

DriveManager

Program help



Engineering Tool

Configuration, commissioning, service and diagnostics for all drive controller families



Description of the functionality and operation of DriveManager 5

ID No.: 0842.05B.3-02

Information valid as of: 06.2019

Valid as of DriveManager Version 5.12.x

The German version is the original version of this documentation.

Legal information

Subject to technical change without notice.

This Program help has been prepared based on DIN EN 82079-1. The content was compiled with the greatest care and attention and reflects the latest information available to us.

We should nevertheless point out that this document cannot always be updated in line with ongoing technical developments in our products.

Information and specifications may be subject to change at any time. For information on the latest version please visit www.lti-motion.com.

Copyright ©

The entire contents of this documentation, especially the texts, photos and graphics it contains, are protected by copyright. The copyright is owned by LTI Motion GmbH unless specifically marked otherwise.



Legal information

Table of contents

Le	egal information	3
Та	able of contents	
1	General	6
	1.1. Target group	¢
	1.2 Requirements	C
	1.3 Pictograms	. C
	1.4 Exclusion of liability	7
	1.5 Applicable documents	. 7
	1.6 Support	
2	Safety	g
	2.1 Overview	. 9
	2.2 For your own safety	. 9
	2.3 Safety information and warnings	. 9
	2.4 Responsibility	10
~	The Liele Custom	
3	The Help System	.11
	3.1 Overview	. 11
	3.2 Help window / Help browser	. 12
	3.3 F2 Parameter Help	. 14
4	Installation	.16
_		
5	The user interface	.17
	5.1 General user interface information	17
	5.2 The default desktop	17
	5.3 Customizing the user interface/desktop	. 18
	5.4 Saving and loading a desktop	. 20
	5.5 The menu bar and toolbars	. 2′

	5.5.1 Showing/hiding toolbars	. 21
	5.5.2 An overview of the standard bar	. 21
	5.5.3 Overview of the basic operations of the active device	. 22
	5.5.4 Overview of the quick access bar for the individual subject areas of the active device	.22
	5.6 The workspace: Graphic and list views	. 23
	5.7 User-defined parameter list	.25
	5.8 User level (access restrictions)	. 26
	5.9 Password	. 27
	5.10 Online/offline mode	. 28
	5.11 Options / Options window	. 29
	5.11.1 Project options	. 29
	5.11.2 Program start and end	29
	5.11.3 International settings / language settings	. 29
	5.11.4 Display / Visualization options	30
	5.11.5 Cyclic operations (modifications to the refresh/update rates)	. 30
	5.11.6 Directories	. 30
	5.11.7 Directories > Documents	31
	5.11.8 Project data maintenance	31
	5.11.9 E-mail support	. 31
	5.11.10 Advanced functions	. 32
	5.11.11 User authorizations	. 33
	5.12 Actual value display (cockpit)	34
	5.13 Messages	35
	5.14 History of parameter changes in the device	37
	5.15 Macro recorder	38
	5.16 Object search	. 40
	5.17 Invalid user input	41
	5.18 Blinking code	. 42
	5.19 Printing documents	. 42
6	Projects	45
Ĵ	6 1 Project tree / Project window	45
	6.2 Creating a new project	47
	6.2.1 Create a new project when the program starts	47
	6.2.2 Creating a new project from the desktop	49
	6.3 Opening a project	50

6.4 Saving a project	
6.5 Deleting a project	
6.6 Freeze and reactivate project	
6.7 Project archive	
6.8 Send project	
6.9 Functions for all devices in the project	55
7 Manual mode window	
8 Email function	
9 Drive status	61
9.1 Device status window (Device status)	61
9.2 Faults/Alarms/Warnings	62
9.3 Error messages/Error display	63
10 Device settings	64
10.1 Save/Load/Transfer device settings	
10.1.1 General	64
10.1.2 Save current device settings in file	
10.1.3 Transfer device setting from file to device	67
10.1.4 Load data from axis and save to file	
10.1.5 Copy data from a file to the axis	68
10.1.6 Create device commissioning file	
10.1.7 Load device commissioning file	
10.2 Printing the device setting	
10.3 Compare data sets and settings	71
11 Digital oscilloscope/digital scope	73
11.1 Scope settings	
11.1.1 Basic functions of the digital oscilloscope	
11.1.2 Operating the digital oscilloscope	
11.1.3 The channel selection	
11.1.4 The trigger settings	
11.1.5 The time setting	
11.1.6 Options	

51	11.1.7 Start recording	
51	11.2 Scope recording	
52	11.2.1 Toolbar for editing oscilloscope recordings	
53	11.2.2 Saving a recording	
54	11.2.3 Loading an oscilloscope recording	83
55	11.2.4 Cut, Copy, Paste and Save	
	11.2.5 Labelling a scope recording	
56	11.2.6 Print an oscilloscope recording	
	11.2.7 Visual signal setting / Curve display (signal properties)	85
58	11.2.8 The measurement tool	85
	11.2.9 Mathematical functions	
61	11.2.10 Container functions	
61	12 Load firmware	03
62		
63	13 Serial commissioning	
64	13.1 Introduction	
64	13.2 Firmware package	
64	13.3 Device commissioning file	
65	13.4 Project commissioning file	
67	13.5 Transfer error	102
68	11 Plug in concent	103
68		
69	14.1 Introduction to the plug-in concept	
70	14.2 Installing device packages from the hot-plug folder	104
70	14.3 Package Manager (PAM)	
71	14.4 Overview of active plug-ins	
73	15 Initial Commissioning wizard	110
73	16 Index	440
73		



Table of contents

1 General

The product DVD for LTI Motion GmbH contains the complete documentation for the respective product series. The documentation of a product series includes Operation Manual (hardware description), Device help (software description) and other User manuals (e.g. field bus description) and Specification. They are available in PDF format.

1.1 Target group

Dear user,

This documentation is an integral part of the device and contains important information on operation and service. It is aimed at everyone who performs mounting, set-up, commissioning and service tasks on the product.

1.2 Requirements

Requirements for using LTI Motion GmbH:

- The documentation for the devices must be legible, accessible at all times and kept for the product's entire service life.
- The user must read and understand the device documentation.
- Qualification: To avoid bodily injury and property damage, only qualified personnel with electrical training may work with/on the device.
- Required skills and knowledge:
- national accident prevention rules (e.g. DGUV V3 in Germany)
- How to set up, install, commission and operate the device

Work related to other specialised areas, such as transportation, storage and disposal must be performed exclusively by appropriately trained personnel.



1.3 Pictograms

The pictograms used in this Program help have the following meaning for the user:



• Useful information and special notes.



• Reference to applicable documents.

6

1.4 Exclusion of liability

Compliance with the documentation for the devices of LTI Motion GmbH is a prerequisite for:

- safe operation and
- attaining the performance characteristics and product characteristics described.

LTI Motion GmbH accepts no liability for personal injury, material damage or financial losses arising from disregard of the documentation.

1.5 Applicable documents

Fi

All of the further applicable documents for this device can be found on our website:

www.lti-motion.com at

ServoOne Single-axis system

ServoOne Multi-Axis System

ServoOne junior

ServoOne CM

1.6 Support

Address:	LTI Motion GmbH
	Gewerbestrasse 5-9
	35633 Lahnau

Our Helpline helps you quickly and expertly if you have any technical questions concerning project planning for your machine or commissioning your device.

The Helpline can be reached by email or telephone:

Service hours:	Mon–Fri: 8 am–5 pm (CET)
Email:	helpline@lti-motion.com
Phone:	+49 6441 966-180
Internet:	www.lti-motion.com



NOTE

 For detailed information on our services, please visit our website www.lti-motion.com ► Service ► Tailored Service Offers [direct link].







2 Safety

2.1 Overview

Our devices are designed and built with the latest technology and comply with all recognized safety rules and standards. Nevertheless, there are potential hazards that may arise during their use. In this chapter:

- We provide information regarding the residual risks and hazards posed by our devices when they are used as intended.
- We warn you about foreseeable misuse of our devices.
- We point out that it is necessary to exercise due care and caution and go over measures designed to minimize risk.

2.2 For your own safety



NOTE

When installing and commissioning your device, you must observe the documentation for the relevant device family!

NOTE Please

2 Safety

Please also observe the safety information and warnings in the respective applicable operation manual, especially when commissioning the drive!

NOTE



Pay attention to special safety information and warnings which are presented here in the document directly before a specific activity is described and which warn the user of a specific hazard!

Our devices are fast and safe to operate. For your own safety and to ensure reliable operation of your machine, take note of the following:

Step Action

Precautions to avoid injury and damage to property

1. Ensure there is no possibility of bodily injury or damage to the machine when testing and commissioning the device.

2.3 Safety information and warnings

Our devices may pose certain hazards. Therefore, always observe the following safety information and warnings.

WARNING!	Risk of injury posed by uncontrolled rotation!
	Improper conduct can lead to serious injury or death. Before commissioning motors with a feather key at the
	being ejected if this is not already prevented by drive elements such as pulleys, couplings, etc.

CAUTION!	Your system/motor may be damaged if put into operation in an uncontrolled or inappropriate manner.	
	 Improper conduct can cause damage to your system / machine. Before the "Start" step, make absolutely sure that a valid setpoint has been entered, as the configured setpoint will be immediately transmitted to the motor after the motor control function starts, which may result in the motor accelerating unexpectedly. 	

CAUTION!	Damage to the device as a result of incorrect operation!
	 Failure to exercise caution or follow proper working procedures may result in damage to the device. The mains voltage for the power supply must not be switched on until after the available mains voltage setting has been configured in the device firmware and the device is restarted (in the event that the mains voltage or the switche has been configured).
	voltage of the switching frequency has been changed).

2.4 Responsibility

Electronic devices are not fail-safe. The company setting up and/or operating a complete machine or system is responsible:

- For ensuring that the motor will be brought to a safe state if the device fails.
- For the safety of persons and machinery.
- For proper functional capability of the complete machine.
- For the risk assessment of the complete machine or system acc. to DIN EN ISO 12100:2011 and EN ISO 13849-1.

Observe the topic "Electrical equipment of machines" in EN 60204-1:2006 "Safety of machinery".

The safety requirements defined there to be met by electrical machinery are intended to ensure personal safety and the safety of machinery or systems.

The emergency-stop function (to EN 60204-1:2006) shuts down the power supply of a machine, which leads to uncontrolled rundown of the drives. In order to prevent hazards, check whether the following will be required:

- To keep individual drives running.
- To initiate certain safety procedures.

 To provide an emergency-stop function (emergency-stop function: movement stopped by "switching off the electrical power supply" or STO Safe Torque Off).

3 The Help System

3.1 Overview

The help feature in the DriveManager 5 is divided into several areas and also offers further opportunities for the user to obtain information on the system, the device or on the parameters.

The following three areas can be found in the main menu under the "Help" menu item:



Program Help:

This opens the help feature which explains the program, or the user interface itself, including the structure, the menus, the windows and the functions involved in operating it.

Device Help:

This Help offers the operator all the information on the device, the device family, software functions, parameters, etc.

Information about:

Here, general information on the DriveManager 5 can be found. An overview of all installed plug-ins with the version shown can be found under Details.

Context sensitive help

In nearly all areas in which it is possible to open a menu window using the right mouse button, the context sensitive help menus can be found.

-	Open	
≣	Open as list view	
	Export	•
	Import	•
≝	Specials	×
0	Help	
	Online	

This opens the correct Help for the respective topic.

Direct information on the parameter properties (F2 Parameter help)

Detailed information on the respective parameter can be found using F2 Parameter help directly (see Parameter help).



3 The Help System

3 The Help System

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

3.2 Help window / Help browser

When DriveManager 5 Program help is opened, the help window opens in the workspace.

When the device help is started, however, a selection window appears first in which the desired device and the language must be selected. After this, the available types of help for this device are displayed.

Device	High performance angle axis drive with integrated functional safety (SIL 3) for central DC-link-voltage
--------	---

Fig. 3.1: Pre-selection window for opening the correct device help

Cin Drive settings 🕜 Help "ServoOne-Help" (en)						÷			
Content	Content > Power stage > Power stage setting								
E- Content									
? Title page	Navigation: P	ower stage ►Power	stage setting						
Document information	- anguton.		olugo oolung						
Change history	D	- 4 44							
General information	Powers	Power stage settings							
? Safety									
🕫 🛄 Initial commissioning		Mains voltage	2-4001 40(2) 2-400 1	(
Power stage			Nata: Calented mains will b	man is	el affre en start af déue anti-	puoris			
? Power stage setting	0.00		Note: Selected mains will b	be activate	d after restart of drive only.				
	ĬĬĬĬ								
Encoder		Switching frequency 8kHz(3) = 8kHz		z switching fraguency					
E-D Control	Drive		orthe(o) - orthe announing	g nequene	, .				
Motion profile	Drive	Online derating of	OFF(0) = Function disable	d					
Inputs/Outputs settings		switching frequency							
Limitations and Thresholds									
Alams and warnings	AC 3ph	a	1.1						
Technology antion (X8)		Characteristics of p	ower stage:						
Device status	I (M)	Dated average of a surger		c	٨				
Manual mode		Nated Current of power	stage		A				
Drive description		Undervoltage at		210	Vdc				
Contact		Power stage enable fro	m	260	Vdc				
		Overvoltage at		685	Vdc				
Sontent		-							
💫 Index		Brake chopper switche	d on at	650	Vdc				
h Search		Note: Update of charac	teristics only after drive-reset (or motor ca	ontrol enable.				
	20								

Fig. 3.2: The help window with navigation pane and help pane (device help)

Searching for a help topic

If the help is not opened via a context-sensitive source directly from a topic, but manually instead, the desired search result can be found using three different options in the navigation pane.

- 1. Searching in the contents tree
- 2. Searching via the index
- 3. Searching using the search window

The order of these three navigation pane items can be changed if needed and it is also possible to hide items.



Fig. 3.3: Customizing the navigation pane options

Content		Index	Search
Content C	E	Pockard prover frastree Pockard prover frastree Active play frast Resource Active play frast Resource Active play frastree Active play frastree Active play frastree Active play Administration Base sampling time Base active down functions Base active down functions Comparing data sats Comparing data sats Comparing the moltispace Comparing the moltispace Contrainer functions Comparing the moltispace Contrainer functions Comparing the moltispace Contrainer functions Comparing the moltispace Decision sarch Decision Decision Dock Do	Settings a Abbitdungen und Beschreibungen in Abbitdungen und Beschreibungen in Abbrevation able able to download the firmware the control mus about About > Accessing the Help system About > Costip About > Toottip about Ploottip about Ploottip about Ploottip about Ploottip about residual risks and dangers posed
Device settings	-		
Sontent		Content	Scontent
🔦 Index		🖏 Index	🔦 Index
AA Search		AA Search	A Search
and second		III contra	
	*	*	×
	- A		

Fig. 3.4: The contents, index and search windows in help

DriveManager 5 as a separate help browser

When help is used frequently, it is useful to employ DriveManager 5 as a separate help browser. To do so, a second instance of DriveManager 5 must be opened. Here, after starting the desired help, all of the windows except the help window can be closed. The result is that the help is then available to the operator in its own Windows pane of any desired size in its own Windows task. This makes it possible to toggle quickly between the help and the DriveManager 5 itself via the Windows task toggling feature.



3 The Help System



Fig. 3.5: DriveManager 5 as a help browser in a separate Windows pane

3.3 F2 Parameter Help

In order to provide the user with comprehensive information on each parameter, DriveManager 5 offers the Parameter Help. This can be opened by clicking on a parameter field in the desired dialog box and then pressing the F2 key. A window opens containing the parameter properties with all of the information which concerns the respective parameter.

Parameter proper	ties E										
	3057[2] - MCon (Avis 1>Encoder->Basic settings->3057-ENC_CH_Sel->[2] MCon) Avis 1: Encoder channel select for speed or position control										
Object ID(s) ✦	Object ID(s)										
Description:											
select moto	r encoder (field oriented control)										
Setting des 0 (CH1) = N 1 (CH2) = Ir 2 (CH3) = H 3 (EC1) = U 4 (EC2) = U 5 (EC3) = U 6 (CH4) = S	cription: fulti encoder interface inperface DSL interface on motor connector se EtherCAT encoder 1 se EtherCAT encoder 2 se EtherCAT encoder 3 ensortess control ~ ~										
Interactive (no Suitable for pri- - Part of the dat Data type: uint	o l euitable for work offine) poese data channel (PDO-access) a set (Drive) 16										
Range											
Minimum:	CH1										
Maximum:	CH4										
Factory setting:	CH1										
Access levels											
Read level:	Observer										
Write level:	Local Administrator										
Attributes NoDeviceReset MultiAxisPara ProfileConform FireReadEvent FirstAxisPara RealTimeEffective FireWriteEvent PDO_Readable AsapEffective HasBackupMemory PDO_Writeable Interactive											
 Data Se Cursor sensitiv 	e display										

Fig. 3.6: Information window with the parameter properties

Device Help: The Device Help can be opened directly from the parameter properties window and it then shows the appropriate explanation for this topic.

Export: The "Export" button can be used to generate and display a text file with the contents of the parameter properties. This can then be saved and processed further.

Help: This opens the Program help

Cursor sensitive display: When this function is enabled, simply moving the mouse over the parameter immediately refreshes the display of the parameter properties for this parameter.

Tooltip display for parameters with a change field

With some parameters, the parameter number is not displayed directly. When the mouse is moved over the input field, the system displays a tooltip (a small pop-up information window) containing the parameter number, the name and a brief explanation; see the figure.

Project -	- 4 X	Drive settings Mains voltage adaption
🕅 🔹 🗄 🗙 Online 🏢 🗮 💫 🐴 🌏		Back Adaption of mains vo 0 425[0] - CON GridVoltageNom
in 📥 192.168.39.6	*	Nominal grid voltage
		`
Drive Settings		Nominal mains voltage
Initial Commissioning		(u = same as mains voltage)
Power stage		
AC drives		
DC drives		
Power failure regulation		
Low voltage DC supply		
👜 🖏 Motor		

Fig. 3.7: Parameter tooltip function

3 The Help System

4 Installation

A detailed description concerning the installation of DriveManager 5 can be found in the installation manual.





5 The user interface

5.1 General user interface information

High degree of flexibility and customization by the user

During the development of the user interface, careful attention was given to ensuring that every user has the ability to adapt it to exactly suit their own needs because of the wide array of operator requirements. The arrangement and size of the individual windows, the menu bars and the general option settings can be configured completely at will.

The user interface philosophy

Many parameters and functions can be reached in various ways using different options. This has led to the development of very different approaches to working with and operating the user interface. For example, some users work without using any project windows whatsoever, instead using only menus and icons and by switching the "active device" while others use the project tree exclusively enabling them to access the desired parameter field or window of the desired device with a single click.

5.2 The default desktop

When DriveManager 5 is started, a predefined user interface opens with all its toolbars and windows. Depending on the display and window size a well as the resolution, some of the window content is displayed only in tabs at the side which can be opened.

The defined default desktop can be modified to suit the requirements. All three toolbars can be shown or hidden as desired using the main menu under **Extras > Customize > Toolbars**.

It is possible to create, save and later load several user interfaces. If things get out of hand, the default view can be restored at any time in the main menu under **Active** device > Load standard desktop.

Views of the default desktop, dependent on the window size





Overview of the menu/toolbars, windows and workspaces



5.3 Customizing the user interface/desktop

The user interface of the DriveManager 5 can easily be customized to suit one's needs and the working conditions.

All windows can be positioned anywhere or can be anchored at the right edge of the screen as tabs. A customized desktop can be saved and thereby becomes part of the project.

The various dialog boxes that are hidden can be opened in a number of ways, for example, via the quick launch bar in the main menu under **>View** or else under **>Window**. It first appears at the side of the screen and can be positioned anywhere on the user interface using **"Docking Views"–Technology**. Clicking and holding the respective toolbar with the mouse and moving it makes the window become the focus and it is indicated by means of a blue field. Now it can be navigated to the central arrow cross or to an individual docking arrow. Anchoring takes place when the mouse button is released.

Moving and anchoring a window



Additional modification options for the window



All windows can be anchored, hidden and detached once again.

The small black arrow key represents a menu with the following window options:

- Floating: The window is detached from the anchor at the side and can be moved at will. The colour of the toolbar changes from grey to blue when the window is the focus.
- **Dock:** This item becomes available with a click in the title bar of a freely moveable window using the right mouse button:



- Auto Hide: The window is no longer shown on the active user interface and is instead shown only as a tab. It can be highlighted once again as needed using the tab, the quick launch bar or the main menu.
- Hide/Close: The window is closed and if needed, must be opened again via the quick launch bar, the main menu or the project tree.



5 The user interface

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

The function **"Auto Hide"** minimizes the window to a tab at the edge of the screen. Clicking on the tab with the cursor opens the window again (depending on the type of anchor, the needle may be displayed rotated by 90°).

5.4 Saving and loading a desktop

After customizing a desktop individually, it can be saved and loaded again later. The following icons are available in the upper standard bar.



Load an existing desktop

The settings must be saved so that they can be called up again at a later point in time.

Moreover, in the main menu under **Extras > Customize**, there is another item for these two menu items which allows the user to make their own user interface (desktop) be the default user interface.



5.5 The menu bar and toolbars

The menu bar and toolbars are dependent on the topic and are divided into four different areas:

- The main menu
- The standard bar (general functions, independent of the device)
- The basic operations of the active device
- The quick access bar (subject area bar): Access to the individual subject areas of the active device



The quick access bar currently contains 17 icons of the respective subject areas. Depending on the window width, only some of these are visible, while the others are hidden in a fold-out menu as shown above.

5.5.1 Showing/hiding toolbars

All three toolbars can be shown or hidden as desired using the main menu under **Extras > Customize > Toolbars**.

5.5.2 An overview of the standard bar

The following functions are available both offline and in online mode.

lcon	Function/Description
	Open the project wizard
•	Selection: New project, new scope plot container or new smart PLC sequence program
~	Selection: Open project, open digital scope record, open device settings, open message logger, open smart PLC sequence program and open file
	Save the file currently open in the workspace
9	Save all open files
Ð	Print the workspace
Ū	Add a device to the project
™	Remove a device from the project
ß	Compare settings (devices or files)
Lokaler Administrator	Selection of the user level (authorized persons: observer, setter, local and global administrators, internal to device)
	Save desktop layout

Table 5.1: The standard bar functions



lcon	Function/Description
-	Open or load desktop layout (with selection menu)
X	Expand/restore document view
0	Start Program help

 Table 5.1:
 The standard bar functions (continue)

5.5.3 Overview of the basic operations of the active device

lcon	Function/Description
り・	Undo last changes of selected page
C -	Repeat last undone changes
Go online	Establish or disconnect communication in the project
Actual device: 6_Mein Senior •	Display the active device and possibility to switch the active device

Table 5.2: Basic operations of the active device

lcon	Function/Description
∎⇒⊡	Save current device settings in file
	Transfer device settings from file to device
	Save device setting persistently in device (RAM to ROM)
	Open the digital oscilloscope (work with the digital scope)
∏ ⇒ \$	Create device commissioning file
	Load device commissioning file

Table 5.2: Basic operations of the active device (continue)

5.5.4 Overview of the quick access bar for the individual subject areas of the active device

If the quick access bar or the subject area bar is currently shown, it is possible to open one or more of the 17 subject areas of the active device.



When several subject areas are open, some of them will be displayed as a separate window or a tab above the central workspace; see figure. A click on the arrow allows all open subject areas to be displayed together.



Documents and/or display windows can be closed via **Main menu > Window**. All open subject areas can also be selected there as menu items.

Windows	Help

- Close document windows
- Close docked windows
- Close all windows
- 🐷 🛛 Digital Scope
- Device status
- 1 Initial Commissioning
- Cockpit
- S Motor
 - Manual mode

5.6 The workspace: Graphic and list views

There are two different display modes for the workspace. For most subject areas, the user is able to switch between the graphic view (also known as the dialog box view) and the list view. The view can be switched by right-clicking in the workspace and choosing "Switch to graphic view or List view." Dialog boxes are not present for all subject areas. In this case, only the list view is shown.

Graphical view of the workspace





List view of the workspace

	ld	Sub id	Name	Value	Unit	Introduction				
	-		Digital filter							
			Advanced speed contr							
0	2974		CON_SCALC_SLStop			Axis 1: Speed calculation for sensorless stop				
	2974	0	LowSpeedLimit	10	%	Low Speed Limit for IF control in % of SNom				
	2974	1	LowSpeedCurrent	50	%	d-current for IF control in % of INom				
	2974	2	KpScale	25	%	Scaling of speed control gain				
	2974	3	KppScale	0	%	scaling of position control gain				
0	2977		CON_SCALC_ObsSel			Axis 1: Selection for observer and feedback method				
	2977	0	MethodSel	FILTER		Select observer method				
	2977	1	OnlineSel	OBSERVER						
0	2978		CON_SCALC_ObsDe			Axis 1: Observer design parmeters				
	2978	0	DesignAssist	DEFAULT		Observer design assistant				
	2978	1	Tf	1	ms	Observer time constant				
	2978	2	Alpha	2		Damping coefficient				
	2978	3	Tf1	1	ms	Speed filtering time constant				
	2978	4	Tf2	0	ms	Disturbance acceleration time constant				
	2978	5	J	0	kgm2	Inertia of observed mass (0 = use plant intertia)				
			Analysis of speed cont.	-		Advanced analysis of speed control				
	2950	0	AddSRef	0	1/min	Axis 1: Additional speed reference value (without ramp				
	3052	0	AddTRef	0	Nm	Axis 1: Additional torque reference value (without ramp				
			Sensorless stop							
	2949	0	CON_SCALC_Tf	0.6	ms	Axis 1: Speed calculation filter time constant				
	2951		CON_SCON_Ctrl			Axis 1: Speed control parameters				
	2951	0	Кр	0	Nm/rpm	Speed control gain				
	2951	1	Tn	10	ms	Speed control integration time constant				
	2951	2	Scale	100	%	Scale speed control gain				
	2959		CON_IP_RefFil			Axis 1: Interpolation Filters				
	2959	0	CON IP RefTf	0	ms	Speed reference filter time constant (SCON mode)				

The context menu can be opened with a right-click in the parameter list window and here, further view options can be set, such as "Expand all" or "Collapse all".

Back		Sett	ings of "Speed contro	l" of device	e "SO	CM-3.0006.21	00.0 (Axis 1)"			
	ld	Sub id	Name	Value		Unit	Introduction			1
		-	Digital filter	-						
			Advanced speed contr.							
	2974		CON_SCALC_SLStop	1			Axis 1: Speed calculat	ion for sensorless stop		ļ
	2974	0	LowSpeedLimit	10						
	2974	1	LowSpeedCurrent	50	+	Expand all				
	2974	2	KpScale	25	B	Collapse all				
	2974	3	KppScale	0	870	Visualization	of a biant ID			
	2977		CON_SCALC_ObsSel		8.0	VISUAIIZACION	or object to		bit	
	2977	0	MethodSel	FILTER	01	View / edit sir	ngle bits			
	2977	1	OnlineSel	OBSER'	_					
-	2978		CON_SCALC_ObsDe		0	Show parame	ter of all child topics in o	ne level (flat list)		
	2978	0	DesignAssist	DEFAUL	Ô.	Show parame	ter sorted by id (only with	hin a topic)		
	2978	1	Tf	1						
	2978	2	Alpha	2	G	Back to "Spee	ed control"	Ctrl+B		
	2978	3	Tf1	1	0	Forward		Ctrl+F		
	2978	4	Tf2	0	*	Up to "Contro	ol"	Ctrl+U		
	2978	5	J	0		u				
			Analysis of speed cont.		1	Home to Dr	ve settings			
	2950	0	AddSRef	0	1	Open in all ax	is of this device		amp)	j
	3052	0	AddTRef	0	673.	Onen in all de			ramp))
			Sensorless stop		NIL.	Open in all de	evices			
	2949	0	CON_SCALC_Tf	0.6	1	Close all othe	rs			
	2951		CON_SCON_Ctrl		_					
	2951	0	Кр	0		Help				
	2951	1	Tn	10		Switch to gray	phical parameter view	Ctrial		
	2951	2	Scale	100		Switch to gra	princar parameter view	CUI+L		

In the list view, all parameters of the respective subject area are displayed with all parameter information; parameter number (ID), index, name, value, unit, description, data type, factory setting, minimum, maximum, reading and writing level.

5.7 User-defined parameter list

The user defined parameter list allows the user to create their own parameter list. It can be used to assemble parameters from different subject areas in list form. They can then be edited directly without having to open the corresponding subject areas.

Procedure for creating a user defined parameter list:

- Open the desired subject area and in the workspace, switch from the graphic view to the list view.
- Open the user defined parameter list in the main menu under View > User defined parameter list.



In the workspace, an additional blank window opens in which one's own parameter list can be managed. Here, the settings can be loaded, saved and also deleted.

Now mark the parameters which are to be selected (multiple selection in typical Windows manner possible) and drag them into the user-defined parameter list using drag and drop. Before the selected parameters can be moved, the cursor must change from the arrow display to an arrow with a rectangle and a plus sign. The change of the symbol takes places as soon as the arrow of the cursor is moved over the line between two parameter lines.

								h	Loadi	ser-defined para ng, saving and de	meter list leting settings	
s	ioeed (control				- ×	Use	r parameter grid				→ ₽ X
R.	-	1 6	attinue of "Speed contre	" of device "SO	CM-3 0006 21	00.0 (Avia 1)"	1	- 🖬 - 🗙 -				
		0.4	a Mana	Value	lu-a	Internet on the second s	:	Device	ld Sub i	d Name	Value	Unit
	NG	300	Disitel Elter	70100	Offic	In Boddebon		SO CM-3.0.	2974 0	Low/SpeedLimit	10	%
			Adversed seed seek					SO CM-3.0.	2974 1	Low/SpeedCurrent	50	%
P		2074	CON SCALC SI Stee			Ania 1: Encoderated and a detice for any		SO CM-3.0.	2950 0	AddSRef	0	1/min
	_	2974 0	CON_SCALC_SLSIOP	10	1-2	Acts 1. Speed calculation for sen		-3.0	3052 0	AddTRef	0	Nm
		2974 0	LowspeedLimit	10		Low Speed Limit for IP control In						
-	-	2074 1	LowspeedCurrent KeCools	50	14	d-current for IF control In A of						
		2074 2	Kpocale	25	*	Scaling of speed control gain						
-		23/4 3	con conconce	U	4	scaling of position control gain						
	-	23/1	CON_SCALC_OBSSEI	E 41 2000		Axis 1: Selection for observer an						
		29// 0	MethodSel	FILTER		Select observer method						
-		29// 1	UnlineSel	OBSERVER								
	-	29/8	CON_SCALC_OBSDe.			Axis 1: Observer design parmete						
		2978 0	DesignAssist	DEFAULT		Observer design assistant						
		2978 1	Tł	1	ms	Observer time constant						
		2978 2	Alpha	2		Damping coefficient		-				
		2978 3	Tf1	1	ms	Speed filtering time constant						
		2978 4	Tf2	0	ms	Disturbance acceleration time cc						
		2978 5	J	0	kgm2	Inertia of observed mass (0 = us+						
2			Analysis of speed cont			Advanced analysis of speed con						
			AddSRef			Axis 1: Additional speed reference						
		3052 0	AddTRef			Axis 1: Additional torque reference						
			Sensorless stop					$\sim c$				
		2949 0	CON_SCALC_Tf	0.6	ms	Axis 1: Speed calculation filter til			opying set	ected parameters		
		2951	CON_SCON_Ctrl			Axis 1: Speed control parameters		In	to the new v	vindow using drag	9	
		2951 0	Кр	0	Nm/rpm	Speed control gain			8	& drop		
		2951 1	Tn	10	ms	Speed control integration time cc						
		2951 2	Scale	100	%	Scale speed control gain						
2		2959	CON_IP_RefFil			Axis 1: Interpolation Filters						
		2959 0	CON IP RefTf	0	ms	Speed reference filter time const						
		0050 4	001105.01	0.05		Delay pos, reference by integer r						
							1.					

• Open additional subject areas and add new parameters as needed.

The user defined parameter list is saved as well when the project is saved.



5 The user interface

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

5.8 User level (access restrictions)

DriveManager 5 has five user levels to provide different parameter access restrictions. By default, the highest user level that is not password protected opens, which can be the "Local Administrator", for example. This level allows selection of all parameters and functions which are adequate for 95% of all applications. The levels "Administrator" and "Internal" are only available to authorized users with the corresponding password.

Display and modification options

Via the standard bar



or via the main menu:



Access to the parameters can be protected additionally apart from the user levels. Passwords can be assigned as desired to block access to the device for nonauthorized people.

Further information about this can be found in the next Section "Password" on page 27.

The five user levels

User level	User level Description	
Observer	Read access only	OFF
Setter	Restricted read and write access	OFF
Local administrator	Factory setting: Read and write access to all parameters	OFF
Administrator	In-house company user level: Access blocked	ON
Internal	Developer access: Access blocked	ON

Table 5.3: The user levels with permissions

5.9 Password

Four passwords can be assigned in order to specifically control access to the device settings.

- Passwords 1 and 2 are for securing the levels of "Setter" and "Local administrator."
- Passwords 3 and 4 are intended for the manual mode and data set operations.

The passwords are saved directly in the device.

Defining passwords:

In the project tree, open the subject area **Administration > Passwords** Or select the "Passwords" icon in the subject area bar (the icon is not available for every device in the subject area bar).

Specify a password.



When the connection status changes from "Offline" to "Online," a password is requested. This query also takes place when the user level is changed.



DriveManager 5 Program help 27



×
Help

Deleting or changing passwords

The procedure is the same as for specifying passwords. When doing so, the password must either be deleted or overwritten with a new one.

NOTE

A password is saved in the respective device and not in DriveManager 5. This ensures that a separate password can be assigned to every device in a network.

5.10 Online/offline mode

No active connection ("offline") between the operating software and the controller is necessary for the editing of a project or a data set.

"Offline" mode (no communication with the device)

In this mode, no active device is connected to the operating software. Nonetheless, it is possible to edit an existing project. The text in the project tree is blue. An offline data set can be saved and transferred to a device at a later point in time.

"Online" mode (communication with the active device)

The communication between the PC and the controller is established. All of the functions in DriveManager 5 can be used. Data sets can be changed and saved directly in the controller. In the "online" mode, the text in the project tree is black.

Establish or disconnect communication

There are different options in DriveManager 5 for establishing communication with the device, i.e. to connect or disconnect it.

- In the "Basic active device actions" toolbar, the Go online icon is for switching between the online and offline modes.
- In the main menu under Project > Go online (connect) or Go offline (disconnect)
- In the menu line of the project window



In the project tree it is also possible to use the context menu (right mouse button) to switch the desired device using "Online/Offline."

5.11 Options / Options window

In the options window, special requirements and properties can be set for different areas.

In the main menu under **Extras > Options**, these properties are divided into ten separate subject areas.

All changes can be undone at any time using the "Reset to standard settings" button.

5.11.1 Project options

General, project-related settings can be changed here. The standard settings and options for changing them are self explanatory.



5.11.2 Program start and end

Here it is possible to define whether a project should be opened automatically when the program starts, either with or without a prior query. The user can decide to specify the point in time for saving as when the program is exited or to have the project saved automatically.



5.11.3 International settings / language settings

The interface opens in the language in which the operating system has been installed. This language can be changed here. Under "Other language" a choice can be made between German and English.

The Installation wizard only operates in English. The language change can only be made once DriveManager 5 has been installed and opened.



C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019



5.11.4 Display / Visualization options

Various different display options can be modified here. For example, device names or acknowledgment errors can be suppressed or the defaults for certain windows can be defined.



5.11.5 Cyclic operations (modifications to the refresh/update rates)

If the computing performance is low, the refresh rate for the device display can be reduced. The device state monitoring and the device message monitor can be modified in the same way.



5.11.6 Directories

Selection of the storage path for the files of a project. The standard setting with the path c:\Users\Username\Documents\... can be changed here at any time.



5.11.7 Directories > Documents

All storage locations in which projects, device settings, oscilloscope recordings, protocols, etc. are saved are defined here and can be changed as needed.

Optionen		×	J
Projekt	Dokumen	te	
Programmstart/-ende	Projekte		
Internationale Finstellungen	Standard	CA	
	Geräteeinstellun	gen	1
Anzeige	Standard	C:\	I.
	Osziloskopaufna	ahmen	4
Zyklische Aktionen	Standard	C:\	1
No.	Tagesprotokolle		
Verzeichnisse	Standard	C:\	
Dokumente.	Lokale Paramete	eransichten	
	Standard	C:\	1
Projektdatenverwaltung	Temporäre Date	eien (Zwischenspeicher, Puffer)	1
	Standard	C:\	1
E-Mail Unterstützung	og dictionaries		
Erweiterte Funktionen	Standard	C:\	
Benutzerrechte			

5.11.9 E-mail support

Options and configuration of the E-mail support.



Detailed information about this can be found in Section "Email function" on page 58.

5.11.8 Project data maintenance

There are several archiving options for managing the project data:

- Automatic clean-up of log files, with or without prior query
- Setting of the time and/or days for the clean-up operations
- Limitation of the data volume





5.11.10 Advanced functions

There are three settings for the Logging of parameter write accesses:

- Program controlled: All actions which are configurable in the screens and via the parameter editor are logged.
- Always, including automatic sequences: Writing access are logged as well which run in the background, e.g. parametrization operations which are triggered by the test signal generator.
- Switched off: Logging is disabled.

Project device builder: If necessary deviations of the parameters between a firmware update and an older version are not to be displayed, it is possible to have all raw data be visible.

Initial commissioning: Selection of whether the initial commissioning dialog box should always be displayed when a new project is created.

Text collector dialog: Active for dictionary creation in the culture (language selection)

If this function is activated, then another window opens in which a language can be selected.



If this options dialog is closed with "OK," then all screens and dialog boxes which are subsequently opened are scanned. A dictionary for the previously selected language is created in the background. Afterwards, the options dialog must be opened once again and this function must be disabled.

Then the dictionary is opened (consisting of two dictionaries; one for the device and one for the dialogs) and a translation can be entered in these dictionaries.

TCP/IP communication settings: Setting of the timeout time for the write/read access to parameters.



Further information about user authorizations can be found in Section "Password" on page 27 and in Section "User level (access restrictions)" on page 26

5.11.11 User authorizations

Making changes here requires the necessary user authorizations.





5.12 Actual value display (cockpit)



The actual value display offers the user numerous displays of various different values, such as positions, speeds, torques, currents, voltages and temperatures of the controller, in dependence on the device that is connected. These are displayed as a numerical display in a window called the cockpit.

Cockpit			▲ 廿 ×			
Scope signals of Codept						
Reference position (user units)	Actual speed (motor shaft)	Actual current r.m.s.	Temp. sensor (X5)			
0 POS	0 1/min	0.02 A	0 deg C			
Actual position (user units)	Actual speed	DC link voltage	Temp. sensor (X6 / X7)			
0 POS	0 SPEED	10.8 V	0 deg C			
Position diff (user units)	Reference torque	Power stage temp.	Motor voltage			
0 POS	0 Nm	38.16 deg C	0 V			
Reference speed	Actual torque	Drive interior temp.	Reference speed (internal)			
0 SPEED	0 Nm	46.7 deg C	0 1/min			
A Cockpit 🐉 History of parameter chang	es 🗿 Messages					

NOTE

• The following functionality with the different manners of display is only available for the ServoOne.

These actual values can be displayed in various different ways. A right click in the window of the cockpit opens a context menu in which a further window can be opened using the menu item "Select instruments." Setting or removing tick marks in the window specifies the type of display used for the individual instruments. Clicking outside of this menu or waiting 3 seconds while the mouse pointer is not located in this window closes it once again automatically.

- **4** × Scope signals of Cockpit nstrument name 3D Reference position (user units) Actual speed (motor shaft) Reference position (user units) ×× ×× 1/n Actual position (user units) 0 POS Select Inst Position diff (user units) Actual position (user units Show parameter list view PEE Actual speed (motor shaft) Open in all devices Actual speed Position diff (user units Close all others Reference torqu Actual torque Tile Actual current r.m. Merge NDC link voltage Help Power stage temp Drive interior temp 🗥 Cockpit 👔 History of parameter changes 🧃 Messi Temp. sensor (X5) Temp. sensor (X6 / X7) Motor voltage Reference speed (interna

The possible types of display for each are either one numerical display (default) or two different analogue display instruments. Use the "Visible" checkbox to hide or show the desired displays.



Actual value groups

This function is not available for all devices!

A further possibility for displaying the actual values visually is the display window of the actual value groups. This can be opened using the project tree under ...> Device setting > Actual values > Actual value groups.

Manual mode	Actual value groups
Administration	Temperatures
Actual values	Absolute temperature of cooling block Temperature rise of cooling block (filte Max. abso
Cockpit	38.16261 deg C -0.0653949 deg C /s 100
⊕ I/O Status	
	Positions Positions Speech Torques Vulages
e-≣≣ System ⊕-⊛ FPc Digital Scope	Temperatures

A selection of actual values is shown which is limited to five groups; positions, speeds, torques, voltages and temperatures.

5.13 Messages

All of the sequences executed, operations and reactions of the system which take place during operation are logged in the "Messages" dialog box. This includes log entries, information, warnings and errors.

The "Messages" dialog box can be opened from the main menu under **View > Messages**.

		Time	Message	Object	Position	
:=	14	11/8/2017 8:18:55 AM	Dictionary dataset added, 6140 entries	de	New culture dictionary in version 1.0	
≣	15	11/8/2017 8:18:55 AM	Dictionary file added	C:\Users\	de	
=	16	11/8/2017 8:18:55 AM	Dictionary instance with 6140 entries added	de	New culture dictionary in version 1.0	
	17	11/8/2017 8:18:55 AM	Ready	Main\//indow	WaitMessage	
=	18	11/8/2017 8:18:55 AM	Updating project tree view	Main\/vindow	WaitMessage	
	19	11/8/2017 8:18:55 AM	Begin tree view update	?	?	_
1	25	11/8/2017 8:18:57 AM	Assembly resolved	DST.SOCTools, Version=5.8.0.6, Culture=neutral, PublicKeyToken=null	C:\Program Files (x86)	

Depending on the selection of the four message types, such as log entries, information, warnings and errors, these are displayed in the message window. Multiple selections are also possible. The sorting can be ascending or descending by number, date, message, object or position. The order is indicated by a small arrow in the respective sorted column.

		R	Arrow indicator for sorting (ascending/descending)				
Mes	sage	is 🖉				▼ ₽	×
Ē	201 L	og entrys 👔 152 Info	s 🛕 0 Warnings 🔕 0 Errors 🗁 🖇	3 🖄			
		Time	Message	Object	Position		1
=	29	11/8/2017 8:18:05 AM	Magnetic-Bearing V5.8.0.2	Splash	ProgressMessage		
=	30	11/8/2017 8:18:05 AM	Magnetic-Bearing V5.8.0.2	MainWindow	ProgressMessage		
=	31	11/8/2017 8:18:05 AM	Trying to load plugin	Magnetic-Bearing V5.8.0.2	PlugInManager		1
=	32	11/8/2017 8:18:05 AM	Device plugged	20007 "Magnetic bearings' electronic" !	DeviceManager		
≣	33	11/8/2017 8:18:06 AM	Plugin loaded successful	Magnetic-Bearing V5.8.0.2	PlugInManager		
≣	34	11/8/2017 8:18:06 AM	ServoOneCM-Kernel V5.8.0.3	Splash	ProgressMessage		
=	35	11/8/2017 8:18:06 AM	ServoOneCM-Kernel V5.8.0.3	MainWindow	ProgressMessage		
≣	36	11/8/2017 8:18:06 AM	Trying to load plugin	ServoOneCM-Kernel V5.8.0.3	PlugInManager		
≣	37	11/8/2017 8:18:06 AM	Device plugged	20100 "Triple-axis servo controller, DC- powered by central supply unit" !	DeviceManager		
≣	38	11/8/2017 8:18:06 AM	Plugin loaded successful	ServoOneCM-Kernel V5.8.0.3	PlugInManager		
≣	39	11/8/2017 8:18:06 AM	ServoOne V5.8.0.1	Splash	ProgressMessage		
≣	40	11/8/2017 8:18:06 AM	ServoOne V5.8.0.1	MainWindow .	ProgressMessage		
•				m		•	

The order of the columns can also be changed by selecting the fields "Date, Message, Object and Position" with the mouse.

The Message logger

To the left of the four message types there are three small icons for the management of the message logger. Use the folder icon to open the message logger.



All messages are always entered in the message logger. The second icon is for deleting the entries in the message window.

The e-mail icon is for sending the message logger (Log file from xx.xx.201x...) to Helpline for troubleshooting or technical assistance.

When the message logger is opened, it appears in the main workspace of DriveManager 5 using a similar view to the message window, except that it contains two additional fields, "Filter text" and "Search" to facilitate finding special entries.

E Log	g entrys 🧃 Infos 🛕	Warnings 🔕 Errors	Filter text 🝷	Search 👻	
	Time	Message	🖌 Id	on	
1	11/8/2017 8:18:04 AM	Static referenced assembly	✓ Time	n manager	
≣ 2	11/8/2017 8:18:04 AM	Static referenced assembly	✓ Message	n manager	
3	11/8/2017 8:18:04 AM	Static referenced assembly	 Object Position 	n manager	
≣ 4	11/8/2017 8:18:04 AM	Static referenced assembly	DOT.AI TOILO	manager	
5	11/8/2017 8:18:04 AM	Static referenced assembly	System.Wind	. Plugin manager	
6	11/8/2017 8:18:04 AM	Static referenced assembly	System, Vers	. Plugin manager	
≣ 7	11/8/2017 8:18:04 AM	Static referenced assembly	System.Draw	. Plugin manager	
8	11/8/2017 8:18:04 AM	Static referenced assembly	DST.+IFrame.	. Plugin manager	
9	11/8/2017 8:18:04 AM	Static referenced assembly	DST.+Interfa	Plugin manager	
10	11/8/2017 8:18:04 AM	Static referenced assembly	DST.OEN R	Plugin manager	
11	11/8/2017 8:18:04 AM	Static referenced assembly	DST.Abst.ct.	. Plugin manager	
= 12	11/8/2017 8:18:04 AM	Static referenced	DST.App ati.	Plugin manager	-
5.14 History of parameter changes in the device

All parameter changes are logged in the "History of parameter changes in the device" window. The parameter history can be opened from the main menu under **View > History of parameter changes in the device**.

	2901) 🕕 🕑 🗸				
	Time	Old value	New value	Sub parameter	Path	-
1	11/8/2017 11:24:11 AM	8kHz	12kHz	302[0] CON_SwitchFreq	SOCM-Test>TCP/IP>192.168.39.6>6_Mein Senior- ->Drive Settings>Power stage>302-CON_SwitchFreq >[0] CON_SwitchFreq	
2	11/8/2017 11:24:18 AM	12kHz	8kHz	302[0] CON_SwitchFreq	SOCM-Test>TCP/IP>192.168.39.6>6_Mein Senior- ->Drive Settings>Power stage>302-CON_SwitchFreq >[0] CON_SwitchFreq	ш
3	11/8/2017 11:24:36 AM	0	90	349[0] CON_FM_MConOf fset	SOCM-Test>TCP/IP>192.168.39.6>6_Mein Senior- ->Drive Settings>Encoder>349- CON FM MConOffset>[0] CON FM MConOffset	-

The time of day, the old and new values of a parameter change, the subparameter name and the path are shown.

Toolbar of the parameter history

Symbol	Description
K,	Clear entire history of parameter changes
K	Clear all undone changes from the list
ク	Undo selected parameter changes
C	Redo selected parameter changes
ίΠ.	Edit changed parameters: This function is used to once again find a parameter change whose location is no longer known. Once the line is selected, open the workspace with the desired subject area using the "Edit" button. If the parameter occurs in several subject areas, the "Select topic" window opens.
0	Start/stop the macro recorder: Activating the red "Record" button records parameter changes.
	Pause the macro recorder. Activating the "Pause" button pauses the recording and it can be resumed by actuating it once again.
۲	Play, opening a recording: Use the "Play" button to call up files. Clicking on the "Open" button transfers the saved parameter changes to the controller. (The parameter changes made are first effective in the project; once the project is online, the changes are also transferred to the connected device. If the project is offline, the parameter changes are only transferred once the project goes online again.)

Table 5.4: Toolbar of the history of parameter changes in the device

5 The user interface

5 The user interface

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

DriveManager 5 Program help 38

Further functions and information on the macro recorder can be found in Section "Macro recorder" on page 38

Edit changed parameters:

Double-clicking on the line of the parameter change selects it and it is marked in blue. Once the line is selected, open the subject area in which the parameter is

located using the "Edit" button 🗎.

If the parameter exists in several subject areas, then an additional window opens first in which the desired subject area can be selected. This window shows all of the subject areas which contain the parameter.

	Back	Encoder channels o	configuration "6 Mein	Senior"	
E	Encoder selection	se			
E	OFF(0) = No en	and torque control loo	p:	▼ Options	
	Encoder offset		90 deg	Detect	
E	OFF(0) = No en	ol loop: coder selected	1	Options	
st	ory of parameter change	35) (() () -			↓ ‡
-	Time	Old value	Netvalue	Sub parameter	Path
	11/8/2017 11:24:11 AM	8kHz	12 Hz	302[0] CON_SwitchFreq	SOCM-Test>TCP/IP>192.168.39.6>6_Mein Senior >Drive Settings>Power stage>302-CON_SwitchFreq [0] CON_SwitchFreq
	11/8/2017 11:24:18 AM	12kHz	8 <mark>k i</mark> z	302[0] CON_SwitchFreq	SOCM-Test>TCP/IP>192.168.39.6>6_Mein Senior >Drive Settings>Power stage>302-CON_SwitchFreq [0] CON_SwitchFreq
	11/8/2017 11:24:36	0	90	349[0]	SOCM-Test->TCP/IP->192.168.39.6>6_Mein Senior-

5.15 Macro recorder

The macro recorder is for the specific recording and logging of parameter changes. It can be used to create batch files which contain defined parameter settings. For example, scope settings can be saved and transferred to another device. Before parameter configuration can be started, the macro recorder must be started and it then records all of the parameter changes. When the recorder is stopped, the settings are saved in a batch file. This means that the parameters continue to be available for further editing.

Start/stop the macro recorder: Activating the red button (Record button) records all parameter changes. The following confirmation window appears.

His	tory of parameter change	S			
	🔉 🤈 ୯ 🗎 🚺) 🕕 🕑 –			
1	Time 11/8/2017 11:24:11 AM	Old value 8kHz	New value 12kHz	Sub parameter 302[0] CON_SwitchFreq	Path SOCM-Test>TCP/IP>192.1 >Drive Settings>Power stage
2 3	Alm 11/8/2017 11:24:18 AM 11/8/2017 11:24:36 AM Cockpit & History of pa		This function starts the recc from now on the currently. After you stopped recordin storage of parameter chang Would you like to start recc	ording of all parameter cha active device "6_Mein Seni g, you are prompted to sel ges (CSV format). ording now?	anges you perform for". ect a file for
				ОК	Abbrechen

Recorder switched on (the blue square means that the recorder is activated)

Stop the macro recorder. The Stop button stops the recording. This is followed by a prompt to save the data in a batch file.

Activating the "Pause" button pauses the recording and it can be resumed by actuating it once again.

Play: Actuating the arrow button plays back a previously recorded parameter change. When opening a recording (parameter, batch file.csv) with the "Play" button, csv files are called up. When doing so, a parameter change that has been made can be passed on to another device.

Clicking on the "**Open**" button transfers the saved parameter changes to the controller.



Settings for the transfer of a recording

In order to transfer a batch file with the parameter settings, the setting "Always, including automatic sequences" must be enabled for the "Logging of parameter write accesses" under **Extras > Options > Advanced functions**.





5 The user interface

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

5.16 Object search

The object search function in DriveManager 5 offers a convenient and simple search function which can be configured as desired. The search can be adapted to suit the requirements and preferences of the user.



Fig. 5.1: Object search and search results found

The object search finds all parameters, help topics, help index entries and anything that can be associated with the search term. The quality and the areas searched can be modified using comprehensive setting options.

The "Settings" item offers an extensive selection menu for customizing the search functions.

ions of object search					
Definition of involved object types and properties					
Search in all axis of a multiple axis device					
V:= Parameter	✓ := Sub parameter (index)				
Vame Name	V Name				
Brief description	✓ Brief description				
ID (for singe digits or ranges only)	Range of value				
∧	 Actual value Update before starting search 				
Vame Name					
 Brief description ID (for singe digits or ranges only) 					
Topic Name Brief description	✔ 💴 Heb ✔ Index ✔ Topics				
Search quality settings	0 100				
Tolerance of the accuracy of the search. 0% means "take exact matches only", 100% means "search similar parts of the term"	<u> </u>				
General threshold (character count) for recognition of a word match	Filter out redundant matches				
Display control	0 100				
Grouping of search results. 0% means show "always separate topics for results with different matching quality"	· · · · · · ·				
Time until the search starts automatically after the user has entered the last character of the search text 6 (a) 8	Maximum number of displayed matches				
OK Cancel	Reset to standard setting Help				

This convenient settings dialog box allows precise definition of the object search. All of the option settings and search criteria are self explanatory.

Object search results

The hit list of searched for objects shows the results with the respective icons from the option menu.

- := Parameter
- A≱ Digital Scope Signal
- C Topic
- := <u>Sub parameter (Index)</u>
- Help

Object search	1 👻		×
ettings	Search Objects in		
	6_Mein Senior		
Manual r	mode > Manual mode control status		
Help			
ServoOne-	Help		
Dev	rice help (Help topic)		
Manual mo	de > Manual mode control status		
Manual r	node > Manual mode control status		
Manua	mode>Manual mode control statu	IS	
Manual mo	de>Manual mode control status		
🗁 Тор	ic (Name)		
Manual mo	de control status		
Status of	manual drive control		
			•

5.17 Invalid user input

After an invalid user or parameter input, a message window is displayed which directly indicates the incorrect input and shows the value range. After the window is closed, the input focus is again directed towards the object.

Is configuration "6_Mein Senior"	
loop:	
Options	
190 deg Detect	
Invalid er input	
w value violates range maximun	
Further Informations:	
New value: 190 Range: [180.100/deg Path: TCP/IP->192.168.39.6->6 Mein Senior->Drive Settings->Encoder->349- CON_FM_MConOffset->[0] CON_FM_MConOffset	
TCP/IP>192.168.39.6->6_Mein Senior	
	Invalid ver input



5 The user interface

5.18 Blinking code

The device display behaves differently depending on the device that is connected. Consequently all the information on the status messages of the LED display must be taken from the respective Device help.

5.19 Printing documents

DriveManager 5 has a special print function with a variable print menu. Only the document which is the current focus of the workspace is printed. A document can be the list view of a subject area, an oscilloscope recording, a complete set of device settings in a list view or a data set comparison.



Page settings... / printer settings

The "Page settings..." menu item can be used to set up the print page to suit one's own requirements. The settings always refer to the Windows default printer that has been specified.

Seite einrichten	ite einrichten				
Papier					
Größe: A4	(210 x 297 mm) 👻				
Quelle: Ma	gazin 1 🔹				
Ausrichtung	Ränder (mm)				
Hochformat	Links: 25,4 Rechts: 25,4				
Querformat	Oben: 25,4 Unten: 25,4				
	OK Abbrechen				

Print subject area (here, "Print encoder")

When printing, the graphical view is never printed, but rather only the list view of the subject area in the current workspace. When doing so, the default Windows printer window appears in which the printer settings can also be modified.

	Power st	age 🖓 🚆 Encoder		
G	Back	Encoder char	nels configuration "6_Mein Senior"	
ld	Sub id	Name	Value Unit Introduction	
		X7 (e.g. SinCos, chan.	Configuration of high resol	ution encoder input X7
		BiSS X7		ace X7 with BiSS
	598 0	ENC_CH1_Position	Drucken	-
	618 0	ENC_CH1_AbsCRCP_		e encoder
	619 0	ENC_CH1_AbsCRCInv	Aigemein	inverted
	620 0	ENC_CH1_AbsErrMa_	Drucker auswählen	tandard Encoder Error
	621 0	ENC_CH1_AbsWarn		Incoder Status Error
		EnDat X7	pr-00035	ace X7 with EnDat
	543 0	ENC_CH1_MultiT	2 pr-00035B	lute encoder)
	544 0	ENC_CH1_SingleT		olute encoder)
	545 0	ENC_CH1_Code		ncoder)
	547 0	ENC_CH1_MTBase		SI absolute encoder)
	548 0	ENC_CH1_MTEnable	Status: Bereit Ausgabe in Datei umleiten	encoder)
!	553 0	ENC_CH1_PeriodLen	Standort: Einstellungen	linear encoder)
	554 0	ENC_CH1_DigitalRes_	Kommentar:	absolute encoder)
	598 0	ENC_CH1_Position	Drucker suchen	
	616 0	ENC_CH1_CycleCount	Saitanharaich	coder)
	617 0	ENC_CH1_AbsInitMo		ation (absolute encoder)
	640	ENC_ENDAT	Anzani Exemplare: 1	
	640 0	ENDAT_Diagnosis_Sel	Markierung Aktuelle Seite	
	640 1	ENDAT_DiagCount	Seiten: 1-9999 Sortieren	der
	640 2	ENDAT_BWZ_1	Geben Sie entweder eine Seitenzahl oder 11 22 33	
	640 3	ENDAT_BWZ_3	einen Seitenbereich ein. Z. B.: 5-12	
	640 4	ENDAT_BWZ_4		
	640 5	ENDAT	Dauckan Abbrachan Übernehmen	
	640 6	ENDAT_Z1_Sel	Didcken	ype selection
	640 7	ENDAT_Z1_1		



5 The user interface

5 The user interface

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

Print preview (of the subject area)

The print preview offers the opportunity of viewing individual or all pages before printing. The settings do not refer to the printing, but only to the view.



6 Projects

6.1 Project tree / Project window

The structure of a project is defined in the project tree. All devices or nodes are contained there, including all information files.

It contains the following nodes:

- Project name
- Network connection: USB or TCP/IP (depending on the device type)
- IP address
- Device name
- Device setting
- Digital oscilloscope

The project window with the project tree



C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6 Projects

6 Projects

The menu bar of the project tree allows a selection which defines to what level the existing nodes should be displayed.

Project	→ ₽ X
🗇 🔹 🕒 🗙 Online	Ŧ
Show nodes up to level 1	
Show nodes up to level 2	
Show nodes up to level 3	
Show nodes up to level 4	
Show nodes up to level 5	
Initial Commissioning	

The symbols + and - beside this allow a setting to be made as to whether all objects in the project tree should be displayed as open or closed.

Different symbols are displayed in the upper menu bar of the project window, depending on the nodes and the levels. The right mouse button function selection corresponds exactly to this upper menu bar.



Project tree with three nodes, several devices in the network cluster

In the following project tree, three devices are connected via connection nodes in a network cluster under the IP addresses 192.168.39.5 to 192.168.39.7 in a single project.



The menu items shown below can be used to add additional devices or to remove existing devices. When doing so, a new window opens in each case to allow selection of new devices or of a device which is to be removed.



6.2 Creating a new project

6.2.1 Create a new project when the program starts

When the program starts, the Project wizard opens by default.



Three points are then available: one to create a new project, and two options for opening an existing project.

ONLINE immediately, i.e. work with the connected device

 Create a new project: In this case, all settings and data are automatically read from the connected device after the connection has been established and are used to set up a new project.

Work / start OFFLINE

 Create a new project: In this case, the desired device can be selected offline via a selection of different device IDs (see below).

When creating a new project (online and offline), the "Define project" window opens.



6 Projects

fine project		x
Project name New project		
Project brief intro	luction	
Introduction to my ne	w project	
Project folder	Reset to standard	Change
C:\Users\		
	Creat	
UK	Cancel	
		/

Project name:

The new project must be given a name and this name is also used as the directory name for the project folder, meaning that only the alphanumeric characters typical for Windows and without *, ?, /, ", etc. must be used. All of the data which belongs to the project are saved in various different subdirectories.



Brief project description

A brief description of the project can be created as an aid to help find the project more quickly.

Project folder:

The project folder is stored on a default path (C:\Users\Username\Documents\...\Projects), but it can be changed or reset once again at any time.

New project offline

With a new OFFLINE project, the "Add device offline" window opens.

dd device offline		
Select additional device		
Device identification		
Device family	ServoOne 🔹	in the second second
Controller print	S024.002.0 💌	
Article number	1325.0000.0000.1 👻	
Power stage	2A 👻	
Main supply voltage	400V 👻	
Firmware version	V4.05-02 👻	
Axis count	1	
Variant (hardware or firmware)	Ţ	
Description	Optimized high performance single axis drive for the lower power range	
Connectivity		
● TCP/IP U	JDP USB USB-COM	Device count (using continuous addresses)
192 168 39	5	1
Ok Cancel		

Here, the desired device must be selected via the different types of device identification (device family, control hardware, power stage, axis, etc.).

There are also different types of communication connections available (TCP/IP, UDP, USB and USB COM), depending on the device family. The system suggests an IP address for connecting this device. The default address is: 192.168.39.5

Finally, the quantity of the same devices (with consecutive addressing) can be set as well.

Afterwards, the project tree for this device is created and the desktop of DriveManager 5 is loaded.

New project online

With a new ONLINE project, the "Select connection" window opens.

Here, as well, there are different types of communication connections available (TCP/IP, UDP, USB and USB COM), depending on the device family. The system suggests an IP address for connecting this device. The default address is: 192.168.39.5

All internal device data and settings are then displayed in the project tree.

NOTE

6 Projects

 A detailed description of the network communication connection can be found in the ServoOne CM device help under Contents > Device setting > Ethernet over EtherCAT® (EoE).

6.2.2 Creating a new project from the desktop

There are numerous options for creating a new project from the DriveManager 5 desktop:

- Starting the Project wizard via the icon in the upper standard bar
- From the main menu: File > New > Project
- From the main menu: Project > Project wizard
- From the main menu: Project > New
- Via the "New" symbol in the upper standard bar > Project
- From the main menu: Extras > Create device offline: Create a device offline using an existing description file (import of a ZIP archive or individual files)

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6 Projects

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6.3 Opening a project

An existing project can be opened in many ways:

- From the main menu: File > Open > Project
- From the main menu: Project > Open
- From the main menu: File > Recent projects
- From the main menu: File > Recent Files (selection of project files with the extension *.dmprj)
- Using drag & drop: Use the mouse to drag project files with the extension
 *.dmprj to the first or second menu line of the DriveManager 5 user interface.
- Double-click on a project file in Windows Explorer (desktop). The program starts and opens the project automatically.
- Via the "Open file" symbol in the upper standard bar > Open project
- From the main menu: Extras > Options > Start/end program; the option "Action on program start" can be used to specify that the last project should be opened automatically, with or without a prior query.



And, of course, from the Project wizard



Here, an existing project can be opened as can one of the recently edited projects.

When opening a project, one of the most recently edited projects can be opened in the "Select project" window or the "Others" button can be used to jump to a Windows file dialog for the selection of another project file.

Select project	- Beispielprojekt1 - NeuesProjekt001 - SOCM-Test - Servo Drive - ServoDrive10 - ServoDrive10 - ServoDrive_sample - ServoOrne - testakojuli - x-Axis	
ОК С	ancel	Others

6.4 Saving a project

An existing project can be saved in many ways:

- From the main menu: Project > Save project "ProjectName": Saves the current version of the open project.
- From the main menu: Project > Save project "ProjectName" as ...: Saves the current version of the open project, but at a different storage location or as a copy of the project under a new name.
- From the main menu: Project > Close project "ProjectName": A query follows as to whether the project should be saved.
- When the program is closed, there is also a query as to whether the current project should be saved. General settings for this can be found in the main menu > Extras > Options > Program start and end under "On program closing."



6.5 Deleting a project

All projects are saved in project folders which have the same name as the project itself. All of the data which belongs to the project are saved in various different subdirectories. To delete the project, the entire folder must be deleted in Windows Explorer, including the project file *.dmprj.



This folder can be found in the main menu under the Extras menu item in the Options window.



C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6 Projects

6 Projects

LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6.6 Freeze and reactivate project

For archiving projects, it is possible to save a project in the "FrozenProjects" folder using the command "Freeze current project."

Start from the main menu under the menu item Project > Management > Freeze current project

The file "ProjectName".dmprj_archive is then archived here and thus the project is closed. The archive file still remains available after the project and the project folder is deleted.



The call for **reactivating** a project from the "FrozenProjects" folder can be made using the command "Reactivate project."

Storage location for archived projects (Frozen Projects) in the DriveManager 5 folder:

The frozen projects are saved under "FrozenProjects" and are not in the project folder.



NOTE

•

• Freezing a project not only creates an archive, it also removes the project from the list of active projects, i.e. it deletes the entire project directory under "My files\...Projects." On the next "Open project," this project will then no longer appear in the list of selectable projects. If the project is then reactivated, the project directory is created once again.

DriveManager 5 Program help

6.7 Project archive

One purpose of a project archive is to save all the information and settings which are part of a project in a single file so that it can be sent via email, for example, for service purposes. This also provides a simple means of project management. For versioning purposes, different project states can be archived and reactivated as needed.

Accordingly, a project archive contains all project data with all device settings, the project tree, scope recordings, commissioning files, logs, protocols, error files, etc. of the project folder grouped together in a compact and compressed file. The file extension is: *.dmprj_archive

Extracting, saving or sending a project archive:



Extracting an archive (loading)

The selected project archive is loaded as a project. If there is already a project with this name, the imported project is renamed so that no name conflicts occur.

Save current project as archive ...

A project archive file is created (zipped) and is saved under the selected path in compressed form as "<ProjectName>.dmprj_archive". If there is already a project with this name, the created project is renamed so that here as well no name conflicts occur.

Send current project as archive

An existing project folder is put into one project archive file named "<ProjectName>.dmprj_archive" (zipped) and is added to an email as an attachment. This allows a data exchange to be carried out easily. See Section "Email function" on page 58



6 Projects

6 Projects

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

6.8 Send project

One purpose of a project archive is to save all the information and settings which are part of a project in a single file so that it can be sent via email, for example, for service purposes.

Accordingly, a project archive contains all project data with all device settings, the project tree, scope recordings, commissioning files, logs, protocols, error files, etc. of the project folder grouped together in a compact and compressed file. The file extension is: *.dmprj_archive

Send current project as archive



An existing project folder is put into one project archive file "<ProjectName>.dmprj_ archive" and is added to an email as an attachment. This allows a data exchange to be carried out easily. If, for example, Microsoft Outlook is installed as the email program, an email form with attachments can be created with no extra steps performed by the user.

This email contains the following text lines, among other things:

*** Project *** Name: >ProjectName< Introduction: >BriefDescription< DriveManager 5 message from DAY, xx.xx.2017 TIME User: >Username< Machine: >ComputerName< Operating system: Microsoft Windows xxx DriveManager 5 Version: 5.x.x.x

List of currently installed plug-ins: Kernel: Version, Release ClineKernel: Version, Release Magnetic-Bearing: Version, Release

...

The recipient of the email can install a project archive directly by double-clicking the attachment or can open a zipped message logger.

For additional information on the email function, see Section "Email function" on page 58

6.9 Functions for all devices in the project

In a project, there are functions which can also be carried out simultaneously for all devices. The functions for which this applies can be found under **Project > All devices** and are shown below:

- Save setting persistently inside device
- Quit error
- Restart...
- Reset to factory settings
- Load device commissioning file...



The advantage of these functions under "All devices" is that each item can be carried out the same for all devices in the project. For example, when "Load device commissioning file..." is selected, the same commissioning file is sent to all devices

in the project at the same time, which provides not only convenience, but also significant time savings, provided there is a good communication connection. All of the submenus are also available for individual devices.

1 NOTE

• The "All devices" menu item and these functions in general are only enabled ONLINE. In OFFLINE mode, this menu item is disabled.

6 Projects

7 Manual mode window

The manual mode window allows a drive to be controlled independently of a higherorder controller. The drive can be operated in every control mode using the individual dialog boxes of the window.

After the manual mode window is opened, a view corresponding to the control mode opens. To execute a movement of the axis, the hardware enable must first be activated and the safety notice must be confirmed.

The following control modes are available:

- Position control mode "PCON"
- Speed control mode "SCON"
- Torque control mode "TCON"
- V/f control mode "VfCON"

The "Manual mode" window is then active so that the control mode can be selected and the parameters configured for the manual mode. Depending on the control mode you selected, various different tabs will appear:

- A tab with the parameters that are specific to the respective control mode but that only apply when the manual mode is used (e.g. acceleration, deceleration, setpoint, speed, etc.)
- Homing (see section "Homing / homing mode" in the device help)
- Jog mode, which can be used to move the motor step-by-step in a positive or negative direction with two different speeds.
- Reversing mode, in which the motor can be moved back and forth with adjustable accelerations and speeds.



Fig. 7.1: Examples of an active manual mode window

After the manual mode window is closed, the original device settings are restored automatically.



• The description of the individual control modes with their specific parameters for the manual mode, such as acceleration, deceleration, setpoint, speed, but also the different homing methods, etc., can be found in the corresponding device help.



7 Manual mode window

7 Manual mode window



8 Email function

The email function allows an easy means of exchanging data.

- Entire projects can be sent via email from the main menu under Project > Project archive > Send project as archive (Also see the section "Sending projects" on this topic) The recipient of the mail can install a project archive directly by double-clicking the attachment or can open a zipped message logger.
- The DriveManager 5 message window also allows log entries, information,

warnings and error messages to be sent via the email function

• Error messages can also be sent directly from the error window.

If Microsoft Outlook is installed as the email program, an email with attachments can be created with no extra steps performed by the user.

For users who do not have MS Outlook, prior configuration including specification of the connection data allows emails to be sent directly by DriveManager 5.

Configuration of the Email support

The respective fields under **Extras > Options > Email support** in the main menu must be activated and filled in.

Options	×
Project	E-Mail support
Program stard and end	Activate e-mail support
International settings	Recipient e-mail address (default is provider)
Display	helpline@company_name
Cyclic operations	Confirmation for sending if attachment size
Folder	exceeds IZ 🐨 MB
Project data maintenance	Call of local e-mail program Send e-mail directly (with automatic attachment support)
E-Mail support	
Advanced functionality	
User authorization	
OK Cancel	Apply Reset to standard settings

Fig. 8.1: Activated email support for MS Outlook

Here, a signature and an additional address for the activated "cc:" function can be configured. There is also a sample text available for the signature. Because some Internet providers only permit emails up to a certain size or, for example, in-house company email limitations could apply, there is an option here which generates a warning message for emails which are of greater size: "Obtain confirmation for sending if attachment size exceeds" the preset "12 MB". The size for the messaging can be changed here. If the content of the email to be generated then exceeds the limit entered and if oversize is also confirmed by the user, then "less important" parts are automatically omitted as the email is generated.

8 Email function

8 Email function

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

The email is only prepared by DriveManager 5, including attachments. Users can expand on the preset text themselves and must then send the message themselves; this does not take place automatically.

If a different email program is used, like Mozilla Thunderbird, Opera Mail, Google Mail, etc., then the selection must be changed to "Send email directly". The name or the IP address of your SMTP server will be needed for this as well as your email address. The exact type of access for your SMTP server is important here, whether via Intranet or Internet (access data is required). Please contact your in-house company IT support with questions concerning setup.



Fig. 8.2: Direct email sending without MS Outlook using an SMTP server

Sending exception messages directly from the error window



Fig. 8.3: Sending an error message via email directly from an error message window

Once an error is displayed in an error window as an "exception message", there is also the option of automatically generating an email with the error description, the project and the message logger.

Sending an email directly from the project window

As shown in the following figure, there is still another possibility for generating an email automatically. The email button in the icon list of the project window is usually hidden. When these hidden icons are displayed, the email function also appears.



Fig. 8.4: Email sending directly from the project window

Sending an email from the help information window

There is also an option for generating an email in the main menu under "Help > Information" under the view of all installed plug-ins (under Details). This contains only system information and the list of the currently installed plug-ins.



8 Email function

9 Drive status

9.1 Device status window (Device status)

The "Device status" dialog box provides an overview of the current state of the system. This should generally always be open so that any possible faults can be recognized visually at once. In the event of a fault, the colour of the button changes from green to red. A maximum of 20 error messages can be logged via the "Error history" button. Once the memory is full, the oldest error is overwritten.

Depending on the device that is connected, you are shown the corresponding device status window for the drive containing different status information and the system state.



Fig. 9.1: Example images for different devices

Status messages are divided into **axis status** messages and **device status** messages and can be opened via the corresponding buttons directly on the quick start bar.





• Further information on this can be found in the Device help in the "Status" chapter.

9 Drive status

9 Drive status

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

DriveManager 5 Program help 62

9.2 Faults/Alarms/Warnings

Faults are displayed in the 'Device status' dialog box or by means of a red field. In the event of an error, the pop-up window "A device error has occurred" opens.

The "Error history" button is located in the upper section of the device status window. The last 20 errors can be viewed here. This opens the "Alarm History/Warning" window: This screen includes:

- Causes
- Troubleshooting tips
- Buttons for quick access to the defined error reactions and warning thresholds for device and axes
- Warning status display for every axis

Back Histrory of alarm	ns and warnings				
		1			2
ror source	Device		Aoris 3		Axis 2
ounter	2		0		0
sbel	Error 24-15		Error 10-7		Error 10
ause	Supply unit: Internal error, addition index 1, 28, 29	onal info at para 704	Actual current exceeds motor maximum current		Actual c
amedy	Try to fix problem at supply unit, the axis module next to the suppl	Then, quit error on y unit.	Reset error and start again. Reduce overload or lower switching frequency.		Reset er lower sv
me of error occurrence	0 years: 0 days : 0 hours : 0 minu	ites : 3 seconds	0 years: 0 days	0 hours : 1 minutes : 1 seconds	0 years:
erCAT system time	0		0		0
0	14		Drive processor	#2.0	Drive or
	CC PHYSic line 912		unknown line 2	10	unknows
iveCom state	CC_TTTSC III ST2		Chevel		Shed
nerating hours (neuer stage) [hh-mm-se]	0		0		2040
perioding model (power everye) (minimizer)			0.0103601		0.00400
nual current (A)			0.0102551		10,00430
tual vonage [v]	0		6.03384		13.020
rual speed [OPEED]	0		0		27.0060
smp. heat sink modul 1["C]	162.95		20.30//		27.0006
emp. heat sink modul 2 [*C]	162.95		27.0011		27.5426
emp. heat sink modul [3 ["C]	162.95		21.1291		27.1207
emp. interior [*C]	3		44		44
m					
Error reactions (device)	Error reactions (axis 1)	Error reaction	na (axia 2)	Error reactions (axis 3)	
Warning thresholds (device)	Warning thresholds (axis 1)	Warning threat	rolds (axis 2)	Warning thresholds (axis 3)	
	Warning state (axis 1)	Warning state (axis	: 2)	Warning state (axis 3)	
NO_SNT_START	UnderVol ^	UnderVol OverVol	^	UnderVol OverVol	*
Ø Br0	CurMot	CurMot		CurMot	
@ Bt 2	0 12t_Dev	I2_Dev		I2_Dev	
🛞 Bt 3 🕴	12t_Mot	Ø 12t_Mot		I2t_Mot	
	SpdActLim E	SpdActLim	E	SpdActLim	E
@ Bt4	InqActLim	IrqActLim		IrqActLim	
🙆 BR 5	TraCurReft im	TraC r Rell in		TraC a Ref Lim	
🛞 BL6	OverTemp	OverTemp		OverTemp	
@ Bt7	resv0	eresv0		esv0	
BEB D	Supply	Supply		Supply	
6 Bt 9	RTOS	RTOS		RTOS	
Ch 12	LimSwPos	UmSwPos		UmSwPos	
- u.u.	LimSwNeg	UmSwNeg		UmSwNeg	
	PosLimPos	PosLimPos		PosLimPos	
		and the second second second second			

Fig. 9.2: "Alarm History/Warning" window

A detailed history of the last 20 errors can be displayed in the project window directly in the project tree under ►Axis adjustment ►Device ►Alarms / Warnings.



- A list of the possible error codes can be found in the application manual of the respective device in the section "Diagnostics".
- The complete error list is also contained in the Device help (under Alarms/Warnings ► Error list). A good deal of further information on warnings, error reactions, the error history and error simulation can be found here.

9.3 Error messages/Error display

An error which is due to the operating software and not a device appears in the "Error message" window.

"Error message" window

remennenuung.	N
Fehler beim Parameterlesezugriff	
Weitere Informationen:	
Zeitüberschreitung beim Lesezugriff au	af einen Parameter
2122 22221	
Fehlerobjekt	
Fehlerobjekt Neues Projekt>USB: Servo drive	->Geräteinterne Parameterliste>Digitales Oszilloskop>1629-DS_yA;
Fehlerobjekt Neues Projekt>USB; Servo drive	->Geräteinterne Parameterliste>Digitales Oszilloskop>1629-DS_vA;
Fehlerobjekt Neues Projekt>USB: Servo drive	->Geräteinterne Parameterliste>Digitales Oszilloskop>1629-DS_yA
Fehlerobjekt Neues Projekt>USB; Servo drive	->Geräteinterne Parameterliste>Digitales Oszilloskop>1629-DS_vAx Verbindung neu aufbauen
Fehlerobjekt Neues Projekt->USB-: Servo drive	->Geräteinterne Parameterliste>Digitales Oszilloskop>1629-DS_vA; Verbindung neu aufbauen

"Error message": Description of the error that has occurred

"Further information": Additional information or error descriptions

"Error object": Information on the error location

"Acknowledge": Resets an error message

"Disconnect": The connection to the connected device is terminated.

"Establish new connection": An interrupted connection is reestablished.

"Close document in which the error occurred": The operating software remains "online" once a defective document has been closed.

Procedure in the event of an error:

- "Close program": The program must be closed when a fatal error has occurred.
- "Close current dialog box": If the error occurs within a dialog box, the dialog box is closed. Work may be continued with the operating software.
- "Close project": If the error is so fatal that the project is no longer functional, then the project is closed.
- "Close all windows": If the error which has occurred affects too many windows, it makes sense to close all documents. It is still possible to continue working with DriveManager 5, however. After the error has been remedied, the windows can be opened again, one after the other.
- "Remove device from project": In a project with several nodes, it can be useful to remove a fault device from the project so that work can be continued with the remaining devices.



9 Drive status

10 Device settings

10.1 Save/Load/Transfer device settings

10.1.1 General

There are various different ways and different objectives which are decisive for saving or loading. Depending on the active device, parameter data sets, device settings, device commissioning files, settings for an axis or the motor data of an axis can be created, saved and transferred.

These functions can be called in a number of different ways:

1. Via the tool bar "Basic operations of the active device"

🤊 - 🔇 - 🕲 Goonline Actual device: - Axis - 🗍 🕁 🗋 🖣 ሩ 🗎 🖛 🖓 🚛 🗍 🚓 🖏 👘

2. Via the main menu under "Active device / Active axis"



C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

10 Device settings

3. Or via the project tree under the device node.



The pictograms indicated in the table show which icon is required for which saving or loading function.

Key to pictograms

Symbol	Description
[]⇒]]	Save current device setting to file: Actuating this button opens a window in which a selection must be made as to whether a parameter data set or a device commissioning file should be saved.
	Transfer device setting from file to device : The device setting is loaded from a file and transferred to a device.
☞⇔	Load data from axis and save to file: Here, the settings of an axis or the motor data of an axis are saved.
@ .⇔[]	Copy data from file to the axis : The settings of an axis or the motor data of an axis are transferred from a file.
	Save settings persistently in device (RAM to ROM): The device settings are saved in the non-volatile memory (ROM) of the device.
∏ ⇒ \$	Create device commissioning file : Create commissioning file for the active device or for the entire project.
∏ ⇔ \$	Load device commissioning file:

Table 10.1: Key to pictograms

There are different file extensions depending on the type of data:

- Parameter data set and partial files for the device commissioning: *.dmdvadj
- Firmware package file: *.comfwarc
- Firmware files: *.hex
- Device commissioning files: *.comdvarc
- Device commissioning files: *.tftpcom (only for SO CM, TFTP (Trivial File Transfer Protocol) for simple file transfer without a loader program, or DriveManager 5)
- Project commissioning files: *.comprjarc
- Settings for one axis (*.dmaxdataset)
- Motor data for one axis (*.dmaxmotdat)
- iPLC files (*.plc)

The respective storage location can be changed via the main menu under "Extras > Options > Documents".

10.1.2 Save current device settings in file



Actuating this button opens an introductory information window in which a selection must be made as to whether only a parameter data set or a device commissioning file should be saved.

Information								
Hints for use of device settin In addition to the transfer of the device settin commissioning files" now on other devices. 1. For the purpose of batch commissioning	Hints for use of device settings In addition to the transfer of the device setting by parameter files (* dmdvadi) you can transfer the entire device setting through *Device commissioning files* now on other devices. This new kind of transmission has following advantages: 1. For the nurses of bath commissioning there 's also an easy-to-use external loading program weilable in addition to this program.							
A double-click on the file is enough to start the 2. The device commission file may include addition to the parameter data set. Therefore one simple action of you.	 The exclusion of the file is encoded to the second case of the second case o							
traditionally way:	traditionally way: new way:							
Save as parameter setting file	[]] ⇔ 🔹 Save as device commissioning file	Cancel						
Don't show this information again								

When Save as parameter data set is selected, a window opens for saving the device settings using the file type *.dmdvadj.

Afterwards, the creator and a description can be supplied in an additional window. The Options button opens yet another window for the exact selection of parameters (All those portable / Only motor data / Select storage group(s) / Select individual parameters).



Save as device commissioning file

A window opens here independently of the connected device in which the exact contents of this file must first be defined. The contents are always dependent on the active device and consist of at least two sources which must be defined.



1. Selection of the source for the firmware package: *.comfwarc

2. Selection of the source for the device setting (parameter data set). However, there are three options here.

- Device
- File: Partial files for the device commissioning: *.dmdvadj
- Restoration from target device: Here the original data of the target device are written back after loading of the firmware package.

10 Device settings

DriveManager 5 Program help

67



Here it is also possible to add different types of information and descriptions before the save operation. Afterwards, the window for saving the device commissioning file opens (*.comdvarc).

10.1.3 Transfer device setting from file to device



This is the reverse method; loading the device

settings "FileName".dmdvadj and transferring to the device. Additional windows with information and options open for this purpose. A log of the copy operation can also be displayed.

Load device setting from file					
Source setting information Originator pastalex Description		Source device informa Name Family Alias name Software version Introduction	tion Mein Safety ServoOne Mein Safety V4.05-07 High performance si with integrated funct (SIL 3)	ngle axis drive tional safety	
Show protocol of copy operation Ok Cope	Options Parameter selecti Al Motor data User defin Save non OK	on a only ed selection volatile inside device Reset to default o	ptions		22

10.1.4 Load data from axis and save to file

This option is only available for devices of the series SO CM.

Actuating this button opens a window in which the data type to be saved can be selected:

- Settings for one axis (*.dmaxdataset)
- Motor data for one axis (*.dmaxmotdat)



Afterwards, an additional window opens containing the following selection:

- All axis settings
- Axis motor data only

The creator and a description of the file can also be entered here.



10.1.5 Copy data from a file to the axis

Actuating this button opens a window in which the data type to be loaded can be selected:

- Settings for one axis (*.dmaxdataset)
- Motor data for one axis (*.dmaxmotdat)



10 Device settings

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

Load axis data from file	st • Device settings	• to Device settings durch	x o	
Organisieren • Neuer Ordner	x y beneeseungs)		
Downloads Suletzt besucht	▲ Name SO CM-3 ↓ SO CM-3	^ .0006.2100.0 (Achse 1).DmAxDataSet .0006.2100.0 (Achse 2).DmAxDataSet	•	Select data type
Dateiname: 6.210	0.0 (Axis 1)	 Axis setting (*.dmaxda Axis setting (*.dmaxda Axis motor data (*.dmaxda All files (*.dmaxda) 	taset) taset) axmotdat)	

Afterwards the following control window opens. Here, a log of the copy operation is displayed while the data are being copied.

ad axis data from fil	e				
Load single a	tis data of a multiple axis device from file	.			
File	06.2100.0 (Achse 1)				
Axis	TCP/IP->192.168.39.8>50 CM-3.0006.2100.0>Ge	väteinterne Paramet			
Data type	Single axis setting				
Originator					
Description	Daten der Achse 'Achse 1'				
Data source informati	on:				
Device name	SO CM-3.0006.2100.0				
Family	ServoOne				
Software version	V1.36-10				
Introduction	Triple-axis servo controller, DC-powered by ce	ntral supply unit			
Copy protocol:					
Copy axis setting	Close				

10.1.6 Create device commissioning file

 $\mathbf{1} \Rightarrow \mathbf{3}$ In the first step, the extent and the contents the device commissioning file should have must be selected.

- File for commissioning the entire project
- File for commissioning only the active device

lect commissioning type	
Select content of commissioning file	
The project contains multiple devices. Do you want to create a commissioning file for the entire project or only for the active device?	
Entire project (multiple devices)	
Active device (TCP/IP->192.168.39.5->5_Mein Senior)	
Ok Cancel	

Afterwards, a window opens in which the exact contents of this file must first be defined. The contents are always dependent on the active device and consist of at least two sources which must be defined.

This process has already been described in Section "Save as device commissioning file" on page 66

69

DriveManager 5 Program help

10.1.7 Load device commissioning file

 $\mathbf{I} \leftarrow \mathbf{I}$ This pictogram is used for loading a device commissioning file.

This is the reverse method; loading the device commissioning file "FileName".comdvarc and transferring to the device.

Further information about the entire topic can be found in the section: Serial commissioning Introduction

The macro recorder can also be used to create, save and transfer individual parameters. Further information about this can be found in the section: Macro recorder.

10.2 Printing the device setting

The device setting can be printed in part or as a complete parameter list in the list view.

Only the parameters of the dialog box which are focused in the workspace are printed when the print command in the main menu under **File > Print device setting** is used. Using the subject area "Overview" icon prints all device settings which can be accessed in the "Local administrator" user level.

File	View	Project	Edit	Actual device	Extras	Windows
	New				•	
=	Open				•	
	Save			Ctrl+S		
	Save "Dr	ive Setting	s" as	Ctrl+Shift+S		
7	Save all					
1	Page set	tings				
7	Print "Dr	rive Setting	s"	Ctrl+P		
à	Preview	of "Drive S	ettings'			
	Import			I	•	
	Recent p	projects				
	Recent f	iles				
	Close			Alt+F4		

The subject area to be printed or the overview of the device setting must be the present focus of the workspace.

Further information about printing can be found in Section "Printing documents" on page 42.



10 Device settings

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

DriveManager 5 Program help 71

10.3 Compare data sets and settings

The current device settings can be compared with an previously existing data set, with a data set of a different device or with the factory settings.

Compare settings

Click on the "Compare settings" icon in the standard bar or on this menu item in the main menu under **Extras > Compare settings**.

Choose the two data sets which are to be compared. In addition, the selection of the parameters can be restricted further and whether the parameters which are not present should be marked can be specified. Start the comparison by actuating the button.



The two data sets are contrasted in the dialog box displayed for the parameter comparison:

Orive Settings Setting 1 Setting name: Device name: Device SW version:		Settings e: e: version:	SOCM-Test->TCP/IP Mein Senior V4.05-04	Setting 2 Setting name: Device name: Device SW version:	✓ X SOCM-Test~>TCP/IP~>192.168.39.6~>6_M Mein Serior V4.05-04	
S	Setting intro	duction:	Servo drives from 2 to	Setting introduction:	Servo drives from 2 to 450A for AC powered s	
	11	SUDIO	RARA SetCond	Value setting 1	Value setting 2	4
	103	0	MPRO INPLIT ES ISD02	4	0	
	131	0	MPRO OUTPUT OFA Offect	1	0	
	132	0	MPBO OUTPUT OFA Scale	0	1	
	132	1	MPBO OUTPUT OFA Scale	0		
	201	0	MPRO TAB PSod	0	100	
	270	0	MPRO FG PosNorm	18	1048576	
	510	0	ENC CH1 Num	0	1	
	602	0	ENC CH3 Period	565	0	
	2253	0	MPRO 402 VelEncRes	0	1048576	
	2260	0	MPRO 402 AccFact	0	1	
	2260	1	MPRO_402_AccFact	100	1	
	2279	0	MPRO_402_TouchProbeFunction	100	0	
	2609	0	MPRO_TWIN_RemoteScaling	100	1	
	2609	1	MPRO_TWIN_RemoteScaling	100	1	
	2609	2	MPRO_TWIN_RemoteScaling	100	-15910	

The view can be printed out using the print command in the main menu. There is also a print preview available. With a right-click on the dialog box of the displayed data sets, this can also be saved as a data set.

File	View	Droject	Edit Actual devic	e Evtrar	Windows	Help		
	New	riojeci	cuit Actual devic	e Extras	+ br	•	- XI 🕗	
	Open			• [
	Save			s				
ø	Save "Setti Save all	ng compa	rison result 1" as	S Enco	Encoder 💫 Control 🥂 Motio			
۹ 🗈	Page settin	ngs						
7	Print "Setti	ing compa	rison result 1"	p ^{itting :}	2			
R	Preview of	"Setting c	omparison result 1"	Settir	ng name:	SOCM-Test		
4	Import			► Devi	ce name: ce SW version:	Mein Senior V4.05-04		
	Recent pro Recent file	ojects s		Settir	ng introduction:	Servo drives f		
	Close			4	wing 1 Volumenting 2			
-	10	SUD IU	INditie		varue šettin	g 1	Value setting 2	
12	11	4	PARA_SetCmd		1		0	
-	103	0	MPRO_INPUT_FS_ISD02		4		U	
ě.	131	0	MPRO_OUTPUT_0	DEA_Offset	1		0	




11 Digital oscilloscope/digital scope

11.1 Scope settings

11.1.1 Basic functions of the digital oscilloscope

Using the digital oscilloscope makes it possible to record time histories for control variables as well as individual bits of control and status words. There are 6 channels available for this purpose. This is a suitable tool for commissioning, analysing controller performance and for error analysis.

Functions and settings

- Recording with up to 6 channels.
- Trigger signal selection
- Pre-trigger selection
- Bit-trigger selection
- Time basis selection
- Editing recordings
- Creating serial recordings
- Save, load and archive

11.1.2 Operating the digital oscilloscope

The oscilloscope in the window view:

Operating the digital oscilloscope is typically done via the "Digital Oscilloscope" window. All of the functions are available in one window with different tabs. It can be positioned as desired, hidden or undocked or also be anchored at the edge of the screen as a tab.



Functions available via the "Central Oscilloscope Control":

Another option is to use the "Central Oscilloscope Control". This can be opened via the main menu under **Project > Central Oscilloscope Control** in the central active window. Here there are separate windows for all of the channel, trigger signal and time settings and these have the same parameters as in the oscilloscope window.



DriveManager 5 Program help 73



Channel selection and configuration



11.1.3 The channel selection

The digital oscilloscope window contains four tabs with different displays for channel, trigger, time and options. The first (left) tab contains the settings and functions for the "channels" of the oscilloscope. The buttons with the digits 0 to 5 indicate the available channels. A single click on the rectangle opens the editor with the available recording variables for this selected channel.

The channel selection window opens the window for the signal selection. However, this can also be opened directly from the project tree under > Digital oscilloscope > Signals.

Digital Scope signal selection					8
Double dick signal for channel 0 All signals		-+	- Show raw	data 🔀 Reset	
Signal path: Consider->Axis 1->Encoder->C	hannel 1				
Folder	ID In	dex T	Channel	Signal	Unit
	6	0 S	3	ADC - Encoder channel 1 track A (axis 1)	V
🗎 🕀 🦢 Axis 1	7	0 S	Off	ADC - Encoder channel 1 track B (axis 1)	V
😥 🐝 Motor	33	0 S	Off	Track A (axis 1)	V
Encoder	34	0 S	Off	Track B (axis 1)	V
Channel 1	41	0 S	Off	Counter (axis 1)	incremen
Channel 2	43			Actual encoder monitoring value (axis 1)	
Cantral 3	42	0 S	Off	Anzahl Quadrantenfehler (axis 1)	
Diabal incude	51	0 S	Off	Encoder status information (axis 1)	
C_ Digital inputs	2851	0 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Actual Position Singleturn	
BharCAT	2851	1 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Actual Position Multiturn	
2 Status	2851	4 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Encoder raw data low word	
Actual values	2851	5 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Encoder raw data high word	
H- das Axis 2	2851	6 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Unfiltered speed from encoder module	UPM
H da. Axis 3	2851	7 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker	
Device	2851	8 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker single turn position	
, i i i i i i i i i i i i i i i i i i i	2851	9 P	2	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker multi Turn position	
J				III	+

Project 🗸 🗘 🕹	Central control of o	sciloscope	/+ D	igital Scop	e - Signals			- x
🔋 • 🗄 🗄 🗙 Online 🕂 🤪	Double click signal for d	hannel 0 Al	signals		🔹 🕂 Show raw data 😒 Reset			
Beispielprojekt 1 TCP/IP	Signal path: 🗁 Sig	gnale						
L 192 168 39 5	Folder	ID In	dex T	Channel	Signal	Unit	Symbol	-
d. R. Device	⊞∳- Signale	2313	0 P	Off	Axis 1: Motor brake status bits.		MPRO_BRK_Status	- 1
Ch Drive settings	🕀 🦣 Axis 1	6	0 S	3	ADC - Encoder channel 1 track A (axis 1)	V	Axis 1: ADC_CH1_A	
Distal Scope	🕀 🦓 Axis 2	7	0 S	Off	ADC - Encoder channel 1 track B (axis 1)	V	Axis 1: ADC_CH1_B	
di Sanah	🕀 - 🎰 Axis 3	33	0 S	Off	Track A (axis 1)	V	Axis 1: CH1-TrackA	
		34	0 S	Off	Track B (axis 1)	V	Axis 1: CH1-TrackB	
ter chammens		41	0 S	Off	Counter (axis 1)	incremen	Axis 1: CH1-Counter	
-/ 4 Hecord control		43	0 S	0	Actual encoder monitoring value (axis 1)		Axis 1: CH1-EncObsAct	
		42	0 S	Off	Anzahl Quadrantenfehler (axis 1)		Axis 1: CH1-CntCor_Err	
Trigger		51	0 S	Off	Encoder status information (axis 1)		Axis 1: CH1_Status	
		2851	0 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Actual Position Sin		Axis 1: ENC_CH1_ActVal[0]	- 6
		2851	1 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Actual Position Mul		Axis 1: ENC_CH1_ActVal[1]	- 4
		2851	4 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Encoder raw data I		Axis 1: ENC_CH1_ActVal[4]	- F
		2851	5 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Encoder raw data		Axis 1: ENC_CH1_ActVal[5]	- F
		2851	6 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Unfiltered speed fr	UPM	Axis 1: ENC_CH1_ActVal[6]	- 5
		2851	7 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker		Axis 1: ENC_CH1_ActVal[7]	- 2
		2851	8 P	Off	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker single		Axis 1: ENC_CH1_ActVal[8]	- 2
		2851	9 P	2	Axis 1: Encoder act. values (CH1, Multiencoder)> Zero marker multi		Axis 1: ENC_CH1_ActVal[9]	- 2
		4	0 S	Off	ADC - Encoder channel 2 track A (axis 1)	V	Axis 1: ADC_CH2_A	
		5	0 S	Off	ADC - Encoder channel 2 track B (axis 1)	V	Axis 1: ADC_CH2_B	
		45	0 5	Off	Track A (axis 1)	V	Axis 1: CH2-TrackA	
		46	0 5	Off	Track B (axis 1)	V	Axis 1: CH2-TrackB	
		47	0 S	Off	Counter (axis 1)	incremen	Axis 1: CH2-Counter	1
		< 10	0.0	04	A short an and an an alteria south of Annia (A)		1	F I

The signal window with the currently contained signals for the respective subject areas/topics can be opened everywhere the oscilloscope pictogram or the blue text "Oscilloscope signals of" appears.

÷	Scope Status	signals o	F					
		Device s	tatus Scope sig Device stat	mals of	¥	д	X	
				Cockpit	Scope s Cockpit	sign	als c	of

Displaying the signal selection in a graphic interface dialog

Current control + X Back Settings of "Current control" of device When the mouse pointer is positionedover an arrow, the green signal curve, - a signal name, 0 V/A Field control the signal selection window 4 ms ind PM/M Advanced settings of torque control Speed control isare epst Scope signal map -1-Double click row to map signal to Scope channel 0 Reset Scope mapping Hold bra Index T Channel Signal ID Unit Step res Off q-axis ref. voltage (axis 1) 19 0.5 26 0 S Off current vector, comp. alpha (axis 1

Direct visualization of the signal in the subject area

If a subject area has signals, a new node with the name "Scope signals of ..." is created under this subject area. The signal selection window opens when this node is activated. The window can be closed using the "x" button (The window only closes automatically if it was opened in a screen with the cursor on an arrow or the green signal curve)





Description of the signal selection window

DriveManager 5 Program help 76

Signal selection (display): Deletes the channel number. Allsignals See the explanation in The settings of the trigger signa Only parameter signals (P) the section below and the time remain unaffected Only original signals (S) by this. -+- Digital Scope - Signals **→** × Double click signal for channel 0 All signals 🔹 🕂 Show raw data 🛛 🗟 Reset Signal path: 🚞 Signale-->Axis 1-->Actual values Folder Channel Signal Index T Unit Symbol 🔺 ⊟--- √- Signale 0 S Off phase current u (axis 1) Δ Axis 1: is 🖻 🖢 Axis 1 0 S Off phase curre Axis 1: is Δ Display drop-down list for 🗄 🌍 Motor 0 S Off phase Axis 1: is A channel assignment 🗄 👻 Encoder por on actua 1004 0 S Trigger incr Axis 1: ep Control Digital inputs Off 🖌 1021 Off Actual torque value (axis 1) S Nm Axis 1: M - ∺ Limits/thresholds 1020 1/min Axis 1: N 🗄 ≑ EtherCAT 65 3016 1/min Axis 1: N Path of the folder whose signals are - 🔐 Status 1 P tual speed Axis 1: C rpm displayed in the list. 3016 3 P Axis 1: C ctual torque Nm 🗈 🏠 Axis 2 2303 0 P Axis 1: Factor group: Values in user units --> Actual speed in user units SpeedUnit Axis 1: M Axis 3 Of 2303 1 P Off Axis 1: Factor group: Values in user units --> Reference speed in user units SpeedUnit Axis 1: M 2303 2 P Off Axis 1: Factor group: Values in user units --> Command speed in user units SpeedUnit Axis 1: M 3 P Off 2303 Axis 1: Factor group: Values in user units --> Speed difference in user units SpeedUnit Axis 1: M 2303 4 P Off Axis 1: Factor group: Values in user units --> Position tracking error in user units PosUnit Axis 1: M 2303 5 P Off Axis 1: Factor group: Values in user units --> Actual position in user units PosUnit Axis 1: M 2303 6 P Off Axis 1: Factor group: Values in user units --> Reference position in user units PosUnit Axis 1: M 24676 0 P Off Axis 1: DS402 position actual value PosUnit PositionA 0 P Off 24684 Axis 1: DS402 velocity actual value SpeedUnit VelocityA 2967 0 P Off Axis 1: CON FM ActValues --> Quadrature axis actual current Axis 1: C A 2967 1 P Off Axis 1: CON_FM_ActValues --> Direct axis actual current A Axis 1: C 2967 2 P Off Axis 1: CON_FM_ActValues --> Actual motor current amplitude (filtered) Δ Axis 1: C 2007 20 04 ALL A CON THE ADDALLS & OUR ADDALLS AND ADDALLS A.... 1. 0

Column	Description
ID	Display of the parameter number with the ID of a parameter signal.
Index	Index number (subparameter)
Т	P: Parameter signal / S: original signal
Channel	Channel selection: Off, channel 0-5 and trigger
Signal	Signal description /Signal name
Unit	Parameter variable unit
Symbol	Symbol name
Туре	Data type (Unit, Float, Bool, String,)

Table 11.1: Description of the signal selection window symbols

Display raw device data (expert mode)

When the option "Display raw device data" is enabled, invisible parameters which might exist in the background are displayed (main menu: Extras > Options > Display > Display of device data).



After a reboot of DriveManager 5, the raw data of the device are then visible once the "Display raw data" button is enabled.

Digital Scope - Signals Double dick signal for channel 0	II signals		•	🕂 Show raw data 🛛 Reset			. x
Signal path: 🗁 Signale>Urspr	üngliche O:	zilloskopsigr	nale>System	1			
Folder	ID	Index T	Channel	Signal	Unit	Symbol	
	1515			CC left input signal		HasPreDevice	
- Vrsprüngliche Oszilloskops	1517	0 S	Off	CC right input signal		HasNextDevice	-
i	1516	0 5	Off	CC enumeration state		EnumState	-
	1011	0 5	Off	Reference generator: state (axis 1)		Axis 1: REF_State	
	3011	0 5	Off	Reference generator: state (axis 2)		Axis 2: REF_State	
	5011	0 5	Off	Reference generator: state (axis 3)		Axis 3: REF_State	
Vebug	1010	0 S	Off	Reference generator: event (axis 1)		Axis 1: REF_Event	
A Harrison	3010	0 S	Off	Reference generator: event (axis 2)		Axis 2: REF_Event	
	5010	0 S	Off	Reference generator: event (axis 3)		Axis 3: REF_Event	
And VSI (available on Avia	1012	0 S	Off	DriveCom actual status (axis 1)		Axis 1: ActState	
Scope	3012	0 5	Off	DriveCom actual status (axis 2)		Axis 2: ActState	
	5012	0 5	Off	DriveCom actual status (axis 3)		Axis 3: ActState	
Encoder	1013	0 5	Off	DriveCom actual event (axis 1)		Axis 1: ActEvent	
	3013	0 S	Off	DriveCom actual event (axis 2)		Axis 2: ActEvent	
	5013	0 S	Off	DriveCom actual event (axis 3)		Axis 3: ActEvent	
	1014	0 5	Off	DriveCom control word (axis 1)		Axis 1: Control DWord	
Communication	3014	0 5	Off	DriveCom control word (axis 2)		Axis 2: Control DWord	
🔅	5014	0 5	Off	DriveCom control word (axis 3)		Axis 3: Control DWord	-
4 III >>	•			III			•

11.1.4 The trigger settings

The settings for triggering can be found in the digital oscilloscope window on the "Trigger" tab. The event that is to trigger the recording can be defined here.

The **"Manual Trigger"** button initiates the event which triggers a recording with a single mouse click.

The trigger mode can be set in the pull-down menu under **"Mode"**, which means the trigger edge can be selected. The trigger signal can be sent on a rising or falling edge or by both edges, either normally or symmetrically.

The **"Level"** setting specifies the signal level, or threshold, at which the recording is triggered.

With the **"Pre-Trigger"** function, the recording begins before the actual trigger point, e.g. 10% relative to the recording duration.

"Bit Trigger": Triggering starts when a selected bit of the DRIVECOM state machine has been set. Range [-1...31] (For information on the DRIVECOM state machine > see Device help)



DriveManager 5 Program help 77







11.1.5 The time setting

The recording duration and the sampling time can be set in the digital oscilloscope window on the "Time" tab. Values smaller than the base sampling time are ignored and are set to the respective value of the base sampling time. The sampling time is limited by the available storage capacity for the scope function and the number of active channels. The recording duration entered by the user is reset to reflect an optimized value based on these criteria.

Setting the time basis



NOTE •

To achieve the best resolution, it is recommended that the "sampling time" be set to 0 and then the desired recording duration be selected.

11.1.6 Options

In the digital oscilloscope window on the "Options" tab, a container name can be selected in which the subsequent recordings are saved. If a series recording is desired, this function can be set by placing a tick mark beside "Enable serial plot." After a recording has been made, it is loaded to the container specified for this purpose. If no container name is specified under "Container," a name with a timestamp is generated automatically. The desired recording time can be selected from between 0% and 100% of the maximum possible recording time.

Assigning a container name:

- Set container to "new."
- Permit serial recordings (only if desired)
- Assign a defined container name
- Optional: "Always create a new container" for every recording



The "Activate Oscilloscope" button makes it possible to activate the oscilloscope in a servo controller via DriveManager 5 and subsequently terminate the connection again. If a trigger event occurs after the disconnection, this can be displayed via the "Read oscilloscope data" button after the connection has been re-established.

11.1.7 Start recording

If the oscilloscope is not visible in the user interface, it can be opened in the main

menu under "Active device" using the symbol **We** Digital Scope or via the project tree "Digital Scope".

Procedure for a recording:

- 1. **Channel setting:** Select the variables to be recorded. Select display of the labelling on the right or left y-axis
- 2. Trigger setting: Select the trigger signal and set the trigger conditions
- 3. Time setting: Enter the sampling time and the recording time
- 4. Triggering a recording:

Actuate the button **"Start"**. When the trigger conditions are fulfilled, the recording begins automatically. A recording can also be started manually. To stop a recording operation prematurely, actuate the **"Stop"** button. The **"Status"** display shows the current state of the digital oscilloscope.

11 Digital oscilloscope/digital scope

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

11.2 Scope recording

11.2.1 Toolbar for editing oscilloscope recordings

Symbol	Description					
	Visual signal setting / Curve display:					
	 Selection of the scope variable to be edited 					
	 Switch signal view on/off 					
	 Arrangement of the Y variable on the left or right Y-axis 					
	 Curve display: Colour, line thickness 					
	 Measurement values can be indicated with an accuracy of up to 6 decimal places See Section "Visual signal setting / Curve display (signal properties)" on page 85 					
T	Edit record caption: Edit the title of the scope recording.					
Table 11.2:	Symbols on the toolbar for editing oscilloscope recordings					



Symbol	Description
	Switch display on/off for title, footer and key: This allows the title, footer and key to be shown or hidden.
	Activates measurement tool: Measure the curves; measurement values can be read in the measurement value window. See Section "The measurement tool" on page 85
5	Activates/deactivates 'dragging' and 'dropping': Activates/deactivates 'dragging' and 'dropping' for curves, which makes cutting, copying and saving them possible. See Section "Cut, Copy, Paste and Save" on page 83
x ¹	Mathematical functions: FFT, Subtraction, complex FFT, addition, frequency analysis. See Section "Mathematical functions" on page 86
9.	Activate setting of the oscilloscope on the device: Oscilloscope settings from a recording are applied directly by actuating the button and the original recording conditions are thereby restored.
X	Conversion of the recording to an Excel file: The coordinates of a recording are transferred to an Excel list and saved.
0	Oscilloscope help: Opens the online program help
HEX HEX	Show numbers in hexadecimal: Switches the numbers between decimal and hexadecimal

Table 11.2: Symbols on the toolbar for editing oscilloscope recordings (continue)

Symbol	Description
nke Y 🔹	Axis assignment for direct measurement: Selection of the left or right Y-axis
= 2,582 : 256800	Display of the measured values
ħ	Add digital oscilloscope recordings: Add additional recordings to the open container.
×	Delete digital oscilloscope recordings: Delete recordings from the container and also from the hard drive.
12	Divides the container into two views: Opens a second container. This means these scope recordings can be displayed next to each other (using a new horizontal or vertical tab group).
Ø	Send digital scope recording via email: If Microsoft Outlook is installed as the email program, an email with attachments can be created with no extra steps performed by the user (see Section "Email function" on page 58).

Table 11.2: Symbols on the toolbar for editing oscilloscope recordings (continue)

11.2.2 Saving a recording

Generally, all recordings are saved automatically; no explicit saving is possible.

"Save as"

The currently open recording is saved under a new name.

The saved recording is stored on the path C:\Documents and Settings\User Name\My Files\DriveManager 5\Projects\Demo_Project\Digital Scope with the extension: xxx.dmdsr. The storage location can be changed under **Menu <Extras <Options**.

11.2.3 Loading an oscilloscope recording

A saved scope recording (*.dmdsr) can be loaded via the main menu under 'File > Open > Oscilloscope recordings...'.

	File	View Project Edit	Act	ctual device Actual axis Extras Window
-		New	•	🖌 🔊 🛛 Local Administrator 🔹 🚽
1		Open	•	Project
		Save Ctrl+S		My Digital scope record
		Save IE as Ctrl+Shift+S		Device setting
	Q.	Save all		Message logger
	ħ	Page settings		Smart PLC sequence program
Γ	ā	Print IE Ctrl+P		Dictionary
	B.	Preview of IE		

11.2.4 Cut, Copy, Paste and Save

Ň

Individual curves within a graphic can be selected, copied, cut and pasted into a different graphic. A recording can be saved in the BMP, JPG or TIF format under **Save image as...** A selected curve is displayed with a double-wide line width. The function can be cancelled by clicking in the area next to a curve.

11 Digital oscilloscope/digital scope



The selected curve can be copied to memory using the **Copy** function and the marking of the currently selected curve is removed. With a right-click in a second graphic, the options menu is once again displayed at the top in the centre of the image. In this case, the functions "Cut" and "Copy" are disabled and the function "Paste" is enabled. Selecting this function inserts a copy of the previously selected curve from the first graphic into the second graphic. The scaling is adapted automatically and the inserted curve is shown in a different colour. Use **Cut** in the same manner with the exception that the curve selected in the first graphic is then deleted.

A curve can be copied from one graphic to another with the "drag & drop" function. To do so, after the curve has been selected, press and hold the <Ctrl> key and then left-click the curve and hold down the mouse button while dragging the curve into the second graphic. The cursor changes to an arrow with a plus sign.



11.2.5 Labelling a scope recording

T

Any name desired can be chosen for the scope recording. The default designation consists of the label "Recording of device, date and time" as the title of the graphic.

11.2.6 Print an oscilloscope recording

DriveManager 5 has a special print function with a variable print menu. Only the document which is the current focus of the workspace is printed.

If there is only one recording, the print command in the main menu under **File > ... Print** prints it out.

If there are several recordings available in a container, the one that is currently visible is always the one that will be printed. The recording can be printed in portrait or landscape format. If the measuring tool is active, the measurement values are also printed out. A print preview can also be displayed.

· · · · · · · · · · · · · · · · · · ·			
New		•	K 🔊 I
Open		•	device:
Save	Ctrl+S		il device.
Save IE as Ctrl-	+Shift+S		
Save all			
Page settings			
Print IE	Ctrl+P		
Preview of IE			
Import		•	
Recent projects			
Recent files			
Close	Alt+F4		
	New Open Save Save IE as Ctrl- Save all Page settings Print IE Preview of IE Import Recent projects Recent files Close	New Open Save Ctrl+S Save IE as Ctrl+Shift+S Save all Page settings Print IE Ctrl+P Preview of IE Import Recent projects Recent files Close Alt+F4	New Image: Constraint of the second

Project Edit Actual device

File View

Additional information on the general print functions can be found in the Section "Printing documents" on page 42 11.2.7 Visual signal setting / Curve display (signal properties)

+

The display of a curve can be modified as desired. Select the curve which is to be modified using the "Visible signal properties" window. Curves that are not needed can be hidden completely.



Procedure for curve display:

- Selection of the recording variable to be edited
- Show/hide signal view: Curves can be shown or hidden.
- Arrangement of the Y variable: In order to get an optimal display of the curve, the coordinates of the y-axis can be displayed either on the left or the right yaxis.
- Curve display: Modifying the colour and line thickness
- Decimal places: The decimal places refer to the "Measurement tools" function. Measurement values can be specified with an accuracy of up to 6 decimal places.

11.2.8 The measurement tool

i....

The tool for measuring function curves can be activated using this pictogram or with this button in the toolbar. The measurement function remains active after use and actuating it once again then disables the function.

Using the measurement tool

The red markers are labelled with T1 and T2 on the x-axis (abscissa) and with S1 and S2 on the y-axis (ordinate). To the left, next to the marker of the ordinate, there are two fields which indicate the exact position of these markers on the ordinate.

Two additional red markers on the right side, marked with S1 and S2, serve as additional measuring sensors with exact position and magnitude information.

The measured values are displayed in the lower area of the window (markers T1/T2, difference between the two markers, RMS, mean value, etc.)



DriveManager 5 Program help 85



Moving the markers:

- 1. Click the red triangular areas and with the mouse button held down, move to the left or right or up or down.
- Click any location. The pair of markers "T1" and "S1" must be moved so that the intersection point of these two markers is located at the point which was clicked. If the <Ctrl> button is also held down when clicking, the two markers, T2 and S2, are moved.

Once markers T1 and T2 have been moved to the location that is to be measured, the values are displayed below. The window contains the designation of the recorded curve, its units and the values at the T1 or T2 position, the difference between these two values, as well as additional data. There are checkboxes located at the left side with which the individual curves can be set to be visible or invisible. If the accuracy provided by 3 decimal places is inadequate, it can be increased to a maximum of 6 places in the "Signal properties" dialog box.

If the number of curves to be displayed in the measurement value window exceeds the space available in the window, scroll bars are automatically added, with which the areas that are not visible can be displayed.

11.2.9 Mathematical functions

X³

Various different computational operations can be carried out using the mathematical functions.



11.2.9.1 Addition and subtraction

Two curves can be **added** or a second curve can be **subtracted** from a recorded curve. Please note here that both curves must be from the same oscilloscope recording. Curves with different sampling times cannot be added together.



11.2.9.2 FFT (Fast Fourier Transformation)

A Fast Fourier Transformation of a signal is calculated. The result is the value of the amount and the phase.

This function serves to specify the frequency spectrum of any time signal desired, which can then be selected as "Operand A" after this option has been selected. Overall, all time signals of the selected scope recording are available. Compliance with the sampling theorem must be ensured by the user already at the point in time of the recording. Before actuating the "Apply" button, the user is able to make further, optional fine-tuning settings in the "Expert mode" which then affect the FFT that is to be carried out.

Operation:	Extended Paramete	rs
FFT of one signal: Result = FFT(A)	Tindow Type.	(IECLWIT
Operand A:	Range:	0 Hz 1024 Hz
act. speed from filter-nact [rpm]	Detrend:	long-mean 🔻
	nift:	1024 •
	Absolut Value:	🗖 X log. 📄 Y log.
Annhy Close	lacture	

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

11 Digital oscilloscope/digital scope

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

11.2.9.3 Complex FFT (complex Fast Fourier Transformation)

A complex Fast Fourier Transformation of a signal is calculated. The result is the absolute value of the amount and the phase.

The complex signal is entered in operand A (cosine signal real part) and operand B (sinus signal imaginary part). The FFT is formed using these two signals. The result is an estimate of the unbalance of the two encoder signals of a sin/cos encoder in terms of amplitude and phase. The advanced dialog box screen allows the elimination of the average value of the time signal as well as formatting of the axes. It is possible to switch between a linear and a logarithmic display.

Operation:	Extended Paramete	rs
Complex FFT: Result = Re(A) + jIm(B)	Window Type:	rectwin 💌
Operand A:		
act. speed from filter-nact [rpm]	 Detrend: 	long-mean 🔻
Operand B:	nfft:	1024 💌
act. speed from filter-nact [rpm]	•	
	Absolut Value:	Xlog. Ylog.
	_	

The "Bode Plot" option serves as a tool for signal analysis in the frequency range with which the transfer function between any two measurement signals can be determined. This makes it possible to create a model of a mechanical drive train for the design of the control system. Two time signals must be selected as operands A and B. Here, operand A is the excitation signal measured at the system input. Operand B must be set to the measured system response. Because of the finite data volume which results from the finite recording duration, only a frequency response estimate is made. After a computation of the frequency analysis, the amount and the phase are displayed in two containers.

Operation:	Extended Parameters		
Bode plot: (ndiff to nact) and (nref to nact)	Window Type:	hann	-
	Frequency Response:	H1	•
Operand A ¹	Range:	0 Hz	4096 Hz
act, speed from filter-nact (rom)	Detrend:	long-mean	•
Operand B:	nfft:	2048	•
act. speed from filter-nact [rpm]	Window Length:	1024	
	Overlap:	0.5	
	Absolut Value:	🗸 X log.	V log.
	Phase:	✓ X log.	

11.2.9.4 Bode plot

The Bode plot serves as a visualization of the transmission behaviour of a dynamic system and is also called the frequency response. An analysis of the quotient of an input signal and an output signal is calculated.

Explanation of the parameters and the enhanced parameters of the mathematical function

Depending on the selected mathematical function, the dialog box may differ from that shown. Some parameters are not available in every mathematical function.

Apply: The mathematical operation is carried out. The dialog box remains open. Further calculations are possible without needing to reopen the dialog box.

Close: The dialog box is closed.

Reduced: The dialog box can be displayed in the reduced form or in the expanded form with additional parameters. This option is not available for all mathematical functions.

Window type: Selection of various different window functions. Without the window function, strong signal peaks can occur.

Frequency: Type of frequency analysis

H0 – During the calculation, no forms of interference are suppressed which occur due to inadequacies in the measurement of the input and output signals.

H1 – Interference of the output signal is suppressed.

H2 – Interference of the input signal is suppressed.

Value range: Specification of the lower and upper limit of the frequency to be displayed.

Remove mean value: This parameter removes the mean value or the linear deviation of the data in four different ways: 'none': The mean value is not removed. 'short': Removes the mean value from every data segment. 'linear': Removes the calculated linear deviation from every data segment. 'long-mean': Removes the

mean value from the data before they are subdivided into segments. If the mean value is not removed from the data, then there is a large signal peak at a frequency of 0 Hz.

Length of the FFT: This parameter makes it possible to set the length of the Fast Fourier Transformation. The value is set to the length of the window by default. If a value larger than the length of the window is set, all excess values are filled in with zeros. If a smaller value is set, the window length is ignored.

Window length: This parameter provides the option of setting the length of each data segment. This value is set by default to window = sqrt(length(x)) and it is rounded up to the next power of two and is filled in with zeros.

Amount (x-log / y-log): In the results window, the absolute value can be displayed logarithmically in the abscissa (X-axis) or ordinate (Y-axis).

Phase (x-log / y-log): In the results window, the phase can be displayed logarithmically in the abscissa (X-axis) or ordinate (Y-axis).

11.2.10 Container functions

11.2.10.1 Container

You can fill a container with numerous recordings. When a container with the extension "*.dmdsc" (old) is opened with DriveManager 5, a directory with the same name is created automatically and the recordings which belong to the container are copied to this directory.

There can be any number of recordings saved in a container. Please take note, however, that only a maximum of 10 recordings can be present in the memory. Additional recordings are loaded separately as needed. If a container with 30 recordings in opened, for example, the selected recording and the 4 previous as well as the 5 subsequent recordings are loading into the memory. When a recording which is located outside the range of the 10 recordings already located in the

memory is selected in the selection combo box, a message box and a progress bar indicate that additional recordings are being loaded.

Moreover, please note that any modification of a recording such as the designation of a recording, changing the colour of a signal, copying a signal from a different recording immediately results in the recording being saved. This means that the recordings stored on the hard drive are always up to date. This also means that the "Save" icon in the toolbar and the "Save" menu item in the "File" menu are disabled.

No explicit saving of a container or a recording is necessary because the current state is saved automatically. The option of saving with another name using "Save as..." is still possible. A dialog box opens in which an existing directory or a new one can be selected. When making an oscilloscope recording, you can select in which "Container" the recording should be recorded. To do so, a container name must be selected.

Assigning a container name:

- 1. In the oscilloscope window, click on Options
- 2. Assign defined container name
- 3. Enable or permit serial recordings (only if desired)
- 4. Activate start button

Contents of a container

After a recording has been made, it is loaded to the container specified for this purpose. If no container name is specified, every recording is automatically given a current time stamp. All of the recordings are located in the selection field (see figure below). The button with a green arrow becomes visible if there are at least two recordings in the container. The arrows are used to navigate to the desired recording. The middle button starts a slide show of the recordings.

🔊 IE 💫 IE:1								+ X
Aufzeichnung von Gerät	vom 18.12.2018 14_11_31.dmdsr	-		>>	1	×	12	
Aufzeichnung von Gerät	vom 18.12.2018 14_11_31.dmdsr		= 10.65	: 10	035			
Aufzeichnung von Gerät	vom 03.01.2019 13 12 29.dmdsr		20103					
Aufzeichnung von Gerät	vom 06.12.2018 16 38 16.dmdsr					_		
Aufzeichnung von Gerät	vom 18.12.2018 18 47 33.dmdsr		Conte	nto	fa			
Aufzeichnung von Gerät	vom 19.03.2019 16 22 50.dmdsr		cont	ainc	vr .			
Subtraktion 26.03.2019 10 06 3	2.dmdsr		COIL	anie	1			
			1					

If there are one or more recordings in a container, the "Save image as" selection field can be opened with the right mouse button. A recording can then be saved in the bmp, jpg or tif format.

Cut
Сору
Paste
Visual signal settings
Save image as

11.2.10.2 Serial recording

Use the "Options" tab in the digital oscilloscope dialog box to create serial recordings. The serial recordings are saved in a single container. As an option, each individual recording can have its own container name assigned. The serial recording can be started using the "Start" button.

24 hours Recording

The "Activate Oscilloscope" button makes it possible to activate the oscilloscope in a servo controller via DriveManager 5 and subsequently terminate the connection again. If a trigger event occurs after the disconnection, this can be displayed via the "Read oscilloscope data" button after the connection has been re-established.

Options box for serial recordings



11.2.10.3 Comparison of several recordings

For comparison purposes and for the analysis of oscilloscope recordings, it is possible to open several recordings at the same time. The icons listed in the table are available for this purpose.

È	Add additional recordings to the open container
×	Delete recordings from the container and also from the hard drive
12	Open a second container. This means these scope recordings can be displayed next to each other (using a new horizontal or vertical tab group).

Use the button to open a second container. A second container display appears (see upper arrow). The Selector for the recordings (see lower arrow) shows all of the recordings that are present in a container.





11 Digital oscilloscope/digital scope

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

New window

After a right click on the tab of a container, a prompt appears asking whether the windows should be tiled or cascaded.



The measurement function can be used separately for every recording.



12 Load firmware

The firmware can be transferred to the device from the main menu under Extras > Load firmware. When doing so, the wizard decides whether a project already exists or not.

NOTE

 In regard to this topic, the chapter "Serial Commissioning" also presents the option of loading an entire firmware package (*.comfwarc) with additional components; see Section "Firmware package" on page 96.

Procedure: Loading the firmware with an existing project:

- Establish a connection to a project
- Main menu under Extras > Load firmware



퉬 CoDeSys	29.07.2011 09:55	Dateiordner	
🐌 Fieldbus	29.07.2011 09:55	Dateiordner	
\mu Prod	29.07.2011 09:56	Dateiordner	
\mu Revtext	29.07.2011 09:56	Dateiordner	
200031004.elf	27.07.2011 17:27	ELF-Datei	37.565 KB
200031004.ftp	27.07.2011 17:27	FTP-Datei	1.907 KB
200031004.hex	27.07.2011 17:27	HEX-Datei	5.362 KB
200031004.map	27.07.2011 17:27	MAP-Datei	1.969 KB
V200031004.comfwarc	29.07.2011 11:48	Drive service tool f	1.289 KB

When the "Start loading operation" button is actuated, a prompt is issued requesting that the firmware be selected. The device is put into the bootstrap mode. This state is indicated on the display by "L1". The transfer takes place when the HEX file is selected. The firmware download may take several minutes. The display shown changes during the transfer. The data transfer can be recognized in DriveManager 5 by the green bar at the lower right edge of the screen.

CAUTION!	Your system/motor may be damaged if put into operation in an uncontrolled or inappropriate manner.
	Improper conduct can cause damage to your system / machine.
	• Once the firmware has been installed, the controller is in the factory setting state. Afterward, either an existing or a new device data set must be loaded.

Procedure: Loading the firmware without an existing project:



12 Load firmware

12 Load firmware

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

- Switch off the device or disconnect the 24 V terminal.
- At the same time as the 24 V control voltage is switched on, press both buttons on the display and release them after about 2-3 seconds. The controller is in the "bootstrap mode" when "L1" appears in the display.
- If there is not yet a project present, this message appears:



Start load process

Select boo	t loader			23
Descript	tion of bo	oot device		
Devid	ce type			
Othe	r device			-
Boot	loader v	ersion		
Versi	ion >= 0	0002773 (with USB sup	port)	•
ОК		Cancel	Define it	Help

 Selection of the firmware: Select file. Depending on the device family, the firmware file can have the extension *.hex, *.tftp or *.comdvarc. The loading operation begins.

NOTE

To be able to transfer the firmware, the controller must be switched off.

13 Serial commissioning

13.1 Introduction

The objective of serial commissioning is to transfer commissioning data (suitable firmware, the device settings, etc.) to the drives of a serial machine via DriveManager 5 using a single mouse click. The special advantages of this procedure include an exceptionally high level of reliability and speed in the transfer of the data.

Serial commissioning of single axes

Creating a device commissioning file is sufficient for the serial commissioning of individual axes.

During the transfer of the commissioning files, each device is connected to DriveManager 5 ("peer to peer").

Serial commissioning of devices in the network cluster (Ethernet)

For serial commissioning of devices in the network cluster, a project commissioning file must always be created. It contains all the commissioning data. DriveManager 5 is connected to all devices simultaneously via a "switch".

The data for a serial commissioning operation are divided into the following three file groups.

- Firmware package
- Device commissioning file
- Project commissioning file

When loading device commissioning files, all types of these files (firmware, device, or project commissioning files) are evaluated. The correct loader is started for the respective file attachment.





13 Serial commissioning

DriveManager 5 Program help 95

Precondition for serial commissioning:

- The drives of the reference machine must be put into operation once via DriveManager 5.
- The commissioning files must be created so they are unique.
- In a single-axis device, each drive must be connected to DriveManager 5 during the transfer of the commissioning data.
- In a multiaxial system, the network must be set up. The addresses must be assigned manually. With Ethernet-based fieldbuses, such as EtherCAT, the network topology for the service channels is created automatically. DriveManager 5 is connected to all drives simultaneously via a "switch".

NOTE

When creating commissioning files, if there is a network cluster, a notice is provided automatically indicating the option of creating a project commissioning file.

13.2 Firmware package

File extension: *.comfwarc

The firmware package contains the firmware of all programmable units of a device and, depending on the device, has the extension "comfwarc", "comfvarc" or "tftpcom". This file can be transferred to a device via a separate loader or using DriveManager 5 via the main menu under **Extras > Load firmware...**. The firmware package is provided by the device manufacturer and contains the software components required for the transfer.



Contents of a firmware package:



Loading a firmware package with a separate loader without DriveManager 5

- Clicking on a desired firmware file opens the following window:
- Set the connection type
- Click the "Connect" button
- Press the start button





Firmware packages can be obtained from your service partner.



13 Serial commissioning

13.3 Device commissioning file

File extension: *.comdvarc or *.tftpcom

The device commissioning file is sufficient for the serial commissioning of individual axes. For serial commissioning of devices in the network cluster, the device commissioning files of all devices are grouped into a project commissioning file. When creating a device commissioning file, the contents must be defined.

Contents of a device commissioning file



Creating a device commissioning file via the button $\P \Rightarrow$



The contents are always dependent on the active device and consist of at least two sources which must be defined; the firmware package, the device setting (userdefined parameter data set) and possibly an iPLC program.

The description about this can be found in the Section "Save/Load/Transfer device settings" on page 64.

As an alternative to this, it is also possible to create a device commissioning file in the project tree.

To do so, the cursor must be positioned under the communication node in the project tree on the relevant device in order open the pop-up menu for defining the device commissioning file with the right mouse button.



Loading a device commissioning file

↓ Start button for loading a device commissioning file.

As an alternative to this, it is also possible to load a device commissioning file in the project tree.



Loading a device commissioning file with the separate loading program

- Before the transfer, the communication to the DriveManager 5 must be interrupted
- Clicking on an existing device commissioning file opens the following dialog box
- Set the connection type
- Select file for device commissioning
- Activate the "Online" button and press the start button





13 Serial commissioning

13.4 Project commissioning file

File ending: *.comprjarc

The project commissioning file contains the commissioning data of all devices integrated in a project. This only applies for devices in the network cluster.

In addition to the individual device commissioning files, the data for communication is also contained.



Create project commissioning file

1. Call via the main menu under Project > Serial commissioning > Create project commissioning file



2. Call via the quick launch bar $\P \Rightarrow$

In this case, there is a query whether a commissioning file for the entire project (several devices) should be created or only for the active device.

Select commissioning type	3
Select content of commissioning file	
The project contains multiple devices. Do you want to create a commissioning file for the entire project or only for the active device?	
 Entire project (multiple devices) 	
Active device (TCP/IP->192.168.39.5->5_Mein Senior)	
Ok Cancel	

100

DriveManager 5 Program help

A window opens for saving the entire project and in it, the exact contents of this project commissioning file must be defined. The source (device or file) must be selected for each individual device.

Create project commissioning file	
Define content of project commissioning file	
✓ 5_Mein Senior (TCP/IP->192.168.39.5->5_Mein Senior)	
Source: Device Device File	E
✓ 6_Mein Senior (TCP/IP->192.168.39.6->6_Mein Senior)	
Source: Device	•
7 Mein Senior	-
Ok Cancel	Help

Transferring an existing project archive with a separate loader program:

A double-click on the existing project commissioning file (*.comprjarc) opens the loader program. Afterwards, just click the Start button and the files will be transferred.

Device batch commissioning		23
🌗 Journal 👻 🧮 Options 🙈 E-Mail 🦓 About thi	nis program	
110701_thirstapplikation (C:\Temp\DM5 Versionen\110701_thirstapplikation.comprj	Select other file riarc)	
<u> </u>		
Start Qose		



13 Serial commissioning

13 Serial commissioning

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

13.5 Transfer error

The following information should be noted if a transfer error occurs.

Measures in the event of a transfer error

If there is an error during the transfer of the project commissioning file, it is possible to view the log file protocol with DriveManager 5 or with the separate loader program to check the location at which the transfer error occurred.

Error		
Error Message: Error in parameter read access		
Further information:		
System Xml XmException: Ung bei System Xml XmTextRead bei System Xml XmTextRead bei System Xml XmTextRead bei System Xml XmTextRead	htge Daten auf Stammebene. Zeile 1, Postion 1. rimpl Throw(Exception e) rimpl ParseBoot.evelWhatespace() rimpl ParseDocumentContent()	Emal
ОК	Close error causing document	Help

CAUTION! Da	amage to the device as a result of incorrect operation!
Fa pro	 ailure to exercise caution or follow proper working ocedures may result in damage to the device. After a faulty transfer, do not use the reset function. In this case, the transfer must be stopped in the pop-up window after about 2 minutes. Only then may the

14 Plug-in concept

14.1 Introduction to the plug-in concept

Drive Service Tools installation has changed fundamentally with version 5.6.x of DriveManager 5. The complete functionality of all applications is divided into packages that can be installed separately. These packages can also be installed or uninstalled separately in future. The plug-in concept greatly simplifies installation management of software components. For example, you can now easily modify, update or replace motor and encoder databases, device packages or even new kernel versions as plug-ins.

1 NOTE

• Please refer to the DriveManager 5 installation manual for details on basic and first-time installation.

During setup installation the program displays the various software components in the Application Startup window along with the appropriate version numbers.



1. Kernel packages

a. Kernel (interfaces, basic device functions)

b. Kernel visualisation (toolboxes, parameter controls, dialog boxes, etc.)

2. Device support packages (plug-in and device data)

3. Applications (DM5, commissioning loaders, etc.)

Installing device packages

There are three ways to handle and install device packages or plug-in packages:

- 1. From the distribution **hot-plug folder** (see section Section "Installing device packages from the hot-plug folder" on page 104)
- 2. Manually, using the Package Manager (PAM)
- 3. Automatically, using the PAMCLI (expert tool)





14 Plug-in concept

14.2 Installing device packages from the hotplug folder

The easiest way to install device packages is to add *.dstpackage files to the distribution hot-plug folder. Simply copy the files into the setup directory "..\PlugIn".

퉬 de			
퉬 Drivers	Name	Typ	Größe
🍌 DriveServiceTool			46.074.00
퉬 DST Kernel	CLine_5.6.0.3.dstpackage	DST Device Support Package	16.371 KB
LanguagePackages	Magnetic-Bearing_5.6.0.2.dstpackage	DST Device Support Package	2.638 KB
PlugIn	ServoOne_5.6.0.1.dstpackage	DST Device Support Package	18.446 KB
Resources	ServoOne-CM-Help_1.0.0.0.dstpackage	DST Device Support Package	25.492 KE
setup.exe	🗩 ServoOneCM-Kernel_5.6.0.2.dstpackage	DST Device Support Package	309 KE
Seconder	ServoOne-CM-MotorAndEncoder_1.0.0.0.dstpackage	DST Device Support Package	3.418 KB
	🗯 ServoOne-CM-Support_1.0.0.0.dstpackage	DST Device Support Package	281 KE
	🗩 ServoOneCM-Visu_5.6.0.3.dstpackage	DST Device Support Package	2.883 KE
	🗩 ServoOne-Help_1.0.0.0.dstpackage	DST Device Support Package	41.991 KE
	🗩 ServoOne-HF_5.6.0.2.dstpackage	DST Device Support Package	545 KE
	🗩 ServoOne-MotorAndEncoder_1.0.0.0.dstpackage	DST Device Support Package	2.196 KE
	🗩 ServoOne-PSU-Kernel_5.6.0.1.dstpackage	DST Device Support Package	18.288 KE
	🗩 ServoOne-PSU-Visu_5.6.0.1.dstpackage	DST Device Support Package	18.632 KE
	🗩 ServoOne-Safety-Kernel_5.6.0.1.dstpackage	DST Device Support Package	25.697 KE
	ServoOne-Safety-Support_1.0.0.0.dstpackage	DST Device Support Package	454 KE
	ServoOne-Safety-Visu_5.6.0.3.dstpackage	DST Device Support Package	33.878 KE
	ServoOne-ServoPump_5.6.0.2.dstpackage	DST Device Support Package	365 KE
	ServoOne-Support_1.0.0.0.dstpackage	DST Device Support Package	10.726 KE
	🛸 ServoOne-TLI_5.6.0.1.dstpackage	DST Device Support Package	18.333 KE
	ServoOne-Visu_5.6.0.2.dstpackage	DST Device Support Package	42.692 KE
	🛸 Smart-Energy_5.6.0.2.dstpackage	DST Device Support Package	6.815 KF
	🛸 Wind-Energy_5.6.0.2.dstpackage	DST Device Support Package	1.144 KE

When you run the setup program again, the system recognises all available device support packages in the "PlugIn" subfolder and adds them.

14.3 Package Manager (PAM)



General information about the Package Manager (PAM)

The newly introduced plug-in concept provides the user with a new tool for installing or removing device support packages. PAM gives the user an overview of installed packages, as well as details and dependencies of the packages. It also allows the user to define and manage profiles.



Running PAM manually

Unlike the other applications, such as DriveManager 5, the commissioning loader or IP network configuration, the installation does not create an icon on the desktop.

The program can be run from the Windows start menu, as shown. For installation purposes, PAM must be run in administrator mode (right click: Run as administrator).



If you don't launch PAM in administrator mode, all plug-in installation buttons are greyed out and you can only view plug-in information.

Running PAM automatically

Double-click on a package file (*.dstpackage) to automatically launch PAM in administrator mode and install the package.

Functions in the installation window





14 Plug-in concept

The following window is displayed when you install separate packages or entire collections.



so Installation and profile manager Info about this program Installation Profile Currently installed plugins: \$ 5.6.0.1 \$ ServoOne-Visu \$ 5.6.0.2 \$ ServoOne-Visu \$ ServoOne-Visu \$ \$ 5.6.0.2 Install plugin... Uninstall plugin ServoOne-HF \$5.6.0.2 Details Titel: ServoOne-Safety-Visu Kurzbesc Visualization of servo drives from 4 to 72 Å with AC or DC feed and with integrated safety control in SIL3 ServoOneCM-Ken Version Firma: Typ: ID: 74cca6f3-b6af-46e0-bf82-bc7722cf6891 . A Smart-Energy e560c7a4-e2ba-4c69-8264-19cc1261bf57 (ServoOne-Visu) Vater-ID: Zusätzliche Plugin-Abhängigkeiten [168cf3bb-6541-4b64-8062-ed4433d5d220 (ServoOne-Safety-Kernel) Schließen

Press the "Details" button for more information about the plug-ins.

Functions in the profile window

The profile window allows you to select special versions of each component, e.g. for testing purposes. The "latest version of all" option is enabled by default.

If you run DriveManager 5 without a profile in the command line option or, for example, by clicking the installed desktop icon, it automatically loads the latest (or only) version of each installed plug-in.

ation	Profile				
elec	t profile: The latest of the	em all		•	
	Name	Version condition	Effective version	-	Duplicate profile
Ŷ	CLine	Newest	5.6.0.3		Delete profile
9	Magnetic-Bearing	Newest	5.6.0.2		
9	ServoOne	Newest	5.6.0.1		
9	ServoOne-CM-Help	Newest	1.0.0.0		Edit condition
9	ServoOneCM-Kernel	Newest	5.6.0.2	-	
9	ServoOne-CM-MotorAndEnco	Newest	1.0.0.0	=	
	ServoOne-CM-Support	Newest	1.0.0.0		
9	ServoOneCM-Visu	Newest	5.6.0.4		
9	ServoOne-Help	Newest	1.1.0.0		
9	ServoOne-HF	Newest	5.6.0.2		
9	ServoOne-MotorAndEncoder	Newest	1.0.0.0		
9	ServoOne-PSU-Kemel	Newest	5.6.0.1		
9	ServoOne-PSU-Visu	Newest	5.6.0.1		
9	ServoOne-Safety-Kernel	Newest	5.6.0.1		
9	ServoOne-Safety-Support	Newest	1.0.0.0		
9	ServoOne-Safety-Visu	Newest	5.6.0.3	-	

Creating a new profile

To use an older or special version of **one** or **more** device packages, create a new profile, i.e. a duplicate of the default profile, and then modify it (duplicate profile). Press the "Edit conditions" button to edit specific version conditions.

	sin Installation and profile manager								
	Installation Profile		New profile name		ie	Info about this program			
	Sele	ct profile: Trial versio	on		_	٠			
		Name	Version	condition	Effective version	Â	Duplicate profile		
	Ø	CLine	Newest		5.6.0.3		Delete profile		
Oldest version		Magnetic-Bearing	Newest		5.6.0.2				
selected	A 4	ServoOne	Oldest		5.6.0.1			Edit specific version	
1	9	ServoOne-CM.Holo	Newest		1.0.0.0		Edit condition	conditions	
Latest version		ServoOneCM-Kemel	- Exact		5.6.0.2	-			
pie set		Server motorAndEnco.	. Newest		1.0.0.0	_			
Exact version		ServoOne-CM-Support	Exclud	led	1.0.0.0				
selected	•	ServoOneCM14	Newest		5.6.0.4				
		oone-Help	Newest	(1100				
Version excluded		ServoOne-HF	Newest	Edit version co	ndition			_	
version excluded	5	ServoOne-MotorAndEncoder	Newest						
	9	ServoOne-PSU-Kernel	Newest	Compon	ent:	Serve	oOne-CM-Support,		
	0	ServoOne-PSU-Visu	Newest						
		ServoOne-Safety-Kernel	Newest	Version condition	n condition				
		ServoOne-Safety-Support	Newest						
		ServoOne-Safety-Visu	Newest	6	Exact version	1:			
) Newest versi	on			
			_		Oldest Version				
				•	Exclude				
						_	OK	Cancel	

You can create multiple different profiles. You must load a profile in order to activate

it.

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

Running DriveManager 5 with a custom profile

To run DriveManager 5 with a custom profile, it must be launched from the command line or from a modified desktop icon. This is useful, for example, if you have multiple shortcuts on the desktop and you want to run them with different profiles.

Call syntax:

"DriveServiceTool5.exe -profile <Profilename>"

There must be a space between the flag (-profile) and the name of the profile.

You can declare different profile launchers by duplicating/copying the installed shortcut and then adding the profile option in "Target:".



Information about PAM



DriveManager 5 Program help
NOTE

• PAM always runs with the Windows system language currently configured. It is therefore not easy to change language. It is not sufficient to simply change the settings in the taskbar's "Language bar" as there you can only change the language region, i.e. the default for keyboard, date and currency formats, etc.

14.4 Overview of active plug-ins

An overview of all active plug-ins is given in DriveManager 5 under **Help > Information** under Details. The user can simply send this list to the Helpline at LTI Motion in the event of an error or if service is required.

Information			23			
Programm	DriveManager					
Beschreibung	Einstellung und Diagnose von Elektrischer	n Antrieben				
Version						
Hersteller		Information - Details				23
Convictor		Name	Version	Hersteller	Software Status	_
Copyright		Kemel	5.6.0.0		ReleaseCandidate	
		CLine	5.6.0.3		ReleaseCandidate	
		Magnetic-Bearing	5.6.0.2		ReleaseCandidate	
Liose	Details	ServoOneCM-Kernel	5.6.0.2		ReleaseCandidate	
		ServoOne	5.6.0.1		ReleaseCandidate	
		Smart-Energy	5.6.0.2		ReleaseCandidate	=
	-	Wind-Energy	5.6.0.2			
		ServoOne-CM-Help	1.0.0.0		ReleaseCandidate	
		ServoOne-CM-MotorAndEncoder	1.0.0.0		ReleaseCandidate	
		ServoOne-CM-Support	1.0.0.0		ReleaseCandidate	
		ServoOne-Help	1.0.0.0		ReleaseCandidate	_
		ServoOne-MotorAndEncoder	1.0.0.0		ReleaseCandidate	
		ServoOne-PSU-Kemel	5.6.0.1		ReleaseCandidate	_
		ServoOne-Safety-Kemel	5.6.0.1		ReleaseCandidate	_
		ServoOne-Support	1.0.0.0		ReleaseCandidate	_
		ServoOne-TLI	5.6.0.1		ReleaseCandidate	_
		ServoOne-Visu	5602		ReleaseCandidate	-
		Close En	nail			.41
				E-mail fur	nction for a	
				plug-in	version	
				ove	rview	

Further information on the "E-mail function" can be found in Section "Email function" on page 58



14 Plug-in concept

15 Initial Commissioning wizard

Ĩ ĵ

If DriveManager 5 is opened without an existing project, a prompt appears asking whether to undertake initial commissioning. The Initial Commissioning wizard can also be opened at a later point in time using the quick launch pictogram in the quick launch bar (subject area bar).

Selection for carrying out initial commissioning with the wizard



Fig. 15.1: Preselection window for the Initial Commissioning wizard

Initial Commissioning wizard

The assistant guides the way through the initial commissioning via the individual subject areas (power stage > motor > automatic tests ...). When the data are entered correctly, rotation of the motor is possible via the manual mode window.



Fig. 15.2: The Initial Commissioning wizard



15 Initial Commissioning wizard



Opening the Initial Commissioning wizard via the project tree



Fig. 15.3: Project window with the Initial Commissioning node in the project tree

16 Index

....

"Offline" mode	
"Online" mode	

Α

active plug-ins	
Actual value display	
Actual value groups	35
Addition	87
Alarms	62
All devices	
Archiving projects	52
Auto Hide	
Axis status	61
В	
Bit trigger	

С

74
71
88
89-90
3
18
40

D

Data sets	71
Default desktop	17, 20
Deleting a project	51



16 Index

16 Index

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

113 DriveManager 5 Program help

Device commissioning file	. 98	Erro
Device display	.42	Erro
Device Help	. 11	Erro
Device settings	.64	
Device status	.61	Г
Device status window	.61	Fau
Dialog box view	.23	Fau
Digital oscilloscope	73	FFT
DIN EN 12100	.10	File
Display instruments	.34	Firm
Display options	.30	Firm
Display raw device data	.77	Floa
Dock	.19	Free
		Eros

Е

E-mail function	
E-mail support	
EN 60204	
EN 60204-1	
EN ISO 13849-1	10
Error display	63

Error history	61
Error message	
Error reactions	

Fault	62
Faults	61
FFT	
File extensions	65
Firmware	
Firmware package	
Floating	19
Freeze project	52
Frozen Project	

G

Graphical view	23
Н	

Help browser	12
Help system	11

Help window	
History of parameter changes	
Hot-plug folder	104

Initial Commissioning wizard	110
Installation	16
International settings	29
Invalid user input	41

L

Language	
Language settings	
LED display	
List view	23
Load	64
Load firmware	93
Loader program	
Loading a device commissioning file	70
Loading an oscilloscope recording	83
Logging of parameter changes	

Μ

Macro recorder	38
Malfunction	61
Manual mode window	56
Marker	85
Mathematical functions	86
Measurement function	92
Measurement tool	85
Menu	21
Message logger	36
Messages	35
Mode	93
Ν	

New project	
Nodes	

0

Object search	40
Opening a project	50

16 Index

C LTI MOTION ID No.: 0842.05B.3-02 version: 06.2019

DriveManager 5 Program help

115

Options	, 78, 82
Options window	29
Oscilloscope	73

Ρ

Package Manager	104
РАМ	104
Parameter changes history	37
Parameter comparison	71
Parameter help	11, 14
Password	27
Plug-in concept	103
Pre-trigger	73, 77
Print function	42
Print menu	42
Print preview	44
Print settings	43
Printing the device setting	70
Profile launcher	108
Program help	11
Project archive	53

Project commissioning file	
Project data maintenance	31
Project options	
Project tree	45
Project window	45
Project wizard	47
Q	
Quick access bar	21
R	
Reactivate project	52
Recording	
Refresh rate	
Responsibility	
Restore	66
S	
Safety	
Safety functions	
STO	

Save	64
Save as parameter data set	66
Saving a project	51
Search function	
Send project	54
Serial commissioning	95
Serial recording	90
Setup installation	103
Signal properties	
Signal selection window	76
Sin/Cos encoder	
Status messages	
STO	10
Subject area bar	21
Subtraction	87

Т

Table of contents	4
Target group	6
Time basis	73
Time setting	

Toolbar for oscilloscope recordings	80
Toolbars	21
Transfer error	
Trigger settings	77
Trigger signal	73

U

User-defined parameter list	25
User authorizations	33
User interface	17
User interface philosophy	17
User levels	26
User levels with permissions	27

V

Visualization options		D
-----------------------	--	---

W

Warning thresholds	
Warnings	
Workspaces	

16 Index

16 Index



DriveManager 5 Program help 117

LTI Motion GmbH

Gewerbestrasse 5-9 35633 Lahnau Germany Phone +49 6441 966-0 Fax +49 6441 966-137 www.lti-motion.com info@lti-motion.com

