Silverpak 17C/23C & R256 GUI Interface R325I, IE

Lin Control

User Manual Version 1.1





Used with Products:

- 1. Siverpak 17C/CE, 23C/CE
- 2. R256 controller/driver, R356
- 3. R101, R325I, R325IE

Programming Software & License

- 4. Development Language : Visual C++ 2005 express
- 5. Software license : Free version

http://msdn.microsoft.com/vstudio/express/support/fag/#compat

Æ Co	ontroller Selection	
	R256 R356 R325I& R325IE R101	
	Open Clo	se

Select the product from the list. R256 is the same as Silverpak 17C. R356 is the same as Silverpak 23C.

R256, R356, Silverpak 17C or 23C:

Figure 1. LinControl

There are two separate parts, left and right side.

The Left side displays the serial port and quick command inputs and the right side exhibits the Tree structure for Silverpak C and R256 commands.

🛎 LinControl			
<u>File H</u> elp			
Load Command Sa	ve Command Reset Commands		
Terminal	E LIN ENGINEERING Step Motor Specialist	Serial Interface	Command Set Line Address 1 / 1 New Command
	Figure 1	Port COM1 V Baud Rate 9600 V Data Bit 8 V Stop Bit 1 V Flow Control None V Parity None V UnConnected Connect	
Save Text Clea	r Text Execute	Address Address 1 /1	
RPS_RPM Step Angle 0.9	to Conversion DEG Step Resolution 1	Query Execution Commands Address Address 1/1	
UP Set Current Set Vel & Accel Set uStepping Set Encoder Set Home Move Home	Set Current Run current ranges from 0 to 100%, where 100% is 2 Amps Peak. Hols current ranges from 0 to 50% M Set Run Current h Set Hold Current	Erase (r)ecover Encode Repeat current cmd (X)	
DOWN	Send to Terminal Add to Program	(T) erminate	

Figure 1 above replaces HyperTerminal and can be used in the same way as HyperTerminal. Commands can be written directly in Figure 1, or the user can type commands in the command line and press "Execute".

Figure 1 shows all commands that are sent to the motor controller and receives responses from the controller, similar to HyperTerminal. However, unlike HyperTerminal, this GUI interface allows the user to backspace and retype information along one line.

/ LinControl	
<u>File H</u> elp	
Load Command Save Command Reset Commands	
Terminal	Serial Interface Port COM1 Baud Rate 9600
	Data Bit B Stop Bit 1 Flow Control None Parity None UnConnected connect
Save Text Clear Text Figure 2 Execute	Query Address Address Address Address V
Unit Conversion RPS_RPM to Conversion	Query
Step Angle 0.9 DEG 💙 Step Resolution 1	Execution Commands
UP Set Current Set Current Run current ranges from 0 to 100%, where 100% is 2 Amps Peak. Set Vel & Accel Hols current ranges from 0 to 50% Set Encoder M Set Run Current Set Home h Set Hold Current Move Home Send to Terminal DOWN Send to Terminal	Address Address 1 /1 Erase (r)ecover Encode Repeat current cmd (X) (T) erminate

Figure 2 is another place to send commands to motor controller. After pressing the "Enter" button on your keyboard or clicking the Execute button with your mouse, the command will be displayed in the Terminal and is also sent to the motor controller.

🛎 LinControl	
<u>File H</u> elp	
Load Command Save Command Reset Commands	
Terminal	Serial Interface
	Baud Rate 9600
	Data Bit 8 Y
	Stop Bit 1 V Flow Control None V
	Parity None 🗸
	UnConnected connect
	Query
Save Text Clear Text	Address Address 1 /1
Command Execute	POSITION ?0
Unit Conversion	Query
Step Angle 0.9 DEG V Figgereugen	Execution Commands
Command	Address Address 1 /1
UP Set Current Set Current Set Vel & Accel where 100% is 2 Amps Peak.	Erase
Set UStepping Hols current ranges from 0 to 50% Set Encoder M Set Run Current	(r)ecover Encode
Set Home h Set Hold Current	Repeat current cmd (X)
Move Home DOWN Send to Terminal Add to Program	(T) erminate

Figure 3 is a Unit Conversion that can conduct most unit conversions for motion control purposes. The drop down menu describes the conversion that will be made which will always be converting from the left unit to the right unit. In this example, it will convert RPS to RPM.

E LinControl	
File Help	
Load Command Save Command Reset Screen	
Terminal	Serial Interface Port COM1 Baud Rate 9600 Data Bit 8 Stop Bit 1 Flow Control None Parity None Query
Save Text Clear Text Command Execute	Address Address 1 /1
Unit Conversion RPS_RPM v to Conversion Step Angle 0.9 DEG Step Resolution	Query Execution Commands
UP Set Encoder Set Vel & Accel N Set Homing to O No Indexer O To indexer Set Vel & Accel aC Set Encoder Deadband to Set Home aU Set Position correct attempts Move Home Set Position O Set Overload DOWN Set Position?	Address Address 1 /1

Figure 4 is the Commands section. This shows each command set for the Silverpak C and R256 commands. The user can see different command sets by clicking UP and DOWN at left side. The command uses the listed address at execution.

Users have a choice to send the command to the Terminal or to the command set.

🛎 LinControl	
<u>File H</u> elp	
Load Command Save Command Reset Commands	
E LIN ENGINEERING Step Motor Specialist	Figure 5 Serial Interface Port Data Bit 8 Stop Bit 1 Flow Control
Connection	Parity None V
status	Query
Save Text Clear Text Execute	Address Address 1 /1
Unit Conversion RPS_RPM Conversion Conversion	Query
Step Angle 0.9 DEG 😒 Step Resolution 1	Execution Commands
UP Set Current Set Current Run current ranges from 0 to 100%, where 100% is 2 Amps Peak. Set Ustepping Hols current ranges from 0 to 50% Set Encoder M Set Run Current Set Home h Set Hold Current Move Home Send to Terminal DOWN Send to Terminal	Address Address 1 /1

Figure 5 exhibits the serial port settings. The setting is same as HyperTerminal.

After the serial port is opened, the Connection status changes to "Connected" and after clicking the "Connect" button again, the serial port connection is closed and the connection status change to "Unconnected".

E LinControl	
<u>File H</u> elp	
Load Command Save Command Reset Commands	
Load Command Save Command Reset Commands	Serial Interface Port COM1 Baud Rate 9600 Data Bit 8 Stop Bit 1 Flow Control None Parity None UnConnected connect Ouery
	Address Address 1 /1
Save Text Clear Text	
Command	
Unit Conversion RPS_RPM v to Conversion	Figure 6 Query
Step Angle 0.9 DEG 💙 Step Resolution 1	Execution Commands
Command	Address Address 1 /1
UP Set Current Set Current Run current ranges from 0 to 100%,	Erase
Set Vel & Accel Set uStepping where 100% is 2 Amps Peak. Hols current ranges from 0 to 50%	(r)ecover Encode
Set Encoder M Set Run Current Set Home h Set Hold Current	Repeat current cmd (X)
Move Home Send to Terminal Add to Program	(T) erminate

Figure 6 displays the Query and Execution command. First select the address of your board. Next use the drop down menu to select a query. Click on the "Query" button to get your results. The following queries can be made:

- Motor's current position
- Top speed
- Status of all four inputs
- Current velocity mode speed
- Step resolution (microsteps)
- O value for smooth motion during microstepping
- Encoder position (only NEMA 23 version)

E LinControl		
<u>File H</u> elp		
Load Command Save Command Reset Commands		
Load command Save command Reset commands EXE Step Motor Specialist Terminal Save Text Command Save Text Command Execute Unit Conversion RPS_RPM Unit Conversion RPS_RPM Step Angle 0.9 DEG Step Resolution 1 Command UP Set Current Set Pangle 0.9 DEG Set Proder N Set Homing to No Indexer N Set Homing to No Indexer Set Stat Stepping Set Encoder Set Home DOWN Set Position Correct attempts aE What is your Encoder counts/rev ? Set Overload Correction? Set Overload Cmd Prog	Serial Interface Port COM1 V Baud Rate 9600 V Data Bit 8 V Stop Bit 1 V Flow Control None V Parity None V UnConnected connect Query Address Address 1 /1 V STEP SIZE ?6 V Query Execution Commands Address Address 1 /1 V Erase (r)ecover Encode Repeat current cmd (X) (T) erminate	 Command Set Line Address 1 /1 V 1000 /Top Velocity j 256 /Set uStepping L 5 /Acceleration factor P 1000 /Move CW M 500 /Delay (msec) D 1000 /Move Absolute A 0 /Move Absolute G 10 /End Loop & Repeat Line Address 1 /1 m 50 /Run Current Line Address 1 /1 Z 1000 /Move steps towards Home Figure 7

Figure 7 displays an example of the Silverpak command tree structure. Each node shows its command and the value and also the description.



At the beginning of the command set, or when you reset the window, the tree shows the basic structure above.

• How To Tree Command



After right clicking on "Command Set", a context menu will pop up. Left double clicking will execute the corresponding selection from the menu.

"New L Set" inserts a Line within the Command set.

"Show all" expands the tree structure and "Hide all" collapses all tree nodes.

Command Set
📮 Line 1
Address 1 / 1
New Command
🖻 Line 2
Address 1 / 1
New Command

After left double clicking, another basic line command is displayed

There are two new commands in the Line command. "Address" and "New Command"

In order to change the address to send commands, left double click, then a combo box pops up to select a new address.



There are two ways to change "New Command" to a Silverpak command: one is to left double click and the other way is to right click on the "New Command" node.

d Command Save Comman		INEERING or Specialist	Serial Interfa		Command Set ⇒ Line - Address 1 / 1 V 1000 / Top Velocity -1 256 / Set uStepping L 5 / Acceleration factor	New Comm Address 1 New Comm	/1
			Port CC		P 1000 /Move CW M 500 /Delay (msec)		Set Current
	Commands Menu	1	1	1	D 1000 /Move CCW g /Begin loop		Set Vel & Accel
	Set Current	Set Vel_Accel	Set uMicrostepping	Set Encoder	A 500 /Move Absolute A 0 /Move Absolute G 10 /End Loop & Repeat		Set uStepping
				<u> </u>	Address 1 / 1 m 50 / Run Current		Set Encoder
	Set Home	Move Home	Move Relative	Move Absolute	New Command		Set Modes
			Ļ		Address 1 / 1 2 1000 / Move steps towards Home		Set Home
re Text Clear Text	Jog	Skip If	Halt 1f	Set Output Signal			Move Home Move Relative
nit Conversion		ļ	ļ				Move Absolute
	Set Output String	Start Loop	End Loop & Repeat	Delay			Jog
Step Angle 0.9 DEG 🛩 S							Loop
ommand	Set Encode	-	Address Addres	s1/1 ¥			Set Output Signal
Set Curront N Set Homing to 0 ho Indexer O To Indexer Set Valla Accel set ustupping a C set Encoder Deadband to Set Encoder Deadband to Set Encoder and Set Profile on context attempts Set Homing Action Set Context Set Set Set Set Set Set Set Set Set Se		Eras	e			Set Output String	
		(r)ecover	Encode			ProgStorage & Recall	
		Repeat current cmd (X)			Delay		
Move Home Set Position Set Overload Correction? report mode? Cmd Prog		(1) erm	inate			Baud Control	
· · · · · · · · · · · · · · · · · · ·		Contraction of Contra					bada condior

There are two pictures for each way below.

Figure 2. Left double click & single right click

After selecting an option from above window, a different panel shows below.

LinControl	
<u>File Help</u>	
Load Command Save Command Reset Commands	
EINE ENGINEERING Step Motor Specialist Terminal Serial Interface Port CDM1 V Very CDM1 V Port CDM1 V * Run Durrent Add * Run Durrent h * Hold Current Add * Hold Current Go Menu Step Angle 0.9 DEG V Set Encoder Set Current N Set Homing to 0.9 bidser Set Using 0.9 DEG V Set Encoder Set Using 0.9 DEG V Set Encoder Set Using 0.9 DEG V Set Encoder Mue Home Set Proceston constrater tengts Bet Wate Sync Encoder constrater ? (T) erminate	□ Command Set □ Inders □ J000 / Top Velocity □ 256 / Set Ustepping □ 256 / Set Ustepping □ 1256 / Set Ustepping □ 100 / Nove CW □ 100 / Nove CW □ 100 / Move CW □ 100 / Move Absolute □ 100 / Move Absolute □ 10/ Move Absolute □ 10/ Move Absolute □ A (Move Steps towards Home

After clicking "Add", the command replaces the "New Command".

Entering a loop command is different than other commands.

The loop starts with the "g" command and ends with "G" so after selecting "g", the tree will automatically show the command below.



To add a new command inside of a loop, right-click on "G" then a "New Command" menu will pop up.

To change the loop command to a different command, right-click on "g" node, then message box pops up and click "Ok".

The command "n" is bit selectable. When left double-clicked, check boxes appear to select the modes below.



There are two menus, "Load Command" and "Save Command". "Load Command" loads text file that LinControl generates. Please don't change anything out of LinControl.

"Save Command" generates a text file from the tree structure.

• (S)kip & (H)alt command

Replace textbox input to button input

 Command Set Line Address 1 / 1 S /Skip next Inst if 				 Command Set Line Address 1 / 1 H /Half prog If 							
	Pin	14	13	7	5		Pin	14	13	7	5
	High	0	\circ	\bigcirc	0		High	0	0	\circ	\circ
	Low	0	\circ	\bigcirc	0		Low	0	0	\circ	\circ
			(Don	e				(Dor	ne

• Drag & Drop to move command data directly

User can drag "line" node to Terminal and command text box below the terminal.

R101 & R325 Products:

Both GUI's for the R101 and R325 are similar. Select the correct COM port and click "Connect". Figure 1 below.

🛎 R325I & R325IE		
<u>L</u> oad <u>S</u> ave <u>H</u> elp		
Script	Response	
	*AFR325123	Clear
		COM12 V Figure 1
RUN STOP	Command #AFR Response *AFR3251230	Send Figure 2

Figure 2: If the user wishes to send one command aside from running the script, the "Command" section allows for this function. Click "Send" and the response shows up in the "response" field. In this example, we queried for the Firmware Revision information. It returned that the R325 is on version 1.23.

Commands that work in this GUI:

There are added commands that pertain to this GUI only. It allows for the user to delay, or wait for certain amount of milliseconds. It also allows for users to add loops.

LOOPING

#START5 #ENDL #WAIT500	This indicates the beginning of the loop, where the program will repeat 5 times This indicates the end of the loop. This will delay the program for 500 msec.
Example:	
#START2	
#APM1000	
#WAIT500	
#APM-1000	
#WAIT500	
#ENDL	

The above example will move the motor 1000 steps, wait 500 msec, move to -1000 position, wait 500 msec. This program will repeat 2 times because of the command "#START2". If the user wishes to repeat this cycle 10 times, enter "#START10".

Click "RUN" to run the script. Save it or load a saved program by clicking on the top menu bar:

🛎 R325	il & R325	IE		
Load	<u>S</u> ave	<u>H</u> elp		
E R3251 & Load <u>S</u> a	R325IE ive <u>H</u> elp			
	Script		Response	
#APM1 #WATI1 #STAR #APM1 #WAIT1 #ENDL #WAIT1 #AHA1	1000 T3 00 100		*AFR325123	Clear COM12 V Connected
	RUN STOP	=	esponse #AFR *AFR3251230	Send