Analog Current Command Interface



Quick Start Guide B1100-VF

B1100-VF (-HC/-XC)

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Note

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System Overview

This manual gives a short step by step introduction in the functionality of the B1100-PP(-HC/-XC) drive family.

References

Ref	Name	Source
1	Installation_Guide_B1100.pdf	www.linmot.com
2	Usermanual_LinMot-Talk.pdf	www.linmot.com
3	Usermanual_MotionCtrISW.pdf	www.linmot.com

The documentation is distributed with the LinMot-Talk configuration software, which can be downloaded from the LinMot homepage for free.

For more detailed information about the functionality of the software please refer to the manuals above:

- Installation_Guide_B1100.pdf: data sheet, wiring and connections
- Usermanual_MotionCtrISW.pdf: motion controller software description (state machine, motion interface)

Connector Overview



Typical servo system B1100-XX-YY: Drive, motor and power supply.



Getting Started Current Command Mode

Connect the motor with the drive, wire at least the motor power supply on X1 and the 24VDC logic supply on X14.

Wire the differential analog current command input to X14.8/X14.21.

Wire the position encoder signals from the X13 connector to the superior control system.

Wire the state machine control lines according the configuration. For the quick start configuration use the following:

Descriptor	IO type	Configured Function
X14.14	Input	Ctrl Word: Switch On
X14.2	Input	Ctrl Word: Home
X14.15	Input	Ctrl Word: Error Acknowledge
X14.3	Input	Ctrl Word: Special Mode
X14.16	Input	Ctrl Word: Go To Initial Position
X14.5	Output	Status Word: In Target Position
X14.18	Output	Status Word: Warning
X14.6	Output	Status Word: Error
X14.19	Output	Status Word: Special Motion Active



Alternatively to the digital IO control of the state machine and error handling you can use a B1100-GP drive and do this over a serial bus interface (CANopen, DeviceNet or LinRS). This offers deeper integration into your superior control system.

Connect your configuration PC using a 1:1 serial RS232 cable (female/female) with the drive's X5.

Switch on the 24V logic supply.

Start the LinMot-Talk configuration software.

Login the drive.



Import the B1100_CurrCmd_QuickStart_Cfg.Imc configuration file:

Open		? X
Look in:	: 🔁 Quick Start 💌 🗢 🛍 📸	
My Recent Documents Desktop My Documents My Computer	B1100_CurrCmd_QuickStart_Cfg.lmc B1100_PP_QuickStart_Cfg.lmc CT_Example.lmc	
My Network Placës	File name: B1100_CurrCmd_QuickStart_Cfg.lmc Oper Files of type: Configuration (*.lmc) Cance Open as read-only Open as read-only	n el

The following description is a short tour through the imported configuration.



IO Configuration

In the quick start configuration the digital inputs and outputs are configured as shown:

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Parameters	



The differential analog voltage input is configured as a current command input:

LinMot-Talk1100 - V3.7 Build 20071206			
<u>File</u> Search <u>Controller</u> <u>Services</u> <u>Options</u> <u>Window</u>	w <u>T</u> ools <u>M</u> anuals <u>H</u> elp		
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The scaling is done with the 10V current value and may be adapted regarding the motor's and drive's maximal current:

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		Name	Value		
		10V Current	8A		
😑 🚍 Motion Control SW					
E Controller Configuration					
H Motor Lontiguration State Machine Setup					
E Control Word					
🕀 🖃 Quick Stop					
Go To Position					
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□ □ Special Mode					
Bande Mode					
🔤 🔚 Analog Input Scale	-				
⊡ 🖃 StatusWord					
Motion Interface Position Controller					
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Parameters		,			

Also the 0V offset adjustment can be done here:

🔀 LinMot-Talk1100 - V3.8 Build 20080505	
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Controller Configuration Power Bridge Stidge Stidler State State State Stat	Image: Second state of the s
Parameters Path:\\Motion Control SW\Controller	Configuration\X14 I/O Definitions\Diff Analog In -10V10V\0V Offset

In the next step the state machine is set to the special mode "Current Command Mode":

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Motion Interface		
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	1	
The Cariables	1	
🖃 🗟 Oscilloscopes 📃	J	
Parameters		

Now the motor can be configured with the motor wizard. The motor wizard guides you through the configuration:

📉 Motor Wizard				
Step 1/9: Actuator Selection				
Actuator Data File: Stator:	PS01-37x120-HP.adf	ange Actuator		
		_		
		1		
Derived Settings	Value	Comment		
		Please select		
Slider Mounting Direction				
Help < <u>B</u> ack	Next > Enish Cancel			



📉 Motor Wizard				
Step 1/9: Actuator Selection				
Actuator Data File:	PS01-37x120-HP.adf	Change Actuator		
Stator:	PS01-37x120-HP-C			
Clider	DL01.20vc00/E40.HD			
Slider:	PL01-20X600/540-HP			
	The slider can be identified by its ler the type engraved on the surface.	igth. Newer sliders have		
Slider Mounting Direction:	Regular			
Therefore the available stroke range changes with the mounting direction.				
Derived Settings	Value	Comment		
STATOR	PS01-37x120-HP-C			
Article Number	0150-1251			
Stator Length	216 mm			
Stator Mass	740 g			
SLIDER	PL01-20x600/540-HP			
Article Number	0150-1510			
Slider Length	600 mm			
Slider Mass	1327 g			
MOTOR	P01-37x120-HP/400x480-C			
Maximal Stroke (S)	480 mm			
Shortened Stroke (SS)	400 mm			
Electromagnetic Zero Position (ZP) 230 mm			
Force Constant	20.4 N/A			
Edge Force (Fb)	67 %			
Help < <u>B</u> ack	Next > Einish	Cancel		

If you use the encoder simulation you can configure it at the external position sensor system section. As resolution you may configure a multiple of 0.1um, recommended values are **2um** 5um 10um, which should be a good selection for most applications.



If the resolution value is too small, the maximal speed in operation may be reduced! For secure operation, the maximal velocity/resolution should not be greater than 2MHz. E.g. 4m/s/2um = 2MHz, which means 4m/s is the maximal save operation speed for 2um sensor simulation resolution.

📉 Motor Wizard					
Step 4/9: External Position Sensor System					
External Position Sensor					
Type: AB Encod	der Simulation (RS422)				
Resolution r (1/4 Period Length):	2 um				
With an additional external position measuring system the positioning accuracy and the linearity can be improved. The optional position sensor has to be connected to X12 on the controller.					
Derived Settings	Value	Comment			
Help < Back N	ext > <u>Fi</u> nish Cancel]			

When the motor wizard is finished all the needed parameters are set accordingly. The system is now ready for operation. Switch on the motor supply.

'LinMot®

Set the input on X14.14 high, this enables the position control of the motor:

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	IO Panel	Motion Command Interface		
		Enable Manual Override:	rl mm] +10 mm nly Used T suuri Nbble	
	□ X14.17 - Output ● □ X14.5 - Output ●	Name Offs. Description Scaled Value	Int. Value (Dec) Int. Value (Hex)	
	X14.18 - Output	Read	Command Send Command	

Now set the input on X14.2 to start the homing sequence. Wait until the warning on X14.8 disappears and the in target position on X14.5 is set. This indicates that the homing sequence has been completed.

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Ele Search Controller Services Options Window Tools Manuals Help						
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Project	Control	Status <<	Monitoring			
Unramed, ID 63 on CAN	0. Switch On. 1 Digital Input X14.14 1. Victage Enable 1. Forced by Parameter 2. Duids Stop. 1. Forced by Parameter 3. Enable Depension 1. Forced by Parameter 4. /Abort 1. Forced by Parameter 5. /Frieze 1. Forced by Parameter 6. Go To Position 0Interface 7. Error Achonvidega. 0Digital Input X14.15 8. Jog Move 0Interface 10. Special Mode 0Digital Input X14.2	0: Operation Enabled	Connection Status: Online Firmware Status: Running Motor Status: Switched On			
		2 / Quec Stop. 1 3: rostom Lag sterning0 5 Switch Do Locked0 0: Controller Heb0 0 7. Warring0 7: Motor Not Homed0 0: Second Notor Not Homed0 8: Event Handler Active0 8: PTC Sensor 1Hot0 0: Second Notion Active0 9: Special Motion Active0 9: PTC Sensor 2Hot0 0: In Target Position1 10: RR Hot Calculated0 11: Homed1: Reserved0 0: Not Second1 10: Reserved0 0: Not Second0	Dp. State: Homing			
	12: Dearance Check0 Diratellance 13: Go To Intal Position Diratellance Diratellance Diratellance Diratellance	12 Fada Error. 0 12 Heserved. 0 13 Motion Active. 0 13 Reserved. 0 14 Range Indicator 1 14 Interface Warn Flag. 0 15 Range Indicator 15 Application Warn Flag. 0 Status Word 4C37h Warn Word 0000h 0p. Main State 09h Logged Error Code: 0000h 0p. State 0Fh 0Fh 0Fh	Actual Position: 0.00 mm Demand Position: 0.00 mm Force Factor: 91.51 % Motor Current: 0.62 A Logic Supply Volt: 23.42 V Motor Supply Volt: 75.39 V			
	Enable Manual Override Enable Value Override Value	Motion Command Enable Manual Override:	-1 mm +10 mm			
	×14.14 - input	Command Category: Most Commo	nly Used 🔻			
	X14.15 - Input	Command Type: No Operation (000xh)	- 2			
	☐ X14.3 - Input ☐ X14.16 - Input ☐ X14.4 - Input	Count Nibble (Toggle Bits): 0h 🖃 🗌 Auto Increment Co	ount Nibble			
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		Read	Command Send Command			

Set the input on X14.2 low to complete the homing.

By setting the input on X14.3 the current command interface will be activated!



Before activating the superior position control loop, make sure the position control loop in your superior system is initialised correctly and the position



feedback direction is correct! Otherwise the motor will accelerate in any direction and crash to a limit!

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MC SW Motion Inte	IO Panel	Motion Command Interface		
Hand SW Lappuse 4 How SW Van Inspire 4 How SW Van Inspire 4 How SW Van Inspire 4 How SW Inspi		Enable Manual Override:30 mm1mm+10 mm+10 mm Command Category:Most Commonly Used Command Type: _No Operation (000kh) Count Nibble (Toggle Bits): OhAuto Increment Count Nibble		
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I		Read Command Send Command		

If an error occurs, the output on X14.6 will go high. It can be acknowledged by a rising edge on the input X14.15.

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