



## **Analog Current Command Interface**



---

### **Quick Start Guide B1100-VF**

**B1100-VF (-HC/-XC)**

---

## **Table of Content**

<b>SYSTEM OVERVIEW .....</b>	<b>3</b>
REFERENCES.....	3
<b>CONNECTOR OVERVIEW .....</b>	<b>4</b>
<b>GETTING STARTED CURRENT COMMAND MODE.....</b>	<b>5</b>
IO CONFIGURATION .....	7
<b>VELOCITY CONTROL MODE.....</b>	<b>16</b>
<b>CONTACT ADDRESSES .....</b>	<b>17</b>

© 2010 NTI AG

This work is protected by copyright.

Under the copyright laws, this publication may not be reproduced or transmitted in any form, electronic or mechanical, including photocopying, recording, microfilm, storing in an information retrieval system, not even for didactical use, or translating, in whole or in part, without the prior written consent of NTI AG.

LinMot® is a registered trademark of NTI AG.

Note

The information in this documentation reflects the stage of development at the time of press and is therefore without obligation.

NTI AG reserves itself the right to make changes at any time and without notice to reflect further technical advance or product improvement.

Document version: 1.1 / mk / June2010

## **System Overview**

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

### **References**

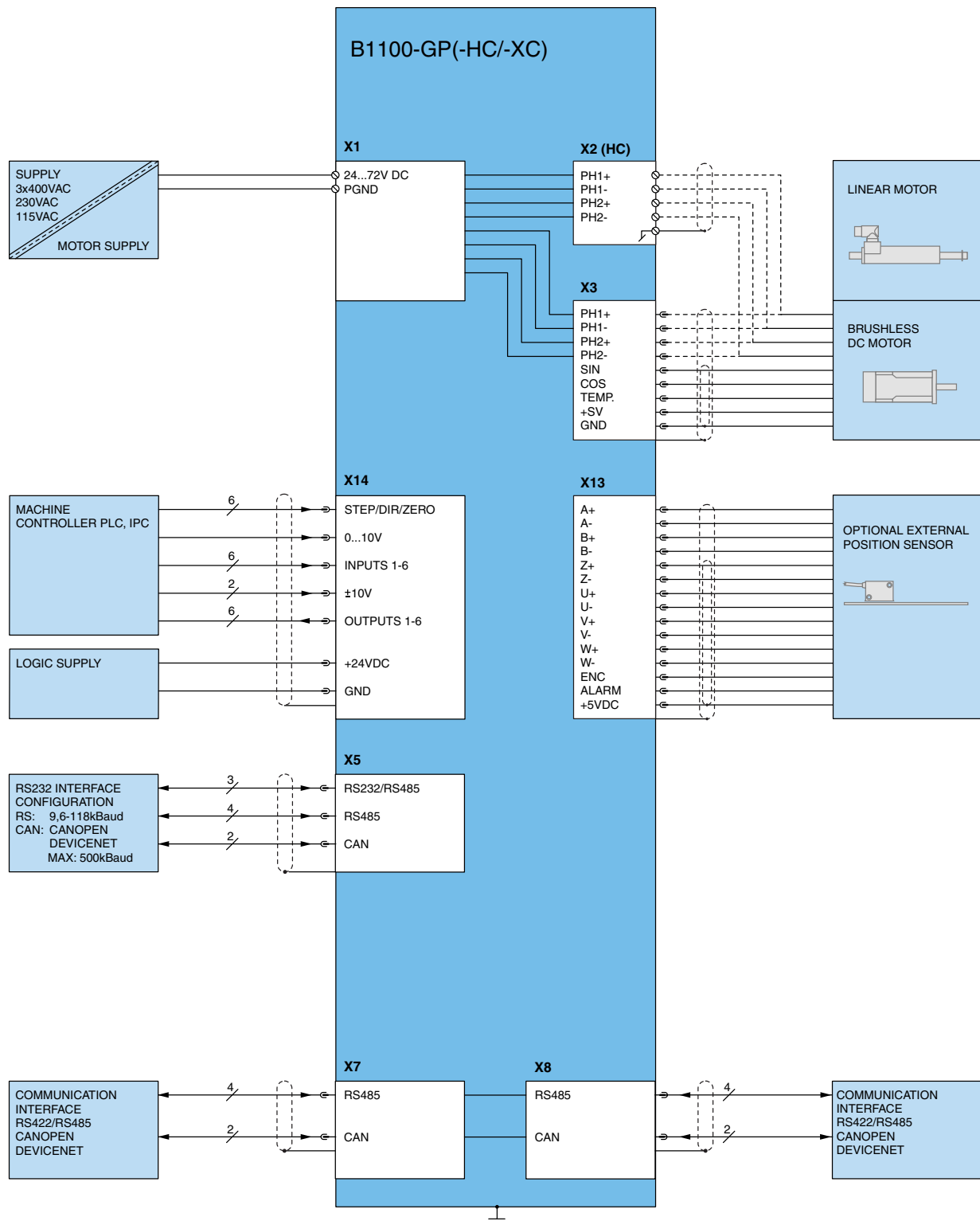
Ref	Name	Source
1	Installation_Guide_B1100.pdf	<a href="http://www.linmot.com">www.linmot.com</a>
2	Usermanual_LinMot-Talk_4.pdf	<a href="http://www.linmot.com">www.linmot.com</a>
3	Usermanual_MotionCtrlSW.pdf	<a href="http://www.linmot.com">www.linmot.com</a>

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\_MotionCtrlSW.pdf:  
motion controller software description (state machine, motion interface)

### Connector Overview



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

## **Getting Started Current Command Mode**

Connect the motor with the controller, 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 controller and do this over a serial bus interface (CANopen, DeviceNet or LinRS). This offers deeper integration into your superior control system.

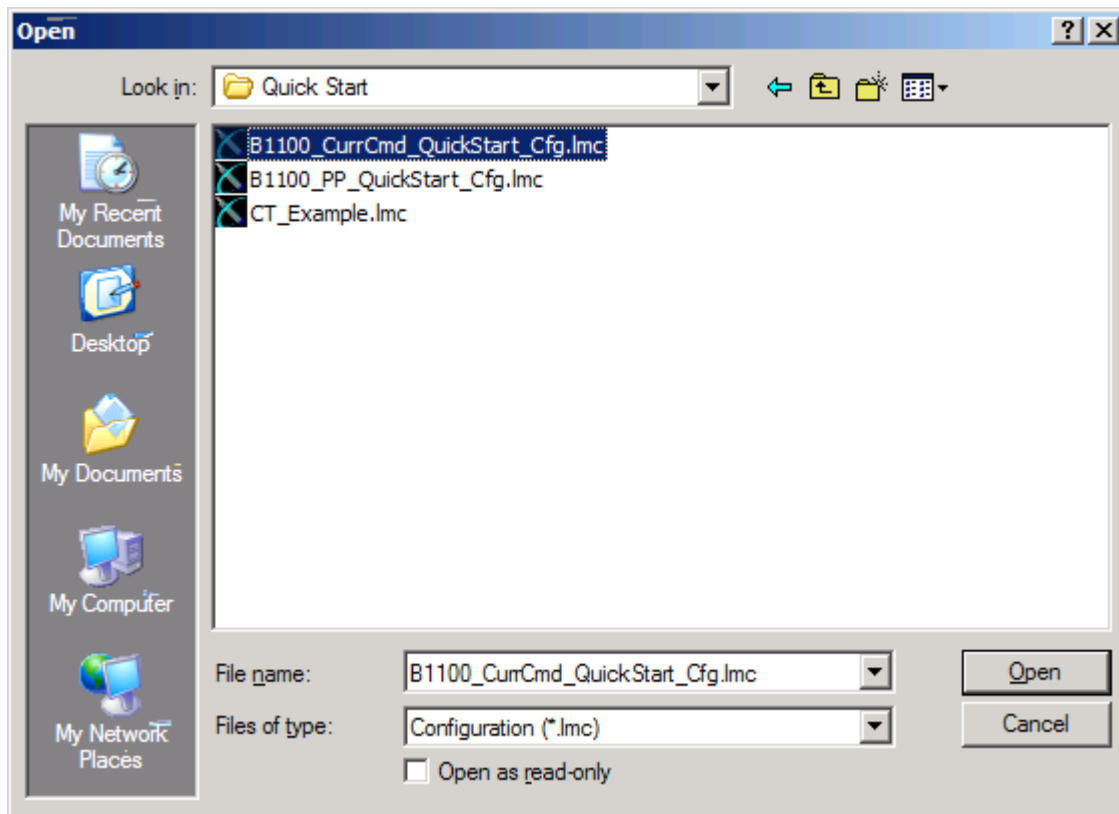
Connect your configuration PC using a 1:1 serial RS232 cable (female/female) with the servo controller X5.

Switch on the 24V logic supply.

Start the LinMot-Talk configuration software.

Login the servo controller.

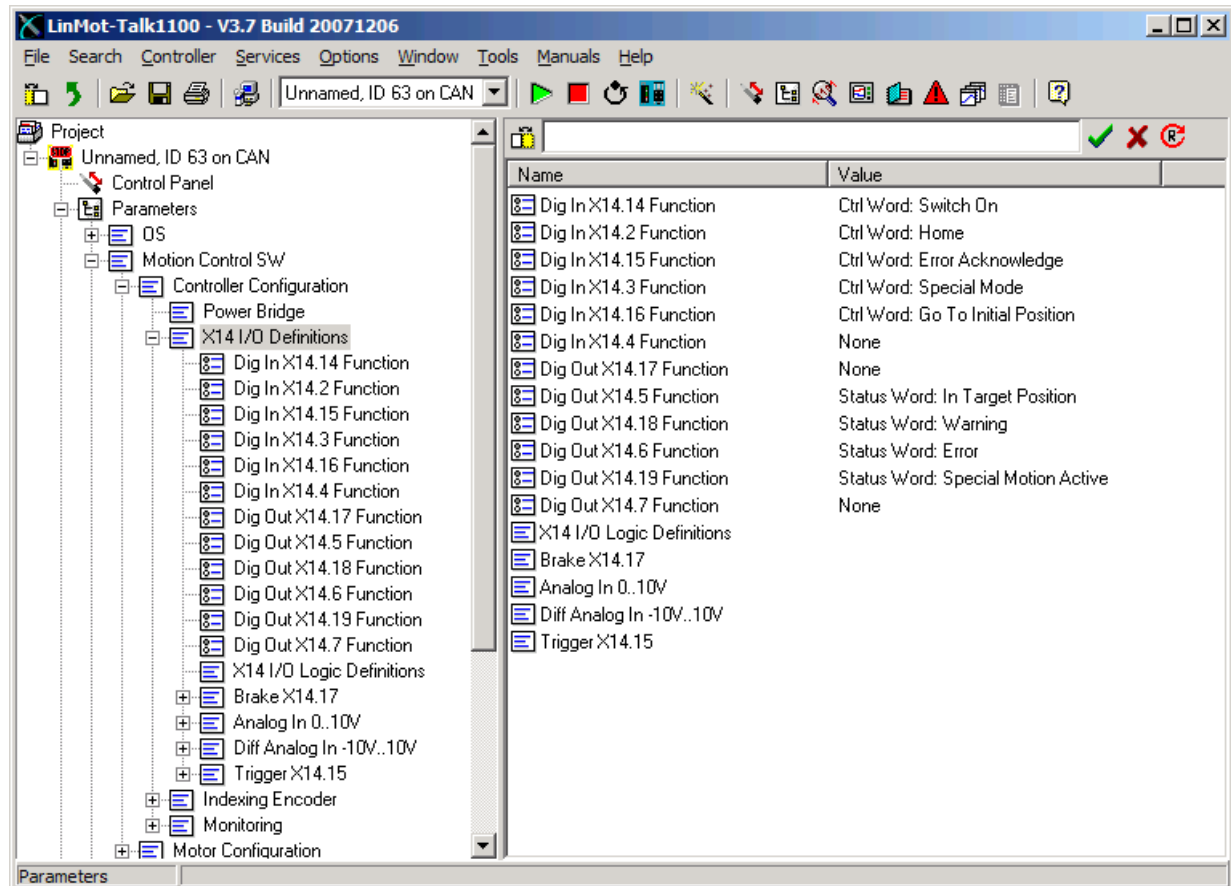
Import the B1100\_CurrCmd\_QuickStart\_Cfg.lmc configuration file:



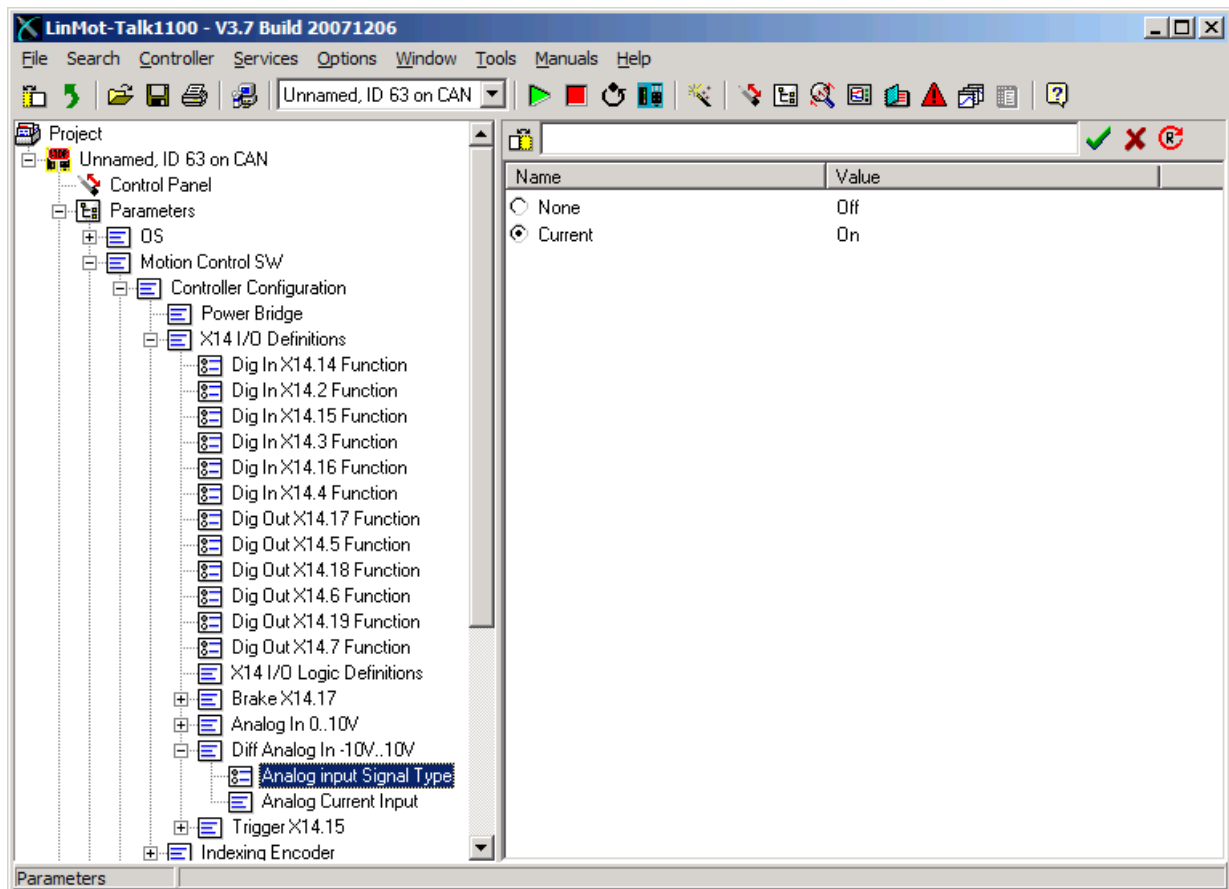
The following description is a short tour through the imported configuration.

## IO Configuration

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

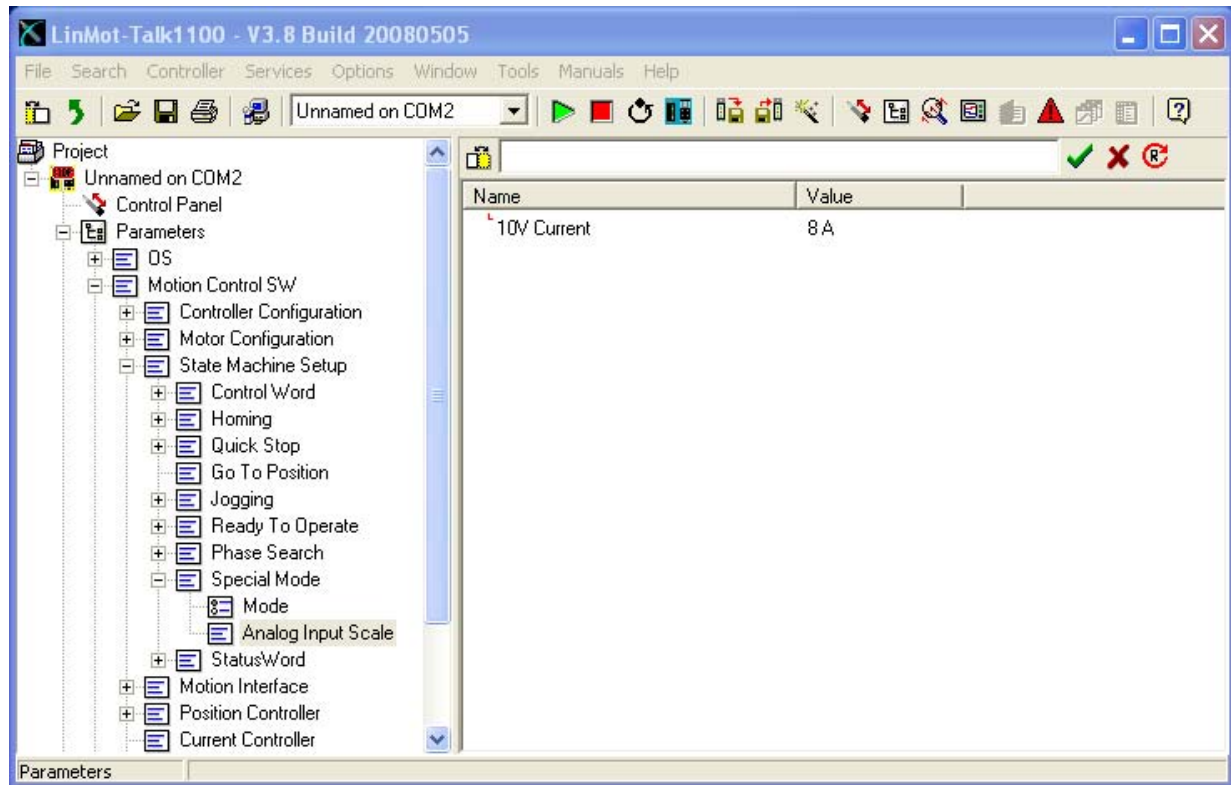


The differential analog voltage input is configured as a current command input:

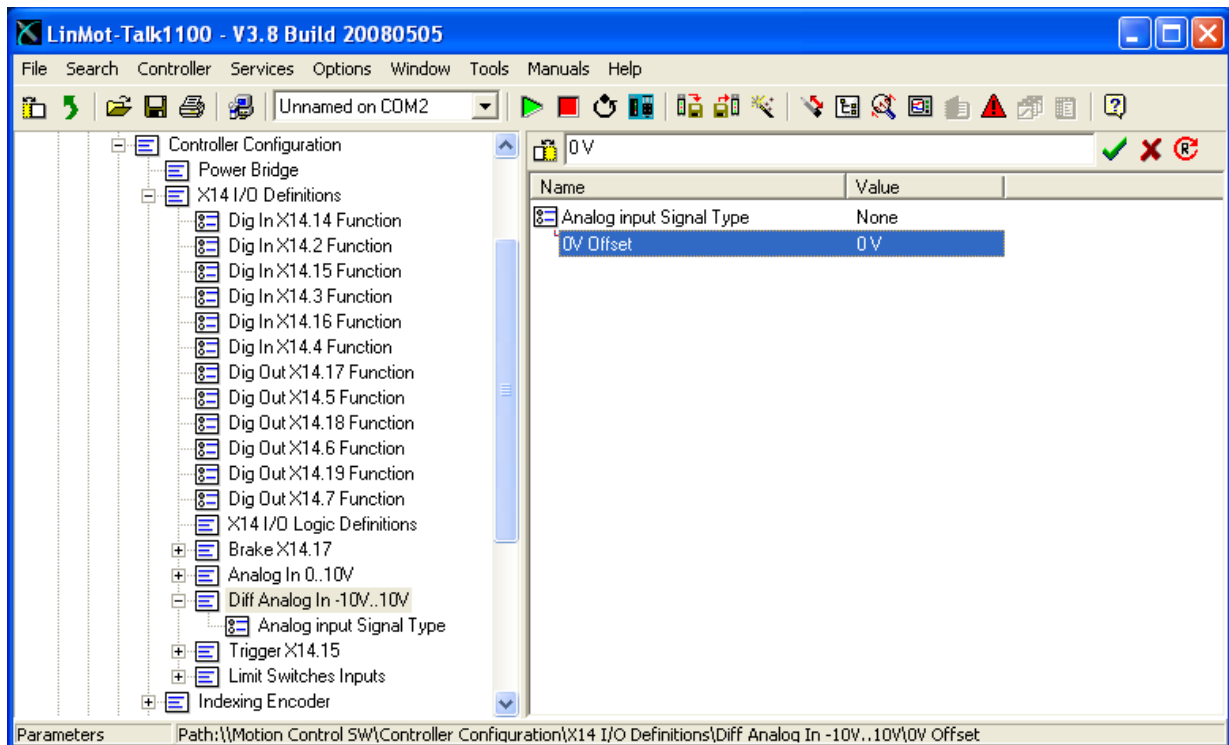




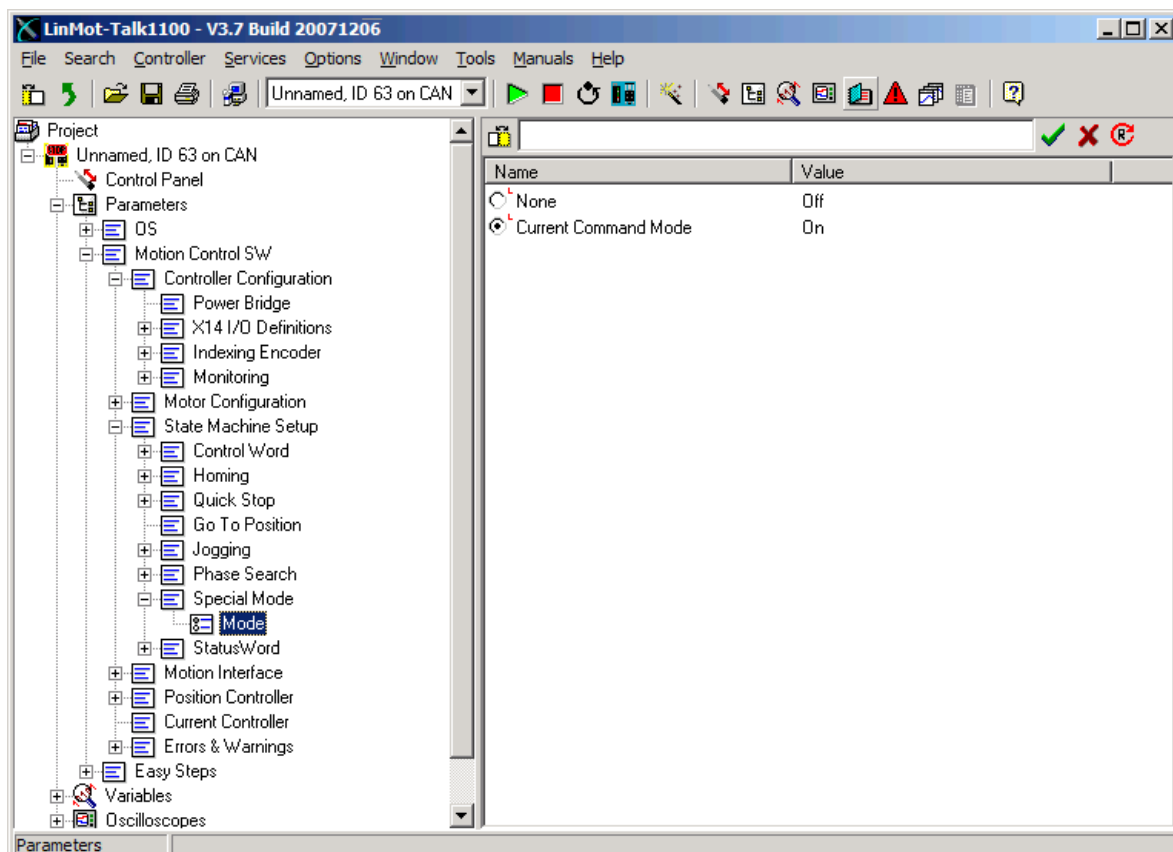
The scaling is done with the 10V current value and may be adapted regarding the motor's and servo controller's maximal current:




Also the 0V offset adjustment can be done here:



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



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: PS01-37x120-HP.adf

Change Actuator ...

Stator:

Derived Settings	Value	Comment
 STATOR		Please select
 SLIDER		
 Slider Mounting Direction		

Help

< Back

Next >

Finish

Cancel

Motor Wizard

Step 1/9: Actuator Selection

Actuator Data File: PS01-37x120-HP.adf

Change Actuator ...

Stator: PS01-37x120-HP-C

Slider: PL01-20x600/540-HP

The slider can be identified by its length. Newer sliders have the type engraved on the surface.

Slider Mounting Direction: Regular

The sliders are not symmetric. The value of ZP (Zero Position) depends on the mounting direction relative to the stator. 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

< Back

Next >

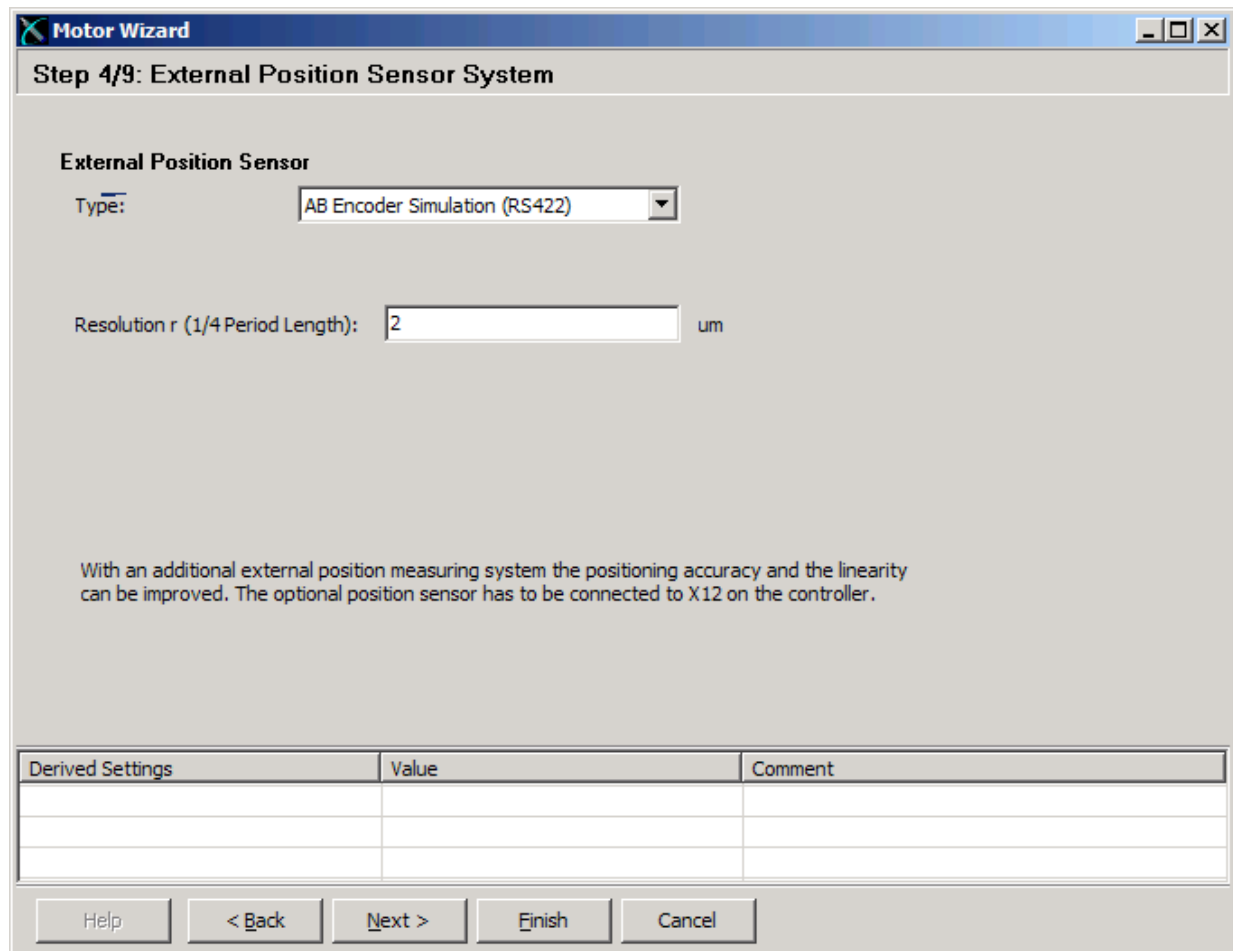
Finish

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 0.1µm, recommended values are **2µm** 5µm 10µm, 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/2µm = 2MHz, which means 4m/s is the maximal safe operation speed for 2µm sensor simulation resolution.



**Motor Wizard**

**Step 4/9: External Position Sensor System**

**External Position Sensor**

Type:

Resolution r (1/4 Period Length):  µm

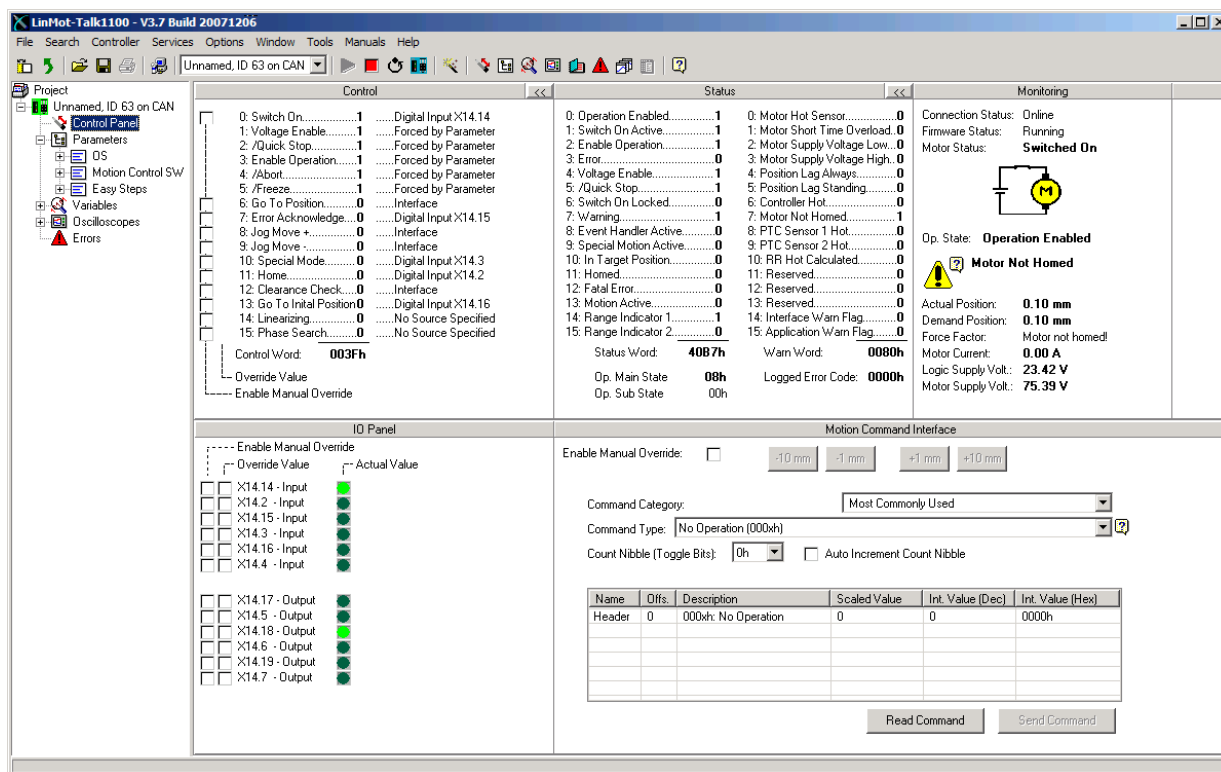
With an additional external position measuring system the positioning accuracy and the linearity can be improved. The optional position sensor has to be connected to X12 on the controller.

Derived Settings	Value	Comment

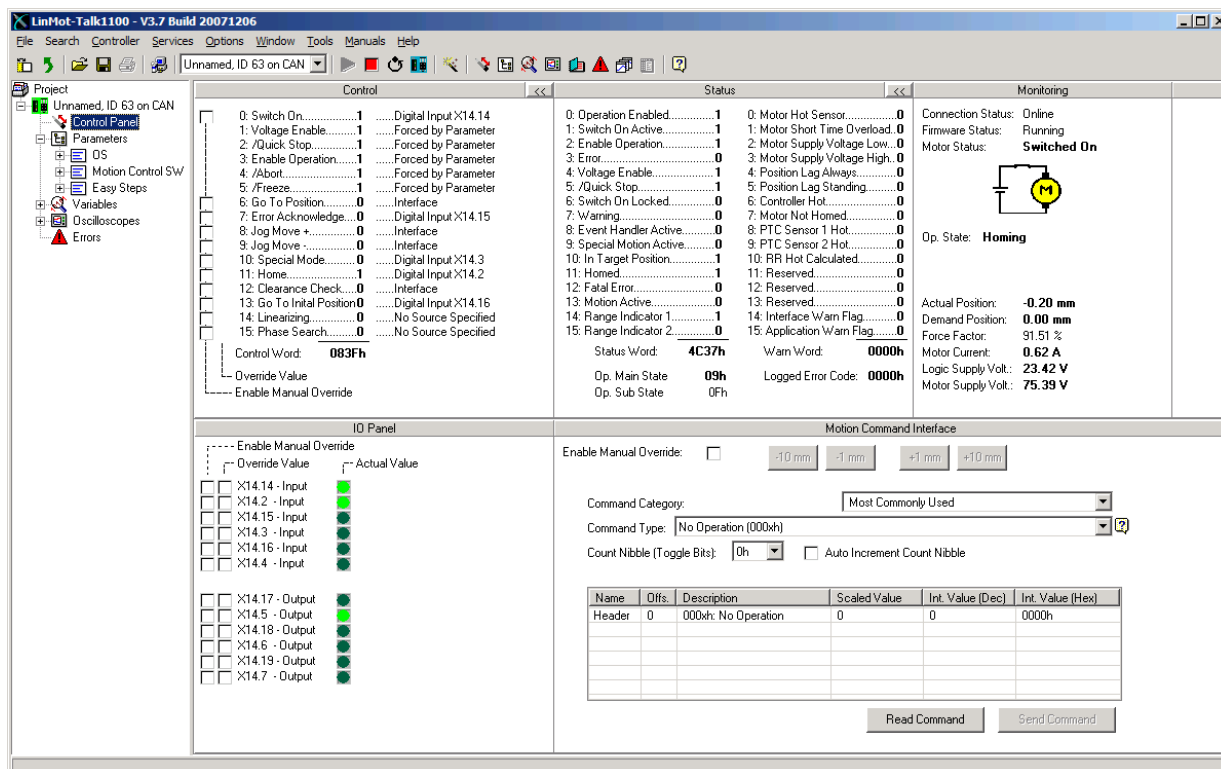
Help < Back Next > Finish Cancel

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.

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



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.

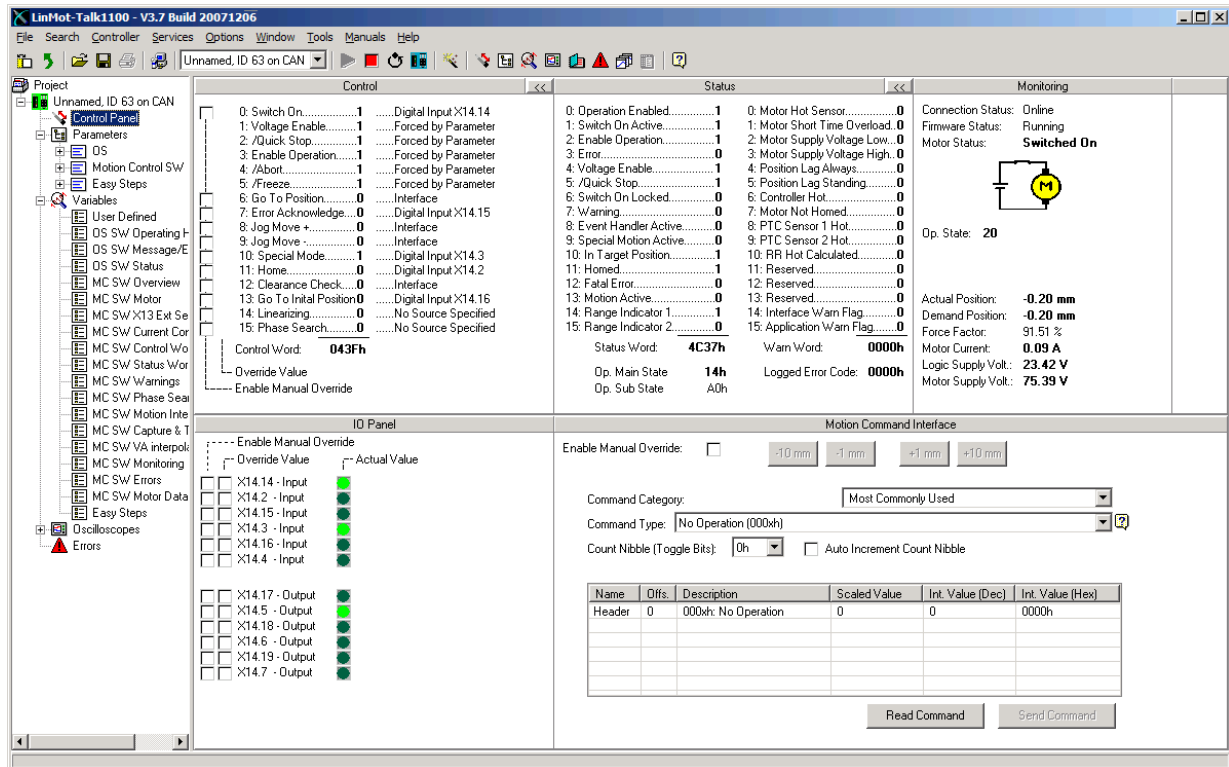


Set the input on X14.2 low to complete the homing.

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!



**Control Panel:**

- 0: Switch On.....1 .....Digital Input X14.14
- 1: Voltage Enable.....1 .....Forced by Parameter
- 2: /Quick Stop.....1 .....Forced by Parameter
- 3: Enable Operation.....1 .....Forced by Parameter
- 4: /Abort.....1 .....Forced by Parameter
- 5: /Freeze.....1 .....Forced by Parameter
- 6: Go To Position.....0 .....Interface
- 7: Error Acknowledge.....0 .....Digital Input X14.15
- 8: Jog Move +.....0 .....Interface
- 9: Jog Move -.....0 .....Interface
- 10: Special Mode.....1 .....Digital Input X14.3
- 11: Home.....0 .....Digital Input X14.2
- 12: Clearance Check.....0 .....Interface
- 13: Go To Initial Position.....0 .....Digital Input X14.16
- 14: Linearizing.....0 .....No Source Specified
- 15: Phase Search.....0 .....No Source Specified

**Status Panel:**

- 0: Operation Enabled.....1
- 1: Switch On Active.....1
- 2: Enable Operation.....1
- 3: Error.....0
- 4: Voltage Enable.....1
- 5: /Quick Stop.....1
- 6: Switch On Locked.....0
- 7: Warning.....0
- 8: Event Handler Active.....0
- 9: Special Motion Active.....0
- 10: In Target Position.....1
- 11: Homed.....1
- 12: Fatal Error.....0
- 13: Motion Active.....0
- 14: Range Indicator 1.....1
- 15: Range Indicator 2.....0

**Monitoring Panel:**

- 0: Motor Hot Sensor.....0
- 1: Motor Short Time Overload.....0
- 2: Motor Supply Voltage Low.....0
- 3: Motor Supply Voltage High.....0
- 4: Position Lag Always.....0
- 5: Position Lag Standing.....0
- 6: Controller Hot.....0
- 7: Motor Not Homed.....0
- 8: PTC Sensor 1 Hot.....0
- 9: PTC Sensor 2 Hot.....0
- 10: RR Hot Calculated.....0
- 11: Reserved.....0
- 12: Reserved.....0
- 13: Reserved.....0
- 14: Interface Warn Flag.....0
- 15: Application Warn Flag.....0

**IO Panel:**

- X14.14 - Input: ☒
- X14.2 - Input: ☒
- X14.15 - Input: ☒
- X14.3 - Input: ☒
- X14.6 - Input: ☒
- X14.7 - Input: ☒
- X14.17 - Output: ☒
- X14.5 - Output: ☒
- X14.18 - Output: ☒
- X14.6 - Output: ☒
- X14.19 - Output: ☒
- X14.7 - Output: ☒

**Motion Command Interface:**

Enable Manual Override: ☐ -10 mm -1 mm +1 mm +10 mm

Command Category:

Command Type:  [?] [2]

Count Nibble (Toggle Bits):  ☐ Auto Increment Count Nibble

Name	Offs.	Description	Scaled Value	Int. Value (Dec)	Int. Value (Hex)
Header	0	0000h: No Operation	0	0	0000h

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.

## **Velocity Control Mode**

The LinTalk1100-Firmware for the B1100 series controllers doesn't support the velocity control mode. The Velocity control mode isn't implemented on the B1100 series controller so far, because it is much easier to work with only current command mode. If the current command mode is used, only one control loop has to be tuned (position control loop on the superior motion controller). Whereas in velocity mode one always has to tune two loops: First the velocity loop in the drive and then the position control loop of the motion controller.

If your application requires the use of a velocity control mode, please contact our support team so a suitable solution to your problem can be worked out.



## **Contact Addresses**

---

### **SWITZERLAND**

**NTI AG**  
Haerdlistr. 15  
CH-8957 Spreitenbach

**Sales and Administration:** +41-(0)56-419 91 91  
office@linmot.com

**Tech. Support:** +41-(0)56-544 71 00  
support@linmot.com

**Tech. Support (Skype) :** skype:support.linmot

**Fax:** +41-(0)56-419 91 92  
**Web:** http://www.linmot.com/

---

### **USA**

**LinMot, Inc.**  
5750 Townline Road  
Elkhorn, WI 53121

**Sales and Administration:** 877-546-3270  
262-743-2555

**Tech. Support:** 877-804-0718  
262-743-1284

**Fax:** 800-463-8708  
262-723-6688

**E-Mail:** us-sales@linmot.com  
**Web:** http://www.linmot-usa.com/

---

Please visit <http://www.linmot.com/> to find the distribution near you.

Smart solutions are...

