



**EasySteps**



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## **Quick Start Guide B1100-PP**

**B1100-PP/HC/XC**

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## **System Overview**

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

### **References**

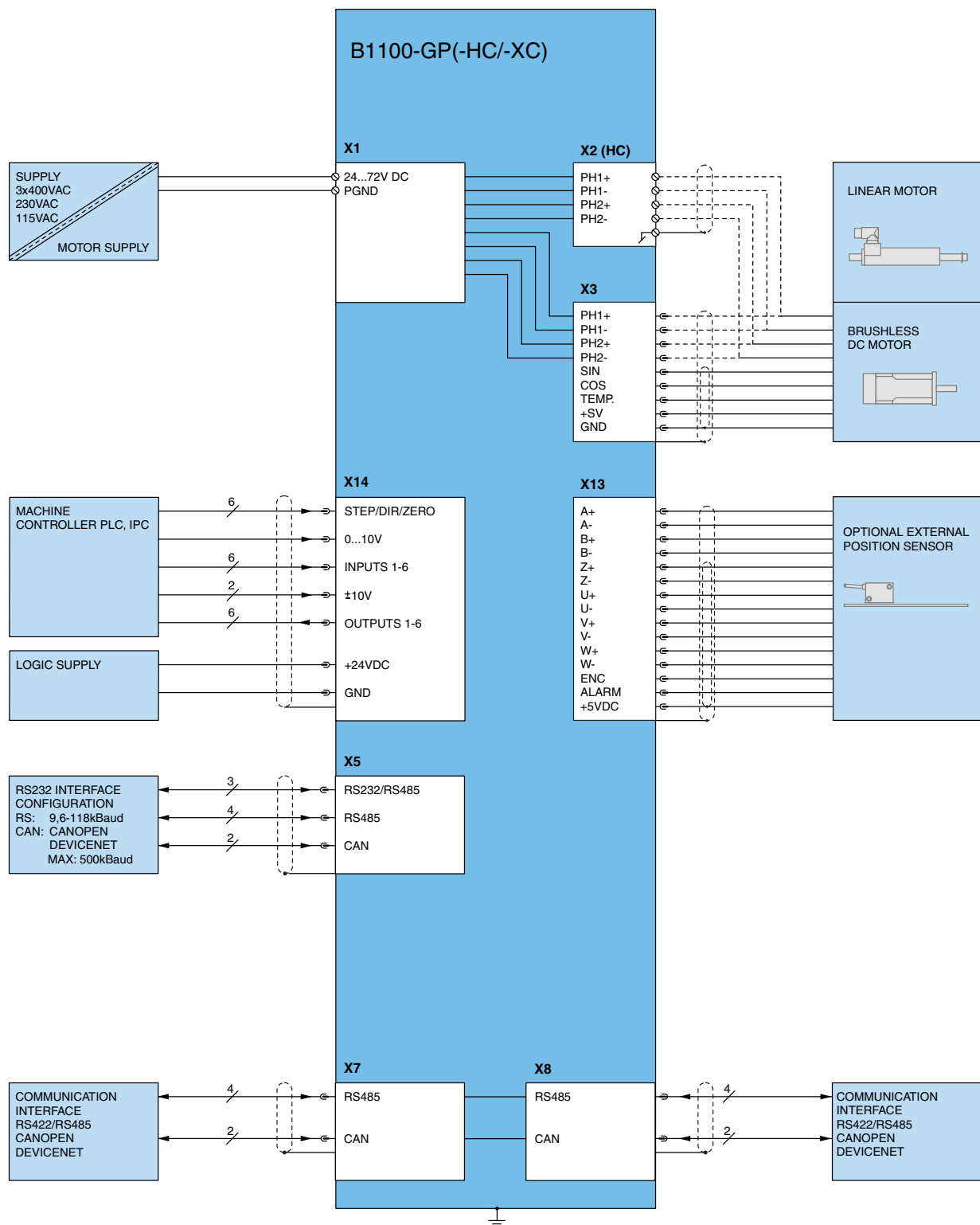
Ref	Name	Source
1	Installation_Guide_B1100.pdf	www.linmot.com
2	Usermanual_LinMot-Talk1100.pdf	www.linmot.com
3	Usermanual_EasySteps_Appl_1100.pdf	www.linmot.com
4	Usermanual_MotionCtrlSW_1100.pdf	www.linmot.com

The documentation is distributed with the LinMot-Talk1100 configuration SW, which can be downloaded from the LinMot homepage for free.

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

- Installation\_Guide\_B1100.pdf: data sheet, wiring and connections
- Usermanual\_LinMot-Talk1100.pdf: how to use the configuration software
- Usermanual\_EasySteps\_Appl\_1100.pdf : EasySteps application software description (smart control word behavior, analog parameter scaling and IO motions)
- Usermanual\_MotionCtrlSW\_1100.pdf: motion controller software description (State machine, motion interface)

### Wiring



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

## **Getting Started**

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

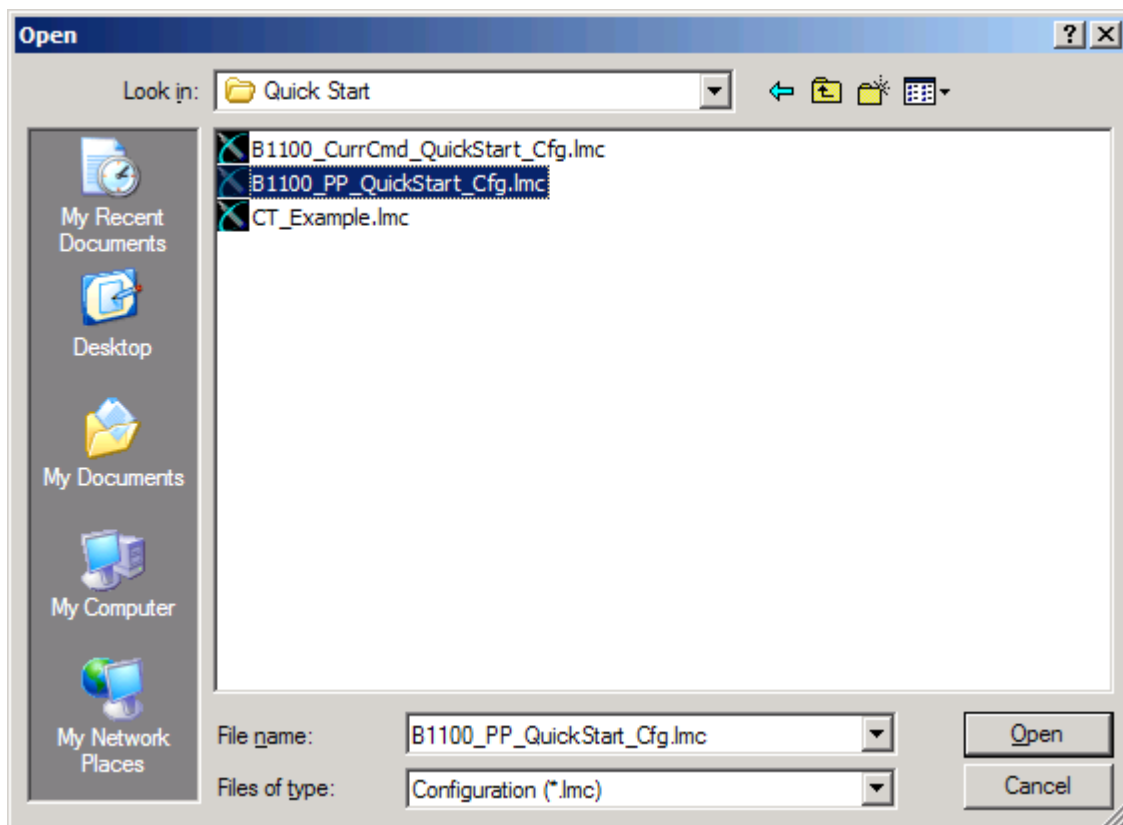
Connect your configuration PC using a 1:1 serial RS232 cable (female/female) with the servo controller X5.

Switch on the 24V logic supply.

Start the LinMot-Talk1100 software.

Login the servo controller.

Import the B1100\_PP\_QuickStrt\_Cfg.lmc configuration file:



Start the motor wizard to configure your motor type, follow steps 1 to 9:

Motor Wizard

Step 1/9: Actuator Selection

Actuator Data File:

PS01-37x120-HP.adf

Change Actuator ...

Stator:

PS01-37x120-HP-C20

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-C20	
Article Number	0150-1252	
Stator Length	227 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-C20	
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

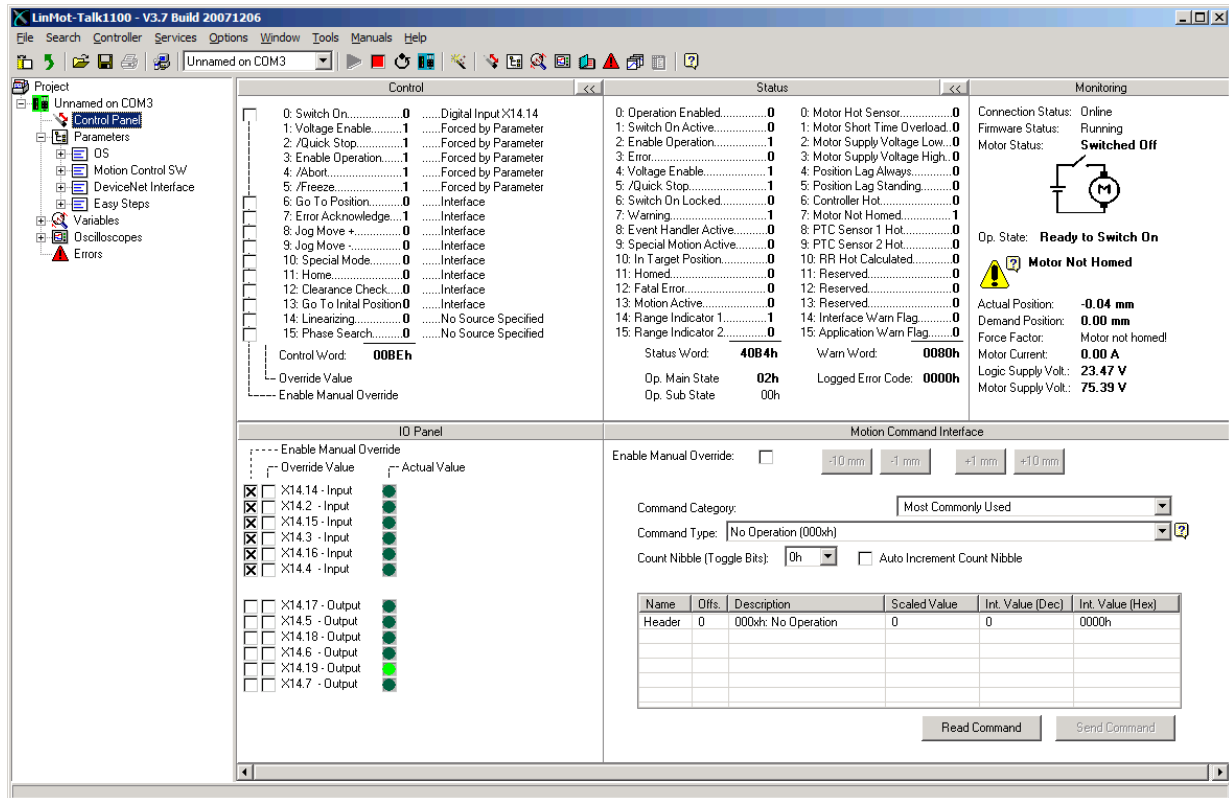
Next >

Finish

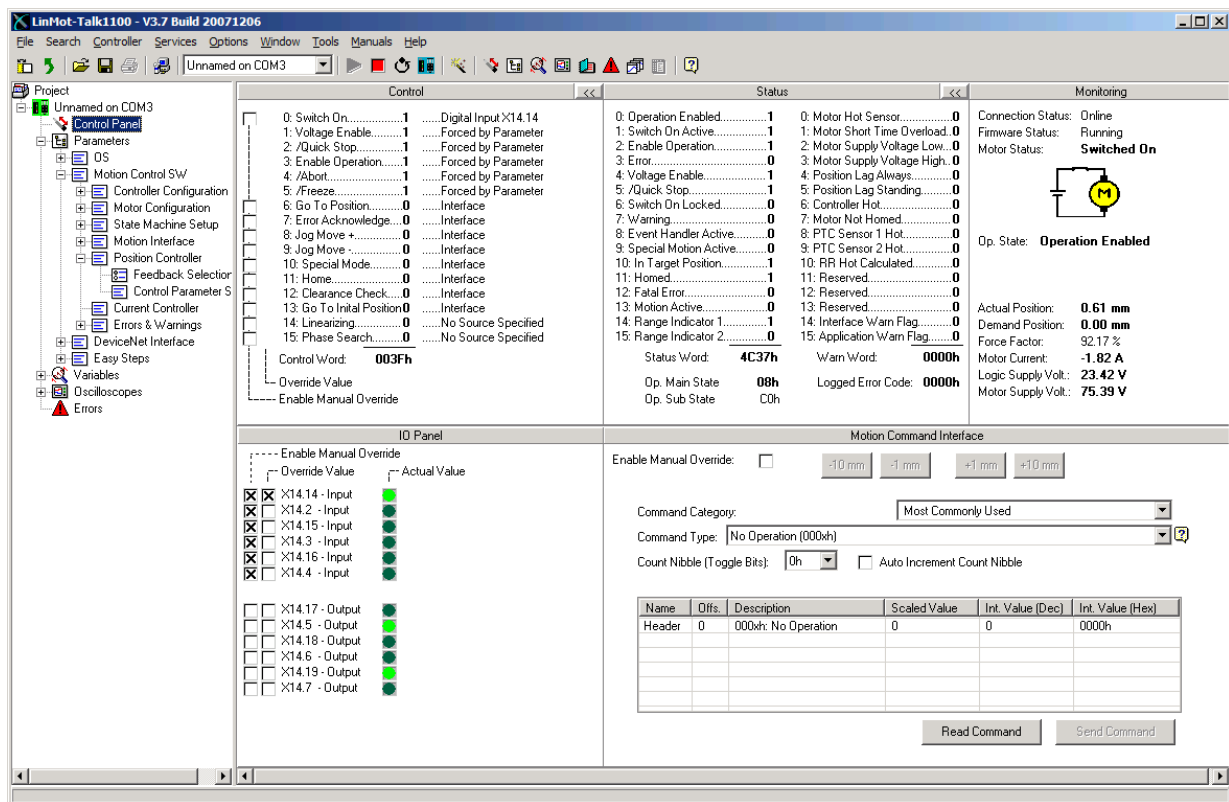
Cancel

Switch on the motor power supply.

The EasySteps software can be used to control the motor over digital inputs and outputs. For testing purposes, you can wire these inputs and outputs to your control panel or simply force the values from the IO panel section in the control panel of the LinMot-Talk1100 software:

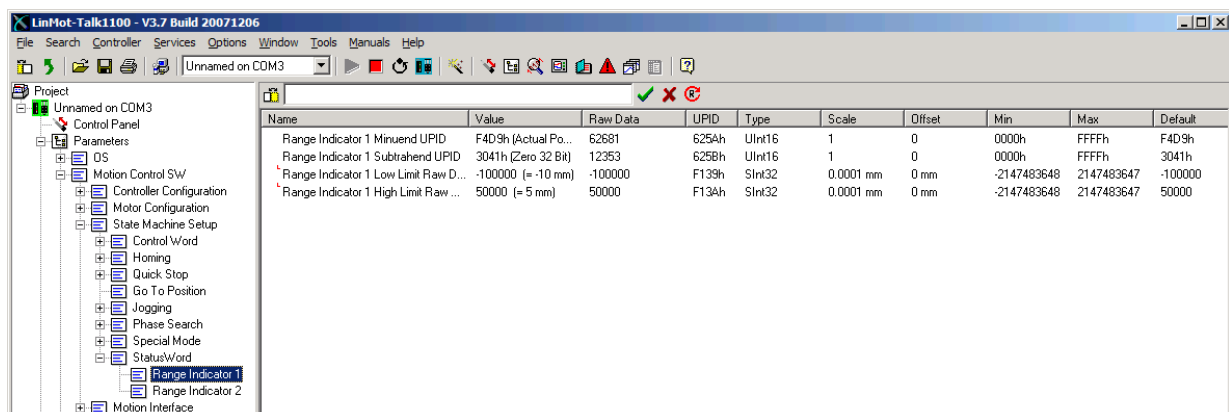


Set the input X14.14 high in order to get the motor controlled. It will automatically move for homing:



After the homing sequence, the output on X14.5 goes high indicating the motor is in target position. Also the range indicator 1 output goes high (position range between –10mm and 5mm).

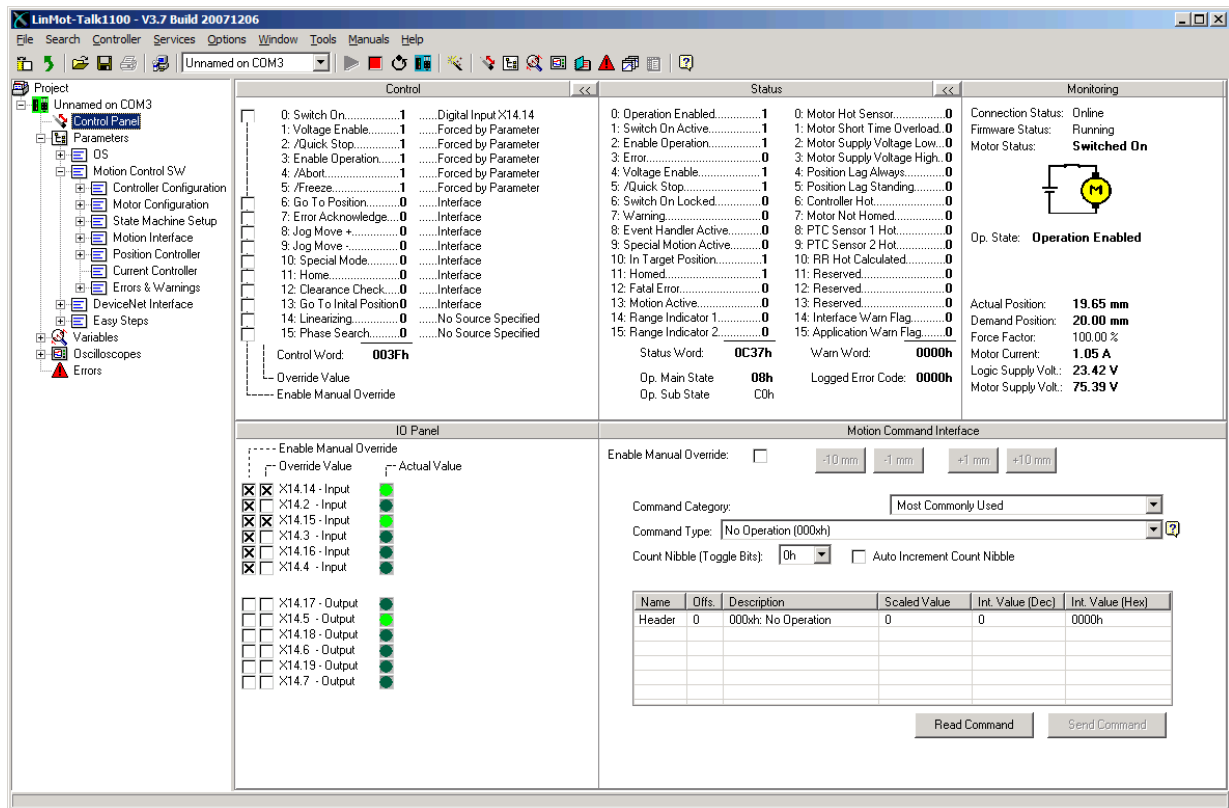
The range indicator 1 is configured as shown:



This output is high, if the term (Actual Position – 0) is in the range -10mm .. 5mm.

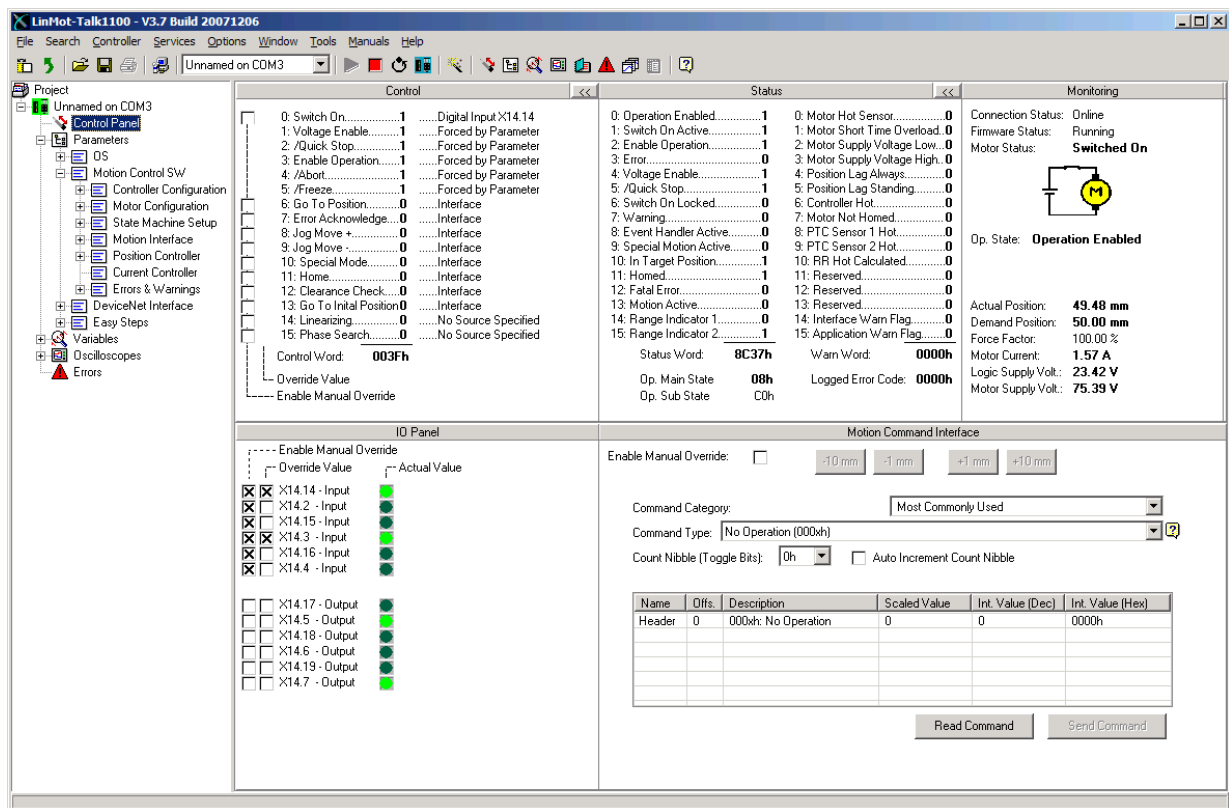


Set the input X14.15 high, so the motor moves to 20mm. This absolute motion command is configured in the EasySteps parameter section.



The output of range indicator 1 (mapped to X14.19) has been cleared. The output in target position (X14.5) may be cleared for a short time and will be set again.

Set the input X14.3 high, so motor moves to 50mm. This absolute motion command is configured in the EasySteps parameter section.



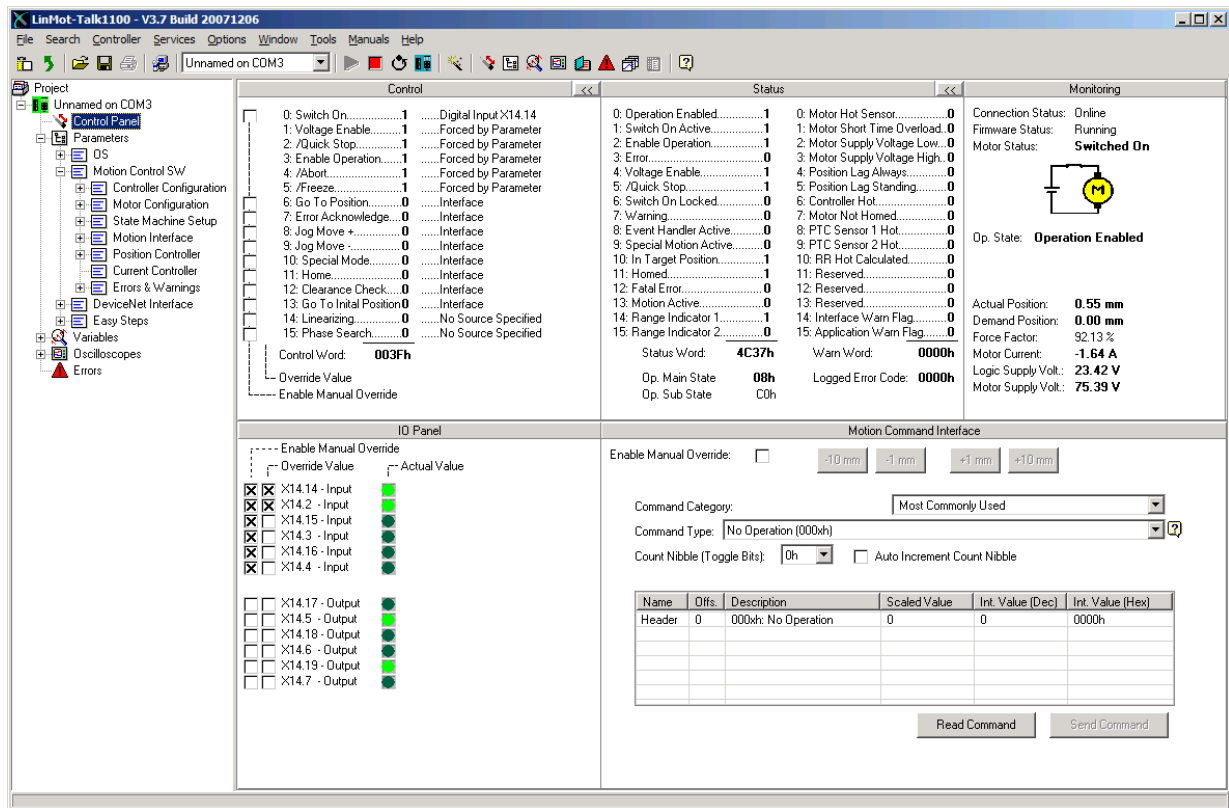
The output of range indicator 2 (mapped to X14.7) has been cleared. The output in target position (X14.5) may be cleared for a short time and will be set again.

The range indicator 2 is configured as shown:

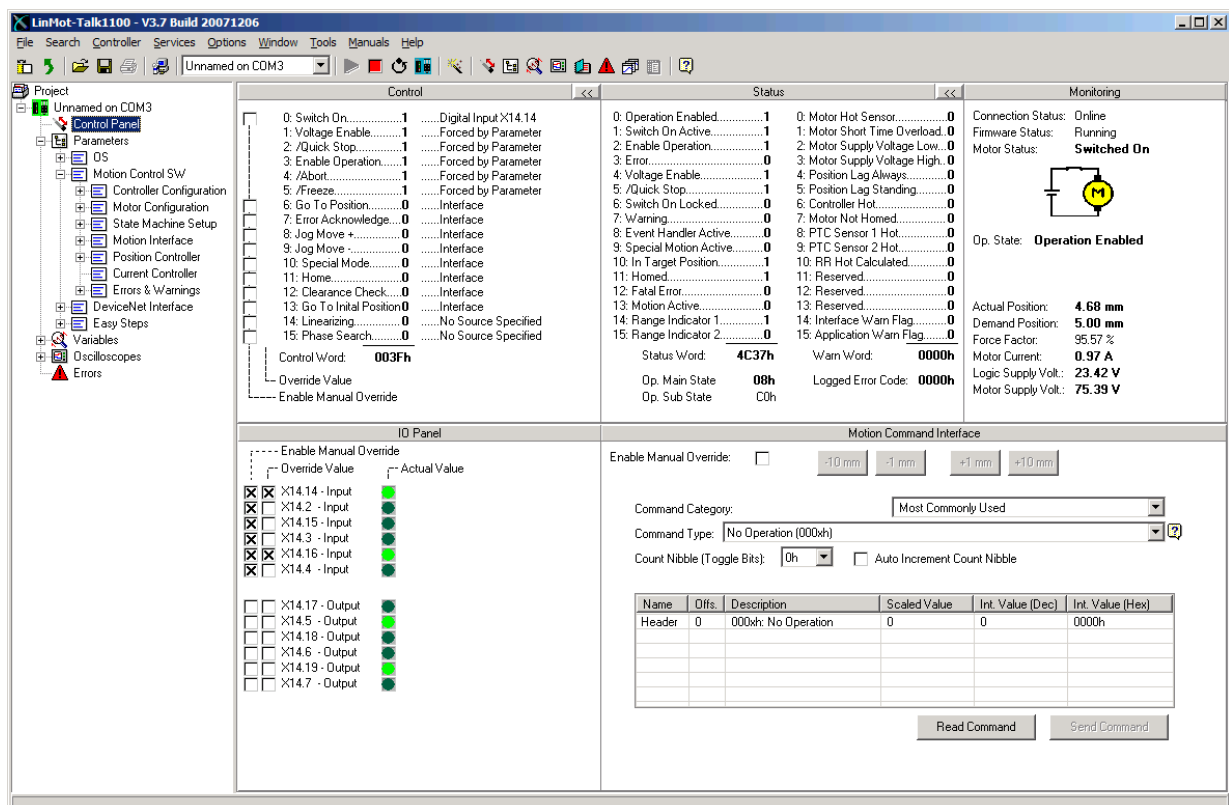
Name	Value	Raw Data	UPID	Type	Scale	Offset	Min	Max	Default
Range Indicator 2 Minusend UPID	F4D9h (Actual Po...	62681	625Ch	Ulnr16	1	0	0000h	FFFFh	F4D9h
Range Indicator 2 Subtrahend UPID	3041h (Zero 32 Bit)	12353	625Dh	Ulnr16	1	0	0000h	FFFFh	3041h
Range Indicator 2 Low Limit Raw D...	450000 (= 45 mm)	450000	F138h	Slnt32	0.0001 mm	0 mm	-2147483648	2147483647	450000
Range Indicator 2 High Limit Raw ...	510000 (= 51 mm)	510000	F13Ch	Slnt32	0.0001 mm	0 mm	-2147483648	2147483647	510000

This output is high, if the term (Actual Position – 0) is in the range from 45mm to 51mm.

Set the input X14.2 high, the motor moves to 0mm. This absolute motion command is configured in the EasySteps parameter section:



Set the input X14.16 high, the motor moves to 5mm. This incremental motion command is configured in the EasySteps parameter section as well.



Set the input X14.16 high, the motor moves to 10mm. This incremental motion command is configured in the EasySteps parameter section.

**Control**

- 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 Interface
- 8: Jog Move +.....0 Interface
- 9: Jog Move -.....0 Interface
- 10: Special Mode.....0 Interface
- 11: Home.....0 Interface
- 12: Clearance Check.....0 Interface
- 13: Go To Initial Position.....0 Interface
- 14: Linearizing.....0 No Source Specified
- 15: Phase Search.....0 No Source Specified

Control Word: 003Fh

Override Value

Enable Manual Override

**Status**

- 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.....0
- 15: Range Indicator 2.....0
- 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: PR Hot Calculated.....0
- 11: Reserved.....0
- 12: Reserved.....0
- 13: Reserved.....0
- 14: Interface Warn Flag.....0
- 15: Application Warn Flag.....0

Status Word: 0C37h

Warn Word: 0000h

Op. Main State 08h

Op. Sub State C0h

Logged Error Code: 0000h

**Monitoring**

Connection Status: Online

Firmware Status: Running

Motor Status: Switched On

Op. State: Operation Enabled

Actual Position: 9.71 mm

Demand Position: 10.00 mm

Force Factor: 99.76 %

Motor Current: 0.88 A

Logic Supply Volt.: 23.42 V

Motor Supply Volt.: 75.39 V

**IO Panel**

Enable Manual Override

Override Value Actual Value

- X14.14 - Input
- X14.2 - Input
- X14.15 - Input
- X14.3 - Input
- X14.16 - Input
- X14.4 - 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: ☐

Command Category: Most Commonly Used

Command Type: No Operation (000xh)

Count Nibble (Toggle Bits): 0h ☐ Auto Increment Count Nibble

Name	Offs.	Description	Scaled Value	Int. Value (Dec)	Int. Value (Hex)
Header	0	000xh: No Operation	0	0	0000h

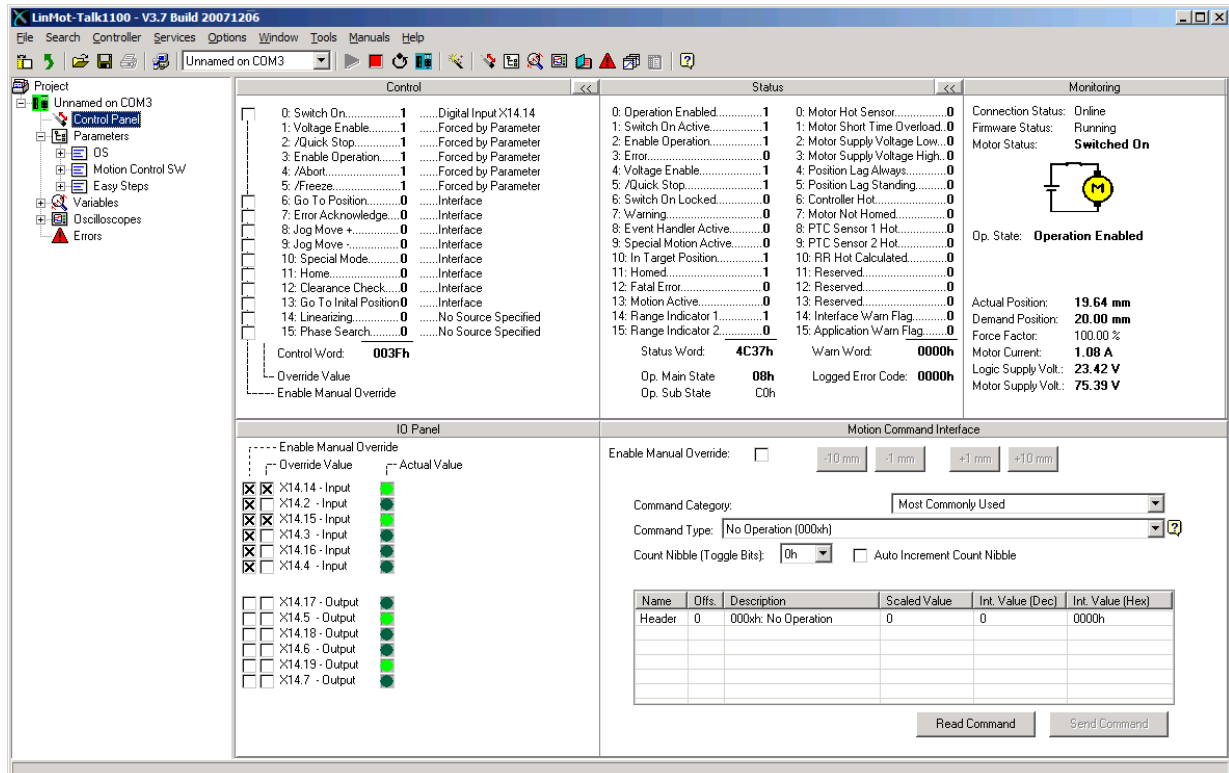
Read Command Send Command

An incremental motion command can be used e.g. for stacking or de-stacking applications.

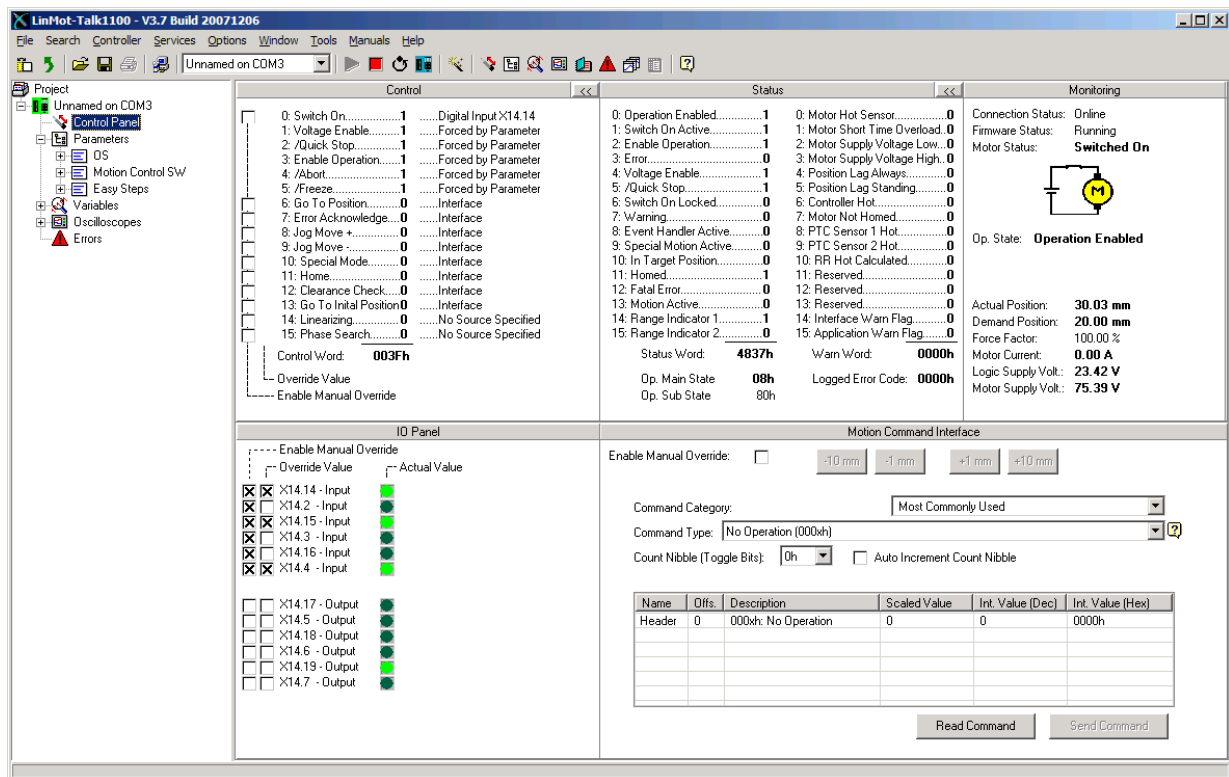
To change positions without using the LinMot-Talk1100 software, the EasySteps software supports the possibility of teaching positions manually over a single separate input.

The following sequence has to be executed for a correct teaching:

First, select the motion which has to be changed, by setting this output high. The motor moves to the position.



Then set the teach in input (X14.4 high), this makes the motor currentless, so the motor can be moved manually to the new position ( in this example 30.03mm). Note: in vertical applications the slider can drop down due to gravitation.

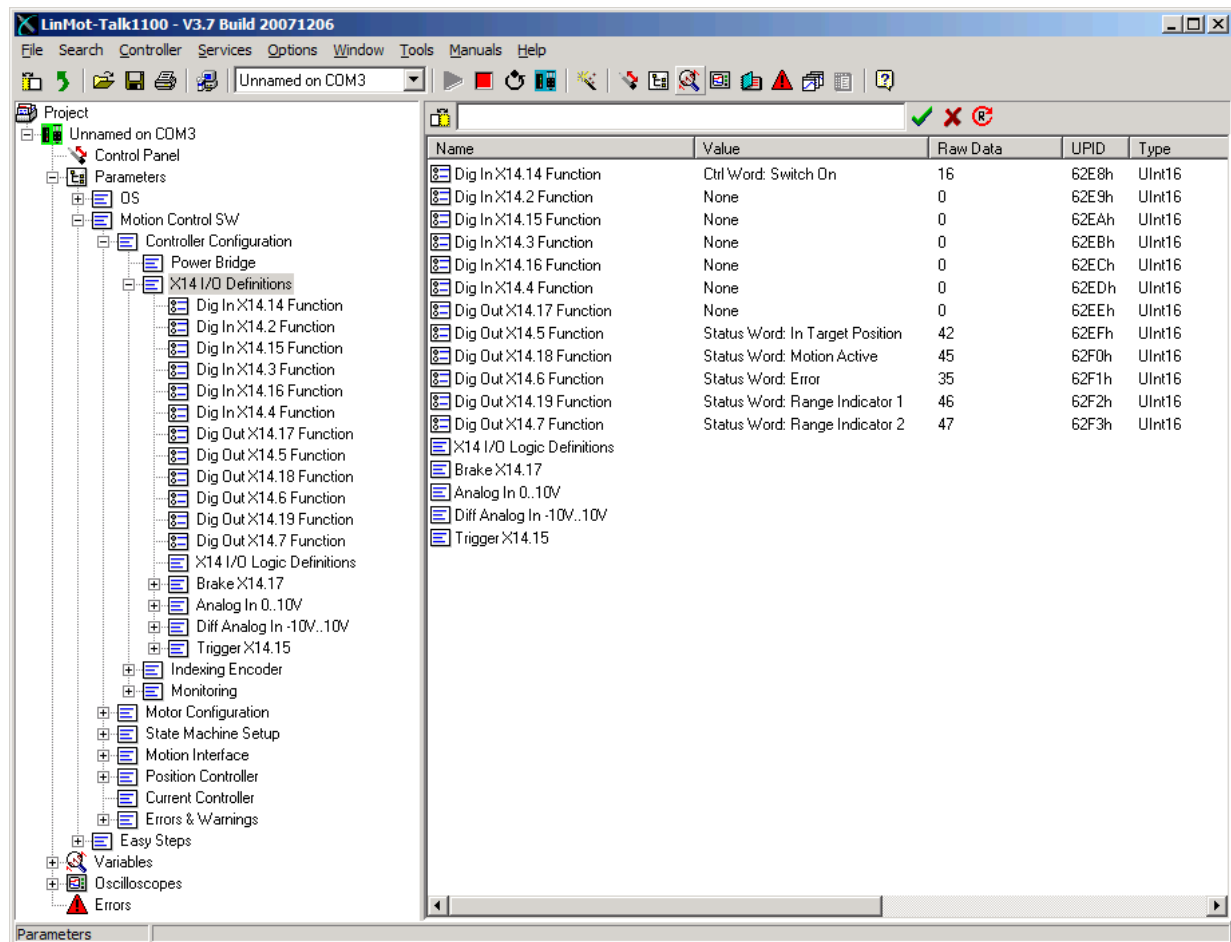


When moved the motor to the correct position, set the teach in input low, the motor is now position controlled and powered again, and the new position for the selected IO motion is stored remanently (survives a power cycle).

## Quick Start Configuration

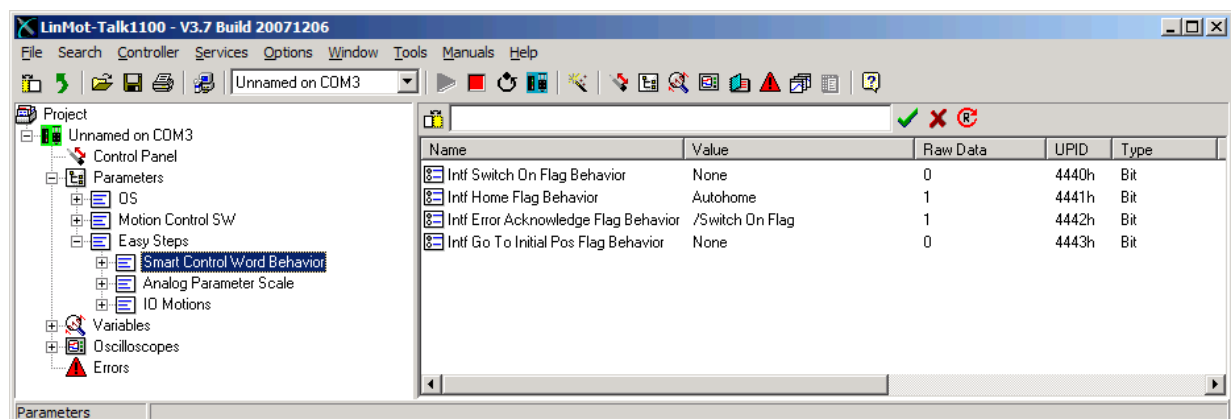
### Input and Output Configuration

The inputs and outputs in the quick start example are configured as:



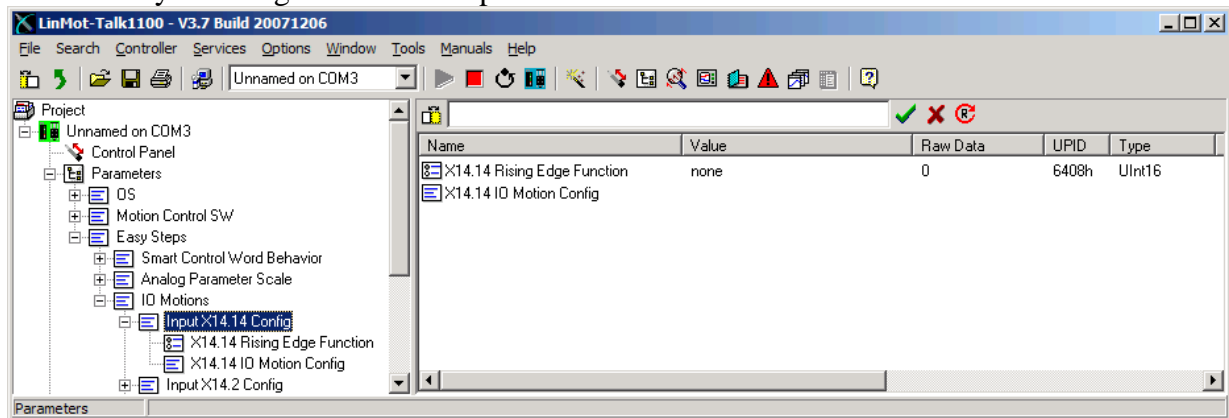
The input X14.4 is mapped to the control word bit wswitch ON. In the EasySteps configuration the additional behavior on this bit is configured as:

- Autohome
- Error acknowledge to falling edge of the “Switch On“ flag

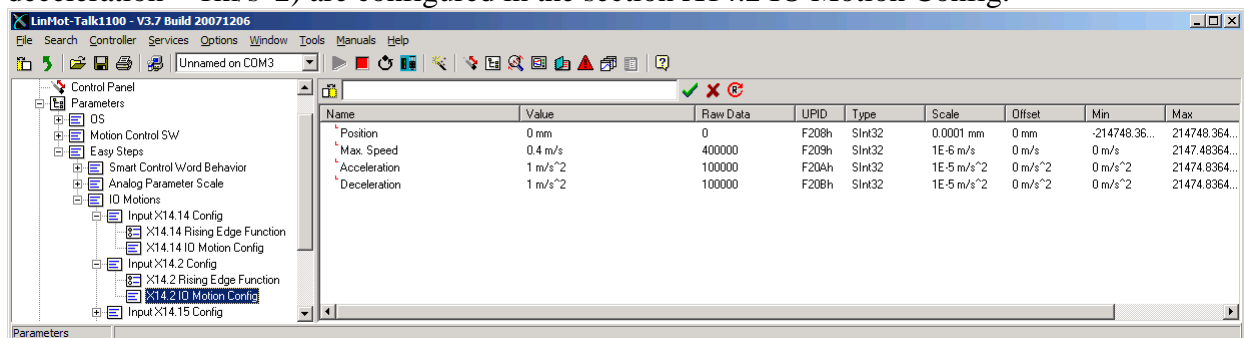


### IO Motion Configuration

The input X14.14 is mapped to the control word bit “Switch On”, for this reason no IO motion functionality is configured for this input.

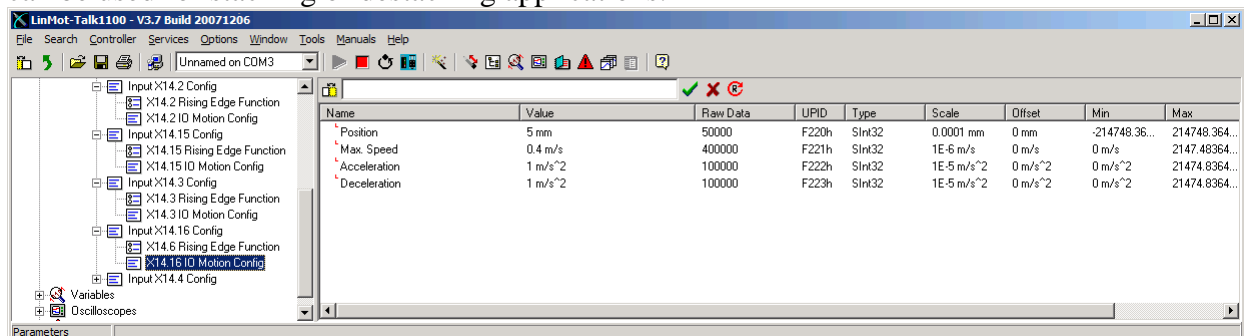


On the input X14.2 no MC SW functionality is mapped, so it's free to use as IO motion input. In the quick start example is the motion goto absolute position configured. The motion parameters ( target position = 0mm, max speed = 0.4m/s, acceleration = 1m/s<sup>2</sup> and deceleration = 1m/s<sup>2</sup>) are configured in the section X14.2 IO Motion Config.



On the inputs X14.15 and X14.3 are also goto absolute position commands, with target positions 20mm and 50mm configured.

On the input X14.16 is an ‘Increment Target Position’ IO motion command configured. In this case the parameter position = 5mm, means not the absolute position but the target position's increment. So on a rising edge of X14.16 the old target position is incremented by 5mm. A negative position value would decrement the target position. This kind of motion commands can be used for stacking or destacking applications.



On the input X14.4 the ‘Teach In IO Motion’ is configured. This functionality is only available on this input.



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