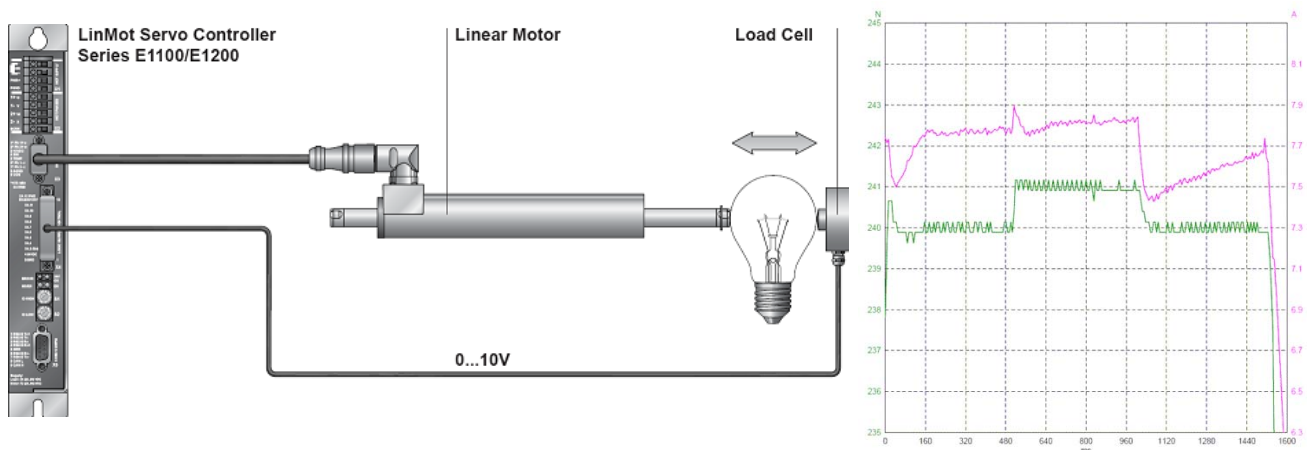


Technology Function Force Control

Introduction

The new technology function "Force Control" for LinMot's series E1100 and E1200 Servo Controllers offers closed loop force control with down to 0.1N resolution. Closed loop force control permits to apply a constant force with high precision over the whole stroke range independently from the actual position. As the applied force is measured by a load cell and directly controlled by the servo controller, side effects like friction, slip-stick effects and temperature changes will not influence the resulting force applied to the object.



Servo Controller E1100/E1200 with force control technology function. The force applied to the object is generated by the linear motor and measured in the load cell. The applied force measured in the load cell is directly feed back to the Servo Controller

Applied force (green) and motor current (pink) in a closed loop force control application during an increasing of the force set value from 240N to 241N

Motion Commands

The following new Motion-Commands are available

VAI Go To Pos With Force Ctrl Limit (380xh)

Moves to the defined target position, if the measured force reaches the defined value the controller switches to the force control mode with Target Force = Force Limit. To change back to position control mode use motion command VAI Go To Pos From Act Pos And Reset Force Control (381xh)!

VAI Go To Pos With Force Ctrl Limit And Target Force (383xh)

Moves to the defined target position, if the measured force reaches Force Limit the controller switches to the force control mode with Target Force = Target Force. To change back to position control mode use motion command VAI Go To Pos From Act Pos And Reset Force Control (381xh)!

Force Ctrl Change Target Force (382xh)

This command could be used to change the Target Force during the force control mode

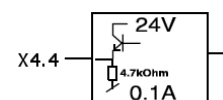
VAI Go To Pos From Act Pos And Reset Force Control (381xh)

Reinstalls the position control mode and moves to the defined target position

Detailed description of the commands can be found in the "Motion Control SW" manual

Technical Data

- Analog Input-Signal: 0..10V, 10 Bit Resolution
Attention: Input with 4.7 kΩ pulldown resistor
- Supported Controllers: Series 1100/1200 except MT/MP-Controllers



Installation

This section describes how to activate the Technology Function Force Control and how the analog input has to be configured.

1. Get the access code

Contact your local LinMot-Distributor, see www.linmot.com, to order your access code.
Keep the serial number of your controller ready.

2. Input the access code

Open LinMotTalk1100 and login to your controller
Under **Controller\Set Access Code** the following window will open:

Set Access Code

Active Keys:

Name	Value	Access Code
Key1	5A93h - Force Closed Loop Control	50B453F3h
Key2	0000h - No Key	
Key3	0000h - No Key	
Key4	0000h - No Key	

Set Key Access Code:

Name: Value (HEX): Access Code (HEX):

Note: The keys will not be activated on the controller until a reboot has been processed.
Press the "activate" button to reboot.

A maximum of four keys can be set on the controller. Under Active Keys all valid installed keys are listed (key value and access code). A new key can be set by selecting the key name and defining the value and access code. With the Write button, the key and access code are written to the controller. As soon as the controller has rebooted (click the Activate button) the new key will be active, if the access code fits.

Please note: Access codes are controller specific. They cannot be copied from one controller to another.

3. Configuration of analog input (X4.4)

(UPID 1037) Parameters\Motion Control SW\X4 I/O Definitions\IO X4.4 Function\

► Set to "Analog Input"

(UPID 1790) Parameters\Motion Control SW\X4 I/O Definitions\Analog In X4.4\Analog input Signal Type\

► Set to "Force"

(UPID 1501/1502) Parameters\Motion Control SW\X4 I/O Definitions\Analog In X4.4\Analog Force Feedback Config\

► Set the force that stands for 0V (UPID 1501) and the force that stands for 10 V (UPID 1502)

4. Connect the analog signal from the Load Cell with Input X4.4 on the Controller

5. Use the Force Control Motion Commands within your application

6. If necessary the Force Control parameters have to be adapted

Parameters\Motion Control Parameters\Protected Technology Functions\Analog Force Feedback Control\Force Control Parameters

Ordering Information

Motion Control SW		
Article	Description	Part No.
TF-1100-Force-Control	Technology Function Force Control	0150-2503