

# Command:LOCKRG (LR)

This command's function changes if the system has a Phototrack, CRISP, or SERVOLOCK\_TTL modules.

On CRISP systems

Tiger Syntax

<b>Shortcut</b>	LR
<b>Format</b>	[Addr#]LOCKRG [X=cal_gain] [Y=objective_na] [Z=lock_range] [F=cal_range] [T=loop_gain]
<b>Type</b>	Card-Addressed
<b>Remembered</b>	Using [Addr#]SS Z

MS2000 and RM2000 Syntax

<b>Shortcut</b>	LR
<b>Format</b>	LOCKRG [X=cal_gain] [Y=objective_na] [Z=lock_range] [F=cal_range] [T=loop_gain]
<b>Remembered</b>	Using SS Z

The LOCKRG command allows the user to control of several system variables.

**X [cal\_gain]**: The X parameter, `cal_gain`, is the gain variable normally obtained from running the calibration sequence. Although not recommended, it can be changed with this command, but it will be reset upon running the calibration sequence.

**Y [objective\_na]**: The Y parameter sets both the `cal_range` focus depth (LR F) and also the `in_focus_mm` range (AFLIM Z) appropriately for the specified numerical aperture of the objective. The computed values can be read and/or overridden using the LR F and AFLIM Z commands respectively. This is a floating point number and can have up to six decimals of precision, although the math may truncate this precision internally.

**Z [lock\_range]**: The Z parameter controls the maximum excursion (in either direction) of the stage from the position where the Lock state was initiated before the system generates an error condition and unlocks. The value `lock_range` is in units of millimeters. The default value is 1.0 mm.

**F [cal\_range]**: The F parameter controls the excursion of the stage in the dither state of the calibration sequence. The default value for `cal_range` is 0.005 mm. Setting the objective's NA using LR Y will change this value.

**T [loop\_gain]**: The T parameter controls the gain multiplier or loop gain. The default value is 4.

Note: Firmware with a compile date prior to November 2016 used the [KADC](#) command to the set loop gain. Firmware builds from November 2016 to March 2018 have both KADC and LR T commands which have an identical effect. Note: with LR T the axis character does not need to be specified.

## With SERVOLOCK\_TTL

## Tiger Syntax

<b>Shortcut</b>	LR
<b>Format</b>	[Addr#]LOCKRG [Z=lock_range]
<b>Type</b>	Card-Addressed
<b>Remembered</b>	Using [Addr#]SS Z

The SERVOLOCK\_TTL module uses the LOCKRG Z command to set the maximum excursion. If CRISP is also present then the same setting is shared by both modules.

The Z parameter controls the maximum excursion of the stage from the position where it was initially locked before the system generates an error condition and unlocks. The value lock\_range is in units of millimeters. The default value is 1.0 mm.

## On Phototrack system

<b>Shortcut</b>	LR
<b>Format</b>	LOCKRG [X=cal_value] [Y=xy_lock_range] [Z=z_lock_range] [F=cal_range]
<b>Remembered</b>	Using SS Z

This command sets range limits for tracking and autofocus systems. For XY tracking systems, the excursion from the point of lock for both the X and Y axes in millimeters is set with the lock\_range value using the Y parameter. If the system encounters a lock\_range or focus\_range limit, servo tracking is terminated.

Cal\_range is the distance in millimeters of the stage movement for automatic calibration of the Tracking or Focus system, set using the F parameter. The result of such a calibration is the cal\_value, which can be set explicitly with the X parameter or queried using LR X?. The tracking parameters can be displayed on the serial terminal using LR Z.

Query: LR X? Y? F? returns the current value of the parameters.

[commands](#), [tiger](#), [ms2000](#), [crisp](#), [phototrack](#), [servolock ttl](#)

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