change and Line-us will not switch to Setup (Red flashing) mode when a new network is configured.</p>
<b>M588</b>	Forget WiFi Network	S	M588 Smy-ssid M558 S*	Line-us will forget the network specified in the S parameter. If * is given then all networks will be forgotten.
<b>M997</b>	Firmware update	TBC	M997	Downloads the latest firmware and re-starts. This command should only be used when a new firmware has been released.