

# LinCommand GUI software Manual

For use with  
R256/R356 controllers  
SilverPak 17C 17CE  
SilverPak 23C 23CE



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**Version 1.1**

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## **Thank You for choosing LinCommand GUI software**

### **PLEASE READ BEFORE USING**

### **DISCLAIMER**

The information provided in this document is believed to be reliable. However, no responsibility is assumed for any possible inaccuracies or omissions. Specifications are subject to change without notice.

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There are known issues with R256/R356 controllers involving the Halt command (i.e., H01) when stored in memory location zero. Upon power up, the remaining command string after the Halt command might be executed if the user types in a new command. If memory location zero is not being used, the user is advised to always clear everything in memory by typing /1?9. Otherwise, the user may terminate the remaining command string in the buffer by issuing a /1T.

In this manual,

References to R256 also apply to SilverPak 17C, 17CE

References to R356 also apply to SilverPak 23C, 23CE

Sample settings and commands can be found in the Appendix A for basic setup and operation.

If you need assistance with LinCommand software, please email Lin Engineering Technical Support at [techsupport@linengineering.com](mailto:techsupport@linengineering.com) or, call 408-919-0200 for technical support

## Installation

1. From the Lin Engineering website R256/R356 download section, download the appropriate LinCommand version that matches your Windows software, 32 Bit or 64 Bit.  
[Lin-Command-32bit](#)  
[Lin-Command-64-bit](#)
2. After downloading, open the .ZIP file and navigate to the file named 'Setup'.
3. Double click on 'Setup'.

## Launching Program

1. Click the LinCommand icon .
2. Select the model that matches your controller R256, or R356 from the drop down box shown below.

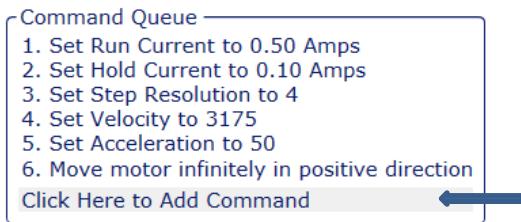


Operating from the **Normal Mode** window (Default) For Advanced mode skip to page 7.

To switch from Advanced mode, to Normal mode, select **Normal Mode** from the 'Options' tab.

1. From the 'Select COM Port' drop down box, choose the com port for your 485 interface.
2. Select the baud rate. (Default is 9600)
3. Choose the Address of the controller(s) you want to control.  
See page 15 of the **R256** Manual and page 5 of the **R256** Commands manual.  
Or see page 17 of the **R356** Manual and page 6 of the **R356** Commands manual.
4. Click the [Connect] box.
5. Next, select the 'Motor Settings' tab to make changes settings for your motor and application.
  - a. Run Current (Default 0.6 Amps for R256, 1.9 Amps for R356)  
**CAUTION** if Run Current is set too high it can cause permanent damage to your motor and controller! Refer to current setting table in Appendix B.
  - b. Hold Current (Default 0.2 Amps, for R256, 1.9 Amps for R356 )
  - c. Step Resolution (Default 256, Micro Step resolution)
  - d. Velocity (Default 305175, Micro Steps per second)
  - e. Acceleration (Default 1000, Micro Steps per second<sup>2</sup>)

6. After configuring 'Motor Settings' Click [Add Settings to Queue]
7. Click [Execute] to send motor settings to controller
  
8. For positioning, homing, I/O, and other modes, double click on the "Click Here to Add Command" line in the Command Queue. This will bring up the Normal Mode Command window.



**Note:** In the R256 / R356 commands manual, the 'List of Commands' table, is used for programing in the Advanced Mode. These commands can also be referenced for their corresponding functions in Normal Mode. In Normal Mode, the commands most often used are presented in simpler to use, GUI format.

The buttons in the Normal Mode window, correspond to the commands in the List of Commands table, found in the R256/R356 Command manual. See references next to window below. (Please note if UPPER or lower case)

### Normal Mode Command window



**Move +**, is the same as the "**P**" command

**Move -**, is the same as the "**D**" command

**Move Absolute**, would be the same as the "**A**" command

**Zero Position**, would be the same as the "**z**" command

**Home/ Initialize**, is the same as the "**Z**" command

**Home Opto Polarity**, is the same as the "**f**" command

**Movement Polarity**, is the same as the "**F**" command

**Delay(Milliseconds)** is the same as the "**M**" command

**Wait on Input**, is the same as the "**H**" command

**Skip on Input**, is the same as the "**S**" command

**Set Output**, is same as the "**J**" command (see instructions)

**Set Mode** is the same as the "**n(1, 2, ..)**" command (See Manual)

**Encoder** [R356 only] same as the "**N**" command (See Manual)

**Execute Stored Command** is the same as the "**e**" command

**Ping After Movement** [R356 only] same as the "**p**" command

**Baud Rate** is the same as the "**b**" command

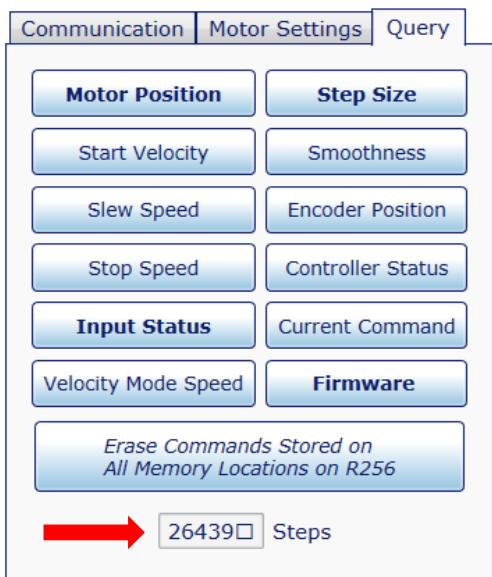
**Smoothness** is the same as the "**o**" command

## Using the Query window.

The query window is used to retrieve position and stored settings on the R256/R356 controller.

As the buttons in the Query window are selected, the answers are displayed at the bottom of the window. (See red arrow)

### Query window



**Motor Position**, is the same as "?0" command

**Start Velocity**, is the same as "?1" command

**Slew Speed**, is the same as "?2" command

**Stop Speed**, is the same as "?3" command

**Input Status**, is the same as "?4" command

**Velocity Mode Speed**, is the same as "?5" command

**Step Size**, is the same as "?6" command

**Smoothness**, is the same as "?7" command

**Encoder Position**, is the same as "?8" command

**Controller Status**, is the same as "Q" command

**Current Command**, is the same as "\$" command

**Firmware**, is the same as "&" command

**Erase Commands Stored ....**, is the same as "?9" command

### Control buttons



**Execute**, sends the commands in the command Queue to controller.

**Stop**, will stop current commands. **Stop**, is the same as "T" command.

**Clear Commands**, will clear all commands in the Command Queue.

**Store on R256/R356**, will store the commands in the Command Queue onto the selected memory location on the controller. The same as the "s" command.

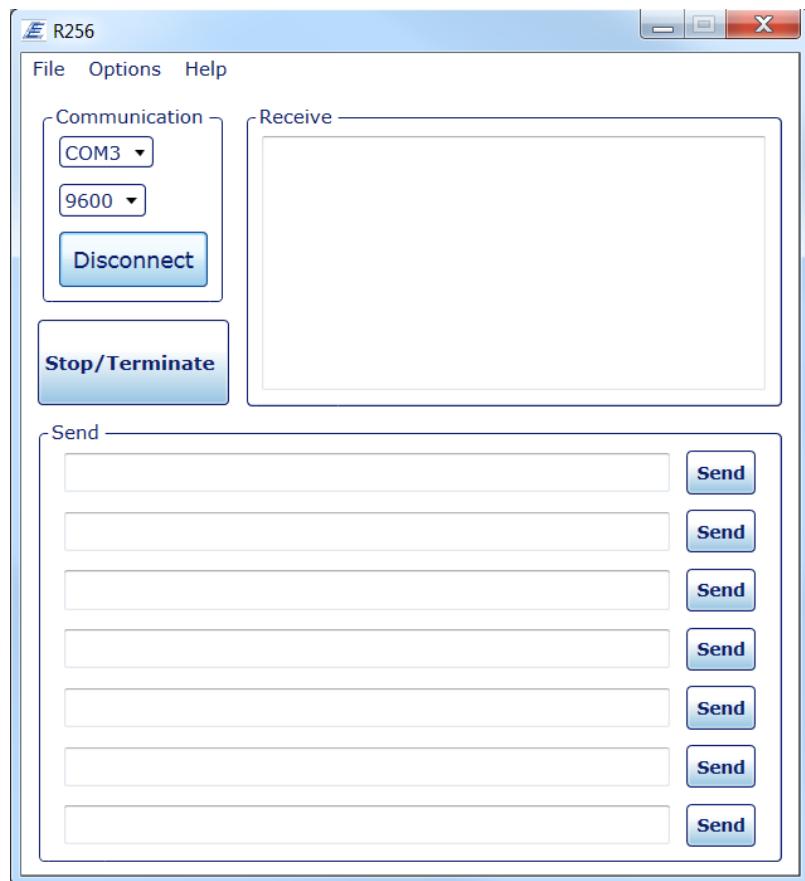
Note: Commands stored in position zero '0', will execute on power up.

## Operating from the **Advanced Mode** window

To switch from Normal, to Advanced mode, select **Advanced Mode** from the 'Options' tab.

1. In the Communication area, choose the 'Select COM Port' drop down box. Choose the com port for your 485 interface.
2. Select the baud rate. (Default is 9600)
3. Click the [Connect] box.

## Advanced Mode window



The **Receive** box, displays the status received after commands, are sent to the controller.

**?/0@** Indicates a good command.

**?/0b** Indicates a bad command.

**?/0`** Indicates that the command is terminated.

**?/0C** Indicates the command is out or range.

Note: If 'Receive' box remains blank after sending commands, this indicates a communication problem.

The **Send** boxes, are for typing in command strings to send to the controller.

### IMPORTANT!

A command string setting the current limits at or below the motors rated current should be sent **BEFORE** the motor is connected to the controller.

Otherwise the motors windings and the controller may be permanently damaged!

See current setting charts in Appendix B.

After typing in the command string, press the **Send** button at the right, to send the command string to the controller.

The **Stop/Terminate** button can be pressed at any time, to terminate current commands.

Please refer to the R256, or R356 Command List manual for a list of commands and their descriptions that can be sent using the Advanced Mode.

## Appendix A Sample programs

Below are Advanced Mode basic sample programs for use with R256 and R356 controllers. Please refer to the R256, or R356 manuals for additional features and sample programs.

### Sample program 1 (Simple motor movement)

**/1m30h10j4V800L300P1600R**

**/**     "/" is the start character for a command string  
**1**     Address 1 of the controller.  
**m30**   Running current 30% of max current. R256 = 0.6 Amps. R356 = 0.9 Amps **Verify current does not exceed motor rating** See current setting table in Appendix B.  
**h10**   Holding current 10% of run current  
**j4**    ¼ stepping micro step size ( 1.8° motor = 800 steps/Rev)  
**V1000** Velocity set to 1000 microsteps per second (1.25 RPS for 1.8° motor 1/4 step)  
**L300**   Acceleration set to 300  
**P1600** 1600 steps in positive direction (2 revolutions for 1.8° motor)  
**R**     Run command string

### Sample program 2 (Using loops)

**/1gP1000M500D1000M500G5R**

**/**     "/" is the start character for a command string  
**1**     Address 1 of the controller.  
**g**     Begins a repeat loop  
**P1000** Move motor 1000 steps in positive direction  
**M500**   Wait for 500 milliseconds  
**D1000** Move motor 1000 steps in negative direction  
**M500**   Wait for 500 milliseconds  
**G5**     End loop after 5 loops  
**R**     Run command string

### Sample program 3 (Using multiple program locations)

This sample will use 3 separate command strings.

The first two will be stored into memory locations 1 and 2 on the controller.

The third string sets the run current, holding current, micro step size, velocity, and acceleration.

This will loop continuously, until a momentary switch on input 2 (Pin 8 R256, Pin 5 R356) is pressed and released.

**/1s1M300gD25S02G0e2R**                   - See descriptions for each line on following page. -

**/1s2M300gP25S02G0e1R**

**/1m30h10j8V1000L100gP25S02G0e1R**

Sample program 3 (continued)

## **/1s1M300gD25S02G0e2R**

**/**     "/" is the start character for a command string  
**1**     Address 1 of the controller  
**s1**    Stores program on controller in memory location **1**  
**M300** Wait for 300 milliseconds (in this sample M300 allows switch bounce to settle)  
**g**     Begins a repeat loop  
**D25**   Move motor **25** steps in negative direction  
**S02**   Skip next instruction if input 2 (Pin 8 R256, Pin 5 R356) is low (in this sample switch is normally low)  
**G0**     Loop continuously  
**e2**     Execute program stored in memory location **2**  
**R**     Run command string

## **/1s2M300gP25S02G0e1R**

**/**     "/" is the start character for a command string  
**1**     Address 1 of the controller  
**s2**    Stores program on controller in memory location **2**  
**M300** Wait for 300 milliseconds (in this sample M300 allows switch bounce to settle)  
**g**     Begins a repeat loop  
**P25**   Move motor **25** steps in positive direction  
**S02**   Skip next instruction if input 2 (Pin 8 R256, Pin 5 R356) is low (in this sample switch is normally low)  
**G0**     Loop continuously  
**e1**     Execute program stored in memory location **1**  
**R**     Run command string

## **/1m30h10j8V1000L100gP25S02G0e1R**

**/**     "/" is the start character for a command string  
**1**     Address 1 of the controller  
**m30**   Running current 30% of max current. R256 = 0.6 Amps. R356 = 0.9 Amps **Verify this current does not exceed motor rating** See current setting table in Appendix B.  
**h10**   Holding current 10% of max current  
**j8**     1/8 stepping micro step size ( 1.8° motor = 1600 steps/Rev)  
**V1000** Velocity set to 1000 microsteps per second (0.625 RPS for 1.8° motor 1/8 step)  
**L100**   Acceleration set to 100  
**g**     Begins a repeat loop  
**P25**   Move motor 25 steps in positive direction  
**S02**   Skip next instruction if input 2 (Pin 8 R256, Pin 5 R356) is low (in this sample switch is normally low)  
**G0**     Loop continuously  
**e1**     Execute program stored in memory location **1**  
**R**     Run command string

## Appendix B Current setting tables

### R256 Settings for run current

Percent	=	Motor's Current Rating (Amps/Phase)	Driver's Equivalent Current (Amps Peak)
10%	=	0.14	0.20
20%	=	0.28	0.40
30%	=	0.42	0.60
40%	=	0.57	0.80
50%	=	0.70	1.00
60%	=	0.85	1.20
70%	=	0.99	1.40
80%	=	1.13	1.60
90%	=	1.27	1.80
100%	=	1.41	2.00

### R356 Settings for run current

Percent	=	Motor's Current Rating (Amps/Phase)	Driver's Equivalent Current (Amps Peak)
10%	=	0.21	0.30
20%	=	0.43	0.60
30%	=	0.64	0.90
40%	=	0.86	1.20
50%	=	1.07	1.50
60%	=	1.29	1.80
70%	=	1.50	2.10
80%	=	1.71	2.40
90%	=	1.93	2.70
100%	=	2.14	3.00

## Appendix C Troubleshooting references

Please refer to the R256 or R356 manuals for troubleshooting.  
Carefully follow instructions for hardware and wiring diagrams.

Most problems are related to wiring and connector issues.