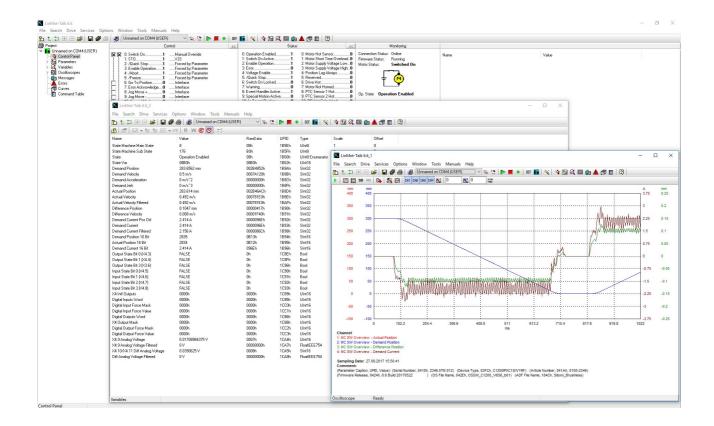


# LinMot-Talk 6 Configuration Software

Manual



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#### Note

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# **Table of Contents**

1	Introduction	5
	1.1 System Generation (SG)	5
	1.2 UPID (Unique Parameter ID)	5
	1.3 PnP (Plug and Play)	5
2	Overview	7
	2.1 Tool button bar	7
	2.2 Control Panel	8
	2.3 Messages	9
	2.4 Errors	9
	2.5 Oscilloscope	. 10
	2.6 Curves	. 11
	2.7 Parameters	. 12
	2.8 Variables	. 13
	2.9 Command Table	. 15
	2.10 Access Codes	. 15
	2.11 Information Window	. 17
3	Quick Start Guide	
	3.1 Cabling E1100	
	3.2 Cabling E1200	
	3.3 Cabling E1400	
	3.4 Cabling B1100	
	3.5 Cabling B8050-ML	
	3.6 Cabling A1100	
	3.7 Cabling C1100	
	3.8 Cabling C1200	
	3.9 Cabling M8000	
	3.10 Firmware Download	
	3.11 Login	
	3.12 Downloading Olderreleases	
	3.12.1 Manual Downloading	
	3.12.2 Downloading by login	
	3.13 Scanning CAN Bus	
	3.15 Motor Wizard	
	3.15.1 Actuator Selection	
	3.15.2 Drive Settings	
	3.15.3 Extantion Cable Setup	
	3.15.4 External Position Sensor System	
	3.15.5 Feed Forward Parameters	
	3.15.6 PID Position Controller	
	3.15.7 Homing 1	
	3.15.8 Homing 2	
	3.15.9 Homing 3	
	3.16 Unit System	
	3.17 Update motor files	
	3.17.1 Adding a motor repository	
	3.18 Continuous Curve Mode	



3.19 Defining Curves	ł
3.20 Control Status	ł
3.21 Oscilloscope	
3.21.1 Oscilloscope Settings 56	
3.21.1.1 General	
3.21.1.2 Trigger	
3.21.1.3 Advanced	
3.21.2 Display Settings	
3.22 Continuous Two Point Mode	l
3.23 Export Configuration	ł
3.24 Import Configuration	1
3.25 Open Offline Configuration	
3.26 Create Offline Configuration	
3.27 Compare Parameters	)
4 Trouble shooting	6
4.1 Setting all Parameters to Default Values	;
4.2 Interface does not run	
4.3 Stopping Firmware	l
4.4 Communication debug Window	



# **1** Introduction

The LinMot-Talk 6 software is a PC based tool, which helps the user in a comfortable way <u>installing firmware</u> on the drive, setting up the drive's configuration, defining and programming motion profiles, emulating the PLC, watching variables and reading messages and errors. The LinMot-Talk 6 works with the drive series A1100, B1100, C1100, E1100, C1200, E1200, E1400 and B8050. It replaces the LinMot-Talk1100 software. For the rest of this document and all other documents, the more general term "LinMot-Talk" will be used for the Linmot- PC configuration software.

Information about software compatibility of LinMot-Talk 6 can be found under this Link.

#### 1.1 System Generation (SG)

The LinMot drive families are based on different hardware platforms, which are called system generations. The abbreviation is "SG". Whereas differences of hardware of software functionality exist between the system generations, the documentation is marked with the "SG" term. The following table gives an overview of which drive family belongs to which SG:

SG	Drives
SG1	Families E400, E4000 V1 (not supported by LinMot-Talk 6)
SG2	Families E400, E4000 V2 (not supported by LinMot-Talk 6)
SG3	Family E1100 (GP, CO, DN, DP) (LC/HC/XC)
SG4	Family B1100 (VF, PP, GP, ML) (LC/HC/XC)
SG5	Family E1200 (GP, DP, DS, EC, IP, LU, PL, PN, SC, SE) Family E1400 (GP, DP, DS, EC, IP, PD, PL, PN, SC, SE) (0S/1S) Family B8000-ML (GP, EC, IP, PL, PN, SC)
SG6	Family C1250 (CC, CM, DS, EC, IP, LU, PD, PL, PN, SC, SE) (0S/1S) Family E1400V2 (GP, DP, DS, EC, IP, LU, PD, PL, PN, SC, SE) (0S/1S)
SG7	Family A1100 Family C1100 (GP, DS, EC, PD, PN, SE) (0S/1S)

#### 1.2 UPID (Unique Parameter ID)

All parameters have an assigned identification number, which is called a UPID (Unique Parameter ID). All parameters are accessed on the drive over this identification.

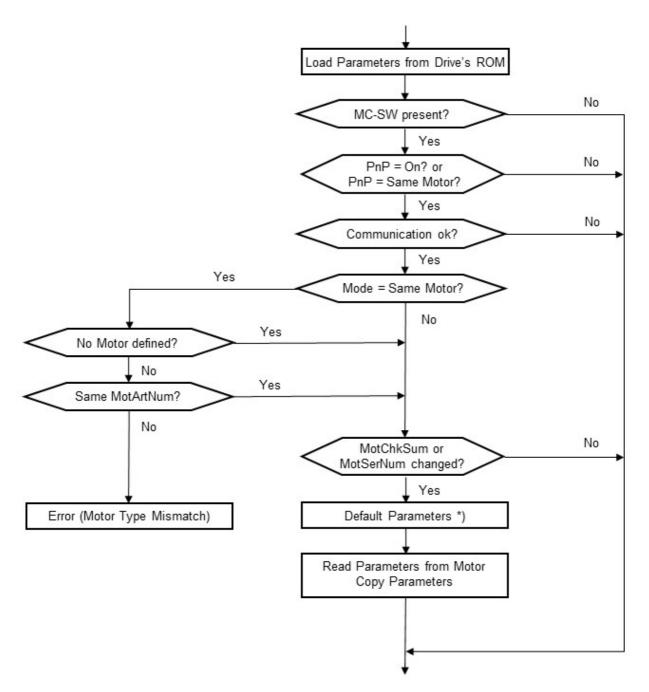
#### 1.3 PnP (Plug and Play)

The drive families A1100, C1100, C1200, E1200 and E1400 support the so called "Plug and Play" functionality. When a motor is connected to the drive, the motor will be automatically detected and the parameters will be set accordingly. The drive then can control the motor without any further configuration procedure. When starting the motor wizard, the connected motor is already selected and all the further configuration, such as exact slider, moving mass, friction etc can be set up.

All components (drives and motors) which support the plug and play functionality are marked on the type label with "PnP".

The drive startup sequence is the following:



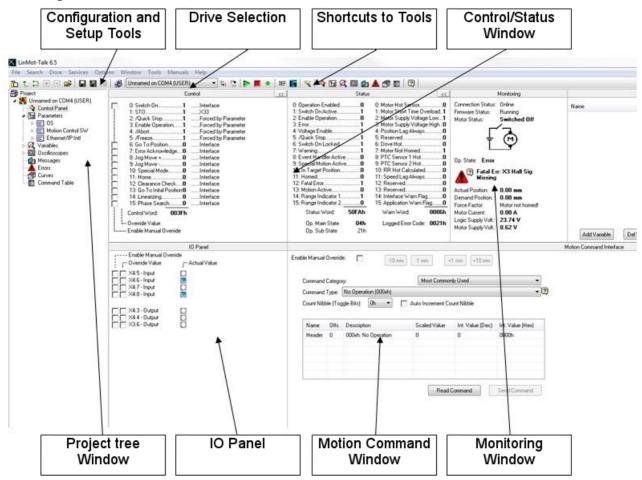


\*) All parameters, which are set by the previous PnP motor and do not exist in the new motor will be set to default values prior to load the new parameters.



# 2 Overview

The most used functions after a start of the LinMot-Talk software is <u>Install firmware</u> or <u>Login to a drive</u>. The following screenshot gives an overview of the different functions integrated in the LinMot-Talk software. The Configuration and Setup Tools the Drive Selection and the Shortcuts to Tools are in the <u>tool button bar</u>. In the <u>control panel</u> are the Control/Status Window, the IO Panel, the Motion Command Window and the Monitoring Window.



# 2.1 Tool button bar

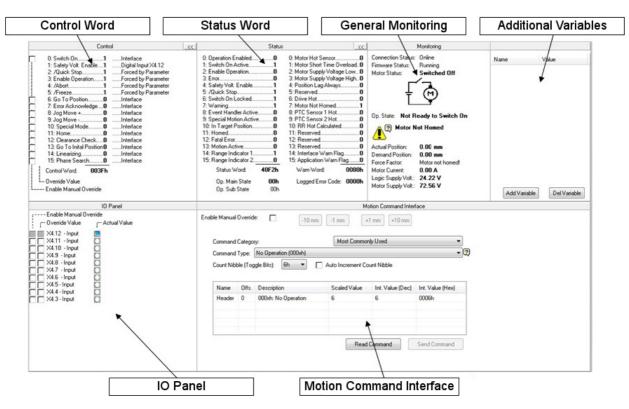
- Show/Hide Tree shows or hides the project tree window.
- 1 Up sets the focus in the project tree to the parent of the selection.
- 📜 Toggle toggles between the last two displayed tree branches.
- Import Configuration imports configurations to the drives.
- Export Configuration exports configurations. Different drives and parts, such as parameters, variables, oscilloscope or curves, can be selected to be exported.
- 🔄 Print prints items like curves, parameter configurations etc.
- 🛃 Install Firmware Start the drive's firmware installation.
- Gpen Login, login to all drives in the selected workspace.
- Save Login, save the actual workspace
- Reboot restarts the firmware on the drive.



- **I** Stop stops the firmware on the drive, used for downloading and software configuration.
- Slink sends a blink LED command to the drive, which is selected.
- Default: Parameters can be defaulted by instances. With this button, the default parameter procedure is started. A window will be shown where the instances (OS, MC, INTF and APPL software) can be selected. All parameters of the selected instances will be set to their default value.
- **III** Go Offline logs out from actual drive.
- K Start Motor Wizard starts the motor configuration setup wizard.
- Show Control Panel switches to the control panel.
- E Show Parameters switches to the variables.
- Show Variables switches to the variables.
- Show Oscilloscope switches to the oscilloscope.
- **Show Messages** switch to the message viewer.
- A Show Errors switches to error viewer.
- Show Curves switches to the curve tool.
- Show Command Table switches to the command table editor.
- 2 Show Object Inspector displays a window in which shows help information to each selected object.
- 🕅 Shows one decimal place more, for numbers like variable values. This button is only activated when the option "Round the decimal places" is activated.
- Shows one decimal place less, for numbers like variable values. This button is only activated when the option "Round the decimal places" is activated.
- (1) Activates the <u>Information Window</u>. This window will be showed on the bottom of the LinMot-Talk when there is a message inside and it is activated.

#### 2.2 Control Panel

The Control Panel helps the user to access directly to the control and status word of the MC Software. The drive can be commanded from the PC, thus no PLC is necessary to be used for the first commissioning.





- Control Word The MC software's control word can be directly written from the PC. For taking over the PC control the left check box (Enable Manual Override) must be selected. The state of each flag can be set with the right check box (Override Value). If other flags have to be altered, the override mask must be configured in the parameter tree under \Parameters\Motion Control SW\State Machine Setup\Control Word\Ctrl, Word Parameter Force Mask.
- Status Word The status word shows the actual state of the drive's MC software status word. It is updated automatically.
- General Monitoring This window displays actual motor and drive information
- Additional Variables In this window variables could be chosen, then they are shown in the list and would updated automatically.
- **IO Panel** For commissioning. The user can take control of the X4 IOs on E1100 or X14 IOs on B1100 drives.
- Motion Command Interface The MC software's motion command Interface can be directly accessed over this window. When enabled (Enable Manual Override switch must be set), MC commands can be selected, parametrized and sent to the drive. Because the motion command interface is, independent of the interface running on the drive, the same, the commands can be exactly tested before programming them in the PLC.

#### 2.3 Messages

This panel reads out and shows all messages, which are logged on the drive, and displays them in chronological order. If logged in a B1100 series drive, this window does not appear, because those drives do not support message logging. To get some informations aubout a message, select the message and press F1, the object inspector will show some information about the selected message.

e Search Drive Services O	ptions Window Tools	Manuals Help	
112888	nnamed, IP: 10.3.10.126 (U	ISER) 🔽 ⊳ 🔳 🔶 📷 💐 😵	14 💐 💷 🔔 🔺 🗊 🗉 🛛
Project			
Unnamed, IP: 10.3.10.126 (USE Control Panel	(R) Event Time	Message	Source
	001604:11:32.773	MC SW Started	MC SW State Machine
Variables	001604:11:30.710	Software Reset	OS
▷ El Oscilloscopes	001604:11:23.897	MC SW Stopped	MC SW State Machine
🚽 🚺 Messages	001584:39:45.813	Trn To Error State	MC SW State Machine
Errors	001584:39:44.008	MC SW Started	MC SW State Machine
Curves	001584:39:41.945	Software Reset	OS
Command Table	001582:00:44.953	MC SW Stopped	MC SW State Machine
	001581:40:15.176	Trn To Ready To Switch On State	MC SW State Machine
	001581:10:53.469	Trn To Operation Enabled State	MC SW State Machine
	001581:10:50.487	Trn To Ready To Switch On State	MC SW State Machine
	001581:10:26.394	Trn To Error State	MC SW State Machine
	001581:10:01.482	Trn To Ready To Switch On State	MC SW State Machine
	001581:09:53.817	MC SW Started	MC SW State Machine
	001581:09:51.754	Software Reset	OS
	001581:09:51.603	MC SW Stopped	MC SW State Machine
	001581:04:01.988	Trn To Error State	MC SW State Machine
	001581:04:00.183	MC SW Started	MC SW State Machine
	001581:03:58.120	Software Reset	OS
	001581:03:57.969	MC SW Stopped	MC SW State Machine
	001581:03:41.101	Trn To Error State	MC SW State Machine
	001581:03:39.296	MC SW Started	MC SW State Machine
	001581:03:37.233	Software Reset	OS
	001581:03:37.082	MC SW Stopped	MC SW State Machine
	001581:03:28.981	Trn To Error State	MC SW State Machine
	001581:03:27.176	MC SW Started	MC SW State Machine
	001581:03:25.113	Software Reset	OS

#### 2.4 Errors

This panel reads out and shows all errors, which are logged on the drive and displays them in chronological order. Install new firmware will logged because it is interesting if the error was before or after installing a new firmware.



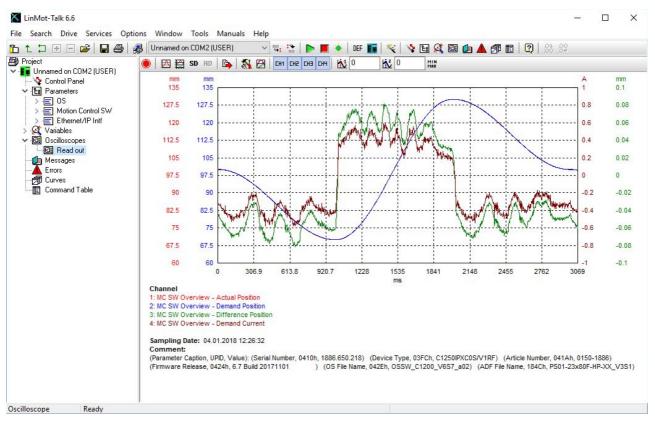
To receive more information about an error, select the error and press F1, the object inspector will show some information about the selected error. It is possible to get the information about all errors by generate an error list under Manuals -> Errors. The error list is a HTML Document and will open in a browser. There are error lists for every software layer. Therefore it is important to have a look on the source of an error. The source symbolises the layer where the error is explained.

ኼ ቲ  🗄 🖻 🚅 📕 🚭 🗎	🔬 Unnamed on COM4 (	Parar	meters and Variables		🕴 DEF 🔢 💐 🔧	<b>} Eg 🔍 💷 🏚 🔺 🗇 🗉 📿</b>   33 32 🚺
Project		Error	s		MC Layer	
Unnamed on COM4 (USER)	Event Time	Moti	on Commands		Interface Layer	Jurce
Control and     Parameters     Q     Variables     E     Oscilloscopes	001940:49:45.335 001930:56:49.452 001926:17:53.197		vant Documents	Þw	Application Layer	DSW Error Handler MCSW Error Handler OS
Messages Errors Curves Command Table	001921:27:29.427 001919:46:46.972 001912:07:02.844 001909:18:12.355	0001h 00BBh 0001h 0067h	Err: Logic Supply Too New Firmware Installe Err: Logic Supply Too Cfg Err: Wrong Stato	d Low		MC SW Error Handler OS MC SW Error Handler MC SW Error Handler

#### 2.5 Oscilloscope

The drive's built in oscilloscope, which can record up to eight channels in real time, is controlled with the oscilloscope tool.

During login the oscilloscope reads out the settings and data from the drive. If an oscilloscope shot is running or ready to read out data, an item called "Read out" will be displayed. Otherwise a default item will be generated.



#### The oscilloscope is controlled with the buttons

🖲 🖾 🛱 SD RD 🕒 🐴 🎇	CH1	CH3 CH3 CH4	сна снь сна снв 🛛 📩	0 📩 0	
-------------------	-----	-------------	---------------------	-------	--

The functions are (from left):

- Start/Abort Start or abort an oscilloscope shot. The button changes the symbol 4 Abort the actual record.
- **<u>Fit View</u>** Displays the recorded channels such as they fit best in the scope window.
- Example the same unit same fit) Displays the recorded channels such as the channels with the same unit have the same scaling and offset.



- **SD** Save Display stores the settings for zoom, scaling and offset.
- RD Recall Display restores the settings for zoom, scaling and offset, which are previously stored with Save Display.
- **Export Data:** Export data and setups of the last recorded oscilloscope shot in a csv file.
- Solution of the setup mask for channels, triggers, times and modes.
- Display Settings is used to set scale, offset and color for the oscilloscope channels.
- **Show/Hide:** Show and hide the oscilloscope channels.
- **Show/Hide Cursor:** Two time cursors can be displayed for measuring the signals.
- Mix Statistics Value: This button opens a window that shows some statistics value for each channel. The calculation is between the two cursors. When both cursor are disabled then the calculations are over the whole oscilloscope shot.

#### 2.6 Curves

With the curve tool, motor motion profiles can be easily created, joined, uploaded, downloaded and saved. NOTE: On B1100 the curve feature must be enabled with an access key.

LinMot-Talk 5.0						
File Search Drive Services Options W	indow Tools Ma 10.3.10.126 (USER)		s нер	V Fi & Ø /		?
Project Innamed, IP: 10.3.10.126 (USER)     Innamed, IP: 10.3.10.126 (USER)				Edit Window		
Control Panel  Parameters  Solution Control Panel  Parameters  Solution Control Panel  Solution Control Panel  Control Panel Control Panel  C	Name	ID 1 2	Type Position vs. Time Position vs. Time Position vs. Time	Setpoint Wizard Sine Sine None	Length 1000 ms 500 ms 1500 ms	No. of Setpoints 501 501 1501
	×	×		Download Window		
	🛛 🖥 🛓 Upload from	Drive	e 📄 👔 Download into l	Drive 🔟 🔨	Curves have chan	ged! Please download.
	Name SineOut SineIn SinOutIn Curve	ID 1 2 3	Type Position vs. Time Position vs. Time Position vs. Time	Setpoint Wizard Sine None	Length 1000 ms 500 ms 1500 ms	No. of Setpoints 501 501 1501

The curve tool is divided into the edit and the download window.

The edit window is used to generate, merge and modify curves with the following buttons:

# 12 😭 🔀 🗮

- New Curve Starts the curve wizard, which guides through the curve generation.
- Edit Properties The properties of a selected curve, like name, time or stroke, can be modified.
- **Edit Curve Values** The curve points can be manually edited.
- Join Curves All selected curves are joined. A wizard will be started for defining the curve properties of the joined curve.

The download window is used to manage the curves, which are stored on the drive or have to be downloaded. Modifications in this window will show up the message "Curves have changed! Please download." After pressing the download into Drive button the window and the drive will be synchronized.



🛛 🛓 Upload from Drive	🖬 🖬 Download into Drive	ID
-----------------------	-------------------------	----

• Upload Curves from Drive All curves stored on the drive will be uploaded and displayed.

• Download Curves to Drive The drive's curve sector will be synchronized with the download window.

• D Auto Numerate Curves The curve ID, which must be unique, will be set automatically.

The maximum number of curves and number of sample points is defined as follows:

Series B1100:

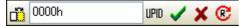
```
Max. 16 Curves
#Curves * 70 Bytes + #SamplePoints1 * 4 Bytes <= 2016 Bytes
Series A110/C1100:
Max. 50 Curves
#Curves * 70 Bytes + #SamplePoints1 * 4 Bytes <= 32512 Bytes
All other Series:
Max. 100 Curves
#Curves * 70 Bytes + #SamplePoints1 * 4 Bytes <= 65280 Bytes
1 #SamplePoint: total of sample points in all curves
```

2.7 Parameters

The drive's parameters are displayed in a tree view.

pject	ő	1: 🖹   🕨 📕 🔶	DEF 🔢   🔫   1	X®			- <u>1</u> 0+					
Unnamed on COM2 (USER)	Name	Value	Raw Data	Value (RAM)	UPID	Туре	Scale	Offset	Min	Мах	Def	Att
Parameters	FF Constant Force	0 A 0	0000000h	0 A	139Ch	SInt32	0.001 A	0 A 0	-15 A	15 A	0 A 0	R١
> 🖅 OS	FF Friction	0 A	0000000h	0 A	139Dh	SInt32	0.001 A	0 A	0 A	15 A	0 A 0	RV
Y E Motion Control SW	FF Spring Compensation	0 A/m	0000h	0 A/m	139Eh	SInt16	1 A/m	0 A/m	-25000 A/m	25000 A/m	0 A	B١
> E Drive Configuration	FF Damping	0 A/(m/s)	0000h	0 A/(m/s)	139Fh	SInt16	0.01 A/(m/s)	0 A/(m/s)	-250 A/(m/s)	250 A/(m/s)	0 A	B١
> E Motor Configuration	FF Acceleration	0 A/(m/s^2)	0000h	0 A/(m/s^2)	13A0h	UInt16	0.001 A/(m	0 A/(m/s^2)	0 A/(m/s^2)	65.535 A/(	0 A	B١
> E State Machine Setup	Spring Zero Position	0 mm	0000000h	0 mm	13A1h	SInt32	0.0001 mm	0 mm	-214748.36	214748.364	0 mm	R١
Hotion Interface     Section Controller	PGain	1.5 A/mm	000Fh	1.5 A/mm	13A2h	UInt16	0.1 A/mm	0 A/mm	0 A/mm	6553.5 A/mm	1.5	R١
Feedback Selection	<sup>b</sup> D Gain	3 A/(m/s)	001Eh	3 A/(m/s)	13A3h	UInt16	0.1 A/(m/s)	0 A/(m/s)	0 A/(m/s)	6553.5 A/(	3 A	B١
Etrl Par Set Selection	D Filter Time	0 us	0000h	0 us	13A8h	UInt16	1 us	0 us	0 us	50000 us	0 us	B٧
Control Parameter Set A	L Gain	0 A/(mm*s)	0000h	0 A/(mm*s)	13A4h	UInt16	0.1 A/(mm*s)	0 A/(mm*s)	0 A/(mm*s)	6553.5 A/(	0 A	B١
Control Parameter Set B	Integrator Limit	17 A	00004268h	17 A	13A5h	SInt32	0.001 A	0 A 0	0 A	25 A	25 A	B١
> E Advanced Settings	Maximal Current	17 A	00004268h	17 A	13A6h	SInt32	0.001 A	0 A	0 A	25 A	25 A	B١
E Current Controller	Maximal Current Positive	25 A	000061A8h	25 A	13FCh	SInt32	0.001 A	0 A 0	0 A	25 A	25 A	B١
> Errors & Warnings	Maximal Current Negative	25 A	000061A8h	25 A	13FDh	SInt32	0.001 A	0 A 0	0 A	25 A	25 A	R٧
> E Protected Technology Functions	Noise Deadband Width	0 mm	0000h	0 mm	13A7h	UInt16	0.0001 mm	0 mm	0 mm	0.2 mm	0 mm	B١
> - Ethernet/IP Intf												
🕰 Variables												
C oscilloscopes												
🕼 Messages												
···▲ Errors ···伊和 Curves												

The parameter service is controlled with the following buttons:



- **Show/Hide Details:** Additional information for each parameter, such as unique parameter ID (UPID), scaling, min/max value, can be displayed on demand.
- **Show UPID Browser:** When parameters are edited, which represent a UPID, this button will be visible. With this button, the UPID browser will be opened for an easy selection of a parameter.
- W OK: The input value is confirmed with this button. Pressing the enter key has the same effect.
- **Cancel:** This button cancels the value typed in.
- Read: All parameters will be read and refreshed from the drive.

When a parameter is marked with a little red L ( <sup>L</sup>), in front of the name, the parameter is a live parameter. A live parameter could be changed without stopping the firmware, all other parameter can only be changed when the firmware is stopped.

In the table below the columns of the parameterview are explained.

- Name: This is the Name of the Parameter
- Value: Value is the ROM Value, after a restart the ROM value is written in to the RAM value. This value is editable in the LinMot-Talk

Raw Data: is the Data like it is in the ROM without scaling and without the offset, in hexadecimal



Value (RAM):	stands in the RAM, this is the active value at the moment. This value is not editable in the LinMot-Talk. When the parameter is a live parameter then the RAM value will change when the user changes the ROM value in the LinMot-Talk
UPID:	Unique Parameter IDentification
Туре:	is the type of the parameter, for example SInt32, UInt32, String
Scale:	is the scale factor from the Raw Data to the Value.
Offset:	is the offset that must be added to the Raw Data to receive the Value
Min:	is the minimal value that the parameter value could have
Max:	is the maximal value that the parameter value could have
Default:	is the value that the parameter has after defaulting the drive
Attr.:	The Attribut defines what are the rights of the user with this parameter. R means read, W means write, with RW is both possible

When a parameter is selected and then the F1 button would be pressed, the Object Inspecter starts up. In the Object Inspecter are some informations about the parameter. If there is a blue more in the window it is a link to the documentation where it has more information about this parameter and his functionality.

Object Description	What is the Object Inspector?
Object Type	UInt8 Parameter
Name	IP address 3rd Byte
UPID	2113h
Description	3rd byte of device IP address.

#### 2.8 Variables

The drive's variables, which can be watched, are arranged in different functional groups. The MC SW overview group contains the most used variables.



Search Drive Services Options Window	<u>T</u> ools <u>M</u> anuals <u>H</u> elp						
🗅 江   😅 🔚 🎒   🥵   Unnamed, IP: 10.3.10	).184 (USER) 🛛 🔻 📘 🕴		🌾 🔯 🖬 🚳	8	L 🗗 🗉 🛛		
Project	1 II II - 18 18	Faz 👻 LIPID	R W 🕑 🤆	3 ti			
Unnamed, IP: 10.3.10.184 (USER)	Name	Value	BawData	UPID	Туре	Scale	Offset
Control Panel							
⊿ - [bi] Parameters ▷ - (三) OS	State Machine Main State	0	00h	1B5Eh	UInt8	1	0
▷ - ET Motion Control SW	State Machine Sub State	0	00h	1B5Fh	UInt8	1	0
	State	Not R	00h	1860h	UInt8 Enumerator		
	State Var	0000h	0000h	1B62h	UInt16	1	0
E User Defined	Demand Position	0 mm	00000000h	1B8Ah	SInt32	0.0001 mm	0 mm
E OS SW Operating Hours / Time	Demand Velocity	0 m/s	00000000h	188Bh	SInt32	1E-6 m/s	0 m/s
OS SW Message/Error	Demand Acceleration	0 m/s^2	00000000h	1B8Ch	SInt32	1E-5 m/s^2	0 m/s^2
- E OS SW Monitoring	Actual Position	-0.000	FFFFFFFAh	1B8Dh	SInt32	0.0001 mm	0 mm
E OS SW HW Configuration	Actual Velocity	-0.000	FFFFFF06h	1B8Eh	SInt32	1E-6 m/s	0 m/s
E OS Hash Value	Actual Velocity Filtered	0 m/s	00000000h	1BAFh	SInt32	1E-6 m/s	0 m/s
E OS SW Status	Difference Position	0.000	00000003h	1B90h	SInt32	0.0001 mm	0 mm
📰 MC SW Overview	Difference Velocity	0.000	000000FAh	1B91h	SInt32	1E-6 m/s	0 m/s
E MC SW Motor	Demand Current Pos Ctrl	0.002 A	00000002h	1B92h	SInt32	0.001 A	0 A 0
- 📰 MC SW X13 Ext Sensor	Demand Current	0 A	00000000h	1B93h	SInt32	0.001 A	0 A 0
E MC SW Current Controller	Demand Position 16 Bit	0	0000h	1B94h	SInt16	1	0
📰 MC SW Control Word	Actual Position 16 Bit	0	0000h	1B95h	SInt16	1	0
- 📰 MC SW Status Word	10 State Word	0200h	0200h	1C84h	UInt16	1	0
	10 State Bit 0 (×4.3)	FALSE	0h	1C8Eh	Bool		
	10 State Bit 1 (×4.4)	FALSE	0h	1C8Fh	Bool		
	10 State Bit 2 (×4.5)	FALSE	Oh	1C90h	Bool		
MC SW Motion Interface	10 State Bit 3 (×4.6)	FALSE	0h	1C91h	Bool		
	10 State Bit 4 (×4.7)	FALSE	0h	1C92h	Bool		
MC SW VA interpolator	10 State Bit 5 (×4.8)	FALSE	Oh	1C93h	Bool		
E MC SW Curve	IO State Bit 6 (×4.9)	FALSE	0h	1C94h	Bool		
E MC SW Monitoring	IO State Bit 7(×4.10)	FALSE	Oh	1C95h	Bool		
- E MC SW Encoder CAM	IO State Bit 8 (×4.11)	FALSE	Oh	1C96h	Bool		
- E MC SW Encoder CAM	IO State Bit 9 (×4.12)	TRUE	1h	1C97h	Bool		
- E MC SW Command Table	X4 Intf Outputs	0000h	0000h	1C89h	UInt16	1	0
E MC SW Force Control	Digital Inputs Word	0200h	0200h	1C85h	UInt16	1	0
	Digital Input Force Mask	0000h	0000h	1CC0h	UInt16	1	0
	Digital Input Force Value	0000h	0000h	1CC1h	UInt16	1	0
Messages	X4 Output Mask	0000h	0000h	1C88h	UInt16	1	0
Errors	Digital Output Force Mask	0000h	0000h	1CC2h	UInt16	1	Ō
Turves	Digital Output Force Value	0000h	0000h	1CC3h	UInt16	1	ů O
Command Table	X4.4 Analog Voltage	0.010	0004h	1CA4h	UInt16	0.0027027027 V	οv
2	X4.4 Analog Voltage Filtered	0.010	00000000h	1CA7h	FloatIEEE754	0.0027027027 V	0V
	Diff Analog Voltage	-0.059	FFF5h	1CA6h	Sint16	0.00537056928 V	0V
	Diff Analog Voltage Filtered	0.000	00000000h	1CA8h	FloatIEEE754	0.00537056928 V	0V

The variable service is controlled with the following buttons:

n i	P	Ist 🔻	18	ৰ্শৱ	F32	R	W	R	œ	t
L. K. J.								~	-	

- Show/Hide Details Additional information for each parameter, such as unique parameter ID (UPID), scaling, min/max value, can be displayed on demand.
- **R Read Variable:** Reads the selected variable from the drive once.
- Write Variable: Writes the selected variable to the drive.
- Read All Variables: Reads from the drive all variables of the section once.
- Read All Variables Cyclically: Reads from the drive all variables of the section cyclically.
- E Remove (Del): Removes the selected variable from the list.
- The following buttons are only used in special cases.
- Edit Properties The parameter properties can be displayed and changed.
- **New ... Variable** In a new generated variable section a new variable can be defined. This is a drop down menu, which supports different variable types.
- **New Bit Variable** In a new generated variable section a variable of the type bit can be defined.
- **New String Variable** In a new generated variable section a variable of the type string can be defined.
- Fig Vew Float32 In a new generated variable section a variable of the type float32 can be defined.
- **New With UPID** In a new generated variable section a variable can be added by using the UPID from the appropriate parameter.



Under "User Defined" any variables or parameters can be arranged together. Typically the variables are selected via UPID. It is also possible to drag and drop them from the parameter or variable section.

#### 2.9 Command Table

The drive supports the command table (CT) functionality, which means a set of up to 255 motion commands (31 commands for B1100GP and B1100VF series drives, on B1100PP CT is not supported) can be stored in this table.

An example of is shown in the following picture:

e <u>S</u> earch <u>D</u> rive S <u>e</u> rvices <u>O</u> ptions <u>W</u> indow	Tools	Manuals Help									
					<b>-</b> 1						
) 🕇 🏳 🎏 🔚 🎒 🐉 🗍 Unnamed, IP: 10.3.1	10.184 (USI	= HJ 🔻 🕨 📕 🤇	>   🔢   🔨   😵 🖽 🕰		\$V						
) Project Unnamed, IP: 10.3.10.184 (USER)	Entry		2	Auto execute	new command on n	ext cycle					
Control Panel		Name:		Unnamed							
		n Command Category:	Most Commonly Used								
▶ 🚍 Motion Control SW	Motio	n Command Type:	VAI Go To Pos				2)				
⊳ · 🗐 sercos	Targ	jet Position:	0 mm								
Variables	Мах	imal Velocity:	1 m/s								
	Acc	eleration:	10 m/s^2								
Errors	Dec	eleration:	10 m/s^2		c	Apply					
- 🛱 Curves 		Upload from Drive	🖉 🗓 Download to Drive	Command Table mo	dified. Please downlo	pad to drive.					
	ID	Name	Туре	Par 1	Par 2	Par 3					
	1										
	2	Unnamed	VAI Go To Pos	Pos: 0 mm	Vel: 1 m/s	Acc: 10 m/s^2					
	3	Unnamed	VAI Go To Pos	Pos: 0 mm	Vel: 1 m/s	Acc: 10 m/s^2					
	4	Unnamed	VAI Go To Pos	Pos: 0 mm	Vel: 1 m/s	Acc: 10 m/s^2					
	5										
	6										
	7										
	7										

A big variety of commands can be set in this tables, such as motion commands, conditions, sequence directives, parameter access, ...

This makes the CT to very powerful functional unit. The CT entries can be accessed (executed) via digital inputs (on X6) or via interface software.

The CT tool has the following editing elements:

- Entry ID indicates the CT entry, which is being edited.
- Entry Name is a descriptive string of max. 16 characters
- Motion Command Category the available commands are fitted into groups for keeping a better overview
- Motion Command Type specifies the command to be executed in this entry.
- Auto execute new command on next cycle when selected, on the next cycle the entry specified under "ID of Sequenced Entry" will be executed. This gives the possibility of defining cycles, simple logical sequences.
- **ID of Sequenced Entry** defines the CT entry executed on the next cycle when "Auto execute new command on next cycle" is activated.
- Apply writes the edited values into the entry.
- Upload from Drive reads and displays the entire command table from the drive.
- **Download to Drive** writes the edited table (from the PC) to the drive.

An application example of the CT can be found in the motion control software user manual (Usermanual\_MotionCtrlSW\_E1100.pdf).

#### 2.10 Access Codes

On the drive, special features or customer specific applications can be protected by a software key. This means, a key must be activated by an access code, which is drive specific (pinned to the serial number). Under Drive\Set Access Code\ the following window will open:



A maximum of four keys can be set on the drive. 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 drive. As soon as the drive has rebooted (click the Activate button) the new key will be active, if the access code fits.

Please note: Access codes are drive specific. They cannot be copied from one drive to another. The following table shows on which drives the different functions are available:

Legend:

- S: Standard Function
- TF: Technology Function, can be enabled with key
- NA: Function not available

Technology Functions	Curve	Force Control
E1100	S	TF
B1100	TF	TF
B1150ML	TF	TF
E1200	S	TF
E1400V2	S	TF
A1100	S	TF
C1100	S	TF
C1200	S	TF
C1400	S	TF
D1400	S	NA



# 2.11 Information Window

The Information Window is only visible when it has a message inside and it is activated. It could activated

with the Information Window button *in the Tool button bar. The window can show the messages from the list below.* 

Motor Wizard:	The MotorWizard was not used, the Motor is only defined by PnP.	The Motorwizard defines more Parameter then the PnP, this Parameters are not set now. This message will be cleared when the user finishes the Motor Wizard
Oscilloscope:	An Oscilloscope has new data.	This message shows that an oscilloscope has finished, it will be cleared when the user goes to an oscilloscope

# 3 Quick Start Guide

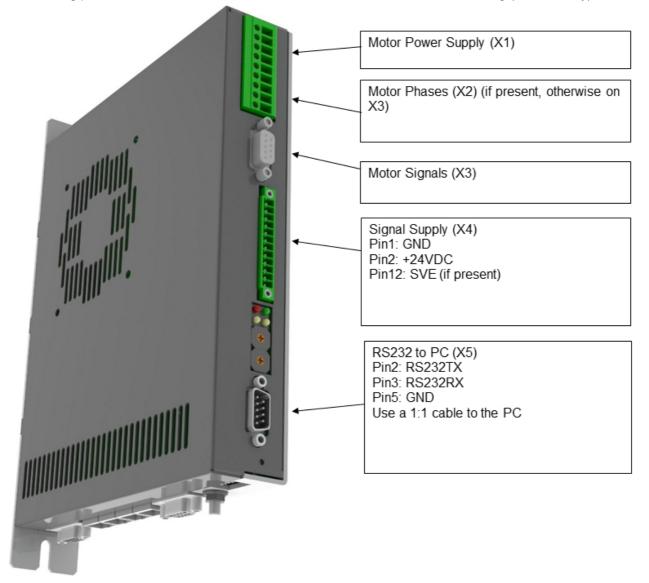
This chapter helps step by step to set up a system using servo drive and the LinMot-Talk configuration software.

Cabling drive is described in the following chapters:

Cabling E1100 Cabling E1200 Cabling E1400 Cabling B1100 Cabling B8050-ML Cabling A1100 Cabling C1100 Cabling C1200 Cabling M8000



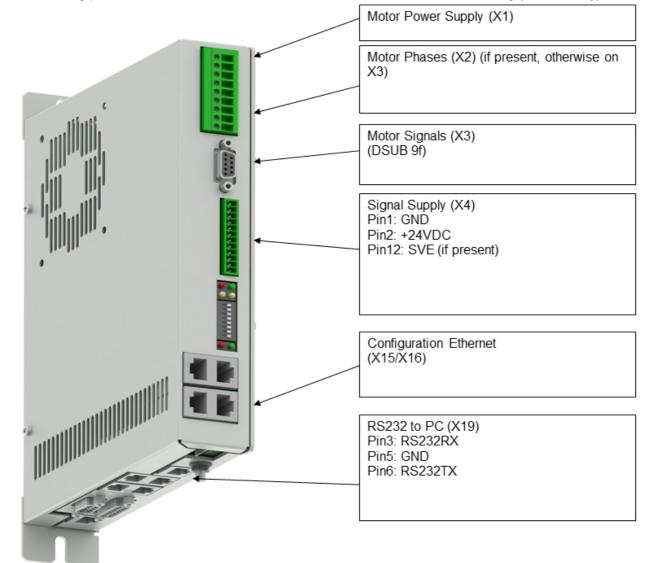
# 3.1 Cabling E1100



- X1 Motor Supply, use 48..72 VDC (between PWR+ and PGND).
- X2 Motor Phases: if this connector is not present, connect the motor on X3 only.
- X3 Motor signals: if motor has a DSUB-9 connector, connect it directly, otherwise use an adapter to DSUB-9 or wire the phase lines to X2.
- X4 For a commissioning with the PC it is necessary to wire only the Pin1 (GND), Pin2 (+24VDC) and, if present, Pin12 save voltage enable (SVE, +24VDC).
- X5 RS232: The cable between the LinMot drive and PC must be DSUB-9 F/F, 1:1 (X modem). If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).



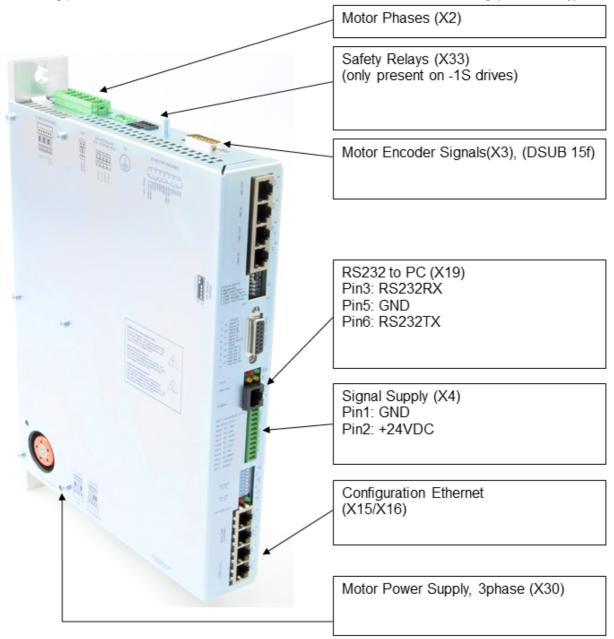
# 3.2 Cabling E1200



- X1 Motor Supply, use 48..72 VDC (between PWR+ and PGND).
- X2 Motor Phases.
- X3 Motor Signals. (Note: the motor phases are not present on this connector. Thus wire the motor phases in any case to X2).
- X4 For a commissioning with the PC it is necessary to wire only the Pin1 (GND), Pin2 (+24VDC) and, if present, Pin12 save voltage enable (SVE, +24VDC).
- X15/X16 Ethernet: Use a standard RJ45 patch cable to wire to the LAN.
- **X19** RS232: Use the RS232 PC configuration cable (LinMot article number 0150-2143) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).



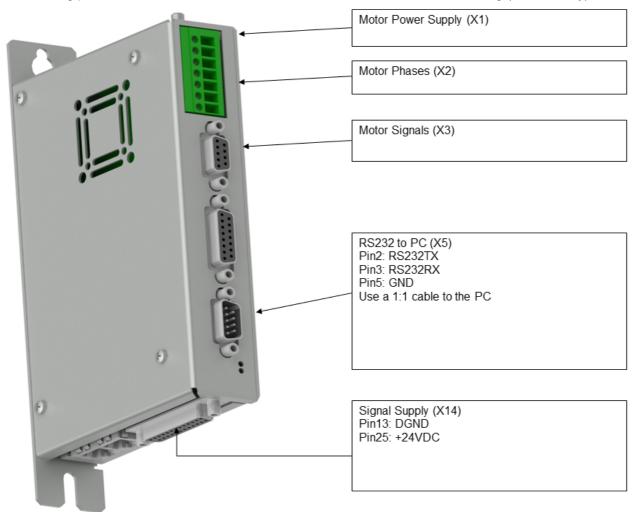
# 3.3 Cabling E1400



- X2 Motor Phases.
- X3 Motor Encoder Signals.
- X4 For a commissioning with the PC it is necessary to wire only the Pin1 (GND) and Pin2 (+24VDC).
- X15/X16 Ethernet: Use a standard RJ45 patch cable to wire to the LAN.
- X19 RS232: Use the RS232 PC configuration cable (LinMot article number 0150-2143) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- X30 Motor Supply, use 3x400 / 3x480VAC 50/60 Hz
- X33 Safety Relays: For the safety relays use a separate +24VDC supply. For a commissioning it is necessary to wire both Ksr+ (X33.4 and X33.8) to +24 VDC and both Ksr- (X33.3 and X33.7) to GND.



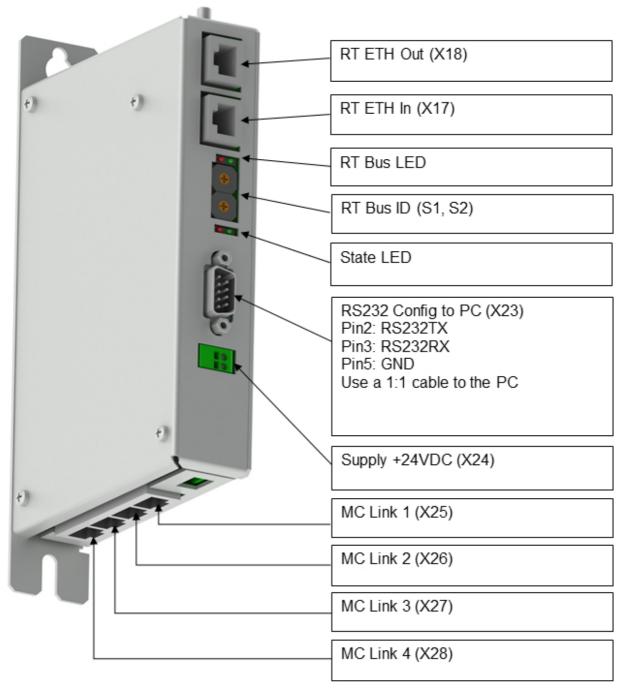
# 3.4 Cabling B1100



- X1 Motor Supply, use 48..72 VDC between (PWR+ and PGND).
- X2 Motor Phases
- X3 Motor signals: if motor has a DSUB-9 connector, connect it directly, otherwise use an adapter to DSUB-9 or wire the phase lines to X2.
- X5 RS232: The cable between the LinMot drive and PC must be DSUB-9 F/F, 1:1 (X modem). If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- X14 For a commissioning with the PC it is necessary to wire only the Pin13 (DGND) and Pin25 (+24VDC).



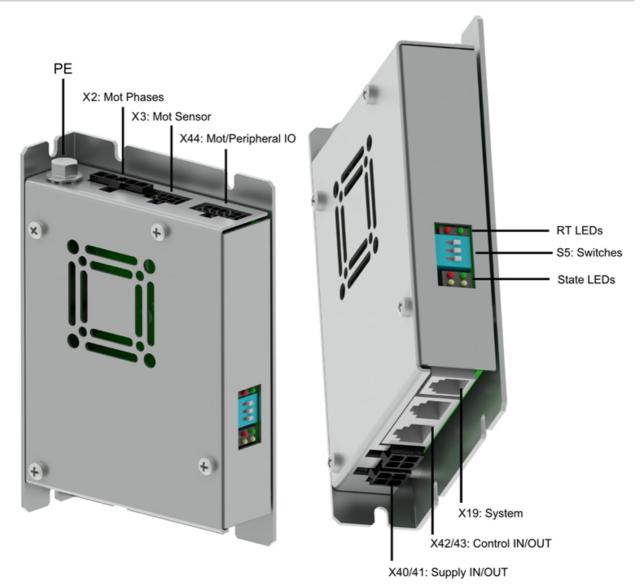
# 3.5 Cabling B8050-ML



- X23 RS232: The cable between the LinMot drive and PC must be DSUB-9 F/F, 1:1 (X modem). If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- **X24** Use a 24V switched power supply.



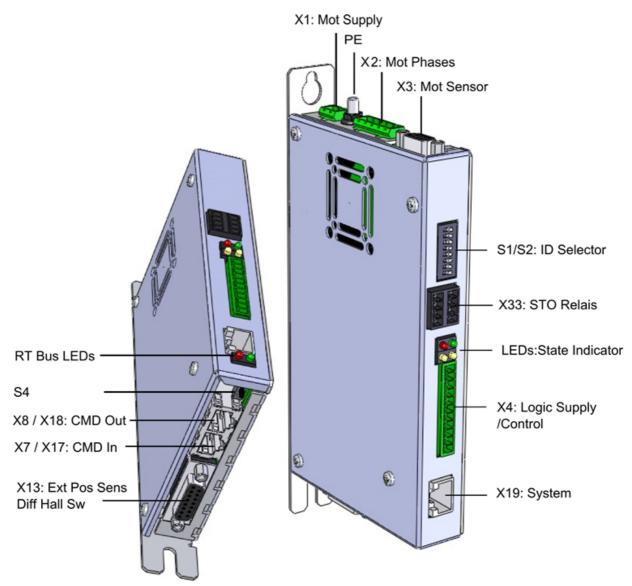
# 3.6 Cabling A1100



- X2 Motor Phases.
- X3 Motor Signals.
- **X19** RS232: Use the RS232 PC configuration cable (LinMot article number 0150-3544) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- **X40** Wire Pin1 (GND) and Pin2 (+24VDC) for signal supply, and for motor supply, use 48..72 VDC for PWR+ on Pin4 and PGND is on Pin3. (Linmot provides a connector with the crimped 1.5m long wires as a product under the article number 0150-3545.)

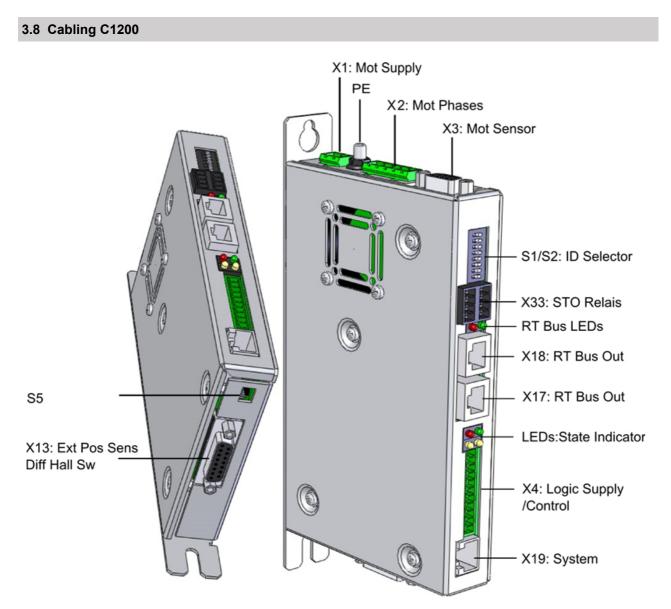


# 3.7 Cabling C1100



- X1 Motor Supply, use 48..72 VDC (between PWR+ and PGND).
- X2 Motor Phases.
- X3 Motor Signals. (Note: the motor phases are not present on this connector. Thus wire the motor phases in any case to X2).
- X4 For a commissioning with the PC it is necessary to wire only the Pin1 (GND) and Pin2 (+24VDC).
- X7-8 RS485: Use the USB to RS485 converter (LinMot article number 0150-3356) to connect your PC. Switch S4.1 has to be set to 'ON' (supported with FW >=6.9). Multidrop connections are not supported, only point-to-point connections are possible.
- X19 RS232: Use the RS232 PC configuration cable (LinMot article number 0150-2143) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110). Switch S4.1 has to be set to 'OFF'.
- X33 Safety Relays: The connector X33 is only present for 1S safety functionality. For the safety relays use a separate +24VDC supply. For a commissioning it is necessary to wire both Ksr+ (X33.4 and X33.8) to +24 VDC and both Ksr- (X33.3 and X33.7) to GND.
- **S4** S4.1 selects the communication channel used for LinMot-Talk communication. OFF (Default): RS232 on X19, ON: RS485 on X7/8. If the installed interface is LinRS, the interface will automatically use the other channel. (supported with FW >=6.9)

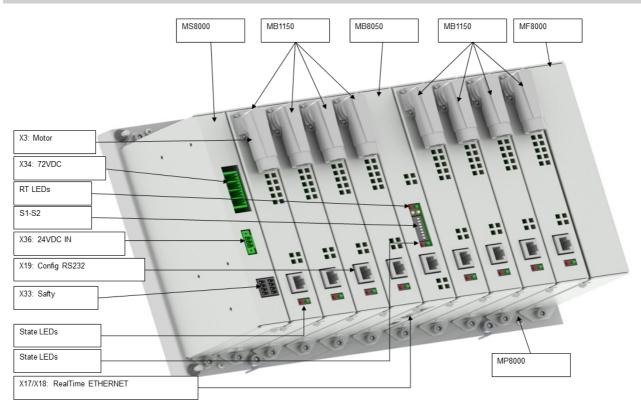




- X1 Motor Supply, use 48..72 VDC (between PWR+ and PGND).
- X2 Motor Phases.
- X3 Motor Signals. (Note: the motor phases are not present on this connector. Thus wire the motor phases in any case to X2).
- X4 For a commissioning with the PC it is necessary to wire only the Pin1 (GND) and Pin2 (+24VDC).
- X19 RS232: Use the RS232 PC configuration cable (LinMot article number 0150-2143) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- X33 Safety Relays: The connector X33 is only present for 1S safety functionality. For the safety relays use a separate +24VDC supply. For a commissioning it is necessary to wire both Ksr+ (X33.4 and X33.8) to +24 VDC and both Ksr- (X33.3 and X33.7) to GND.



# 3.9 Cabling M8000



- X3 Motor: This is the only connector to the motor, it includes the phases and signals.
- X19 RS232: Use the RS232 PC configuration cable (LinMot article number 0150-2143) to connect your PC via RS232. If the PC has no COM port available, use the USB to RS232 converter (LinMot article number 0150-3110).
- X33 Safety Relays: The connector X33 is only present for 1S safety functionality. For the safety relays use a separate +24VDC supply. For a commissioning it is necessary to wire both Ksr+ (X33.4 and X33.8) to +24 VDC and both Ksr- (X33.3 and X33.7) to GND.
- X34 Motor Supply, use 48..72 VDC (between PWR+ and PGND). The Axis 1-4 and 5-8 are supplied separately.
- X36: For a commissioning with the PC it is necessary to wire only the Pin1 (GND) and Pin2 (+24VDC).



#### 3.10 Firmware Download

As the cabling is done correctly now, turn on the drive's power and start up the LinMot-Talk software. Before

using the drive the first time, the firmware has to be downloaded. Therefore press install firmware button be to start the wizard. Choose the file "Firmware\_Build20101126.sct" (or similar) and press "Open". Then the wizard will start and guide through the installation.

In case of installing the firmware over ETHERNET, the service password is required. This is for safety reasons. Especially if there are a lot of drives accessible in the network, it can easily happen to confound them. Thus it is strongly recommended to set a password. By default no password is set. If the password is unknown, the parameters can be set to default by hex switches, see <u>4.1</u>. Installing the firmware over ETHERNET is only possible on drives with a separate Config Ethernet (E1200 and E1400). Installation over RT Ethernet is not possible.

According to the drive type, different interfaces and application software can be selected. The following tables show the compatibility of drive type, interfaces and applications. Legend:

- D: Programmed as default
- X: Can be selected
- P: Planned
- GW: Gateway Software
- 6.3: Until Software Build 6.3
- ML: Motion Link Version

Drivetypes/ Interfaces/ Applications	None	MC Link	CT Interface	LinRS	S	N	DP	EtherCAT	SoE	CiA402	N	PD	PL	sc	٩	LinUDP V1	LinUDP V2	None	EasySteps	EasyStepsX6	MasterSlave	AutoStart	Sinoide
A1100-GP	X	2	0		D			ш	05	0	Ľ.	а.	<u>a</u>	0)	=			D	ш	ш	2	A X	X
C1100-GP	X			x	D													D	x			X	
C1150-DS										D								D	x			х	
C1150-EC								D										D	x			x	
C1150-PD												D						D	x			х	
C1150-PN	-										D							D	x			х	
C1150-SE									D									D	x			х	
C1250-DS										D								D	х				
C1250-EC								D										D	x				
C1250-IP															D	6.3		D	x				
C1250-LU																	D	D	x				
C1250-PD												D						D	x				
C1250-PL													D					D	x				
C1250-PN											D							D	x				
C1250-SC														D				D	x				
C1250-SE									D									D	x				
E1200-GP	X			х	D													D	х		х		
E1230-DP							D											D	X		х		
E1250-DS										D								D	x		x		
E1250-EC								D										D	x		х		
E1250-IP															D	6.3		D	x		x		
E1250-LU																	D	D	x		х		
E1250-PD												D						D	x		х		
E1250-PL													D					D	x		x		
E1250-PN											D							D	x		х		
E1250-SC														D				D	x		х		
E1250-SE									D									D	X		х		
E1400GP V2	х			х	D													D	х		х		
E1430-DP V2							D											D	x		х		
E1450-DS V2										D								D	X		х		
E1450-EC V2								D										D	x		х		
E1450-IP V2															D			D	x		х		
E1450-LU V2	1																D	D	x		х		
E1450-PD V2	1											D						D	x		х		
E1450-PL V2													D					D	x		х		
E1450-PN V2											D							D	x		х		
E1450-SC V2														D				D	x		х		
E1450-SE V2	1								D									D	x		х		



E1400-GP V1	Х			х	D										D	х		Х		
E1430-DP V1	Х			х	х		D								D	х		х		
E1450-EC V1	Х			х	х			D	X						D	х		х		
E1450-IP V1	Х			х	х								D	х	D	х		х		
E1450-PL V1	Х			х	х						D				D	х		х		
E1450-PN V1	Х			х	х					D					D	х		х		
E1450-SC V1	Х			х	х							D			D	х		х		
E1450-SE V1	х			х	х			х	D						D	х		х		
E1100-GP	Х		D	Х	Х	х									D	Х	Х	Х	Х	х
E1100-CO	Х			х	D										D	х		х	х	х
E1100-DN	х			х	х		D								D	х		х	х	х
E1100-RS	Х			D											D	х		х	х	х
E1130-DP	х		х	х	х		D								D	х		х	х	х
B1100-GP	Х			Х	D	Х									D	Х				Х
B1100-VF	D														D	х				
B1100-PP	D															D				
B1100-ML		D													D	х				х
MB1100-ML		D													D	х				х
B8000-ML-GP					GW										D					
(M)B8050_ML-PL											ML				D					
(M)B8050-ML-SC												ML			D					
(M)B8050-ML-EC								EC							D					
(M)B8050-ML-IP													ML		D					
(M)B8050-ML-PN										ML					D					

# 3.11 Login

When successfully finished downloading the firmware, login with \File\Login... or with a double click on Project in the project tree window, then select the appropriate port and press ok. A login info window will appear showing the login progress.

When logged in you will find the following window:

Image: Unnamed, IP: 10.3.10.184 (USER)       0: Switch On1       Interface       0: Operation Enabled         Image: Control Panel       1: Safety Volt. Enable1       Digital Input X4.12       1: Switch On Active         Image: Control Panel       2: Quick Stop1       Forced by Parameter       2: Enable Operation	
<ul> <li>Motion Control SW</li> <li>Strezes</li> <li>Variables</li> <li>Scriezes</li> <li>Goziloscopes</li> <li>Messages</li> <li>Soros</li> <li>Curves</li> <li>Command Table</li> </ul> <ul> <li>Command Table</li> </ul> <ul> <li>Control Wat</li> <li>Control Variables</li> <li>Sectors</li> <li>Control Variables</li> <li>Sectors</li> <li>Control Variables</li> &lt;</ul>	1 1: Motor Short Time Ov
X4.12 - Input X4.12 - Input X4.11 - Input III Command Calegory	[ <mark>M</mark> i ▼ ▶

The Object Inspector window can be dragged away or closed. It can be reopened with F1. By login into a Drive without installing firmware before, it is possible that the firmware on the drive may not have the same version as LinMot-Talk. In this case it is possible to download the correct files to login. This is described in the chapter <u>downloading Olderreleases</u>.

#### 3.12 Downloading Olderreleases

After installing LinMot-Talk, it has the possibility to install the actual version and the version before on a drive. The same is with login on a drive. LinMot-Talk can login on a drive that has the firmware on the actual



version or one version before. Fore example with a LinMot-Talk 6.9 it is possible to login on drives with firmware 6.9 and 6.8.

To login on firmware or install firmware with older version, it is possible to download the files from the internet. To download the older firmware from the internet there are two possibilities, one is the manual downloading the other downloading by login. Manual downloading is recommended when more then one older versions are needed, or for installing a older version on a drive. Downloading by login is recommended when you have a drive with older firmware and you want to login on it.

#### 3.12.1 Manual Downloading

In the Help Menu under Update Functions is the Option Download Older Releases.

#### LinMot-Talk 6.9 File Search Drive Services Options Window Tools Manuals Help Show Object Inspector 🛅 t. 🕽 🗉 🖃 🔛 🞒 🥵 🗓 🚺 💙 🖬 🕸 🖬 🌰 🛦 🍠 🔳 🕲 🕺 🔅 🚺 🤤 Project Home Page Check For Updates Update Functions Check For Software Updates at Program Startup Default LinMot-Talk Settings Download and Show News About LinMot-Talk 6.9 Check For News Updates at Program Startup Check for new Motor Files Download Older Releases Generate Portable App

After click on Download Older Releases the following window is showed.

🔀 OldReleaseWindow	_		×
Release_V3S2_Build20050603Release_V5S0_Build20120710Release_V6S6_Build20180509Release_V3S3_Build20070119Release_V5S1_Build20121010Release_V6S7_Build20180517Release_V3S3_Build20110901Release_V6S0_Build20131216Release_V6S7_Build20180702Release_V3S4_Build20070119Release_V6S1_Build20140509Release_V6S7_Build201802828Release_V3S5_Build20070119Release_V6S2_Build20140915Release_V6S7_Build20180221Release_V3S5_Build20070119Release_V6S3_Build20150416Release_V6S7_Build2018020180201Release_V3S5_Build20071126Release_V6S4_Build20150416Release_V6S7_Build20181206Release_V3S7_Build20071219Release_V6S5_Build20160711Release_V6S7_Build20190311Release_V3S9_Build20080603Release_V6S5_Build20160711Release_V6S8_Build20190315Release_V3S9_Build20090105Release_V6S5_Build20160927Release_V6S8_Build20190517Release_V3S9_Build20090105Release_V6S6_Build20170116Release_V6S8_Build20190820Release_V3S9_Build20090707Release_V6S6_Build20170704Release_V6S6_Build20170704Release_V4S1_Build20100104Release_V6S6_Build20170704Release_V6S6_Build20170704Release_V4S2_Build20110704Release_V6S6_Build20180111Release_V6S6_Build20180111Release_V4S3_Build20110901Release_V6S6_Build20180226			
Black text: This release is not yet on your computer Select A	.II	Unselect Al	I
Grey text: This release is already on your computer, but can be downloaded again. Cancel		ОК	

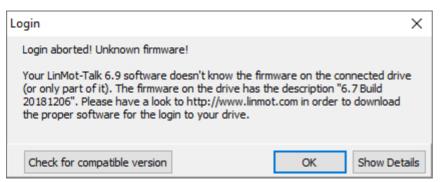
The window shows a list of all version they are possible to download. The versions with the grey text are already installed on the computer. The versions with the black text are not yet on the computer. Select the needed version an click on the OK button. LinMot-Talk will connect to the server and download the selected versions. For this process the computer needs a connection to the internet. For installing the downloaded version on a drive the olderreleaeses folder is on the path C:

\Users\USERNAME\AppData\Local\LinMot\LinMot-Talk X.Z - Build YYYYMMDD\Firmware\OlderReleases.



# 3.12.2 Downloading by login

By login on a drive with a firmware version that is not on the computer yet, the following dialogue will be shown.



By clicking on the "Check for compatible version" button, LinMot-Talk search the correct files on the server and download them. When it finished in the text is written if the download was successful and after clicking the OK button, the LinMot-Talk ask if it should start the login process again.

#### 3.13 Scanning CAN Bus

When one or several drives are linked with CAN bus for configuring, it can be very helpful to scan the CAN bus for linked drives automatically. Thus, it is not necessary to know all node IDs. Under \File\Scanning (with CANusb) a list of the present drives will be displayed:

			Login	- 🗆 🗙
Login		Drive Name	User ID	Password
	1	Y-Axis	USER	
	2	X-Axis	USER	

With just one click the LinMot-Talk software will log in to all drives.



#### 3.14 Scanning Ethernet

When one or several drives are linked with Ethernet for configuring, it is helpful to scan automatically for linked drives. Thus, it is not necessary to know all node IP addresses. Under \File\Scanning (via Ethernet) first the interface has to be selected (network link)

With the radio button Group Number could be activated a scan for a special drive group. The list will only display the drives with the group number, like the number in the text field. In the drives this number is saved in the parameter with the name Net Group and the UPID 0078h.

Choose the Interface	2			×
Interface:				
Broadcom NetLink (1	M) Gigabit Ethernet - 10.3.10.	87		•
Send To:				
All Groups	🔘 Group Number.	0		
			Continue	Cancel

A list of the present drives will be displayed like in the picture below.

With just one click the LinMot-Talk software will log in to all drives. The colored markings have the following meaning:

- **Green**: The drive is ready to log in.
- Grey: You are already logged into this drive.
- Red: Another instance is logged into this drive (other user or other interface).

The default mode for acquiring an IP address is via DHCP. If no servers on the connected network respond, the drive switches to the Ipv4 Link-Local addressing scheme (also known as APIPA on Windows systems). This way the drive automatically assigns itself an address within the range of 169.254.0.1 through 169.254.255.254 (Subnet Mask 255.255.0.0).

Please note that this process can take up to a minute until a valid address is assigned to the drive this way.

tate	IP Address	MACID	Group	Device Name	Device Type	Release Info	User ID	Password
1 📖	10.3.10.22	00:1A:4E:00:10:5C	0	Lagertest1	E1400-GP-QN /1RB	4.4 Build 20120130	USER	
	10.3.10.61	00:1A:4E:00:1A:5C	0	Flo's E1250-SC	E1250-SC-UC/V1RE	4.4 Build 20120130	USER	
	10.3.10.66	00:1A:4E:00:0A:AA	0	KMT Referenzantrieb		4.3 Build 20110901	USER	
	10.3.10.67	00:1A:4E:00:0D:80	0	MotEnd		4.2 Beta 20110211	USER	
- 🍝	10.3.10.82	00:1A:4E:00:05:0C	0	Flo's E1250-PL	E1250-PL-UC/V1RD	4.4 Build 20120130	USER	
🔲 🚝	10.3.10.93	00:1A:4E:00:02:2A	0	MM_E1250_EC_UC	E1250-EC-UC/V1RC	5.0 Beta 20120514	USER	
- 🍝	10.3.10.106	00:1A:4E:00:10:14	0	MM_E1450_SC	E1450-SC-QN /1RB	5.0 Beta 20120514	USER	
	10.3.10.107	00:1A:4E:00:22:2C	0	KHS Teststand	E1400-GP-QN /1RD	5.0 Beta 20120514	USER	
	10.3.10.108	00:1A:4E:00:06:78	0	Flo's E1250-IP	E1250-IP-UC/V1RE	4.4 Build 20120130	USER	
	10.3.10.109	00:1A:4E:00:02:48	0	Ludo Desk	E1200-GP-UC/V1RC	4.4 Build 20120130	USER	
	10.3.10.123	00:1A:4E:00:10:0C	0	Unnamed	E1450-IP-QN /1RB	5.0 Beta 20120514	USER	
🔲 🌉	10.3.10.127	00:1A:4E:00:2B:08	0	Unnamed	E1250-PN-UC/V1RE	5.0 Beta 20120702	USER	
	10.3.10.129	00:1A:4E:00:1B:B8	0	Laser3 - Laser_X	E1250-EC-UC/V1RE	4.4 Build 20120130	USER	
	10.3.10.132	00:1A:4E:00:1B:BA	0	Laser3 - Laser_Z	E1250-EC-UC/V1RE	4.4 Build 20120130	USER	
	10.3.10.137	00:1A:4E:00:02:24	0	MM_E1250_PL_UC	E1250-PL-UC/V1RC	4.4 Build 20120130	USER	
🔲 🛲	10.3.10.143	00:1A:4E:00:22:30	0	QS_TestCtr	E1400-GP-QN /1RD	5.0 Beta 20120514	USER	
- 🍝	10.3.10.179	00:1A:4E:00:10:0A	0	Unnamed	E1400-GP-QN /1RB	4.4 Build 20120130	USER.	
	10.3.10.184	00:1A:4E:00:03:4E	0	Unnamed	E1250-SC-UC/V1RD	5.0 Build 20120710	USER	
- 🍝	10.3.10.186	00:1A:4E:00:10:24	0	Unnamed	E1450-EC-QN /1RB	4.4 Build 20120130	USER	



# 3.15 Motor Wizard

As no motor is defined, the next step is to start the motor setup wizard. Press the button 🖄 and the following window will appear:

	inMot → LinMot-Talk 6.5 Build 20170116 →	Motors 🗸	Ö "Motors" du	rchsuchen	۶
Organisieren 👻 Neu	er Ordner			····	(
∧ ★ Schnellzugriff	Name	Änderungsdatum	Тур	Größe	
Schneizugrin	LinMot Linear Motors	18.01.2017 07:22	Dateiordner		
ConeDrive	LinMot Linear Rotary Motors	18.01.2017 07:22	Dateiordner		
Dieser PC	LinMot Modules	18.01.2017 07:22	Dateiordner		
-	LinMot Rotary Motors	18.01.2017 07:22	Dateiordner		
📰 Bilder 🛄 Desktop 🗸 🗸	Other Motors	18.01.2017 07:22	Dateiordner		
Date	einame:		✓ Actuator Da	ta Files(*.adp )	~

As we want to configure a LinMot Motor we choose "LinMot Linear Motors" and press Open. Then we choose the statorfamily like "PS0x-23x" and then the statorsubfamily like "PS01-23x160x". Select the actuator type you have connected to the drive, then press Open.

· -> - + 📙	« Lin	Not Linear Motors > PS0x-23x > PS01-23x	160x 🗸	ඊ "PS01-23x16	0x" durchsuchen	٩
Organisieren 🔻	Veuer (	Ordner			BE 🔻 🔟	?
🕹 Downloads	^	Name	Änderungsdatum	Тур	Größe	
👌 Musik		PS01-23x160F-XX_V3S1.adp	11.01.2017 11:40	ADP-Datei	102 KB	
Videos		PS01-23x160F-XX_V3S2.adp	11.01.2017 11:41	ADP-Datei	103 KB	
🛖 public (\\share	)	PS01-23x160H-HP-XX_V3S1.adp	11.01.2017 11:40	ADP-Datei	64 KB	
👳 workfolder\$ (\\	la.	PS01-23x160H-HP-XX_V3S2.adp	11.01.2017 11:41	ADP-Datei	65 KB	
. OS (C:)		PS01-23x160-XX_V3S1.adp	11.01.2017 11:40	ADP-Datei	103 KB	
	~	PS01-23x160-XX V3S2.ado	11.01.2017 11:41	ADP-Datei	104 KB	
Dateiname: PS01-23x160F-XX_V3S2.adp		ame: PS01-23x160F-XX_V3S2.adp		~ Actuator Da	ata Files(*.adp )	~
				Öffnen	Abbrechen	

If it is not possible to find the correct file, it is possible to update the motor files. This is described in the chapter <u>update motor files</u>.

#### 3.15.1 Actuator Selection

The following steps will show forms including drawings and descriptive texts. The first step is to define the stator and slider.



 Motor Wizard			1.17.011		_	×
Step 1/9: Actuator Selec	ction					
Actuator Data File:	PS01-37x120	)-XX_V3S3.adg	D	Change Actuator		
Stator:	PS01-37x120-	с	·	~	]	
Slider:		- 540-LC (L: 600mn	o: D: 20mm: Arti	No: 0150-2564)	]	
Jiuei.	The slider can b	e identified by its	s length and the	number of notches on the . 3 Notches = LC).		
	Standard	-HP	-LC	l		
Slider Mounting Direction:	Regular			~		
	the mounting d		o the stator. The	Zero Position) depends on erefore the available stroke	4	
	⇒ —	Force	S SS ZP Notch(es	Stroke		
Devision Marrie - Disartian	-		Notch(es	)	1	
Positive Moving Direction:	Regular			~		
	→ Symbol f	for positive movin	g direction			
Derived Settings	Value			Comment		^
STATOR	PS01-37	x120-C				
Article Number	0150-12					
Stator Length	216 mm					
Stator Mass	740 q					۷
<						>
Help < Back	Next >	Finish	Cancel	]		

The derived settings show information about the complete motor type, article numbers and the most important technical data. The change of the positive moving direction is supported since release 6R7 and only for motors with PnP version V3S2 and higher. Motor with PnP version V3S1 do not work with changed positive moving direction. Be also aware in case of exchange!



# 3.15.2 Drive Settings

The next step is to choose a drive name and if it is possible a regeneration resistor.

Motor Wizard				-	×
Step 2/9: Drive Set	ttings				
Drive Name:	Unname	d			^
<b>Regeneration Resistor</b> Type:	None		~		
Derived Settings		Value	Comment		v



# 3.15.3 Extantion Cable Setup

Longer extension cables will have an effect to the motor's phase resistance. In step 3 can be defined two cable segments.



# 3.15.4 External Position Sensor System

The next hardware setup step is to define an external position sensor system (if present). For E1100 drives can be chosen between none, incremental AB(Z) and analog sine/cosine 1Vpp. For B1100 drives can be chosen between none, incremental AB(Z) and AB encoder simulation.

🔀 Motor Wizard			—		$\times$
Step 4/9: Externa	I Position Sensor System				
External Position 9	Sensor				,
Type:	Incremental ABZ Encoder (RS422)	~			
Count Direction:	Positive	~			
Res <mark>ol</mark> ution r (1/4 Pe	riod Length): 1	um			
	le <sup>r</sup> el				
	Z				
With an additional e	xternal position measuring system the position to be connected to Ext Pos Sens connector of	ning accuracy and the linearity can be improved the drive. In case of a absolute position set	ed. The option	al	
recovery mode will b					
Mode:	None	~			
					•
Derived Settings	Value	Comment			
Help <	Back Next > Finish	Cancel			



## 3.15.5 Feed Forward Parameters

With step 5 the feed forward parameters are set up. Depending on the moving mass, additional load mass, friction and orientation. Under the derived settings the influence can be watched.

Step 5/9: Feed Forward Paramet Mechanical Layout Moving Part of Motor: Slider Orientation Angle (-90°+90°): 0 Moving Mass Slider: 1064	v o			
Moving Part of Motor: Slider Orientation Angle (-90°+90°): 0 Moving Mass	•			
Moving Part of Motor: Slider Orientation Angle (-90°+90°): 0 Moving Mass	•			
Orientation Angle (-90°+90°): 0 Moving Mass	•			
Moving Mass	•			
No. of Concession, Name				
Slider: 1064			<u>+</u>	
blider	g	_	<b></b>	
Additional Load Mass: 500	g			
Friction Forces				
Dry Friction: 2	N			
Viscous Friction: 0	N/(m/s)			
MagSpring (or other constant force)		-90°↓ ↔ +90°↑		
External Constant Force: 0	Ν			
Force Direction: Negati	ve 🗸			
erived Settings Value	2	Comment		 
otal Moving Mass 1564	łg			
Gravitation force in motor direction 0 N				
External Constant Force 0 N				
um of Constant Effective Forces 0 N				>



## 3.15.6 PID Position Controller

With the next and last step the position drive's parameters will be set up:

📉 Motor Wizard					-	×
Step 6/9: PID Po	sition Co	ontroller				
PID Position Co	ntroller S	etting				
P Gain:	2	A/mm	Set To Default Soft	(P=2, D=4, I=0)		
D Gain:	4	A/(m/s)	Set To Default Stiff	(P=5, D=10, I=0)		
I Gain:	0	A/(mm*s)				
D Filter Time:	0	us				
Noise Filter:						
Noise Filter: Dead Band	0.0005	mm	🗹 Enable Noise Filte	r		
Dead Band Beside the feed f drive behavior. F given default set The Noise Filter of	forward par for the mos tings (no ac	ameters (see prev t applications it is p dditional loop tunin I to filter out any n	vious step), the PID controlle	er setup influences the ults with one of the		
Dead Band Beside the feed f drive behavior. F given default set The Noise Filter of	forward par for the mos tings (no ac	ameters (see prev t applications it is p dditional loop tunin I to filter out any n	vious step), the PID controlle possible to achieve good res ig necessary). ioise from the position feedb	er setup influences the ults with one of the		
Dead Band Beside the feed f drive behavior. F given default set The Noise Filter o filter dead band o Derived Settings	forward par for the mos tings (no ac	ameters (see prev t applications it is p dditional loop tunin to filter out any n egative impact on	vious step), the PID controlle possible to achieve good res ig necessary). ioise from the position feedb	er setup influences the ults with one of the back signal. A too wide		
Dead Band Beside the feed f drive behavior. F given default set The Noise Filter of filter dead band of Derived Settings	forward par for the mos tings (no ac	ameters (see prev t applications it is p dditional loop tunin t o filter out any n egative impact on Value	vious step), the PID controlle possible to achieve good res ig necessary). ioise from the position feedb	er setup influences the ults with one of the back signal. A too wide		
Dead Band Beside the feed f drive behavior. F given default set The Noise Filter o filter dead band o	forward par for the mos tings (no ac	ameters (see prev t applications it is p dditional loop tunin t to filter out any n egative impact on Value 2 A/mm	vious step), the PID controlle bossible to achieve good res ig necessary). ioise from the position feedb the drive's performance.	er setup influences the ults with one of the back signal. A too wide		

It is recommendable to start with the default soft settings, because the parameters can be changed any time later on (by restarting the motor wizard or by setting in the parameter tree directly).

With the soft parameter setting, PID values will be quite low such as the motor is low noise and the position is not controlled very stiffly.

The stiff parameter set tends to more noise and more power consumption of the motor, but the position will be controlled harder.

In both settings, the I Gain is set to zero, which means a steady-state deviation from the desired position can occur. When using the I Gain, the position controller may tend to swing.

The Noise Filter option is to reduce the noise from the position feedback sensor at standstill.

For finding the best set of PID parameters, the system has to be optimized iteratively. There is no general way of how to optimize the settings, because different goals can be achieved such as position accuracy, power minimization, noise reduction, ...



## 3.15.7 Homing 1

The next step is to define the homing procedure.

					1000
tep 7/9: Homir	ng l				
Home Position S	iearch Move				
Speed:	0.01	m/s			
Mode:	Mechanica	al Stop Negative Search	~		
	The motor	moves in negative direction ur	ntil a mechanical stop		
	is reached	. This position is assumed to be	e the Home Position.		
Before motion co	mmands can be	executed, the motor must be	homed. Depending on the		
Before motion co selected mode, t	mmands can be he motor search	executed, the motor must be hes a mechanical stop and/or a	homed. Depending on the an electrical switch.		
Before motion co selected mode, t	mmands can be he motor search	executed, the motor must be res a mechanical stop and/or a	homed. Depending on the an electrical switch.		
selected mode, t	mmands can be he motor search	executed, the motor must be nes a mechanical stop and/or a Value	homed. Depending on the an electrical switch. Comment		
selected mode, t	mmands can be he motor search	nes a mechanical stop and/or a	an electrical switch.		
selected mode, t	ommands can be he motor search	nes a mechanical stop and/or a	an electrical switch.		
selected mode, t	ommands can be he motor search	nes a mechanical stop and/or a	an electrical switch.		
Before motion co selected mode, t rived Settings	ommands can be he motor search	nes a mechanical stop and/or a	an electrical switch.		

The most frequently used homing mode is "Mechanical Stop Negative Search". In this case the slider will move with the notch towards the stator's front end (where no cable is). Other modes support homing on home switches, limit switches, indexer inputs or some combinations of

Other modes support homing on home switches, limit switches, indexer inputs or some combinations of those.



## 3.15.8 Homing 2

Step 8 is to define the slider home position. This is for the motor and drive the most important value. It defines at the home position, where the slider is positioned relative to the stator. This defines how far the motor can move in each direction.

📉 Motor Wizard			-0	×
Step 8/9: Homing II				
	nd to Slider End at the Home Po 36 mm A ++++++++++++++++++++++++++++++++++++	osition		^
determine either distance (mechanical stop or swite	10       mm         154       mm         the physical position of the slider related of the slider of the slider related of the slider end is inside the stated of the slider end is inside the state of the slider end is inside the state of the slider end is inside the state of the slider.	nds at the Home Position ue. The other value is		
Derived Settings Slider Home Position	Value 10 mm	Comment Corresponds to distance A		
Help < Back	Next > Finish	Cancel		



## 3.15.9 Homing 3

Motor Wizard										×
Step 9/9: Homing III										
Definition of the Application R	eference System									3
Home Position (HP): -10 mm	154 mm	336 mm 10								
Move to the Initial Position at	the End of the Homi	ing Procedure								
Initial Position (IP): 0 mm		336 mm	c →							
You can define your application spe	cific reference system (	by assigning any	IP	lue to th	ie					
You can define your application spe Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr	values are based on this the motor moves to the he motor has to be hom	by assigning any s system. ne Initial Position.	IP position va . Then it is r	eady to						
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the	values are based on this the motor moves to the he motor has to be hom	by assigning any s system. ne Initial Position.	IP position va . Then it is r	eady to						
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the	values are based on this the motor moves to the he motor has to be hom	by assigning any s system. ne Initial Position.	IP position va . Then it is r	eady to		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr	values are based on this the motor moves to the he motor has to be hom om the Home Position.	by assigning any s system. ne Initial Position. ned on a mechan	IP position va . Then it is r	ready to len the		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr Minimal Position Error Enabled	values are based on this the motor moves to the he motor has to be hom om the Home Position. Minimal Position:	by assigning any s system. net Initial Position. ned on a mechan	IP position va . Then it is r	ready to the the		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr Minimal Position Error Enabled Maximal Position Error Enabled	values are based on this the motor moves to the he motor has to be hom om the Home Position. Minimal Position:	by assigning any s system. net Initial Position. ned on a mechan	IP position va . Then it is r	ready to len the mm mm		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr Minimal Position Error Enabled Maximal Position Error Enabled erived Settings	values are based on this the motor moves to the he motor has to be hom om the Home Position. Minimal Position: Maximal Position:	by assigning any s system. net Initial Position. ned on a mechan	IP position va . Then it is r ical stop, th	ready to len the mm mm		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ fr Minimal Position Error Enabled Maximal Position Error Enabled erived Settings nimal Position (stroke range limit)	values are based on this the motor moves to the he motor has to be hom om the Home Position. Minimal Position: Maximal Position: Value	by assigning any s system. net Initial Position. ned on a mechan	IP position va . Then it is r ical stop, th	ready to len the mm mm		70mm	<= Po	sition <	<= 290m	m)
Home Position. All further position v At the end of the homing procedure execute the motion commands. If the Initial Position value should differ from Minimal Position Error Enabled	values are based on this the motor moves to the he motor has to be hom om the Home Position. Minimal Position: Maximal Position: Value -70 mm	by assigning any s system. net Initial Position. ned on a mechan	IP position va . Then it is r ical stop, th	ready to len the mm mm		70mm	<= Po	sition <	<= 290m	m)

With the last wizard step the user's coordinate system can be defined.

At the end, press finish. If the firmware on the drive is still running, an appropriate message will be shown. All parameters will now being written to the drive. The motor wizard can be run several times, e.g. to setup an external sensor, to change the load setup or to

The motor wizard can be run several times, e.g. to setup an external sensor, to change the load setup or to change the motor type. When rerunning it, at the end will be shown a list of parameters, which will be changed.



## 3.16 Unit System

For LinMot rotary Motors and the rotary part of PR01 motors in the motor wizard it has a special page. This page is to choose the unit system. The unit system is only in the LinMot-Talk active and has no effect to the drive. There are two unit systems. One is a Linear system the position is displayed in 'mm', the other system is a rotary system especially for rotary motors. The position is in this case displayed in ".

In the Page Number 5 Position Feedback, there is one parameter called "1 Revolution". In the Linear unit system, this parameter says how many mm represent one revolution. In the rotary unit system, this parameter says how many ticks (one bit of the position in the motioncontrol software) are a revolution. In both cases, it has two recommended possibility. If the parameter has a multiple of 360 the numbers are well represented. Otherwise if the parameter has a value  $2^n$  or in linear case  $2^n \cdot 100nm$  the position of the motor is on 0 position the same also after an overflow of the position  $(0 \rightarrow 2^{31} \rightarrow -2^{31} \rightarrow 0)$ 

#### Attention:

For LinMot rotary Motors (EC02) it is important, that the value in this parameter is divisible by 4. That means  $x \cdot 4$  or  $x \cdot 4 \cdot 100 nm$ 

For the rotary part of the PR01 motors it is important, that the value in the parameter is divisible by 12. That means  $x \cdot 12$  or  $x \cdot 12 \cdot 100 nm$ 



ep 5/5: Position Fe	edback		 	
Motor Angle to Positio	n Ratio			
Base of Angle Measuring	Sine/Cosine Sensor	~		
1 Revolution =	524288	Ticks:		
Positive Counting Direction	on: Clockwise	~		
External Position Meas	suring System (optional)			
Sensor Type:	No Sensor	~		
Power Up Position Re				
Power Up Position Re Mode:	<b>covery</b> X3 Single Turn Position	~		
Mode:		~		
	X3 Single Turn Position			
Mode: Home Position (HP):	X3 Single Turn Position			
Mode: Home Position (HP): ved Settings	X3 Single Turn Position 0 Value	•		
Mode: Home Position (HP):	X3 Single Turn Position	•		
Mode: Home Position (HP): ved Settings	X3 Single Turn Position 0 Value	•		
Mode: Home Position (HP): ved Settings	X3 Single Turn Position 0 Value	•		



#### 3.17 Update motor files

To update motor files click on "Check for new Motorfiles" in the Help Menu under Update Functions.

👗 LinMot-Talk 6.9					
File Search Drive Services Options Window	Tools Manuals	Help		_	
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🞒 Project			Home Page		
			Update Functions		Check For Updates
			Default LinMot-Talk Settings		Check For Software Updates at Program Startup
			About LinMot-Talk 6.9	Ş	Download and Show News
	l	_			Check For News Updates at Program Startup
					Check for new Motor Files
					Download Older Releases
					Generate Portable App
				_	

#### The following window will be shown.

Motor files update			×
Repository:			
LinMot V Advanced:			
Motors:			
Select the Repository and click on 'Check for Updates', to view the new Motors			
Check for Updates Last update: 20191113 Reset Date Car	icel	Ok	

The last update shows the date of the last update performed on this computer. By clicking the "Check for Updates" button LinMot-Talk looks for the updates since the date of the last updates. All older updates will be ignored, because this updates are handled before. With the button "Reset Date", it is possible to reset this update date and LinMot-Talk will show all updates after clicking on the "Check for Updates" button. After click on the button "Check for Updates" button LinMot-Talk make a list with all new motor files. It is possible to choose the files they will be updated. When a file is not choosen, in a new update process it will not showed because then it is an update before the last update date.



Motor files update	· _ ·		×
Repository:			
LinMot  Advanced:			
Motors:			
Wotors\LinMot Linear Motors\PS0x-23x\PS01-23x80x\PS01-23x80F-HP-XX_V3S3_20191112.adp     Wotors\LinMot Linear Motors\PS0x-23x\PS01-23x80x\PS01-23x80F-HP-XX_V3S3_20171112.adp     Wotors\LinMot Linear Motors\PS0x-23x\PS01-23x80x\PS01-23x80F-HP-XX_V3S3_20161112.adp     All			
Click on the 'Ok' button to download the selected motors.			
Check for Updates Last update: - Reset Date Cane	cel	O	¢

Each motor file has a date on which it was created. With this date it is possible to see how old your motor files are. With the option All, all motor files from the server will be downloaded. This option is normally only possible if the update date has been previously reset.

After choosing the motor files they should be updated, the update will be started by clicking on the Ok button. When the window disappears, the updates are complete.

## 3.17.1 Adding a motor repository

It is possible to add an other source for motor files. This other source can be from a third party supplier. The NTI AG does not check other sources, that means the customer himself is responsible for this source and the parts that LinMot-Talk downloads from this source.

In the motor files update window is a Add Repository button when the advanced check box is checked. After clicking on this button the following window will be shown.



🔀 Add new reposit	ory		-		×
Repository Name:					
URL:					
Username:					
Password:					
Update Date:					
		Cancel		Ok	

To add a repository the following parts are needed:

- **Rpository Name** is the name for selecting this repository in the motor files update window
- URL is the path to the source of the repository, this should be an internet address
- Username is used by LinMot-Talk to login to the repository
- **Password** is used by LinMot-Talk to login to the repository
- Update Date is not used to add a repository but the functionality is described in the <u>chapter update motor</u> <u>files</u>

#### 3.18 Continuous Curve Mode

We want the motor to run a curve cyclically (The easiest, but not so informative way to run the motor would be the VAI 2 Pos Continuous mode).

The drive is set to continuous curve mode by selecting "Continuous Curve" under \Motion Control SW\Motion Interface\Run Mode Selection\ in the parameter tree.

NOTE: For enabling the curve feature on B1100 drives, it is necessary to set an access key.



e <u>S</u> earch <u>D</u> rive S <u>e</u> rvices <u>O</u> ptions <u>W</u> indow <u>T</u> oo 1 🏠 🎏 🔚 🚭 🛞 Unnamed, IP: 10.3.10.184 (	ls <u>M</u> anuals <u>H</u> elp USER) 🚽 ⊳ 🔳 🔶 💵 🌾	<u> </u>		[?]		
Project	Continuous Curve	+	<u> </u>		F	
Control Panel  Parameters  S Motion Control SW  C Motion Configuration  State Machine Setup  C Motion Interface  C Motion Int	Name C <sup>*</sup> Motion Command Interface C <sup>*</sup> Triggered VA-Interpolator C <sup>*</sup> Rise Triggered VAI For/Backward C <sup>*</sup> Triggered Time Curves C <sup>*</sup> Command Table Mode C <sup>*</sup> Triggered Command Table C <sup>*</sup> Position Indexing	Value Off Off Off Off Off Off Off	Raw Data 0001h 0002h 000Dh 0007h 0003h 0000Ch 000Ch 000Qh	UPID 1450h 1450h 1450h 1450h 1450h 1450h 1450h 1450h	Type UInt16 UInt16 UInt16 UInt16 UInt16 UInt16 UInt16	Scale
Run Mode Settings     Run Mode Selection     E Triggered VA-Interpolator Settings     Triggered Curves Settings     E Triggered Command Table Settings     Triggered Command Table Settings     E CAM Mode Settings	C <sup>+</sup> Analog C <sup>+</sup> Triggered Analog C <sup>+</sup> CAM Mode C <sup>+</sup> Triggered CAM Curve C <sup>+</sup> VAI 2 Pos Continuous C <sup>+</sup> Continuous Curve	Off Off Off Off Off Off	0004h 000Bh 0006h 0008h 0008h 0009h	1450h 1450h 1450h 1450h 1450h 1450h	UInt16 UInt16 UInt16 UInt16 UInt16 UInt16	
<ul> <li>Triggered CAM Curves Settings</li> <li>Pos Indexing Settings</li> <li>Paralog Mode Settings</li> <li>VAI 2 Pos Cont Settings</li> <li>VAI 2 Pos Cont Settings</li> <li>Predef VAI netrolator</li> <li>Predef VA Interpolator</li> <li>Protect VA Interpolator</li> <li>Time Curve Settings</li> <li>Time Curve Settings</li> <li>Master Encoder CAM</li> <li>Postion Controller</li> <li>Current Controller</li> <li>Encose Warnings</li> <li>Protected Technology Functions</li> <li>Motor Info Block</li> </ul>	C <sup>®</sup> PC Motion Command Interface	Off	0010h	1450h	UInt16	
Variables     Scilloscopes     Messages     Errors     Curves     Command Table	4					

The second parameter to be set is to define which curve has to be run. Set the parameter "Curve ID" to 1 under \Motion Control SW\Motion Interface\Time Curve Settings\.



e <u>Search</u> <u>Drive</u> S <u>ervices</u> <u>Options</u> <u>W</u> indow	<u>T</u> ools <u>M</u> anuals <u>H</u> elp					
) 🗙 江   😂 🔚 🎒   🐉   Unnamed, IP: 10.3.10	.184 (USER) 🔻 ⊳ 📕 🔶 🔢	🍬 👒 🖬 🚳	📴 🏚 🔺 🗇 🗉	2		
Project	📅 <sup>1</sup>		<ul> <li>Image: A start of the start of</li></ul>	🗙 😢 🛛 DI	EF	
Image: Unnamed, IP: 10.3.10.184 (USER) Control Panel	Name	Value	Raw Data	UPID	Туре	Scale
Parameters	Curve ID	1	0001h	14C8h	UInt16	1
▷ - 🖃 OS	Curve Offset	0 mm	00000000h	14C9h	SInt32	0.0001 mr
🖉 🖃 Motion Control SW	<sup>L</sup> Curve Amplitude Scale	100 %	03E8h	14CAh	SInt16	0.1 %
▷ E Drive Configuration	<sup>•</sup> CurveTime Scale	100 %	2710h	14CBh	SInt16	0.01 %
Motor Configuration						
⊳ 🧮 State Machine Setup						
▲						
▷ 🖃 Run Mode Settings						
16 Bit Interface Scaling     Predef VA Interpolator						
Predef VA Interpolator						
Time Curve Settings						
Master Encoder CAM						
▷						
E Current Controller						
Errors & Warnings						
Protected Technology Functions						
▷						
▷ - E sercos						
Variables						
Oscilloscopes						
- 🕼 Messages						
Errors						
- Durves						
E Command Table						

Before running the curve, it is advisable to define the curve we want to run.

## 3.19 Defining Curves

Curves can be easily defined with the curve wizard. For this example we will define two sine curve forms over a stroke of 50mm out and in with different speeds, which will be joined together.

Now, step by step: Open the curve tool by clicking the "Show Curves" button 🗐 in the tool button bar. Then press the "New Curve" button 🛅 to start the curve wizard.

Curve Type Selection			×
Select Curve Type:	Position vs.	Time	~
Linear Position		Indeduction of the Providence	e
	< Back	Next >	Cancel



As we want to define a curve in position vs. time mode we can keep the default selection and press the next button.

Curve ID (1100):	2	•	
Curve Name:	SineOut		
Setpoint Calculation Wizard:	Sine		~
Curve Length:	1000	ms	
Start Point:	0	mm	
End Point:	50	mm	

In this mask, we will set the curve ID to 2 (we will have the merged curve with ID 1 at the end) and as name we set e.g. "SineOut". The end point is placed at 50mm. With "Next" the wizard will show some curve data:

Based on the Curve Setting	s Data the wizard has	calculated addition
curve information:		
Stroke:	50	mm
Peak Velocity:	0.07854	m/s
Peak Acceleration:	0.24674	m/s^2

The next and last mask proposes a number curve setpoints. It is advisable to accept this proposal.



lumber of Setpoints			×
The proposed number	of setpoints is	501.	
Number of setpoints:	501		
	< Back	Finish	Cancel

with "Finish" the first curve is defined. The curve will be displayed as follows:

LinMot-Talk 5.0						- • ×
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Project				Edit Window		
Image: Unnamed, IP: 10.3.10.184 (USER) Control Panel	1 🗗 🖬 🗮					
▲ E Parameters	Name	ID	Туре	Setpoint Wizard	Length	No. of Setpoints
▷ (Ξ) OS ▲ (Ξ) Motion Control SW	🔀 SineOut	2	Position vs. Time	Sine	1000 ms	501
Messages	$\times$ $\land$ $\land$	*		5 10 11 101		
Errors	🛛 🗍 🎍 Upload fro	- Drive		ownload Window		
Command Table		1.50				N. (0.1.1)
	Name	U	Туре	Setpoint Wizard	Length	No. of Setpoints

We will now define curve going back. So we start the curve wizard again and define under curve settings the following:



Curve ID (1100)	3	•
Curve Name:	Sineln	
Setpoint Calculation Wizard:	Sine	~
Curve Length:	500	ms
Start Point:	50	mm
End Point:	0	mm

Set curve ID to 3, Curve Name to "SineIn", Curve Length to 500ms, Start Point to 50mm and End Point to 0mm. Click twice "Next" and then "Finish".

Now we have defined the two curve segments and will join them together. Select the two curves

LinMot-Talk 5.0						
<u>File Search Drive Services Options Window Too</u>	ls <u>M</u> anuals <u>H</u>	lelp				
🛅 🛍 🏳 🔁 🔚 🎒 🔀 🗍 🛄 Unnamed, IP: 10.3.10.184 (	USER) 🔻 Þ	<b>•</b>	🔢 餐   💸 🖪	🔇 🛛 🔔 🔺 🗇 🔳	2	
Project				Edit Window		
Image: Arrow Technology (IP: 10.3.10.184 (USER)) Image: Arrow Technology (IP: 10.3.10.184 (USER))	12 2 2 1	*				
▲ La Parameters	Name	ID	Туре	Setpoint Wizard	Length	No. of Setpoints
▷ - E OS ▷ - E Motion Control SW	🔽 SineOut	2	Position vs. Time	Sine	1000 ms	501
	🔀 Sineln	3	Position vs. Time	Sine	1000 ms	501
⊳ 🥰 Variables						
▷ 📴 Oscilloscopes 🕼 Messages						
Command Table						
	* <b>v</b> ^	~				
	•• • •	•				
				Download Window		
	🔲 🖣 Upload f	rom Drive	🚽 🛛 🖆 Download ir	nto Drive		
	Name	ID	Туре	Setpoint Wizard	Length	No. of Setpoints
	U					

then press the "Join Curves" button 🔛 The curve settings mask for the joined curve appears:



Curve Settings		×
Curve ID (1100)	1	
Curve Name:	SineOutIn	
Setpoint Calculation Wizard:	None	~ ~
Curve Length:	1500 r	ns
	< Back Next :	Cancel

We will set the curve name to "SineOutIn" and make sure the curve ID is 1.

The curve length is proposed as the sum of the curve segment times.

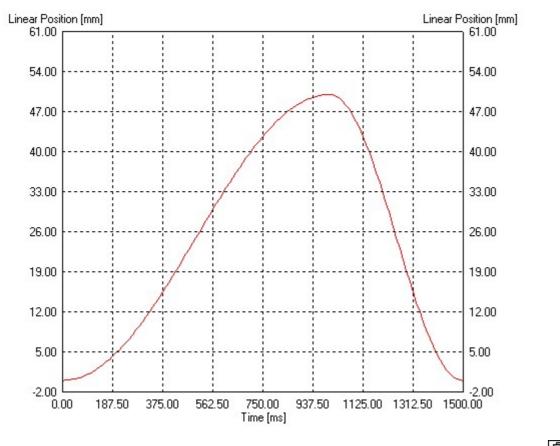
Please consider the maximal number of curves and curve points indicated in chapter 2.6.

Press "Next" and "Finish". The curve for the continuous curve mode is now defined and has, according to the parameter settings, the curve ID 1. As we want to download the curves to the drive we select all the curves in the edit window and move them to the download window.

le <u>S</u> earch <u>D</u> rive S <u>e</u> rvices <u>O</u> ptions <u>W</u> indow 1 1 1 🛱 🖶 🎒 🛞 Unnamed, IP: 10.3.1	10.184 (USER) 🔹 🕨		🔢 🌾 🔖 🗄	🕺 🖸 🛕 📥 🗇 🗉	2	
Project				Edit Window		
• III Unnamed, IP: 10.3.10.184 (USER)	12 🐨 🖬 🛓	ž				
▲ 🕒 Parameters	Name	ID	Туре	Setpoint Wizard	Length	No. of Setpoints
▶ Ē OS	SineOut	2	Position vs. Time	Sine	1000 ms	501
▷ E Motion Control SW	Sinebat	3	Position vs. Time	Sine	1000 ms	501
⊳ - E sercos ⊳ - X Variables	SineOutIn	1	Position vs. Time	None	2000 ms	1001
Errors						
- 🗇 Curves	* ~ ^ *	×				
	* ~ ^ *	×		Download Window		
	V · · · · · · · · · · · · · · · · · · ·		e 🗍 💆 🖥 Download i		üurves have chan	nged! Please download.
			e ⊈ÖDownload i Type		ùurves have chan Length	iged! Please download. No. of Setpoints
	🛛 🛱 🖢 Upload fr	om Driv		into Drive		
	Name	om Driv ID	Туре	into Drive 🛛 🔟 🚹 C Setpoint Wizard	Length	No. of Setpoints
	Name SineOut	om Driv ID 2	Type Position vs. Time	into Drive Drive Drive C Setpoint Wizard Sine	Length 1000 ms	No. of Setpoints

When double click the "SineOutIn" Curve the joined curve is shown:





Now the curves must be downloaded to the drive. Therefore press the "Show Curves" button and then the "Download Curves into Drive" button **Download into Controller**. Then a warning comes up which has to be confirmed and the progress window will display the actions taken to download the curves.

## 3.20 Control Status

As we have defined now all parameters and curves, we will let the motor running. For this time, we will take over the interface control from the PC. So we are interface-independent. Switch to the control panel with the button  $\mathbb{N}$ , then press the start button  $\mathbb{N}$ (starting the drive's firmware) and wait until the control status panel is updated and looks the following:



L □    Command Table     Command Table     Command Table	d. IP: 10.3.10.184 (LISER)  Control Co	Coperation Enable     Coperation Enable     Coperation Enable     Coperation Enable     Coperation     Cop	Status           vd.         0		Connection Status Firmware Status: Motor Status Op. State: Not Actual Position: Demand Position: Demand Position: Demand Position: Demand Position: Demand Position:	Running Switched Off Teady to Switch On Not Homed 0.00 mm Motor not homed 0.00 A 2 24.17 V
	IO Panel           rEnable Manual Override           rCharles Value           rCharles Value           X4.12 - Input           X4.12 - Input           X4.13 - Input           X4.14 - Input           X4.15 - Input           X4.16 - Input           X4.17 - Input           X4.18 - Input           X4.19 - Input	Count Nibble (	gory: x: No Operation	-10 mm -1 mm		▼ ▼][2] Int. Value (Hes)
	X4.4 - Input	Header 0	000xh: No 0			min. value (mex) 0000h
				Rea	d Command	Send Command

Now we will fetch the control over the "Switch On" and the "Home" flags.

	Control	>>
	0: Switch On 1: Volkage Enat 2: /Quick Stop., 3: Enable Opera 4: /Abort. 5: /Freeze 6: Go To Positic 7: Eror Acknow 8: Jog Move 10: Reserved 11: Home 12: Clearance C 13: Go To Inital 14: Reserved 15: Phase Sear	le1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0
	Control Word:	003Fh
L	Override Value	
L	Enable Manual C	Iverride

Now turn off and turn on again the "Switch On" flag, this is because of the auto start prevention. At this time, the motor will be powered and position controlled at the actual position. Set the "Home" flag and the motor will initialize against the inner hard stop. When the motor stands still, clear the "Home" flag and the motor will run the curve continuously.

Detailed information about the MC software's state diagram can be found in the MC software manual.

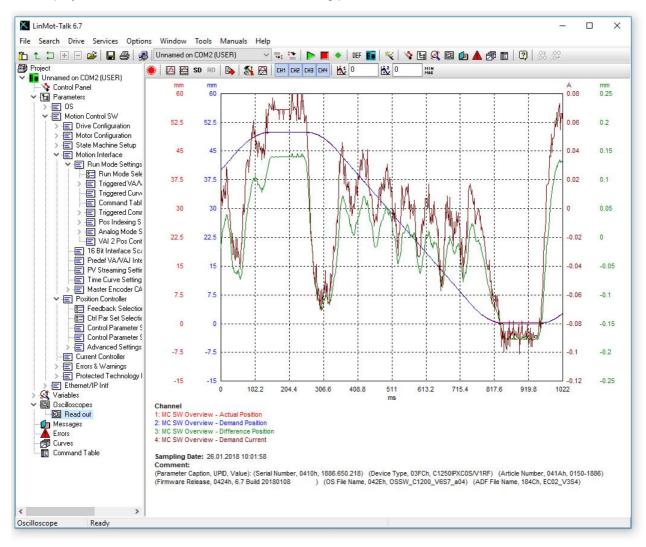
#### 3.21 Oscilloscope

The oscilloscope is a very useful tool for tuning the motor. The LinMot-Talk software has defined a default oscilloscope, which samples the actual position, demand position, position difference and demand current.

When clicking on the "Show Oscilloscope" button III, the focus will be set to the default oscilloscope. We



could start the oscilloscope now with the start button . The recorded data will be read out from the drive and displayed. That will look somehow like the following picture.



Possibly it is necessary to press button (fit view).

Tuning the system would be started at this point. One possibility is by restarting the Motor Wizard and changing the load or control parameter, another one is to change the parameters directly in the parameter tree.

To change the oscilloscope settings use the button



## 3.21.1 Oscilloscope Settings

eneral Trigger Advance	d		
cquisition Mode: Single	Shot	1	
ecording Time: 1000	ms	1	
🗹 Channel 1	Is math channel	Channel 5	Is math channel
Group	Variable	Group	Variable
MC SW Overview	<ul> <li>Actual Position</li> </ul>	MC SW Overview	V Demand Velocity
Channel 2	Is math channel	Channel 6	Is math channel
Group	Variable	Group	Variable
MC SW Overview	✓ Demand Position	MC SW Overview	<ul> <li>Actual Velocity Filtered</li> </ul>
Channel 3	Is math channel	Channel 7	Is math channel
Group	Variable	Group	Variable
MC SW Overview	V Difference Position	MC SW Overview	V Demand Acceleration
🗹 Channel 4	Is math channel	Channel 8	Is math channel
Group	Variable	Group	Variable
MC SW Overview	✓ Demand Current	MC SW Overview	V Difference Velocity

By clicking on the Oscilloscope Button 🚳, the following window will open.

In the Oscilloscope Settings window are three sheets: General, Trigger and Advanced.

General: Here the Oscilloscope channels will be configured. The Channel X check box activates/ deactivates the channel. In the two combo boxes the variable is selected that will be recorded in this channel. The check box Is math channel activates/ deactivates the math channel function for this channel, see below.

Trigger: Here the trigger will be configured. There is the possibility to configure two trigger A and B. Trigger A and B could be logical linked with and or or. For each trigger the trigger condition Advanced:

## 3.21.1.1 General

Here the Oscilloscope channels will be configured.

- Acquisition Mode: Choose the possibility of single shot or continuous recording
- **Recording Time:** Is the time over one oscilloscope shot.
- Channel X check box: activates / deactivates the channel
- **Is math channel:** Defines the channel as a math channel, this gives the possibility to use mathematical functions on other channels.
- Group: Defines the variable group for the recorded variable in this channel
- Variable: Defines the variable recorded in this channel

If the function "Is math channel" for one channel is selected, there are three combo boxes for this channel. In the first box the mathematical function will be selected. The function of the other two boxes is depending on the mathematical function of the math channel. The list below describes the mathematical functions.

- Addition: The channel shows the sum of the two channels they are selected in the two following combo boxes
- **Subtraction:** The channel shows the difference between the two channels selected in the following combo boxes
- **Product:** The channel shows the product of the two channels selected in the following combo boxes
- **Ghost:** The channel shows a channel that is recoded in a other oscilloscope. The first following combo box defines the oscilloscope of the showed channel, the second the showed channel.

#### 3.21.1.2 Trigger

On this sheet it is possible to define two trigger conditions. Group and Variable define the trigger variable, for each condition it is possible to define a different trigger variable. Under Event it is possible to choose the trigger event for the trigger condition.

Events:

- **Rising edge:** Triggers on a rising edge, that goes from below the value to the value or higher than the value.
- Falling edge: Triggers on a falling edge, that goes from up the value to the value or lower than the value.
- Any edge: Triggers on a edge, that goes to the value or through the value.
- Greater than: Triggers when the variable is greater than the value.
- Less than: Triggers when the variable is smaller than the value.
- Greater or equal: Triggers when the variable is greater then or equal to the value.
- Less or equal: Triggers when the variable is smaller then or equal to the value.
- Equal: Triggers when the variable is equal to the value.
- Not Equal: Triggers when the variable is not equal to the value.
- **Change:** Triggers when the variable changes the value. This trigger does not depend on the value that is defined in the oscilloscope settings.
- **Difference greater or equal:** Triggers if the elevation between two neighboring measuring points, of the variable, is greater than or equal to the value / ms.
- **Difference less or equal:** Triggers if the elevation between two neighboring measuring points, of the variable, is smaller than or equal to the value / ms.
- **ABS difference greater or equal:** Triggers if the absolute elevation between two neighboring measuring points, of the variable, is greater than or equal to the value / ms.
- **ABS difference smaller or equal:** Triggers if the absolute elevation between two neighboring measuring points, of the variable, is smaller than or equal to the value / ms.
- Masked Bits = False: Triggers if all set bits in the value, are false in the variable.
- Masked Bits = True: Triggers if all set bits in the value, are true in the variable.

## 3.21.1.3 Advanced

In advanced settings it is possible to define:

- Pretrigger: is defined in % of the recording time.
- Delay: Is the delay after trigger event when the recording starts. It is defined in absolute time.
- Set recording time: Attention changes in this section have influence to the recording time on the general sheet.
- Sample period: define the time between two neighboring measure points.
- **Number of samples:** defines the number of measure points per channel. The maximum of number of samples depending on the number and size of the measured variables. The maximum of number of samples with the current settings is showed behind the edit box with the number of samples
- **Preview function:** It draws an estimated graph during the measurement process. This function works only when the recording time is bigger then 10 s.

## 3.21.2 Display Settings

To change the display settings in the oscilloscope there are several possibilities. One is with the Fit-Buttons

and 🛱. For both buttons it is possible to push the numbers on the Keyboard on the same time of clicking on the button. When some numbers are pushed, the functionality of the buttons has only influence on



the channel with the same numbers. For example when somebody clicks on the Fit-Button and push on the same time number 2 and 3, only channel 2 and 3 will be fitted.

Fit view looks that every channel is showed optimized in the window of the oscilloscope. Every point of a channel is in the window, but it uses the most part of the window.

Fit view (same unit same fit) 🔛 makes the same like fit view but the channels with the same units have the same scale. That means all points of all channels with the same unit are in the window and have the same scale.

An other possibility to scale the view is the mousewheel. With it, the Keyboard has also influence. The number make the same like by the fit-view buttons and when the 'X' is pushed then it scales only in X-direction. The same is with the 'Y' then it scales only in the Y-direction. By scaling without all channels, it scales also only in Y-direction.

The third possibility is with the Display Settings window 2. In this window it is possible to change the scale, offset and colour of each channel. It is possible to change the time scale. With the radio buttons Offset/Division and Min/Max it is possible to change the minimal and maximal values of the axes, instead of offset and scale.

This button Changes how the curves are represented, only with a line, only with the measure points

or with line and measure points

In the tab print it is possible to add some UPIDs. This UPIDs will be written with their values in the comment when the oscilloscope window will be printed. With this function it could given out some information, for example some control parameters.

## 3.22 Continuous Two Point Mode

The easiest way to run the motor continuously is to set the VAI 2 Pos Continuous mode. In this mode the motor moves between the two positions Trig Fall and Trig Rise. The time the motor waits at the two positions is defined under "VAI 2 Pos Cont Settings".

LinMot-Talk 5.0 File Search Drive Services Options Window Tools Manuals Help 🛅 🕇 ⊅ 🕼 🚑 🖉 Unnamed, IP: 10.3.10.184 (USER) 🕒 📂 🔳 🔅 🔢 🖄 🖼 🖉 🔯 🖉 😰 ø HI 2 Pos Continuous 🗸 🗙 🕲 🛛 DEF Unnamed, IP: 10.3.10.184 (USER). Control Panel
 Parameters
 Perover Section 2015
 Parameters
 Perover Section 2015
 Perover Section 2 Name Raw Data UPID Value Туре Scale O<sup>L</sup> Motion Command Interface O<sup>L</sup> Triggered VA-Interpolator Off 0001h 1450h UInt16 C<sup>+</sup> Triggered VA-Interpolator C<sup>+</sup> Rise Triggered VAI For/Backward... Off 0002h 1450h UInt16 Off 000Dh 1450h UInt16 C<sup>1</sup> Triggered Time Curves C<sup>1</sup> Command Table Mode UInt16 UInt16 nя 00072 14506 Off 1450h C Triggered Command Table C Position Indexing Off 000Ch 1450h UInt16 ▲ 🔄 Motion Interface Пff 00045 1450h Llint16 🖌 🖃 Run Mode Settings Provide Settings
 Provide Settings
 Provide Settings
 Provide Settings
 Command Table Settings
 Command Table Settings
 CAM Mode Settings
 Provide CAM Curves Settings
 Provide CAM Curves Settings
 Provide CAM Curves Settings
 Pos Indexing Settings
 Pos Indexing Settings
 Provide VA Interpolator
 Provide VA Interpolator C<sup>1</sup> Analog C<sup>1</sup> Triggered Analog 1450h 1450h UInt16 UInt16 Off Off 0004 C<sup>b</sup> Triggered Ar C<sup>b</sup> CAM Mode 000Bł Off 0006h 1450h UInt16 C<sup>+</sup>Triggered CAM Curve ◆ VAI 2 Pos Continuous ПĤ 00086 1450h Llint1E UInt16 450h Of Continuous Curve 0005h 1450h UInt16 C<sup>+</sup>PC Motion Command Interface **D**H 00104 1450h UInt16 Master Encoder CAM Haster Encoder CAM
 Sotion Controller
 Current Controller
 Current Controller
 Errors & Warnings
 Protected Technology Functions
 E Motor Info Block Variables
 Oscilloscope: Messages - 🛕 Errors - 🚮 Curves -- 🏗 Command Table Errors Path:\\Motion Control SW\Motion Interface\Run Mode Settings\Run Mode Selection\VAI 2 Pos Continuo

The minimal settings for this mode are shown next. First the mode has to be set:

And then the positions have to be set under "Trig Fall Config\Position" and "Trig Rise Config\Position":



LinMot-Talk 5.0						- 0 ×	
	ols <u>M</u> anuals <u>H</u> elp			a			
는 1는 江   😅 🔲 🎒   🛞   Unnamed, IP: 10.3.10.184 🗿 Project		📱 📉 💊 🖬 🕵 🛙					
Manamed, IP: 10.3.10.184 (USER)	🗂 10 mm			🗸 🗶 🕑 DEF			
Control Panel	Name	Value	Raw Data	UPID	Туре	Scale	
Parameters	Position	10 mm	000186A0h	145Ah	SInt32	0.0001 mm	
▷ · E OS	Max. Speed	0.1 m/s	000186A0h	145Bh	SInt32	1E-6 m/s	
Image: A state of the state	Acceleration	1 m/s^2	000186A0h	145Ch	SInt32	1E-5 m/s^	
Motor Configuration	Deceleration	1 m/s^2	000186A0h	145Dh	SInt32	1E-5 m/s′	
State Machine Setup							
A 🔄 Motion Interface							
🖉 🖃 Run Mode Settings							
🔤 Run Mode Selection							
a 📰 Triggered VA-Interpolator Settings							
Trig Fall Config							
► Trig Rise Config							
Triggered Curves Settings     Command Table Settings							
Triggered Command Table Settings							
CAM Mode Settings							
Triggered CAM Curves Settings							
Pos Indexing Settings							
Analog Mode Settings							
VAI 2 Pos Cont Settings							
- 🖅 16 Bit Interface Scaling							
Predef VA Interpolator							
PV Streaming Settings							
Time Curve Settings							
Aaster Encoder CAM     D      E Position Controller							
Current Controller							
▷ Errors & Warnings							
First at warnings     First at warnings     First at warnings							
▶ 🗐 Motor Info Block							
▷ 🖅 sercos							
Variables							
<ul> <li>Oscilloscopes</li> </ul>							
Default							
Messages							
Errors							
- 👘 Curves 			12				
	•	III					

This is all we have to configure. The speed, acceleration and deceleration can also be defined at this place in the parameter tree. The motor can now be started the same way as described under 3.18.

#### 3.23 Export Configuration

When the drive settings are done, it is strongly recommended to save the complete configuration. This can

be done under File à Export... or with by clicking on  $\square$ . First it will open the Save Config window. This window is to choose the drives, from them the config should be saved. There are the possibilities to select one drive or a group of drives. With out the Advanced Options the LinMot-Talk will read the empty (still not read) variables before it saves the configuration.

🔀 Save Confi	9				$\times$
Choose one or m	ore drives to save their	r configuration.			
Select All	Name	Port			
	Unnamed	COM4	F		
	Unnamed	ETH 1	92.168.1.29		
					_
		Advanced Options	Cancel	Continue	8 1

The selection Advanced Options opens the tree to select only parts of a drive. It can be selected for each drive different parts. The active drive is market green. To change the active drive only click on the new drive that should be active.



🔀 Save Confi	g		- 🗆 X
Choose one or m	ore drives to save their configuration.		
Select All	Name	Port	Export All     Second All     Arrow Report All
	Unnamed Unnamed	COM2 COM4	OS     OS     Notion Control SW     X Ethernet/IP Intf     Variables
			<ul> <li>Scilloscope</li> <li>Default</li> <li>Messages</li> <li>Messages List</li> <li>Errors</li> <li>Errors List</li> <li>Curves</li> <li>Command Table</li> <li>Command Table</li> </ul>
	Advanced Options	Read Variables	Cancel Continue

After that the file name dialog will open to choose the filename and the folder where the file should be saved. It is recommended to export all parts of a drive. For a configuration recovery, it is necessary to select the parameters, curves and command table.

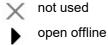
In case of a support request, it is recommended to save the configuration without the advanced options and all drives should be selected. Because then the supporters have all informations from the drive that they need.

#### 3.24 Import Configuration

A configuration can be imported with File à Import... or with the button 🖆. First it opens a dialog window.

Source Configur Port:	ation(s) Name:	Drive Type:	Target Drive Port:	Drive Type:			
:OM4	Unnamed	C1250IPXC1S/V1RF	open offline	~		^	V X Export All
ETH 192.168.1.29	Unnamed	C1250IPXC0S/V1RE	import to ETH 192.168.1.29	✓ C1250IPXC0S/V:	1RE Blink		Parameters     X OS
	E1250-IP-UC	E1250-IP-UC	import to COM4	<ul> <li>✓ C1250IPXC15/V:</li> </ul>	IRF Blink		K Motion Control SW     X Ethernet/IP Intf     Socioloscope     K Default     K Messages     K Messages List     X Errors     X Errors List     X Command Table     X Command Table

In this window, each configuration in the file has a line, in the combobox a drive could be selected. In this drive the configuration will be loaded. There are four possibilities of imports. They have the followed Symbols.



import to a drive with the same drivetype like the drivetype in the config

import to a drive with another drivetype then the drivetype in the config. In this case, it can have some inconsistent parametertrees!



Two possibilities are always possible, not used and open offline. Not used means with this configuration nothing happens. Open offline means for this configuration an offline device will be created and the configuration will load in it. Each drive, on it the LinMot-Talk is logged in, could only selected in one line at the time.

In the green part on the right side of the window, it is possible to select the parts from the configuration, they will be imported to the drive. For each configuration, it has an only tree of parts. The shown tree is from the configuration that is green too. It is possible to import only some specific parts (e.g. curves or command table).

When opening a configuration to a drive, a compatibility list of the parameter trees will be shown. Then the selection of the importable parts will be shown.

## 3.25 Open Offline Configuration

A configuration can also be opened when no drive is present. Under File à Login/Open offline...

ogin	
Configuration Interface:	O RS232 O CAN O ETHERNET O OFFLINE
Configuration File:	0
C:\Program Files\LINMOT\	LinTalk11 Browse
Login ID: user	
Password:	
Scan Blink	OK Cancel

This is a very helpful feature for supporting problems.

#### 3.26 Create Offline Configuration

For any supported drive a configuration can be created offline. Choose the menu item File\Create Offline...

Create Cor	figuration — 🛛	×
Drive Family:	E11xx	~
Drive Type:	E1100-GP	~
Interface:	CT IO Interface	~
Application:	None	~
	ОК	Cancel



The above window will be shown. Select the drive family first, then select the drive type, then choose the interface and application software. The software parts, which can be selected, are the same as when installing firmware to the drive. When created the configuration, the parameters will have their default values. The configuration can then be altered and saved the normal way.

#### 3.27 Compare Parameters

Under Drive  $\rightarrow$  Compare Parameters, there is a function, which allows to compare the settings between different drives.

Driv	e 1:	E1400-GP-QN-1S Ver.2 offline (USER)	V Drive 2:	E1450-EC-QN-0S Ver.2 offline (USER)	~
	OS Parame Only writab	ter 🗹 MC Parameter ble Parameter	Interface Parameter		
۹r.	UPID	Path	Name	Value 1	Value2
1	03E8h	OS\Drive Name	Drive Name	E1400-GP-ON-1S Ver.2	E1450-EC-ON-0S Ver.2
,	2000h	CANopen Interface Dis-/Enable	Dis-/Enable	Enable	UPID does not exist
	2010h	CANopen Interface Baud Rate Baud	Baud Rate Source Select	By Hex Switch S1	UPID does not exist
	2011h	CANopen Interface Baud Rate Baud	Baud Rate Parameter Definition	500 kBit/s [3]	UPID does not exist
	2012h	CANopen Interface Baud Rate Advan	BTR Value	22345	UPID does not exist
	2013h	CANopen Interface Wode-ID Wode-ID	Node-ID Source Select	By Hex Switch S2	UPID does not exist
7	2014h	CANopen Interface Wode-ID Wode-ID	Node-ID Parameter Value	63	UPID does not exist
3	2100h	CANopen Interface PDO Configuratio	TxPDO 1 Enable	Enable	UPID does not exist
9	2101h	CANopen Interface PDO Configuratio	Transmission Type	1	UPID does not exist
10	2180h	CANopen Interface PDO Configuratio	No.of SYNC msgs between transmissions	1	UPID does not exist
11	2102h	CANopen Interface PDO Configuratio	Inhibit Time	10000us(Scale: 1.0000E+002, Offset	UPID does not exist(Scale: 1.0000E+
12	2103h	CANopen Interface PDO Configuratio	Event Time	100ms	UPID does not exist
13	2110h	CANopen Interface PDO Configuratio	TxPDO 2 Enable	Enable	UPID does not exist
14	2111h	CANopen Interface\PDO Configuratio	Transmission Type	1	UPID does not exist
15	2181h	CANopen Interface PDO Configuratio	No.of SYNC msgs between transmissions	1	UPID does not exist
16	2112h	CANopen Interface PDO Configuratio	Inhibit Time	10000us(Scale: 1.0000E+002, Offset	UPID does not exist(Scale: 1.0000E+
17	2113h	CANopen Interface PDO Configuratio	Event Time	100ms	UPID does not exist
18	2120h	CANopen Interface PDO Configuratio	TxPDO 3 Enable	Enable	UPID does not exist
19	2121h	CANopen Interface PDO Configuratio	Transmission Type	1	UPID does not exist
20	2182h	CANopen Interface PDO Configuratio	No.of SYNC msgs between transmissions	1	UPID does not exist
21	2122h	CANopen Interface PDO Configuratio	Inhibit Time	10000us(Scale: 1.0000E+002, Offset	UPID does not exist(Scale: 1.0000E+
77	2123h	CANopen Interface PDO Configuratio	Event Time	100ms	LIPID does not exist

This useful function works with online and offline configurations. There are different setups available, such as firmware instances (OS, MC, INTF and APPL) or parameter types (read only or writable). The parameter list can be saved as a \*.pvl file (comma separated text file).



# 4 Trouble shooting

#### 4.1 Setting all Parameters to Default Values

The following procedures to default the parameters are possible without LinMot-Talk. With LinMot-Talk it is possible to use the DEF button. This button is described in chapter <u>Tool button bar</u>.

#### E1100, E1200, E1400, B8050, MB8050, C1100-GP and C1250

All parameters of the SG3 and SG5 drives can be set to their default values without the use of the LinMot-Talk. This can be done according these steps:

- 1. Power off the drive.
- 2. Set the two ID switches to 0xFF.
- 3. Power on the drive, the Error and Warn LEDs will blink alternately at ~4Hz.
- 4. Set the two ID switches to 0x00.
- 5. Wait until the Warn and EN LEDs will flash together at ~2Hz.
- 6. Power off and on again.

#### B1100

On SG4 drives an image of the default parameters will be stored during the software installation. This image can be reloaded to the operating parameters. The procedure is the following:

- 1. Set the parameter with UPID 0x6085 to 0x0001.
- 2. Power off the drive.
- 3. Power on the drive.

The value of the parameter with UPID 0x6085 will be automatically cleared to 0x0000.

#### A1100

All parameters set to their default values without the use of the LinMot-Talk. This can be done according these steps:

- 1. Power of the drive.
- 2. Set the DIP switch S5.2 to on.
- 3. Power on the drive, the Error and Warn LEDs will blink alternately at ~4Hz.
- 4. Set the DIP switch S5.2 to off.
- 5. Wait until the Warn and EN LEDs will flash together at ~2Hz.
- 6. Power off and on again.

## 4.2 Interface does not run

If the interface software (DeviceNet, CANopen, Profibus, LinRS) does not communicate there may be several reasons:

- Specific Interface Software not installed
- Switch S3.4 "Interface" on drive's bottom side must be set to "On". (In case of LinRS, this switch must be set to off when configuring over RS232, and set to on when running the LinRS interface).
- Parameter with UPID 2008h set to disable.
- Baud Rate and Node ID selection not correctly set (Parameters and/or ID switches on drive's front)

## 4.3 Stopping Firmware

When the same link is used for configuration purposes and from the interface (e.g. RS232 link and LinRS interface) it may not be possible to login with the LinMot-Talk software. In some cases, it should be possible to log in, e.g. to download new firmware.

On E1100 drives, the interface switch S3.4 can be set to off and after a power up the interface software should be deactivated and the configuration link should be free. If this does not help, or you are working with a B1100 drive, there is a script under File -> Open -> StopFirmware.sct, which keeps trying to stop the drives firmware while it is powered on. After a power up, within the first 2 seconds the interface can be prevented from starting.



#### 4.4 Communication debug Window

To see the communication between the LinMot-Talk and the Drives, there is a debug window. In the menu, Tools – RSTelk Debug Window, it opens the debug window.

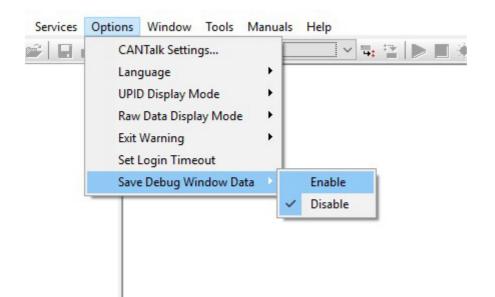
Optio	ons Window	Tools Manua	ls Help		
₽ ⊜	🛃 Unnam	LinRS Test	Tool	1	> 📕 🔶 🛛 DEF 🖠
		CANTalk I	Manager	C C	9 ±1
<b>8</b>	Name	RSTalk De	bug Window		
	State Machine	Main State	8		
	State Machine	Sub State	206		

The debug window looks like in the picture below. To see the communication, it is necessary to check the checkbox "Enable Debug Mode".

X Debug Window								×
Save Show/Hide Status Request	Clear	Go to Top	Go to Bottom		🗹 Enable De	bug Mod	e	
FF FF FF E5 FF FF FF AE FF FF FF C4 FF FF FF BF FF F								
FF FF B7 FF FF FF B7 FF FF FF AC FF FF FF CA FF FF F FF C2 FF FF FF AE FF FF	F B7 FF FF	FF AE FF F	F FF B2 FF FF FF	BF FF FF FF B7 I	FF FF FF B7	FF FF F	FAAF	FFF
[0130] [ 1356.108] - COM4 OUT: 30 58 3B 07 88 84								
[0230] [ 1356.149] - COM4 IN: 30 00 B7 FF FF FF A3 FF	FF FF 99 F	F FF FF BF	FF FF FF C4 FF I	FF FF B3 FF FF FF	98 FF FF FF	BA FF	FF FF	B7
FF FF FF B0 FF FF FF B0 FF FF FF B4 FF FF B4 FF F	FF FF AA FF	FF FF B7 F	F FF FF BE FF FF	FF BO FF FF FF /	A3 FF FF FF	C4 FF F	FFFA	3 FF
FF FF B7 FF FF FF BC FF FF FF 95 FF FF FF A3 FF FF F	F C1 FF FF	FF A6 FF FI	F FF BC FF FF FF	B8 FF FF FF 92 F	F FF FF AA F	F FF FF	F B7 F	F FF
FF BA FF FF FF B7 FF FF FF								
[0188] ( 1356.173) - COM4 OUT: 88 12 5E 1B 5F 1B 60	18 62 18 8	A 1B 9A 1E	8 8 1 8 8 C 1 8 8 F	1B 8D 1B 99 1B	8E 1B AF 1E	90 1B	91 18	92
1 B 93 1 B 98 1 B 9B 1 B 94 1 B 95 1 B 96 1 B 8E 1 C 8F 1 C 1 C A7 1 C A5 1 C A8 1 C	, ap ic an i	C 91 TC 92	10 93 10 89 10	85 IC CU IC CI I		U UZ I	ւսյլ	U A4
[0288] [ 1356.229] - COM4 IN: 88 00 08 CE 08 CE 08 FI	D FF FF FF (	10 00 00 00			00 08 02 00	00.00	nn nn	00.10
0B 00 00 1C 0B 00 00 F5 FD FF FF E4 F4 FF FF AA FF F	FF FF AA FF	FF FF B6 F	F FF FF 00 00 00	00 00 00 00 00 00 A	A FF 00 00 0	0 00 01	00 00	0010
						0 00 00	,	,
[0130] [ 1356.256] - COM4 OUT: 30 DC 3B 07 88 84								
[0230] ( 1356.308) - COM4 IN: 30 00 92 FF FF FF B4 FF								
FF FF B0 FF FF FF A1 FF FF FF B2 FF FF FF AA FF FF F								
FF AE FF FF FF AE FF FF FF BE FF FF B7 FF FF FF 9	2 FF FF FF	99 FF FF F	F 99 FF FF FF CF	FF FF FF B0 FF F	F FF BE FF I	FFFC	4 FF F	F FF
A6 FF FF FF A1 FF FF FF								
[0130] ( 1356.330) - COM4 OUT: 30 60 3C 07 88 84						-		<b>D</b> 7
[0230] ( 1356.372) - COM4 IN: 30 00 B7 FF FF FF AA FF FF FF FF B0 FF FF FF A6 FF FF B7 FF FF FF B7 FF FF B7 FF F	- FF FF B/ F					AFF		B/
FF FF A6 FF FF FF B4 FF FF FF AA FF FF FF AA FF FF FF								
FF B7 FF FF FF B7 FF FF FF		1 0011 11	IT AS IT IT IT	AATT IT IT DE IT	ITTT DAT		0711	
[0130] [ 1356.390] - COM4 OUT: 30 E4 3C 07 88 84								
[0230] ( 1356.436] - COM4 IN: 30 00 92 FF FF FF AA FF	FF FF C5 F	F FF FF A1	FF FF FF AA FF F	F FF CF FF FF FF	B7 FF FF FF	AA FF	FF FF	B7 FF
FF FF AA FF FF FF B2 FF FF FF B7 FF FF FF B7 FF FF FF FF								
FF B7 FF FF FF B7 FF FF FF AA FF FF FF 99 FF FF FF A	A FF FF FF I	37 FF FF FI	F BC FF FF FF BO	FF FF FF B7 FF F	F FF AA FF I	FF FF B	7 FF F	FFF
B7 FF FF FF C2 FF FF FF								
[0188] ( 1356.462) - COM4 OUT: 88 12 5E 1B 5F 1B 60								
1B 93 1B 98 1B 9B 1B 94 1B 95 1B 96 1B 8E 1C 8F 1C	C 96 1C 90 1	C 91 1C 92	1C 93 1C 89 1C	85 1C CO 1C C1 1	C 86 1C 88 1	C C2 1	C C 3 1	C A4
1C A7 1C A5 1C A8 1C					00 00 00 00	00.00	00.00	00.10
[0288] [ 1356.532] - COM4 IN: 88 00 08 CE 08 CE 08 FI 0B 00 00 1C 0B 00 00 F5 FD FF FF E4 F4 FF FF AA FF F		10 00 00 00 FF FF 87 F	E EE EE OO OO UU I				00 00 1 00 00	0010
					MII 00 00 0	0 00 00	,	, 00
[0130] [ 1356.583] - COM4 OUT: 30 68 3D 07 88 84			00 00 00 00 00 00 00 00 00 00 00 00 00					

In the menu, Options – Save Debug Window Data, it is possible to enable the automatic save of the debug window.





If this is enabled, it is not necessary to have the debug window active. The data will be saved in files with the path: "C:\Users\username\AppData\Local\LinMot\LinMot-Talk6.6-BuildXXXXXXX\Communication". The LinMot-Talk saves this data in 10 files. It saves the data cyclic and when it begins with a new file it overwrites the oldest one. Every time when the LinMot-Talk will be restarted this option is disabled.



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