Command:UNLOCK (UL)

For CRISP or ZS

Tiger Syntax

Shortcut	UL
Format	[Addr#]UL [X=LED_intensity] [Y=update_rate] [Z=rel_lk_knob_spd][F=focus_index]
Type	Card-Addressed
Remembered	Using [Addr#]SS Z

MS2000 and RM2000 Syntax

Shortcut	UL
Format	UL [X=LED_intensity] [Y=update_rate] [Z=rel_lk_knob_spd][F=focus_index]
Remembered	Using SS Z

Without arguments, this command unlocks the servo from the focus system and returns control to encoder feedback from the Z-axis drive. The focus error offset is not changed.

X: [LED_intensity] may be set from 0 to 100 (%) of full power using the X argument. The default value is 50.

Y: [update_rate] is used to reduce the update rate of the CRISP system to the motor drive system. Increase Update_Rate to improve stability when using piezo Z-axis drive systems. As of Tiger firmware version 3.38, the value of Update_Rate is given in milliseconds. The default update rate for piezos is 5ms and everything else has an update rate of 10ms as of version 3.38. Note: UL Y was previously known as "Number of Skips". You will want to increase the loop gain with LR T=# as you increase the update rate.

Z: [rel_lk_knob_spd] controls the sensitivity of the control focus knob when the system is locked. This will vary depending on the calibration factor that the system finds, so don't be alarmed if you find large sensitivity differences with conditions. The default value is 2.

F: [focus_index] <u>To select active Z-focus axis:</u> If the controller can handle more than one Z-axis focus device, you can specify the focus_index to select which one is active for the CRISP, TRACKING or ZS functions. Specify as a 0-indexed number; find the axis index from the letter using the Z2B command or else parse the output of the BU X command and figure out what number in order the axis letter is). <u>Save the parameter change (SS Z) and reset the controller</u> for setting to take effect.

> ⚠️ **CRISP:** setting the focus_index will also modify lock range (LR Z), cal range (LR F), and loop gain (LR T). Lock range is set to 1 mm, cal range to 3.5 um, and loop gain to 10.

For TRACKING

Shortcut	UL
Format	UL [X=focus_enable] [Y= z_cal_value] [Z=closeness] [F=focus_index]
Remembered	Using SS Z

Without arguments, this command unlocks the servo from the focus system and returns control to encoder feedback from the Z-axis drive. The focus error offset is not changed.

X: [focus_enable] X=0 autofocus off; X=1 autofocus on.

Y: [z_cal_value] is the gain constant for the focus servo.

Z: [closeness] is a relative value describing the precision of XY centering before Z focus tracking is activated. closeness should be set to roughly the acceptable xerr2 + yerr2, where xerr and yerr are typical "well tracked" errors numbers seen on the controller LCD display.

F: [focus_index] <u>To select active Z-focus axis:</u> If the controller can handle more than one Z-axis focus device, you can specify the focus_index to select which one is active for the CRISP, TRACKING or ZS functions. <u>Save the parameter change (SS Z) and reset the controller</u> for setting to fully take effect. Some functions will work without the reset, including the command ZS X.

[commands](), [tiger](), [ms2000](), [crisp](), [tracking](), [phototrack]()

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