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| Public Domain |
| Herculito GCode |
| Version 1.0 |

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| reinhard  4/30/2023 |

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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