



**Texas MicroCircuits**

**TMC3in1 – Torch & Motion Controller 3in1**  
**Plasma THC - 5 Axis Breakout Board – Spindle Controller**

**Vol. 03: Macro Guide**

For use with TMC3in1 Plugin Rev: 4.1.x.x

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## What are the Macros for?

Macros are provided so that you can change almost all of the THC (Torch Height Controller) configuration settings from your GCode, instead of having to go into the menu each time you want to adjust something. This allows for each G-Code program to utilize specific settings for its own job. However, more importantly, you can change the settings while you are in the middle of a program. A good example would be to set the Target Tip Voltage 30V higher for some tight circles and then lower it again for the straight cuts around the perimeter.

## Where can I find the Macros and where do the Macros need to be placed?

The Macros are located in the TMC3in1 plugin zip file starting with release 4.1.x.x. They are located in the “\macros\TMC3in1 vX.X.X.X\” folder, and they must be placed in your “C:\Mach3\macros\YOUR PROFILE NAME\” folder to work. They will be named “M19100.m1s” through “M19114.m1s”.

## How do I run a macro?

From your G-Code or your MDI window, type in “m19100 Q111.11” without the quotes. When you run it, you should see the target tip voltage change to 111.11 Volts, and you will also see a message in the status window saying “M19100 Setting Target Tip Voltage to 111.11”. If you do not see that message, then your macros are not installed in the correct folder; please follow the previous topic.

## Macro Examples

Here is a G-Code example of the macros. Please keep in mind that G-Code treats text within parentheses () as comments.

M11P3            (This will turn ON output #3 if it is immediately followed by a valid G0, G1, G2 or G3 motion command. This output # MUST be assigned in the ESS Main Config M11Px section)

G0 X0 Y0            (Rapid Move to Origin)

(Single Step through these lines and you can see the results in the History Window)

M19100 Q89.99            (Set the Target Tip Volts to 89.99V)

M19101 Q0.5            (Set the Target Band Voltage to 0.5V)

M19102 Q10.1            (Set the Linear Response Band Voltage to 10.1V)

- M19103 Q-3.3 (Set the THC Offset Voltage to -3.3)
- M19104 Q1 (Enable M11/M10 Mode)
- M19105 Q1 (Enable Delay After ArcOkay Before THC Starts Mode)
- M19106 Q0.6 (Set a Delay of 0.6 Seconds After ArcOkay Before THC Starts)
- M19107 Q1 (Enable Velocity Based AntiDive Mode, Where THC will be Inhibited if X-Y Velocity Drops Below N% of the commanded Feedrate)
- M19108 Q96 (If X-Y Velocity Drops Below 96% of the commanded Feedrate, THC will be Disabled)
- M19109 Q1 (Enable Voltage Based AntiDive Mode)
- M19110 Q64 (64 Data Points will be used in Calculating the Voltage Based AntiDive)
- M19111 Q10 (10 % Change in Voltage Before the Voltage Based AntiDive Activates)
- M19112 Q0 (THC will Respond at 0% of Normal [0% means no THC response] when Voltage Based AntiDive is Active)
- M19113 Q12 (Voltage Based AntiDive Activates 12V Above Target Tip Volts)
- M19114 Q8.3 (Voltage Based AntiDive Activates 8.3V Below Target Tip Volts)

(This will set the values back to the defaults)

- M10P3 (This will turn OFF output #3 if it is immediately followed by a valid G0, G1, G2 or G3 motion command. This output # MUST be assigned in the ESS Main Config M11Px section)
- G0 X1 Y1 (Rapid Move to 1, 1)
- M19100 Q115.1 (Set the Target Tip Volts to 115.1V)
- M19101 Q0.25 (Set the Target Band Voltage to 0.25V)
- M19102 Q20.1 (Set the Linear Response Band Voltage to 20.1V)
- M19103 Q0.0 (Set the THC Offset Voltage to 0.0V)
- M19104 Q0 (Disable M11/M10 Mode)
- M19105 Q0 (Disable Delay After ArcOkay Before THC Starts Mode)

M19106 Q1.1	(Set a Delay of 1.1 Seconds After ArcOkay Before THC Starts)
M19107 Q0	(Disable Velocity Based AntiDive Mode, Where THC will be Inhibited if X-Y Velocity Drops Below N% of the commanded Feedrate)
M19108 Q97	(If X-Y Velocity Drops Below 97% of the commanded Feedrate, THC will be Disabled)
M19109 Q0	(Enable Voltage Based AntiDive Mode)
M19110 Q128	(128 Data Points will be used in Calculating the Voltage Based AntiDive)
M19111 Q4.9	(4.9% Change in Voltage Before the Voltage Based AntiDive Activates)
M19112 Q20	(THC will Respond at 20% of Normal when Voltage Based AntiDive is Active)
M19113 Q100.1	(Voltage Based AntiDive Activates 100.1V Above Target Tip Volts)
M19114 Q99.9	(Voltage Based AntiDive Activates 99.9V Below Target Tip Volts)
M30	(End Program and Rewind)