

CDD

Servocontroller System

Software Update Service, Date: 11.11.2008

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Introduction

As a part of our product maintenance process, we are continuously extending the firmware of the drive system. This Software Update Service is intended to provide you with information on new releases and improvements of the various software versions.

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1 Software: Version 1

1.1. Version 1.10-00

Changes compared with version:	V 1.00-01	Release:: 17.12.2001	CS (XOR): 203D
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1.1.1 Recommendation

If you are using type CDD3000 devices still fitted with software version 1.00-01 or smaller we recommend updating the software to version 1.10-00. If you update to this latest firmware, we will be able to keep providing you with support without problem, and you will also have operator and diagnosis capability via the DriveManager V3.00-00.

1.1.2 New functions

No.	Function	See also Application Manual
1	Setting the digital oscilloscope of the DriveManagers are stored in the firmware of the device. So the manual operation of the files (*.mcw) is not applicable.	
2	Positioning, free programmable (iMotion): - scaling assistant – In connection with the DriveManager V3.00-00 an assistant calculates the necessary scalings for units of way, velocity and acceleration.	4.11.2
3	Positioning, free programmable (iMotion): - new commands – Copy the timer value in variable: SET Hxx=Zyy, SET H[Cxx]=Zyy	
4	Positioning, free programmable (iMotion): - Override – Override – velocity scaling Velocity-override-setting via analog channel ISA1, if FISA1=OVR2 is set. The unipolar analog .This value is written in the display parameter POOVR (usign8) as well as in the sequence program in iMotion-Variable OV. Activation of the override-function by means of command "SET OV=1" in the sequence program. Using the analog inputs in the sequence program The analog inputs ISA0 and ISA1 are applicable in the sequence program, if ISA0=OVR1 as well as FISA1=OVR2 is set. The analog values are written in the appropriate iMotion-variables (usign8) OV1 (-10V - +10V=800H-7FFH) and OV2 (0V - +10V=0H-3FFH).	4.11, 5.1.1
5	CAN-Systembus New field parameter 588-CARB1 for extended diagnosis of bus-control word. All 8 transmitted bytes can be visualised. Parameter is only accessible via parameter editor (subject area option module).	

1.1.3 Changes

No.	Change	See also Application Manual
1	Positioning, free programmable (iMotion): - sequence program – The operating time/command was reduced to 1 ms (old 5 ms).	4.11
2	Positioning, free programmable (iMotion): - parameter for scaling – Velocity scaling New basic unit: Incr/ms (old incr/5ms) Data set, made with firmware version V1.00-01 and smaller must be adapted via parameter 711-POAVE (old:702-POAVE): 711-POAVE = 702-POAVE/25 Acceleration scaling New basic unit: Incr/ms ² (old incr/5ms ²) Data set, made with firmware version V1.00-01 and smaller must be adapted via parameter 712-POABE (old:703-POABE): 712-POABE = 703-POABE/25	4.11.10
3	Motor setting for asynchronous motors Parameter 851-MOL_S changed the meaning: Old: stand inductivity New: dispersion inductivity Motor and general data sets for asynchronous motors, made with firmware version V1.00-01 and smaller, must be recalculated referring the new application: $851-MOL_s(new) = 851-MOL_S(old) - 850-MOL_M$ The parameter is only accessible via parameter editor (subject area motor data).	
4	Positioning – reference run type 0 – At type 0 the actual rotor position will be classified as 0-position encoder (+zero correction). Only exception is the evaluation of multi-turn encoder (G3): Here the actual position is set to the same as the absolute position information of encoder (+ zero correction).	4.11.2
5	Field bus – EasyDrive-status word – The EasyDrive-status words for the position controlled operating modes (492-CACNF=5,6,7,8) mention the actual position in the way unit (former increments), selected by the user.	

1.1.4 Improvements

No.	Improvements	See also Application Manual
1	LED-display at loading of firmware are corrected.	
2	Positioning – Profile generator – Speed mode is possible.	
3	Torque scaling Torque scaling via analog input ISA1 is corrected.	5.1.1

1.2 Version 1.15-00

Changes compared with version: V 1.10-00	CS (XOR): 0FED
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1.2.1 New functions

No.	Function
1	POSMOD-extensions (speed actual value is available ...)
2	Braking control can be switched-off via parameter

1.2.2 Changes

No.	Changes
1	Roundtable indication is changed
2	„Reference reached“ – message adapted

1.2.3 Improvements

No.	Improvements
1	Braking output will be blocked in case of an error
2	Selection reference reaches via mask POMSK
3	Reference and actual value indication via DriveManager and CAN in roundtable units

1.3 Version V1.20-00

Changes compared with version: V 1.15-00	CS (XOR): D2C9
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1.3.1 New Functions

No.	Function
1	Software supports hardware version 2.0

1.3.2 Changes

None

1.3.3 Improvements

No.	Improvements
1	Communication to UM-8I4O – safer designed

1.4 Version V1.20-01

Changes compared with version: V 1.20-00	CS (XOR): 6BE4
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1.4.1 New functions

None

1.4.2 Changes

None

1.4.3 Improvements

No.	Improvements
1	Cooling is improved, interior cooler runs constantly

1.5 Version 1.20-02

Changes compared with version: V 1.20-01	CS (XOR): 5C81
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1.5.1 New functions

No.	Function
1	SCALE-Function with ISA1 is allowed at torque control now, to limit the reference of the torque control via ISA1 to the maximum value.
2	For communication to UM-8I4O – module the initialisation telegram of CDD will be repeated up to five times.

1.5.2 Changes

None

1.5.3 Improvements

None

1.6 Version 1.20-10

Changes compared with version: V 1.20-02	CS (XOR): 5099
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1.6.1 New functions

None

1.6.2 Changes

None

1.6.3 Improvements

No.	Improvements
1	<p>DC-link voltage measurement is cleared.</p> <p>A DC-link voltage measurement justified with a negative balancing voltage (DCV0 is negative) results in a wrong indication of voltage UZK, if the servo controller is supplied with 24V and the mains voltage is switched-off.</p> <p>At applied mains voltage the DC-link voltage is correct. This problem is cleared with version V1.20-10. Do not longer use software versions smaller than V1.20-10 (V1.20-01 and V1.20-02).</p>

2 Software: Version 2

Please state in your order of a CDD3000 that you require the latest software version 2. If no software version is selected we will supply the device with the software version 1.

Software version 2 includes the following extensions and is compatible to software version 1. All in software version 1 created data sets can be used in software version 2 as well.

In case of using devices type CDD3000 with software version 2, which are equipped with a software version lower 2.20-03, we recommend to make a software-update to the latest version (see following list). Selecting the latest version guarantees our support in future in case of any problems and furthermore a complete operation and diagnosis via **DriveManager V3.20** or higher is possible.

2.1 Version 2.20-03

Changes compared with version: V 1.20-02	CS (XOR): A8D7
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2.1.1 New functions

No.	Function
1	Standard functions
	2 Touchprobe inputs are available. The latched position at reaching the touchprobe input can be evaluated with the iMotion program and calculated in special driving commands.
	Cam gear: Parameter setting for 16 cams with hysteresis and various actions at reaching the cams. Outputs as well as telegrams at the used fieldbus and flags for the internal iMotion program can be set. Parameters for the cam gear are set for internal position as well as incoming increments of the encoder.
	Evaluation of encoders with TTL-level
	The iMotion-program can also be activated in the speed-controlled operation.
	Simultaneous evaluation of 2 encoders for exact positioning of loose mechanics
	Encoder simulation via SSI. The actual position of the servo controller can be read via the SSI-interface. Different forms are available.
2	Direct drive functions
	Commutation finding for synchronous machines without absolute shaft encoder.: 5 different methods direct the commutation angle in fixed or free condition of the motor.
	Encoder simulation allows encoder lines of 65536 increments
	Iron and ironless linear motors can be evaluated.
	The dynamic of the servo-controller is improved by means of a speed and torque control as well as higher resolution in the position controller of 20 Bit.
	Encoder evaluation with any encoder lines up to 8191
	Encoder simulation via SSI
	Position control via second encoder

2.1.2 Changes

None

2.1.3 Improvements

None

2.2 Version 2.20-04

Changes compared with version: V 2.20-03	CS (XOR): D3F1
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2.2.1 New functions

None

2.2.2 Changes

None

2.2.3 Improvements

No.	Improvements
1	Revised functionality of round table
2	Revised reference pre-set via analog input

2.3 Version 2.35-04

Changes compared with version: V2.20-04	V2.35-03 CS (XOR): 8267
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2.3.1 New functions

No.:	Function
1.	Implementation of encoder type G9 (TR-encoder with reduced Hiperface-protocol). Encoder will be supplied extern (24 V)
2.	Special functions for lifting stages
3.	Extension of braking conditions with setting Hold5 and Hold6
4.	SSI – Encoder simulation : Via setting ENC25BIT in parameter SSIFO a 25 bit SSI-encoder will be emulated, 12bit multi-turn and 13 bit single-turn information
5.	Control of TorqueChampion-Motors with electric name plate and correction of torque characteristic line.

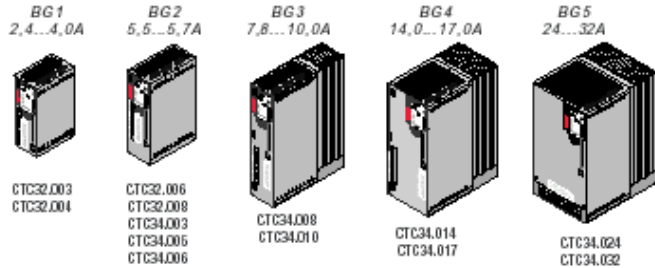
2.3.2 Changes

None

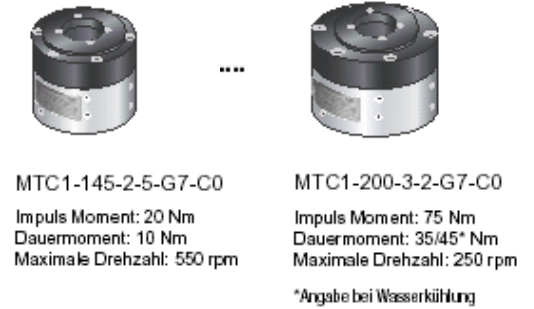
2.3.3 Improvements

No.:	Improvements
1.	<p>Not documented iMotion-functions/commands:</p> <p>a) Automatic homing / search zero point (virtual cams): When starting homing mode without parameterized reference cams (ISD04 != ECAM), after 5 seconds the increasing edge and after further 5 seconds the falling edge of a virtual cam will be simulated and for example the encoder zero point will be searched. Time for simulating the cams can be set via variable POVAR[99] (H99), (value in ms from H99 for H99 != 0 resp. 5000ms for H99 = 0).</p> <p>b) Read out encoder velocity in incr/ms: SET Hxx/ H[Cxx] = EGEARSPEED</p> <p>c) Read out encoder increments in SET Hxx/H[Cxx] = EGEARINC</p> <p>d) Set encoder increments in SET EGEARINC = x/Hxx/H[Cxx]</p> <p>e) Touchprobe acc. to separate modified specification</p> <p>f) Read out revolutions in 1/min SET Hxx/H[Cxx] = IN/SN</p> <p>g) Write/Read field parameters in SET Hxx/H[Cxx] = FPARA[Hxx/x , Hxx/x] resp. SET FPARA[x/Hxx/H[Cxx] , x/Hxx/Hxx[Cxx]] = x/Hxx/H[Cxx]</p> <p>h) Read in sum of analog values OVNORMSUM = OV1 + OV2 / 2: SET Hxx/H[Cxx] = OVNORMSUM, JMP(OVNORMSUM = x/Hxx)</p> <p>i) Emergency stop STOP M / STOP 0 with max. torque</p>
2.	Filtering digital inputs via parameter 225-DFIL- Filter dig. inputs
3.	<p>Starting conditions iMotion extended:</p> <p>771- POSCT- Starting conditions of process control STD – Standard via terminal (two inputs) TERM – Terminal (at only one input) PARA – Parameter (via 772 POSTC) AUTO – automatic at start of device CTRL – automatic at start of control</p> <p>772-POSTC-Start process program: OFF – Off STAPR – Start program STAHO – Start homing mode</p>

Direktantriebsregler:



Motoren:



3 Software: Version 3

Recommendation:

The CDD3000 with **V3.20-04** is able to drive a standard synchronous motor, asynchronous motor, linear motor and also a high torque motor. If you use devices of type CDD3000 or CTC3000, equipped with a software version lower than **V3.20-04**, we recommend to update to the latest version. Working with the latest version guarantees our support in future in case of any problems and furthermore a complete operation and diagnosis via **DriveManager V3.45** or higher is possible.

3.1 Version 3.20-04

Changes compared with version:	CS (XOR): BD86
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This version is the standard version of CDD3000 since February 2006. The functionality based on version V2.35-04

3.1.1 Changes

None

3.1.2 Not documented functionality

Functions, which are not included in the application manual or operating instruction.

No.:	Function
1.	Conducting encoder signal type Impulse / direction: When setting the signal mode "A/DIR(1)=Impulse/direction (step motor)" the 4-fold number of lines of the encoder must be parameterized, compared with setting A/B(0)=A/B (incremental encoder)". That is valid for the TTL-encoder at X5 and for the HTL-encoder at X2 as well.

3.2 Version 3.25-05

Changes compared with version: 3.20-04	CS V3.25-05 (XOR): 62E3
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3.2.1 Improvements

No.:	Function
1.	Adjustment reference run-type 9 The zero offset functionality at reference-type 9 has been adapted. (The encoder position will be set as reference position in consideration to zero offset).
2.	New parameter SELDC (subject area OUT) Activation for Disable Control is now able to set between - ACTV (set at current speed, if speed is zero, than disable control) - REFV (set at reference speed, if ref. speed is zero, than disable control) – parameterisation for Landert application (!!!)
3.	Error confirmation at status E-OFF Confirmation of error ERR_OFF will lead to a status change into status “electronic zero potential”
4.	Error correction encoder simulation Precontrol of speed does not work from V3.20-xx, if ESCPO (lost motion) has not been set to zero (tracking error, clattering at certain speed).
5.	Drive detection at start from G6 to G7-encoder If the motor turns faster than 25 degrees of an electric period when started, an error E-ENC-129 will be noticed. This is equal to the speed of 1rpm at the TorqueChampion or at the speed of 50rpm at the 2-pole motor (e.g. G5) at SSI encoder.

3.2.2 Changes

None

3.3 Version 3.40-00

Changes compared with version: 3.25-05	CS V3.40-00 (XOR): B187
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3.3.1 Improvements

No.:	Function
1.	Expansion of the lines of the optical encoder up to 65535
2.	Scanning of the second encoder track signal . Wire fracture identification. If two encoders are parameterized, the wire fraction identification will be provided. Therefore a wire fraction will be reported.
3.	Assisted by EnDat 2.1 encoder.
4.	Provision of actual status even at the control mode SCON, TCON, VFCON in increments without standardisation of parameter POAIP.
5.	Fast analogue torque input. In the control work cycle (16kHz or 8kHz at 4kHz switching frequency) a parameter of the torque set-point can be set via an analogue input 0. Expansion of the sector FISA0 to TORQE (fast torque set point channel).
6.	HIPERFACE is now „more tolerant“ to not-communication-failure: The CDD performs an initialisation of the HIPERFACE-interface at each control initialisation.
7.	ENPO signal can also be recorded with the digital Scope
8.	CAN: Transfer from operational to preoperational will not cause a controller enable reset any more.
9.	Initialisation circular table An initialisation for the circular table is not necessary any more.

3.3.2 Changes

None

3.4 Version 3.50-05

Changes compared with version: 3.40-00	CS V3.50-05 (XOR): EED1
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3.4.1 New functions

No.:	Function
1.	New homing mode type (no.10) for circular table The displayed position is always within a table revolution. The multiturn information is discarded.
2.	Homing with distance-coded encoder Two new reference types are available, no.11 = start in neg. direction and no. 12 = start in pos. direction. If the drive is at start-up in a mechanical end position, the homing mode starts in the inverted direction and the search for reference marks begins after leaving the end position. Driving on a mechanical end position after start-up the homing mode will cancel it provided by an error message. The base reference mark distance can be set in parameter 418.
3.	EnDat2.1 Release of 17-bit absolute encoder with EnDat2.1-Interface. The released and tested product is the ECI1317 from Heidenhain. The usage of other products has to be checked in individual cases. Additional settings are available in parameter editor in the subject area "encoder".
4.	iMotion New instructions were added for encoder simulation (Touch-Probe-Functionality): - „SET TP3/4 G1 F0/1“ latches the actual position to channel 3/4 by triggering the edge of F0/1 (0->1/1->0) - „SET TP3/4 G2 F0/1“ latches the encoder simulated position to channel 3/4 by triggering the edge of F0/1 (0->1/1->0)
6.	CDD54.XXX Device specific data has been included, so that the product line CDD54.XXX is now released.

3.4.2 Improvements

No.:	Improvement
1.	Use of 2 phases motors Motor protection and inverter protection has been improved. The effective motor current is equal to the current in phase w.
2.	Speed filter for encoder simulation: The speed filter method at encoder simulation has been improved with the result of a more smooth speed profile.
3.	Error detection at interrupted power supply At interrupted power supply (device status „OFF“) the error detection is now inactive. By supplying the power stage again the error list will be reset. Error messages will be monitored if an error still remains or a new error occurs.

4.	<p>Priority of error reactions</p> <p>The priority of simultaneous triggered error reactions has been improved. E.g. if “quick stop” is active, “block power stage” will not be enabled until the quick stop is executed.</p>
5.	<p>Error reaction due to tracking error</p> <p>For the possible tracking errors „speed tracking error“, „position tracking error“ und „max. speed overrun“ are separate error reactions in the subject area „error messages“ available.</p>
6.	<p>Analog inputs</p> <p>A parameter for an adjustable offset voltage has been added to both analog inputs (parameter 194, 195). In speed control mode (function selector: SPEED, SPED2) the input ISA0 can be scaled separate in the ranges from -10V...0V and 0V...+10V. Therefore write in parameter 196[0] the percental speed at -10V and in 196[1] for +10V.</p>
7.	<p>Find commutation</p> <p>A not plausible movement while find commutation is in progress, will be recognized and cancelled provided by an error message.</p>

3.4.3 Known bugs

None

4 Software: Version 4

Recommendation:

The CDD3000 with **V4.05-01** is able to drive a standard synchronous motor, asynchronous motor, linear motor and also a high torque motor. If you use devices of type CDD3000, equipped with a software version lower than **V4.05-01**, we recommend to update to the latest version. Working with the latest version guarantees our support in future in case of any problems and furthermore a complete operation and diagnosis via **DriveManager V3.60** or higher is possible.

Attention:

Firmware version **V4.00-00** and higher does not support devices of type **CDD34.045** to **CDD34.210** any more. Please, use the new power stages **CDD54.045** to **CDD54.210**. For the types **CDD34.045** to **CDD34.210** we recommend the latest firmware version **V3.xx-xx**.

4.1 Version V4.05-01

Changes compared with version:	3.50-05	CS V4.05-01 (XOR):	4556
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4.1.1 New functions

No.:	Function
1.	<p>Find commutation with encoder G1</p> <p>While using encoder of type G1 (Sine/Cosine) "find commutation" don't has to be parameterized if the count of encoder lines (para. 432) is equal to the number of motor pole pairs (para. 844).</p> <p>E. g.: Hall effect sensor on linear motor with 1 sine/cosine oscillation per 1 motor revolution. This information is used for commutation but is not usable as singleturn position.</p>
2.	<p>Water cooled power stages</p> <p>Device specific data for water cooled power stages CDD54.045 to CDD54.210 has been included and is released with this firmware. In addition a water breakage detection is implemented in software.</p>
3.	<p>New homing mode type 13</p> <p>Starting this homing mode type causes that the machine position written in par. 717 will correlate to the actual encoder position. The calculation of the zero point offset from machine to encoder is effected automatically. This offset will be saved non volatile. Afterwards the behaviour of this type is equal to type 9.</p> <p>E. g.: Drive the machine to any position. Write the machine position you would like to have here in para. 717. Start homing --> machine position and actual encoder position will be correlated, zero point offset machine to encoder will be calculated.</p>

4.1.2 Improvements

No.:	Improvement
1.	Jog and homing mode Controlling homing mode and jog mode by terminals/fieldbus is now possible even if the start condition for iMotion is not STD(0).
2.	Reverse rotation direction The sign of rotation direction in positioning control can be written through para. 721. This is possible now also while controlling over terminals/fieldbus (only iMotion in the past).
3.	iMotion start conditions Start conditions for iMotion can be parameterized independently of control location and reference value selector.

4.1.3 Known bugs

None



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Subject to technical changes.