

# Ziegler-Nichols Loop Tuning

Click here for the [SLICE-QT Manual](#).

Click here for the [SLICE-QT Quick Start Guide](#).

Click here for the [SLICE-QT API](#).

Click here for the [SLICE-QT web page](#).



This protocol is designed to optimize the loops for disturbance rejection.



There is the possibility for the loop to go unstable at too high gain. Use caution as gain is increased.

1. From the Home Screen, touch the Channel icon for the loop to be tuned
2. Touch Settings > PID Params
3. Choose a Set Point temperature
4. Set Proportional Gain ( $K_p$ ) to 0
5. Turn off Integral and Differential portions of the loop ( $T_i$  &  $T_d$ , respectively)
6. While monitoring the error in temperature on rolling graph, **slowly** increase  $K_p$  until the error begins to oscillate



7. Use the  and  icons, to scale displayed response appropriately



8. Use the  icon to pause the graph

9. Note  $K_p$  where oscillation begins,  $K_{p, cr}$



10. Use the Cursors enabled by touching the  icon to measure the period of oscillation,  $T_{cr}$
11. Use the following table to set the values of  $K_p$ ,  $T_i$ , and  $T_d$

Type of Control Loop	$K_p$	$T_i$	$T_d$
PI	$0.45K_{p, cr}$	$0.83T_{cr}$	0
PID	$0.6K_{p, cr}$	$0.5T_{cr}$	$0.125T_{cr}$

Tab. 1: Ziegler-Nichols loop values

From:

<https://www.vescent.com/manuals/> - **Product Manuals**

Permanent link:

<https://www.vescent.com/manuals/doku.php?id=slice:z-n&rev=1554220194>

Last update: **2021/08/26 14:26**

