Command:SECURE

This command is used to lock and unlock the Micro Servo (U_SERV0_LK) and the Solenoid based (S0L_LK) lock inserts. SECURE command has a bit more functionality in case of Solenoid Lock insert.

For Micro Servo Lock Insert

Shortcut	SECURE
Format	SECURE [X=p]
Remembered	Using SS Z
Hardware/Firmware Module Required	Micro Servo Lock Insert and U_SERV0_LK

With stages equipped with Micro Servo lock mechanism, this command is used to lock or unlock samples on the stage. The value of p determines the position of the lever arm and can be any decimal number between 0.0 and 1.0. A value of 1.0 fully retracts the lever. The best value for a particular well plate model may vary and can be determined experimentally.

Example:

```
SECURE X=1.0
:A
```

fully opens lever

```
SECURE X=0.25
:A
```

Closes lever for typical well plate

```
SECURE
:N-3
```

Error at axis required

```
SECURE Y=0
:N-2
```

invalid axis

```
SECURE X?
:N-2
```

invalid operation

For Solenoid Lock insert

MS2000 or RM2000 syntax and Function

Shortcut	SECURE
Format	SECURE [X=0 or 1] [Y=0 to 99] [Z=0 to 99] [F=0 to 255] [T=0 to 65000]
Remembered	Using SS Z
Hardware/Firmware Module Required	Solenoid Lock Insert and S0L_LK

Tiger syntax and Function

Shortcut	[addr#]SECURE
Format	[addr#]SECURE [X=0 or 1] [Y=0 to 99] [Z=0 to 99] [F=0 to 255] [T=0 to 65000]
Remembered	Using [addr#]SS Z
Hardware/Firmware Module Required	Solenoid Lock Insert and S0L_LK

With inserts equipped with Solenoid lock mechanism, this command is used to lock or unlock samples on the stage.

X argument accepts either “0” or “1”. “0” is the locking command , and “1” is the unlocking command. The Solenoid use no power when in “0” or lock position , so this is the default and the controller's initial state.

Y arguments is a percentage of power briefly applied to the solenoid to pull the lever back and unlock the wellplate. Set by factory, we recommend that this setting not be adjusted unless suggested by ASI support.

Z arguments is a percentage of power applied to the solenoid to keep it unlock. After unlocking, the solenoid needs very little power to keep the lever pulled back and keep the well plate unlocked. Set by factory, we recommend that this setting not be adjusted unless suggested by ASI support.

F argument sets the auto lock time, units are in minutes. When in unlock position , the solenoid is consuming power, over time solenoid will heat up and may damage it. There is a auto locking timer , Y sets the maximum time the solenoid stays unlocked , after which the controller auto locks. Default is 5 min . This feature can be disabled by setting Y as “0”, this is not recommended.

T argument, units are in milliseconds. This arguments sets the amount of time higher power (Y arguments) needs to be applied to unlock the wellplate. After that lower power (Z arguments) is applied to keep the wellplate unlocked. Set by factory, we recommend that this setting not be adjusted unless suggested by ASI support.

Note 1: Solenoid only consumes and dissipates power when in unlock state. Over time the heat generated by this power dissipation may damage the solenoid. So only unlock when needed.

Note 2: TTL Out mode must be set to 9 ie TTl Y=9 . This give control of the TTL out connector to Secure command .

MS2000 Example:

```
SECURE X=1
:A
```

fully opens lever, unlock state

```
SECURE X=0
:A
```

Closes lever, lock state

```
SECURE
:N-3
```

Error at axis required

```
SECURE X=1 F=2
:A
```

lever unlocks, and will auto lock after 2 mins

```
SECURE X?
X=1 :A
```

reply 1 indicates lever is in unlock state.

commands, ms2000, tiger