Public Domain

Herculito GCode

Version 1.0

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Introduction

This document describes the G-code that is understood by the the Herculito firmware that drives a packer-style robot arm. It has been derived from the G-Code description from the G-code description for the RepRap firmwares found at https://www.reprap.org/wiki/G-code.

Syntax Overview

A typical piece of G-code for the Herculito robot arm might look like this:

```
N1 ; this is line no. 1
N2 G90
N3 G0Z-188.00 (and also rotate a bit )U-84.00 ; this is also a comment
N4 G0X-10Y-185
N5 G4P300
N6 G0X-10Y-200
N7 M4P50
N8 G4P300
N9 G0X-10Y-185
N10 G0 X0 Y0 Z188.00 U84.00
N11 G0 X 10.01 Y -90
N12 G4 P 300
N13 G0X10.01Y-105
N14 M4P0
N15 G4P300
N16 G0X10.01Y-90
/ G0X0Y0Z0U0
N17 G91
N18 G28
```

G-code comments begin with a semicolon and end with the end of the line. Comments can also be embedded in the code surrounding it with the characters “(“ and “)”. A line starting with the character “/” will be deleted. Lines number are defined starting with a character “N” followed by an integer number. For simplicity the can be omitted completely. Spaces can be used to separate the functions codes, but they can also be omitted completely.

G-Commands

G0 : Rapid Move (buffered non-linear)

Xnnn position to move to on the X axis

Ynnn position to move to on the Y axis

Znnn position to move to on the Z axis

Unnn angle to move to on the U axis

G1 : Linear Move

Xnnn position to move to on the X axis

Ynnn position to move to on the Y axis

Znnn position to move to on the Z axis

Unnn angle to move to on the U axis

Please note: currently only implemented for x-only and y-only moves

G4: Dwell – Empty queue and wait

Pnnn Time to wait, in milliseconds

Snnn Time to wait, in seconds

G4P0 Will wait for buffered moves (G0) to finish and then report the total execution time

G6: Direct Stepper Move

Perform a direct, uninterpolated, and non-kinematic synchronized move of one or more steppers directly. Units are steps.

Annn Stepper A position

Bnnn Stepper B position

Cnnn Stepper C position

Dnnn Stepper D position

R Relative move flag

G27: Park toolhead

A Flag to go to the A park position

B Flag to go to the B park position

C Flag to go to the C park position

D Flag to go to the D park position

Due to hardware limitation using A or B will trigger to go to the A and B park position

G28: Calibrate and move to Home position

A Flag to go back to the A axis origin

B Flag to go back to the B axis origin

C Flag to go back to the C axis origin

D Flag to go back to the D axis origin

Due to hardware limitation using A or B will trigger a combined AB homing

G90: Set to Absolute Positioning

G91: Set to Relative Positioning

M-Commands

M0: Stop or Unconditional stop

Pnnn Time to wait, in milliseconds1

Snnn Time to wait, in seconds

M3: Open gripper (100% max.)

Pnnn Open gripper to nnn% (absolute)

Snnn Open gripper by nnn% (relative)

M3P0	Completely close gripper
M3P100	Open gripper 100%
M3S20	Open gripper 20% more

M4: Turn gripper (+/- 90 degrees max.)

Pnnn Turn gripper to nnn degrees (absolute)

Snnn Turn gripper by nnn degrees (relative)

M4P0 Turn gripper to home position (0 degrees)

M4P90 Turn gripper to absolute position +90 degrees

M3S-20 Turn gripper -20 degrees

M5: Home Gripper

M5 Turn gripper to home position and close gripper completely

M17: Enable power for all stepper motors

M18: Disable power for all stepper motors

M114: Get Current Position

This causes the machine to report its current

A, B, C, D coordinates to the host.

P reports in steps

M115: Get Firmware Version and Capabilities

M119: Get Endstop Status

Returns the current state of the configured

A, B, C, D endstops.

M201: Set max acceleration

Annn Acceleration for for stepper A in units/s2

Bnnn Acceleration for for stepper B in units/s2

Cnnn Acceleration for for stepper C in units/s2

Dnnn Acceleration for for stepper D in units/s2

M203: Set maximum speed

Annn Maximum speed for stepper A

Bnnn Maximum speed for stepper B

Cnnn Maximum speed for stepper C

Dnnn Maximum speed for stepper D

M870: Send an error message to the display

M870;This is an error message

M871: Send a warning message to the display

M871;This is a warning message

M872: Send a message to the display

M872;This is a message

M880: Neopixel Lighting

Annn Red value

Bnnn Green value

Cnnn Blue value

M880A255B255C255 Neopixel white lighting

M881: Neopixel Run Light

Annn Red value

Bnnn Green value

Cnnn Blue value

M881A100 Neopixel red run light

M882: Switch Neopixel Lighting off

M882 Turn off the Neopixel lighting

M883: Buzzer control

Annn	Buzzer on time in in msec
Bnnn	Buzzer off time in in msec
Cnnn	Number of buzzer cycles

M883A500B100C4

Buzzer will beep 4 times with a length of 400ms each and 100ms breaks in between