What's New In The 3D Printer World≡

By Scott Worthington on Sunday, 22 April 2018

Category: 3D News

Chitu G code Explained

Once again Scott Here to see if I can't help you understand the something else I have seen questions about in the 3D printing community. This Time around I'll go over the G-code used By Chitu on their F mini control board and other custom made control boards used by Tronxy and several other companies now. This control board comes on the Tronxy X5SA, X5ST, X5S-E2, XY-3 and XY-2 to name a few.

PLEASE NOTE CHANGING THESE SETTING WILL change your printers behavior. Therefore I do not recommend changing settings yourself without understanding what each setting your adjusting does.

So To start with G code files can not be written in word you are better off writing then in notepad because it does not leave artifacts in the background. Therefore any time you want to update the firmware you need to either edit the g code you have or start a new notepad document for it.

I am going to do my best to explain each of the G codes in every day terms If I can think of how. Then if you want you can copy each line into a notepad document and edit and save it. Once saved to the SD card put the SD card into the control board and run that G code file as if it was a print and done. Make sure ever g code file you make has the save g code at the end.

Please not that this is the first G code I have seen that is like this " M8012 I200" in this case the M8012 is the code then " I" is the actual settings your adjusting so in the above example it is 200. The this example M8012 is the code for X Y max movement speed then the 200 is the mms. So if you wanted to slow down the max speed you could change it to 120 or 300 to speed it up depending on your printer.

Resume on power Lose

M8000 I1 ; used if you have the resume on power lose module installed

M8000 I0 ;   used if you do not have the resume on power lose module installed

Stepper Motor Direction

  X stepper motor

M8002 I-1 ; current direction

M8002 I1 ; Reverse direction

   Y stepper motor

M8003 I-1 ; current direction

M8003 I1 ; Reverse direction

   Z stepper motor

M8004 I-1 ; current direction

M8004 I1 ; Reverse direction

   E stepper motor

M8005 I-1 ; current direction

M8005 I1 ; Reverse direction

Movement configuration

   X axis Movement

M8005 X0 ; print head moves in X axis

M8005 X1 ; Bed moves in X axis

   Y axis Movement

M8005 Y0 ; print head moves in X axis

M8005 Y1 ; Bed moves in X axis

   Z axis Movement

M8005 Z0 ; print head moves in X axis

M8005 Z1 ; Bed moves in X axis

Speed settings:

speed is in mm/s; acceleration is in mm/ s^2 start speed. When the moving speed exceeds this speed, it takes this speed as the starting speed and begins to accelerate.Otherwise, it is in constant motion at the moving speed

M8006 I120

JERK

M8007 I10 ; Lower this is your getting ringing

ACCLELERATION

Acceleration, the larger the value is, the greater the actual average moving speed is.

M8008 I1000

Axis Steps Per Millimeter

example, 1.8 degree stepper motor, pulley with 20 teeth, tooth pitch is 2.032mm, 1/16 microstepping are (20*2.032)/((360/1.8)*16)

Set X and Y the same

M8009 S0.0125 ; adjust the 0.0125 to correct both at once

independent X,Y stepper motor parameters

M8009 X0.0127 Y0.0127

Z axis

value of each step of Z. The calculation formula: lead /((360/1.8)*16),

M8010 S0.0025

Extruder Calibration

value of each step of E. This value is equal to the 1/3200 circumference of extruder gear. In addition

M8011 S0.010799

Max Movement / print speed

XY movement mm/s

M8012 I200

Z movement mm/s

M8013 I30

extruder mm/s

M8014 I120

Home Speed settings

first home speed

Z-axis

M8015 I8

X-axis and Y-axis

M8015 S30

second home speed

Z-axis returns

M8016 I4

X-axis and Y-axis

M8016 S5

Pre-extrusion before print

Pre- extruded

M8017 I10

max speed of pre-extrusion(mm/s)

Feeding by non-reduction gear, max speed always above 100.

M8018 I20

E max speed

Not sure why this one is here because M8014 does the same thing

M8019 I50

Retract

Distance

M8020 S1.5 ; will set the retract to 1.5mm no matter what the slicer says
M8020 S0 ; Follows slicer retract settings

Speed

M8033 S8 ; will set retract speed to 8mms

M8033 S0 ; Follows slicer retract speed settings

Filament Diameter

M8021 S1.75

Max hotend temperature

M8022 I260

Min Hotend Temperature for extruder to turn on

M8022 T170

Maximum temperature of hot bed

M8023 I120

Temperature error detection

M8023 T0 ; Enable temperature error detection

M8023 T1 ; Forbidding temperature error detection

Maximum distance of X, Y, Z,

exceeding the distance will cause the buzzer to buzz

　X

M8024 I330

　Y

M8025 I330

　Z

M8026 I439

number of extrusion head Or use of second E stepper driver If the second driver chip set is there. (tronxy E2 versions only)
　　Set the number of extrusion headat least 1, at most 3 at present

　　M8027 I1

　　Whether it is 3 in 1 out nozzle or 2 in 1 out nozzle, these two nozzles share a temperature sensor, share a heating rod
　　0: not 3/2 in 1 out nozzle　　1: 3/2 in 1 out nozzle

　　M8027 S0

　The second extrusion head will be used as Z. For some large equipment, two Z axes will be needed. Therefore E2 can be used as Z axis.
　　This order will force the number of extrusion heads to be 1　　0: double Z double limit mode, the second limit connect to X+,
　　1£ºdouble Z single limit mode, only connect to one limit switch . if to enable this function, place a tick in front of the command.

　　M8027 Z0
　the second extrusion head will be used as Y
　　if to enable this function, place a tick in front of the command.

　　M8027 Y0

The second extrusion head is used as the first one, because some machines use two motors to feed the wire

If you need to enable this feature, place a tick in front of the command

M8027 E0

Heated Bed

M8027 T1 ; enable hot bed

M8027 T1 ; disable hot bed

Advanced Settings

Extra pri after retract

M8028 S0.00 ; Add to the 0.00 to add extra length on the prime length after retract.

Home location

M8029 I0 ; front left

M8029 I1 ; Unilateral maximum point limit

M8029 I2 ; Bilateral limit

M8029 I3 ; Limit in the left rear of the machine

types for limit switch

M8029 T0 , limit switch normally open, when not triggered, the signal level is open

M8029 T1:XYZ limit switch normally closed, when not triggered, the signal level is closed

Filament out Detection

Uses same plus as auto bed level sensor

M8029 D0 ; ban fault detection

M8029 D1 ; enabled fault detection

Limit switch type for filament out detection

M8029 P1 ; same with XYZ limit type

M8029 P-1 ; opposite to XYZ limit type

part cooling Fan

M8030 I0 ; fan is controlled by slicing software
M8030 Ixxx ; setting a temperature that is larger than 0 fan controlled by firmware

Coldend Fan

M8030 I0 ; full speed from powering on control board

M8030 I50 T-1 ; allows you to set what speed and temp the coldend fan comes on at

SD card displayed on screen

M8034 I1 ; Yes

M8034 I0 ; No

Auto level point setup

The maximum is 5 as regard to leveling setting, X, Y are floating number, if X, Y are small than 1, then it indicates the corresponding proportion of journey. Otherwise, it indicates the absolute coordinates of X and Y, the unit is mm.

M8035 I3 ; the number of instruction is same with that of point

M8036 X-20 Y0 ; start point

M8036 X50 Y50 ; second point

M8036 X250 Y250 , Third point

M8036 X£» ; ends auto level

Machine type

M8080 I0 ; Cartesian

M8080 I2 ; Corexy

Thermistor type

    M8081 I0 ; Ideal NTC 100K 1% 3950 B

    M8081 I2 ; corresponding to the type 2 sensor of marlin

Auto leveling setting

    M8083 I0 ; ban auto leveling

    M8083 I1; enable auto leveling (leveling switch connect Z)

Z Height Offset(TORONXY HAS THE ONSCREEN)

I skipped this because Tronxy has it onscreen. Height difference of Z leveling limit = Z zero position-Z position for leveling limit.   0: forbid deviation, the route of Z is determined by¡°set Z as zero¡±,the printed

G code doesn't need the automatic high leveling order. It's recommended to use this mode. Non 0:Z is automatically determined when the leveling limit is triggered. Under this mode,

G29 automatic leveling order must be after the return to zero of G28 and before begin print. If the extrusion head is near to main board during limitation, the value is positive.

    M8084 Z4

Boot Screen

The minimum is 100ms,the maximum is 6000ms

    M8085 I500

standby mode to shutdown

 This function can only be used for the equipment installed with the power module. The unit is second(s). When the value is 0, it indicates forbidding the function of shutdown after standby.

    M8085 P0

Max Fan speed

Max 256 with more noise, which can be adjusted through this parameter

    M8489 I256

Disable steppers and turn off all heating after printing

    M8489 P0 ; Turn off all

    M8489 P1 ; G Code Controlled

PID
I have not used these one will more than likely be hotend the other the bed

    M301 P22.2 I1.08 D114 ; enables PID

    M303 E0 S150 C5; enables PID

Laser Engraver

    M8520 I0 ; do not support the laser engraving

    M8520 I1 ; support laser engraving, there are more buttons inside to set speed

Wifi Setup

   Replace the word networkname with your network's name leaving the quotation marks,
Replace the word Password with your networks   password leaving quotation marks.

    M9005 '"Networkname","Password"'

SAVE

MUST DO THIS IN EVER G CODE SET YOU SEND THE PRINTER

    M8500

below is an example of a Gcode I personally used to do basic update to the X5SA.

;Speed settings: speed is in mm/s; acceleration is in mm/ s^2
;start speed.When the moving speed exceeds this speed, it takes this speed as the starting
speed and begins to accelerate.
;Otherwise, it is in constant motion at the moving speed c3d
M8006 I120

; ===============================
;
;JERK
;
;maximum speed while turning a corner. There there will be a large number of reciprocating motion while filling.
;The noise is loud while this value is large. When the value is small, the speed is slow c3d
M8007 I10
; ===============================
;ACCLELERATION
;
;acceleration, the larger the value is, the greater the actual average moving speed is.
;However, the noise is loud. The actual speed is small when the value is small c3d
M8008 I3000
; ===============================
;MAX MOVEMENT / PRINT SPEED.
;
;maximum speed of various parameters. In order to ensure the stabilization of the machine,
;please make settings according to the measured results
;maximum speed of XY movement mm/s
M8012 I200
; ===============================
;maximum speed of Z movement mm/s
M8013 I30
; ===============================
;maximum speed of the extruder mm/s
M8014 I120
; ===============================
;Z-axis home speed.When using makerware software,the home speed will be ignored while slicing,
;because gcode specified the home speed
;first home speed when Z-axis returns to zero, higher
M8015 I8
; ===============================
;first home speed when X-axis and Y-axis returns to zero, higher
M8015 S30
; ===============================
;second home speed when Z-axis returns to zero, slower
M8016 I4
; ===============================
;second home speed when X-axis and Y-axis returns to zero, slower
M8016 S5
; ===============================
;Thermal Protection.

;
; Tronxy Has this turned off
;Forbidding temperature error detection. The default temperature error detection will pop up the warning when the temperature
;sensor is not well plugged in or the heating power is too small. Strongly suggest not forbidding this function
;1: Forbidding temperature error detection   0: Enable temperature error detection
M8023 T0
; ================================
;MAX TRAVEL (adjusted because I have bed lowering installed).
;
;maximum distance of Z
M8026 I439
; ================================
;the duration of the boot screen,the minimum is 100ms,the maximum is 6000ms c3d
M8085 I500
; ================================
M117 PRINTER NOW CUSTOMIZED
;SAVE
;
;¡¾Save command¡¿ This parameter must not be less, otherwise all parameters can not be saved to the device
;save the configuration
M8500