Artisan - Basic Setup and Tuning Guide

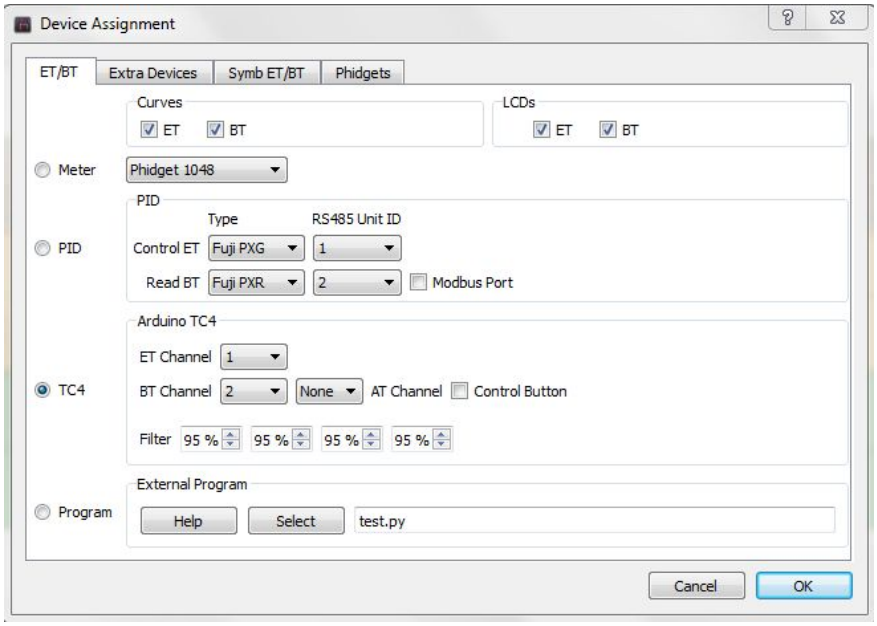
You have temperature probes, you have a temperature meter (Phidget, TC4, etc.), and now you want to configure Artisan. This guide provides a systematic process you can follow to do this.

IMPORTANT NOTES

- This guide's primary focus is finding the "best" sampling interval for your preferences and setup; only brief discussion of meter configuration is provided.
- If you have not yet purchased temperature probes or a temperature meter, see the LINKS section for some helpful links. Choosing the wrong temperature probes (too sensitive or too insensitive) or the wrong meter can cause a lot of headaches.
- Delta - a delta curve in Artisan is what most people consider to be Rate of Rise (RoR). The term delta will be used going forward in this document.
- This document is based off Artisan v0.9.7, but should apply to future versions as well.

CONFIGURE METER

1. Select your meter under **Config > Devices** (most supported meters can be found under the Meter dropdown).



2. While still in **Config > Devices**, you can use the **Extra Devices** tab to add additional temp probe channels (NOTE: Delta curves are enabled in a later section)

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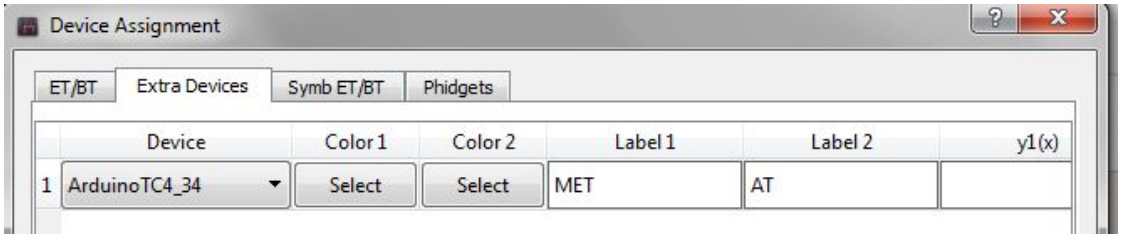
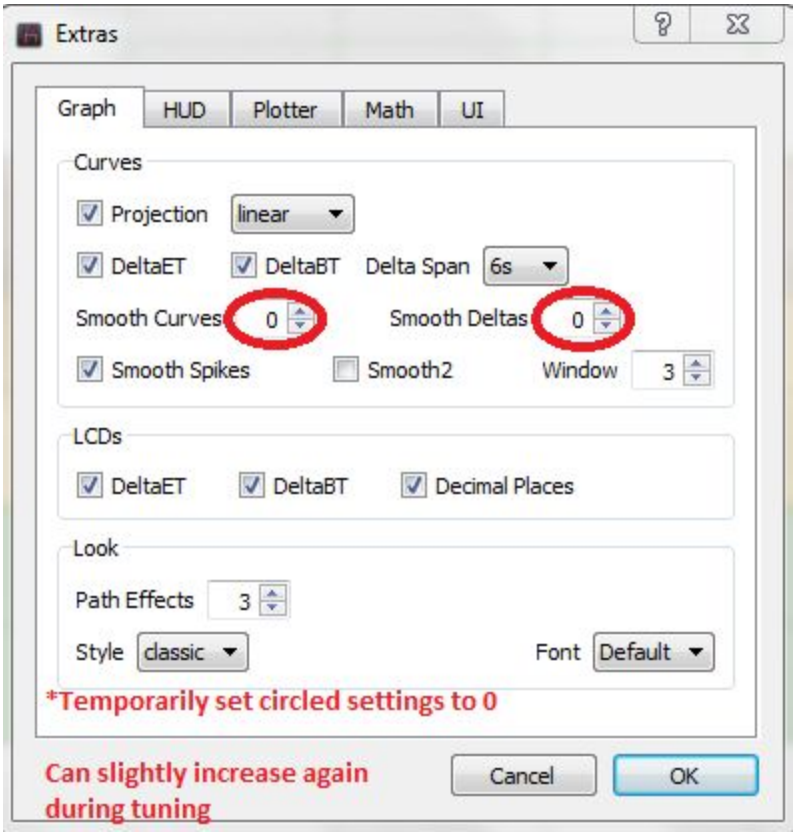


3. Click OK when done configuring your meter. If needed for your meter, an additional screen should appear for configuring the correct Serial Port settings for your device. If you get the settings wrong, you can go to **Config > Serial Port** to adjust the settings.

ENABLE DELTA DISPLAY (RATE OF RISE / ROR)

1. Open **Tools > Extras**
    a. In the Curves section, check DeltaET and DeltaBT to show delta graph lines
    b. In the LCDs section, check DeltaET and DeltaBT to show delta LCDs (on the right-hand side of Artisan)
    c. If desired, in the LCDs section, check Decimal Places if you want all the LCDs to show decimal points for temperature
    d. RECOMMENDED: Set Smooth Curves and Smooth Deltas to 0 to make tuning Artisan easier. You can increase these again later when fine-tuning the settings.



CONFIGURE INITIAL SAMPLING INTERVAL

The sampling interval setting configures how often Artisan updates the curves on the line graph as well as the LCDs (on the right-hand side).

The “best” sampling interval settings for an individual can vary significantly based on their temperature probes, meter, roaster, and personal preferences. Below will give some general guidelines for an individual to find the best setting for themselves.

1. Before adjusting sampling interval, it is generally recommended to turn on oversampling by clicking **Config > Oversampling**. If this is enabled and sampling interval is 3+ seconds, this will help smooth the curves on the graph and make them more readable.
2. Sampling interval is configured under **Config > Sampling Interval**
3. Here are some sampling interval recommendations based on user preferences:
    a. FAST: If a user wants curves/updates in Artisan to appear as quickly as possible (speed is the preference), they can attempt setting the sampling interval to 1 second.
        i. WARNING: This setting might make curves too choppy and might cause issues, so it is not recommended for most setups (Marko, the creator of Artisan, generally recommends against it). Some Phidget users have reported success with it.
        ii. Carefully follow the TUNING SAMPLING INTERVAL section below if this setting is selected.
    b. SAFE/SMOOTH: If a user will not focus heavily on temp information from Artisan, but is primarily using it for a “casual glance” or as a “back-seat” reference point, try setting the sampling interval to 5 seconds. This will make the curves on the graph smoother (and easier to read), at the expense of some lag in temperature readings.
    c. BALANCED: If a user would like a decent compromise between fast updates and smooth curves on the graph, try setting the sampling interval to 3 seconds (the default setting).
    d. NOTE: If in doubt, a 3 second interval is a good starting point. Then follow the tuning sections below.

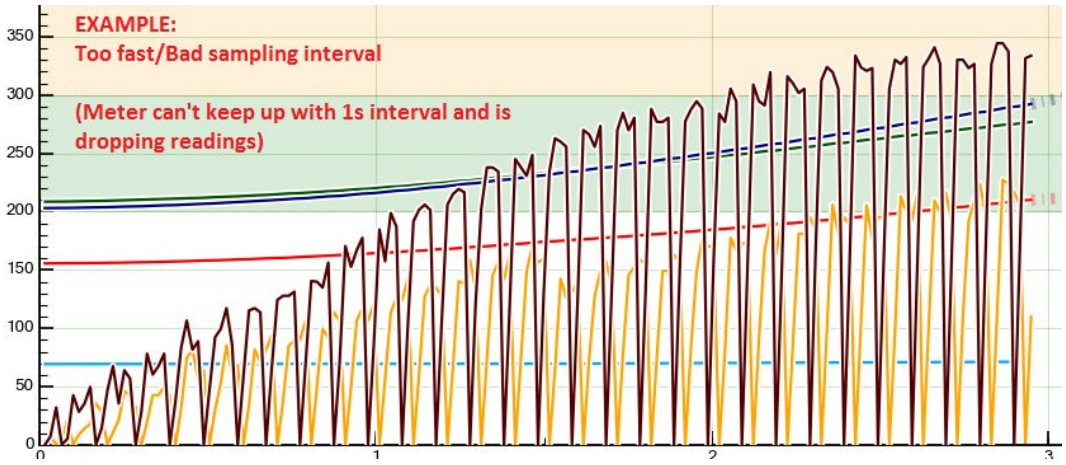
TUNING SAMPLING INTERVAL

If a 1 or 2 second sampling interval was selected, you should follow this section to verify you can actually run Artisan with a 1 or 2 second interval.

If you selected a 3+ second sampling interval, you might be okay skipping this section (and continuing to the FINE-TUNING CURVES section). However, if the curves in the graph are choppy or hard to read, follow the steps in this section.

NOTE: In this document, an unreadable or "overly-choppy" curve is defined as a curve on the graph where it is hard to tell if the curve is increasing, decreasing, or staying flat (because the temp readings are jumping up and down too much). A little choppiness in this section is tolerable and to be expected; however, too much choppiness can be detrimental.

1. With medium heat being applied to the roaster (can start with a cold roaster), click START to enable temperature monitoring
2. Watch the graph curves for at least 60 seconds (more time is even better)
3. If the graph curves are overly-choppy, try adjusting the sampling interval at least 1 second higher and see if the issue minimizes.



4. Keep increasing the sampling interval by 1 second until the curves do not look overly-choppy (if in doubt, feel free to leave the setting where it is and proceed to the next step)
5. Once you have a sampling interval you think looks okay, try roasting some actual beans at this sampling interval (might be good to use throwaway beans if you have them).
6. If the curves still look relatively readable and helpful during a roast, you have found a decent sampling interval for your setup. If the curves are completely unhelpful/unreadable, try increasing the sampling interval one more second.

IMPORTANT NOTE:

If you hit a 5 second sampling interval and the curves on the graph still look very choppy and/or sporadic, there is a good chance you have one of the following issues:

- Meter "sensitivity" is too high - some meters, like the TC4 and Phidget, have settings that can be adjusted to smooth out their reported temp readings.
- Too sensitive/Bad temperature probe(s)
- Grounding issue (ground loop)
- Some other random or quirky issue
- See the LINKS section below for some online posts that might be helpful

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FINE-TUNING CURVES

This section will assist with the following adjustments:

- Fine-tuning/Smoothing delta curves only* during live-recording
- Fine-tuning/Smoothing all curves (standard and delta) "post-roast" (after OFF is pressed)

*If the standard temperature curves (ET/BT/etc.) do not look smooth during live-recording, the sampling interval most likely needs to be increased before proceeding. Follow the TUNING SAMPLING INTERVAL section above to do this.

BASICS:

Slightly and slowly increase the "**Delta Span,**" "**Smooth Curves,**" and "**Smooth Deltas**" settings, 1-2 points at a time. Increasing any of these settings will increase the smoothness of curves at the expense of accuracy. These three settings are all located in **Tools > Extras.**

"**Delta Span**" Overview:

- Affects how far back in time Artisan looks when calculating a delta curve.
- Increasing this setting should smooth *live-recording* delta curves without causing major differences between the live and post-roast curves (like Smooth Curves/Delta cause).
- Increasing this setting will not affect the standard temperature curves (ET/BT/etc.), only deltas.

"**Smooth Curves/Deltas**" Overview:

- These two settings are "dual-purpose" settings that apply a minimal "live-recording" *delta-curve-only* smoothing, and also a much heavier post-roast smoothing after pressing OFF. Don't adjust these too high.
- The "**Smooth Curves**" setting, after clicking OFF (post-roast), will smooth both the standard temp curves (BT/ET/etc.) and also delta curves.
- The "**Smooth Deltas**" setting will only smooth delta curves.
- Changes to "**Smooth Curves/Deltas**" settings also work on saved/previously-recorded Artisan files, so you can try adjusting the setting up and down on that saved graph to get an idea what the changes will do to other graphs.

RECOMMENDATIONS:

- Try to keep these settings low (especially "Smooth Curves/Deltas").
- If you are finding that you need to adjust these settings to a value significantly higher than 10 in order to make curves readable, your sampling interval might be too low (try increasing sampling interval one second higher then fine-tuning again).
- If you adjust sampling interval to 5 seconds and tweak the above settings, and yet still have issues, you might have one of the problems mentioned in the IMPORTANT NOTE portion of the TUNING SAMPLING INTERVAL section.

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LINKS/REFERENCES

Choosing a meter and/or temperature probes:

- Great post by Marko Luther, creator of Artisan (and the basis of much of this document): http://artisan-roasterscope.blogspot.com/2014/01/sampling-interval-smoothing-and-rate-of.html
- Thermocouple Selection Information: http://homepage.ntlworld.com/green_bean/coffee/roastlogger/thermocoupleinstallation.html
- Thermocouple Types: http://www.thermometricscorp.com/thermocouple.html

Resolving choppiness/spikes:

- Marko Luther blog entry on Fighting Spikes: http://artisan-roasterscope.blogspot.com/2013/05/fighting-spikes.html
- Marko post on Home-Barista: http://www.home-barista.com/home-roasting/artisan-version-7-0-t27999-30.html
- Marko post on homeroasters.org: http://www.homeroasters.org/php/forum/viewthread.php?thread_id=4619
- Dealing with Electrical Noise: http://www.home-barista.com/home-roasting/troubleshooting-electrical-noise-with-roaster-thermometer-t22873-60.html
- Grounding Tips: https://phidgets.wordpress.com/2014/06/02/how-to-avoid-grounding-a-thermocouple/

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