CDD3000

Catalogue

Servo drive solutions
from 2.2 A to 32 A

c-line Servo Drives

LTi DRiVES

Catalogue - CDD3000 Servo Drives

ID no.: 0931.24B.3-01

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We reserve the right to make technical changes.

The drive controllers with the ℓ-line technology

The particular benefits to users of Lust drive controllers lie in the expert solutions delivered for automation with electric drives and in the high level of control engineering know-how for a wide range of motor types. Always keeping an eye on the physics, looking to make electric drive engineering the core element of machine optimisation and automation.

It is a long-established fact in electric drives that the various control methods can complement each other effectively in handling complex automation tasks. The best method of handling complex movement tasks depends in each case very heavily on the individual requirements of the user – and on the experience and available equipment range of the supplier. Consequently, it is beneficial if all the options can be accessed easily and without changing equipment setup, or even supplier.

Inverter and servocontroller based on same concept

The ℓ-line DRIVES are ideal for virtually any task. They include the CDE/CDB positioning drives with the Voltage Frequency Control (VFC) method, Field Oriented Regulation (FOR) with encoder evaluation. The CDD servocontrollers include a highly dynamic speed/torque/position control.

All drive controllers ℓ-line DRIVES have the same basis, with a wide range of variants for specific solutions. A platform of this kind enables rapid, cost-effective response to new developments.

Common features of the ℓ-line DRIVES :

- their design
- their metal housing
- their cooling concept for
  - Wall mounting
  - Cold Plate
  - Push-through heat sink
- their excellent EMC performance
- their user-friendly operation with the DRIVEMANAGER PC tool
- their ease of series commissioning with KEYPAD and SMARTCARD
- the modular networking concept
- the comprehensive range of accessories and complementary components

Our focus is on custom drive solutions:

- Positioning systems 0.375 to 15 kW
- Inverter systems 0.75 kW to 15 kW
- Servo system
  - for asynchronous motors and
  - synchronous motors up to 32 A
  - with hollow-shaft torque motors up to 75 Nm
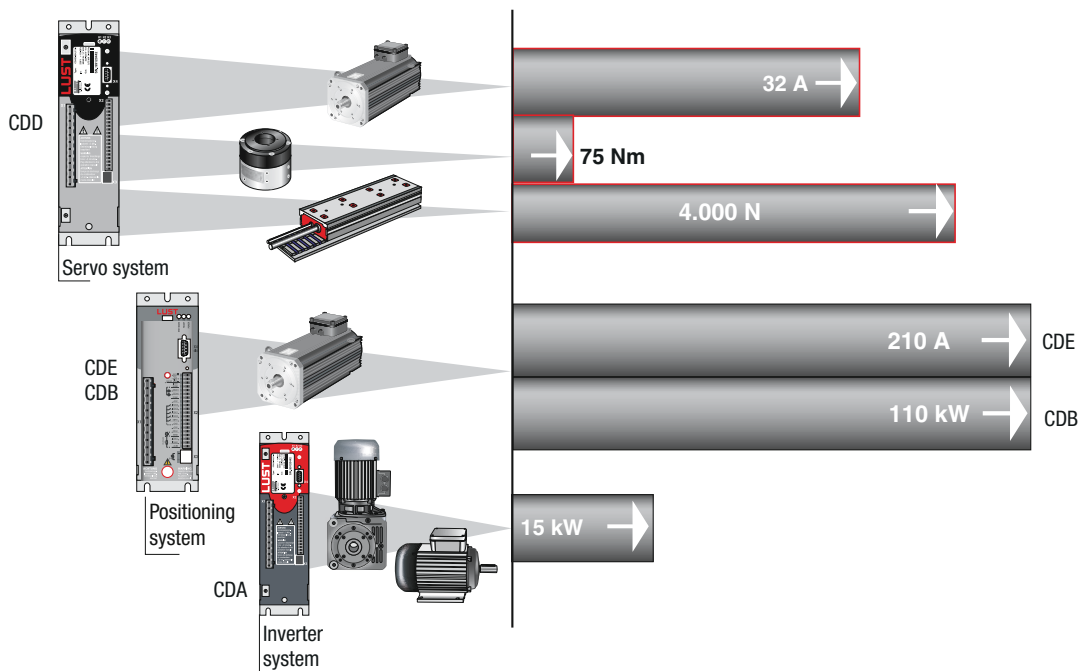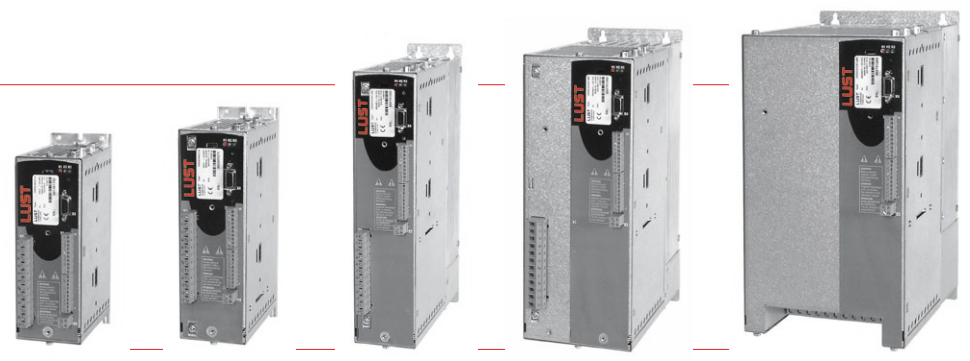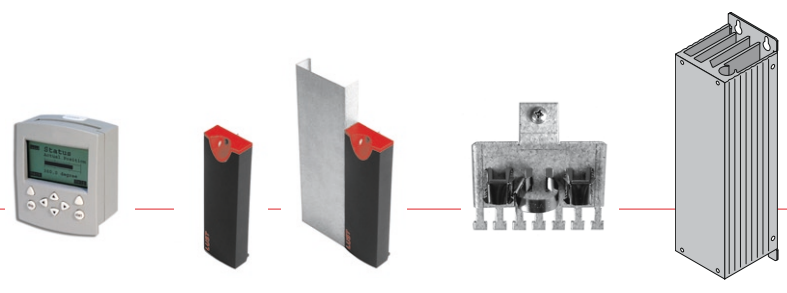 - with linear motors up to 20,000 N

CDD
Servo system

32 A
75 Nm
4.000 N

CDE
CDB
Positioning system

210 A CDE
110 kW CDB

CDA
Inverter system

15 kW

System summary, CDD3000

1

Servocontroller CDD3000

2

Accessories for servocontroller CDD3000

3

User and communication modules

4

Supplementary components

5

Motors
for details see Servomotors order catalogue)
Article no.: 0814.25B.x

6

System summary, CDD3000

Direct is simply more dynamic

Positioning tasks increasingly require extremely short positioning cycles and high precision. The CDD3000 system for direct drives can be used here:

Handling tasks nowadays require extremely short positioning cycles, and the entire production process depends on high-precision positioning.

Reasonable-cost gearing solutions are subject to a number of restrictions in terms of elasticity, backlash and wear.

The mechanical coupling of the drive is often the critical element, as the gearing, clutches, shafts or belts used exhibit slack or elasticity, and so limit the bandwidth of controller dynamics.

For these tasks there is now a „direct" solution from LTi. The CDD3000 system (servocontroller plus torque motor or linear motor) is highly dynamic, and permits a rigid coupling of the load.
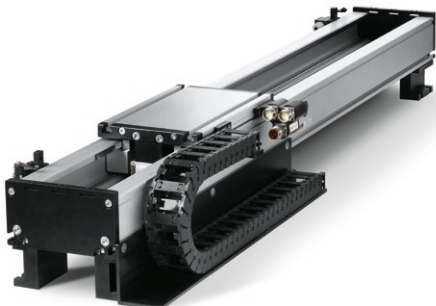
High-torque motors:

- Dynamic and precise positioning, rotational
- Primarily high-pole
- Low-cost

Linear motors:

- Dynamic and precise positioning, linear
- Highly dynamic with ironless structure
- Powerful with iron-core structure

Replacement for direct drives:

- in passenger and goods lifts
- in paper and textile printing
- in indexing tables and handling axes
- Grinding and milling machinery

Special functions for direct drive technology

- Commutation detection, including standstill braking
- Compensation of detent and friction torques
- Suppression of mechanical natural frequencies through use of notch filter
- Pre-control up to current controller
- GPOC – to compensate for encoder measurement errors
- Special software for directly driven elevators

Linear motors are very simple in design, because they have no mechanical transmission elements from the rotational to the linear movement.

Disadvantages such as friction, slack, elasticity and wear are eliminated, and the linear motor solution also offers the benefits of low inertia and low noise.

This means you can take advantage of pre-assembled linear motor units. There is also no more need to select components from separate vendors and then have to match them up.

Encoder system

In order to enjoy the full dynamism of a linear motor or a rotational high-torque motor, the feedback system and the servocontroller must also meet high demands.

The mechanical rigidity of the overall system depends essentially on the recording of the actual position, because the encoder system has a much greater influence on the quality of the drive solution than in conventional solutions.

Owing to their large number of periods per motor revolution, high-resolution sine/cosine encoders are fundamentally much better in this than resolvers for example. The best results are delivered by optical encoder systems. Magnetic or magneto-resistive systems are much less sensitive to dirt contamination, and so are better suited to hostile environments. They do not reach the positioning accuracy of below 5 angle seconds achieved by the optical systems though.

Speed and position measurement errors are corrected by the GPOC process

Because the transmissionless and rigid mechanical coupling of the direct drives fundamentally permits very high controller gain factors, speed and position measurement errors also have a much greater effect than in geared variants. The quality of position encoder and its evaluation is key to determining the achievable drive dynamism. To achieve that, a control process had to be developed which compensates for inadequacies in the motor and the measurement system. Based on an in-house basic research project, LTi DRiVES GmbH has developed the GPOC (Gain Phase Offset Correction) online adaptive software process, which corrects the main gain, phase and offset errors. This software process is now available in the CDD3000 c-line drives series. When there are no ideal encoder signals, as is typically the case, GPOC proves far superior to the standard evaluation method. In terms of performance, it even comes close to the levels achieved with processes featuring additional hardware such as acceleration sensors, hardware PLL or oversampling methods.
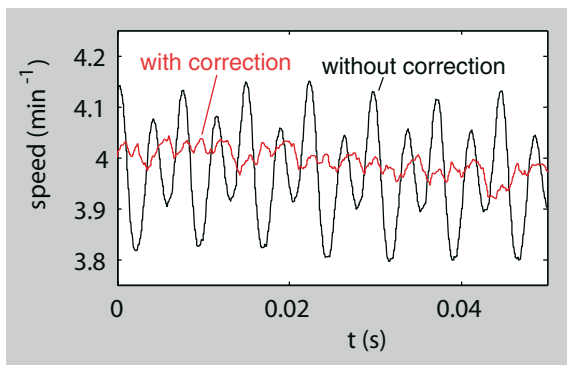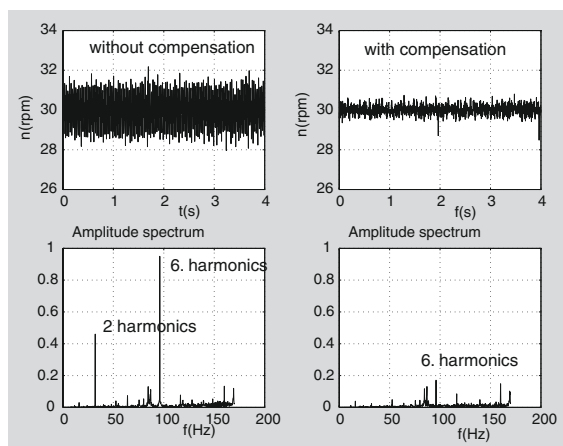

Example comparison of the speed curves of a direct drive with GPOC correction and with a standard evaluation.

Algorithms compensate for the torque ripple

In the low-cost variant of the direct drive motor, users frequently obtain high torque density at the cost of increased torque ripple. The causes of this lie in the detent torques and in the non-sinusoidal distribution of flux across a unit of pole pitch. If a high level of motor synchronism is required, however, special algorithms must be provided in the servocontroller to compensate for the torque ripple. The torque ripple can be compensated by simulating the torque formation inversely with the aid of a torque calculator.

Commissioning tools from LTi DRiVES calculate the detent torques for the motors, help analyse the drive train and so aid optimum controller setup.

A example comparison of the synchronism of a direct drive in speed-controlled operation (setpoint speed 30 rpm) with a relatively soft speed controller setup, shown in the diagrams above) illustrates that some distinct harmonics of the 64-pole motor – in particular the sixth harmonic at 96 Hz – are well suppressed by the compensation measures.

Torque pre-control significantly reduces the tracking error

Positioning tasks in the direct drive field pose extreme demands in terms of positioning and repetition accuracy. Owing to the limited dynamics of the control loop, an improvement of the control response can only be obtained by special pre-control measures.

Consequently, LTi DRiVES has implemented a pre-control designed to take account of the dynamics of the overall control loop in such a way that it comes very close to the ideal dynamism.
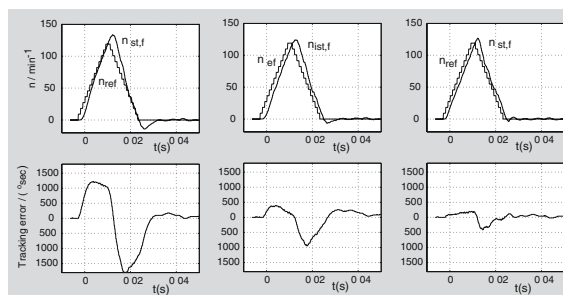
Item for a pre-control up to the speed without (left) and with pre-control filter (right). The upper diagrams respectively show the speed from the profile generator and the filtered actual speed, while the lower diagrams show the associated tracking error in angle seconds.

Features

Servocontrollers for 230 V systems:

Servocontroller	Rated current [A]	Peak current [A][1]	Device rated power [kVA]	Size [BG]	Dimensions [mm] Width x height x depth
CDD32.003,Cx.x	2.4 A	4.3	1.0	BG1	70 x 223 x 120
CDD32.004,Cx.x	4.0 A	7.2	1.6	BG1	70 x 223 x 120
CDD32.006,Cx.x	5.5 A	9.9	2.2	BG2	70 x 248 x 145
CDD32.008,Cx.x	7.1 A	12.8	2.8	BG2	70 x 248 x 145

Mains voltage 1 x 230 V -20 % +15 %
Cooling air temperature (1000 m above MSL) 45 °C at power stage switching frequency 4 kHz
Cooling air temperature (1000 m above MSL) 40 °C at power stage switching frequency 8/16 kHz

1) 1.8 x I_N for 30 s

Servocontrollers for 400/460 V systems:

Servocontroller	Rated current [A]	Peak current [A]	Device rated power [kVA]	Size [BG]	Dimensions [mm] Width x height x depth
CDD34.003,Cx.x	2.2	4.0[1]	1.5	BG2	70 x 248 x 145
CDD34.005,Cx.x	4.1	7.4[1]	2.8	BG2	70 x 248 x 145
CDD34.006,Cx.x	5.7	10.3[1]	3.9	BG2	70 x 248 x 145
CDD34.006,Wx.x	5.7	10.3[1]	3.9	BG2	70 x 258 x 220
CDD34.008,Wx.x	7.8	14[1]	5.4	BG3	70 x 300 x 238
CDD34.010,Wx.x	10	18[1]	6.9	BG3	70 x 300 x 238
CDD34.014,Wx.x	14	25[1]	9.7	BG4	120 x 330 x 238
CDD34.017,Wx.x	17	31[1]	11.8	BG4	120 x 330 x 238
CDD34.024,Wx.x	24	43[1]	16.6	BG5	170 x 330 x 238
CDD34.032,Wx.x	32	58[1]	22.2	BG5	170 x 330 x 238

Mains voltage 3 x 400/460 V -25 % +10 %
Cooling air temperature (1000 m above MSL) 45 °C at power stage switching frequency 4 kHz
Cooling air temperature (1000 m above MSL) 40 °C at power stage switching frequency 8/16 kHz

1) 1.8 x I_N for 30 s

Acceptance tests/Ambient conditions

CE mark

The servocontrollers[1] conform to the requirements of the Low Voltage Directive 2006/95/EG and the product standard EN61800-5-1: 2003.
The servocontrollers[1] thus conform to the requirements for installation in a machine or plant under the terms of the Machinery Directive 2006/42/EG.
The servocontrollers[1] are accordingly CE marked. The CE mark on the type plate indicates conformity with the above Directives.

cUL approbation

cUL approbation has been granted for the entire CDD3000 servocontroller series (2.2 A to 170 A). The cUL approbation is equivalent to UL and CSA approbation.

1) Also applies to user and communication modules

EMC acceptance tests

All CDD3000 servocontrollers have a sheet steel housing with an aluminium/zinc finish to enhance interference immunity (to EN61800-3, environment classes 1 and 2).
To limit line-borne interference emission to the permissible level, all CDD3000 servocontrollers up to 17 A are fitted with integral mains filters. This ensures compliance with the EMC product standard 2004/108/EG:
  Public low voltage system:
  Residential areas up to 10 metres motor cable length
  Industrial low voltage system:
  Industrial areas up to 25 metres motor cable
For servocontrollers CDD34.024 to CDD34.32 external mains filters are available (refer to the "Supplementary components" section).

Characteristic		Servo controller	KP300, CM-xxxx, UM-xxxx
Climatic conditions	in **operation,** as per EN 61800-2, IEC 60721-3-3 class 3K3	+5 ... 40 °C[2] at relative humidity of 5 ... 85 % without condensation	0 ... 55 °C[2] bei relative humidity of 5 ... 85 % without condensation
	in **storage** as per EN 61800-2, IEC 60721-3-1 class 1K3 and 1K4	-25 ...+55 °C [3] at relative humidity of 5 ... 95 %	
	in **transit** as per EN 61800-2, IEC 60721-3-2 class 2K3	-25 ...+70 °C [4] relative Humidity 95% at max. +40 °C	
Protection	Device	IP20 (terminals IP00)	
	Cooling method	Cold Plate IP20 Pusch-through heat sink IP54	Convection IP20
Touch protection		BGV 3	
Mounting height		to 1000 m above MSL, over 1000 m above MSL with power reduction, max. 2000 m above MSL.	

Vibration limit in transit, as per EN 61800-2, IEC 60721-3-2 class 2M1		
Frequency	Amplitude	Acceleration
2 < f < 9 Hz	3,5 mm	Not applicable
9 < f < 200 Hz	Not applicable	10 m/s²
200 < f < 500 Hz	Not applicable	15 m/s²

Shock limit in transit, as per EN 61800-2, IEC 60721-2-2 class 2M1

Drop height of packed device max. 0.25 m

Vibration limit of System[5], as per EN 61800-2, IEC 60721-3-3 class 3M1		
Frequency	Amplitude	Acceleration
2 < f < 9 Hz	0.3 mm	Not applicable
9 < f < 200 Hz	Not applicable	1 m/s²

2) The absolute humidity is limited to max. 25 g/m³. That means that the maximum values for temperature and relative air humidity stipulated in the table must not occur simultaneously.

3) The absolute humidity is limited to max. 29 g/m³. So the maximum values for temperature and relative air humidity stipulated in the table must not occur simultaneously.

4) The absolute humidity is limited to max. 60 g/m³. This means, at 70 °C for example, that the humidity may only be max. 40 %.

5) The devices are only designed for stationary use.

Cooling method

The servocontroller base module offers three different mounting and cooling methods (example: size 3)
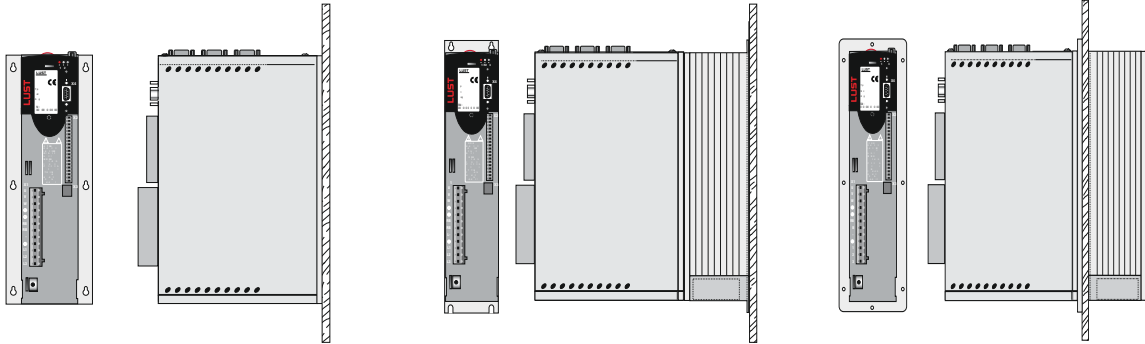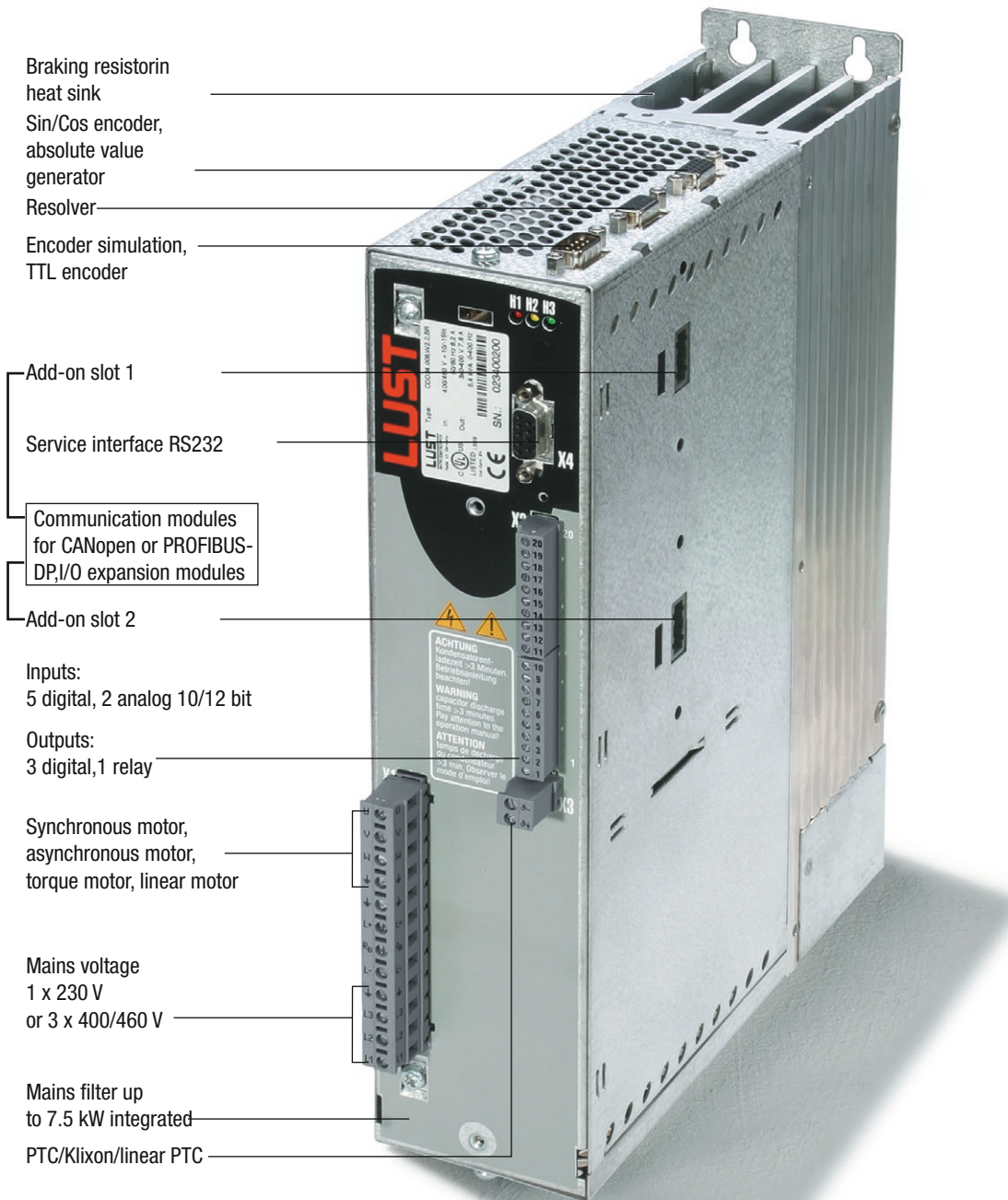
| Cold plate | Wall mounting | Push-through heat sink |

Size	Rated current	Servocontroller	Cold plate	Wall mounting	Push-through heat sink
BG1	2.2 A 4.5 A	CDD32.003	Yes	Yes[1]	No
BG2	5.5 A 7.1 A 2.2 A 4.1 A	CDD32.006 CDD32.008 CDD34.003 CDD34.005	Yes	Yes[1]	No
BG2	5.7 A	CDD34.006	Yes	Yes	No
BG3	7.8 A 10 A	CDD34.008 CDD34.010	Yes	Yes	Yes[2]
BG4	14 A 17 A	CDD34.014	Yes	Yes	Yes[2]
BG5	24 A 32 A	CDD34.024 CDD34.032	Yes	Yes	Yes[2]

1) Corresponds to cold plate design version with accessory heat sink HS3X.xxx, no design version CDD3 ..., Wx.x,
2) Protection IP54

CDD3000 specification

Braking resistorin
heat sink

Sin/Cos encoder,
absolute value
generator

Resolver

Encoder simulation,
TTL encoder

Add-on slot 1

Service interface RS232

Communication modules
for CANopen or PROFIBUS-
DP,I/O expansion modules

Add-on slot 2

Inputs:
5 digital, 2 analog 10/12 bit

Outputs:
3 digital,1 relay

Synchronous motor,
asynchronous motor,
torque motor, linear motor

Mains voltage
1 x 230 V
or 3 x 400/460 V

Mains filter up
to 7.5 kW integrated

PTC/Klixon/linear PTC

Preset drive solutions

With its extensive scope of functions, the CDD3000 ser-vocontroller offers over 500 parameters to control how it operates. To make working with the CDD3000 easier and more pleasurable, we have saved the settings of typical applications in the form of preset drive solutions. They can be loaded into the CDD3000 using the DRIVEMANAGER operator control program. This means you can set, or ad-just, the drive solution you need with just a few clicks of the mouse. The DRIVEMANAGER loads the data set match-ing the drive solution into the servocontroller, so you do not need to get involved in the wearisome job of studying parameters.
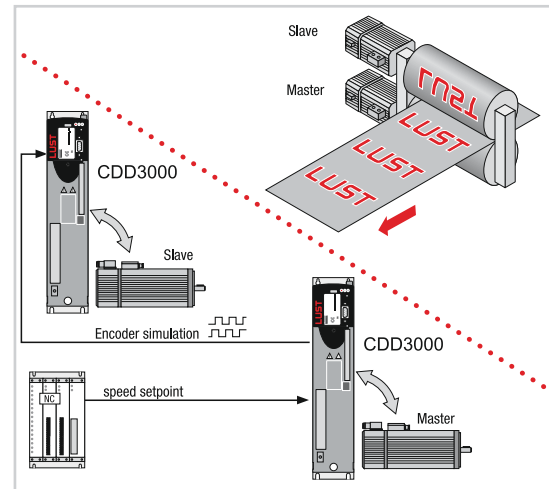
The preset drive solutions of the CDD3000 servocontrol-ler are divided into three groups.
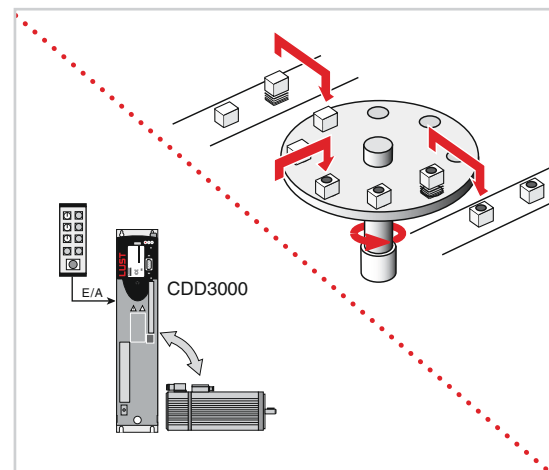
Preset drive solutions with speed control:
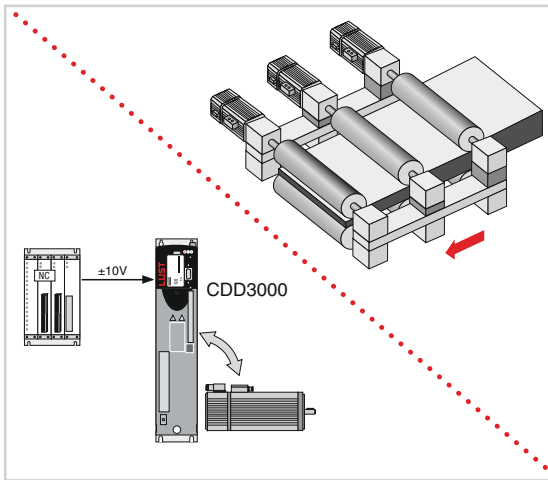
- Speed control with external position control
- Speed control with ± 10 V setpoint input
- Speed control with fixed speeds
- Speed control via pulse input

Preset drive solutions with position control:

- Electronic gearing
- Point-to-point positioning

iMotion positioning and sequence control

- Point-to-point positioning

Drive solutions with speed control

The preset drive solutions permit the flexibility of the CDD3000 servocontroller to be adapted very quickly to solving standard movement tasks.

These drive solutions include the speed control with external position control, speed control with ±10 V setpoint input, speed control with fixed speeds, speed synchronism and torque control variants. These preset drive solutions offer the following features:

- Encoder simulation, programmable lines per revolution for resolvers
- Resolution of analog input:
  ISA00 = 12 bit, ISA01 = 10 bit
- Torque limitation possible by way of a second analog input
- Two analog inputs, five digital inputs, two digital outputs, one relay input, one output to operate a motor holding brake

Speed control with external position control

In this preset drive solution the CDD3000 can be operated directly with a higher-level controller (NC) which executes the position control. In this the analog input is sampled at 8 kHz, thereby minimizing tracking error.

Speed control with ± 10 V setpoint input

In this preset drive solution linear and jerk-limiting ramps are provided for special movements exerting low impact on the mechanism.

Speed control with fixed speeds

In this preset drive solution up to eight fixed speeds can be stored in the servocontroller. They can be selected in operation by way of three binary coded inputs. Linear and jerk-limiting ramps are also provided.
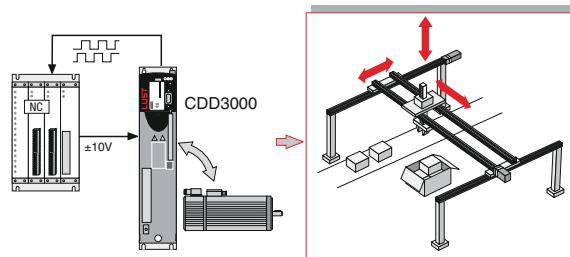
Speed control via pulse input

In this preset drive solution the CDD3000 follows the speed of a master axis with quartz accuracy. Since no position controller is in operation, it must be ensured that the speeds of the master and slave axes are synchronized, but not their angular positions. The actuation is by RS422 levels (±5 V). The signal source may be an incremental encoder, encoder simulation of the CDD3000 or the pulse/direction signal of a controller. The speed ratio can be adjusted in operation by 32-bit numerators and denominators.
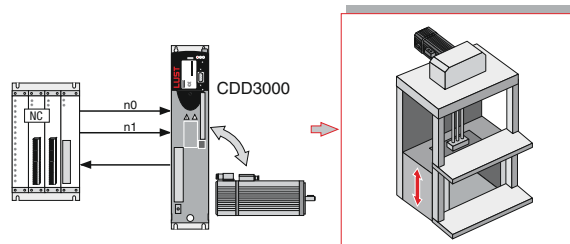
Torque control

This preset drive solution can be used for tractive force control. It limits the operating speed by means of an internal speed limit controller.
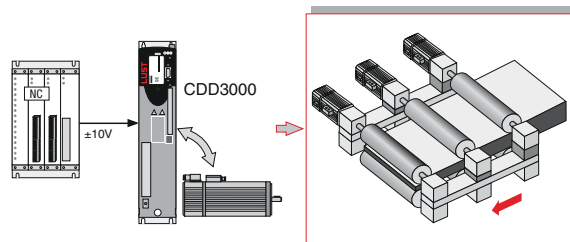
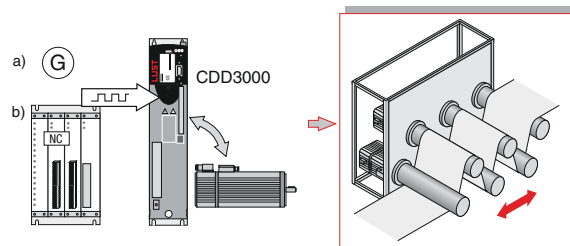## Application examples

Gantry robots:
Speed control with superimposed position control

Lifting application:
Speed control with fixed speeds

Drawing of plastic sheeting:
Speed control with ± 10 V setpoint

Speed synchronism:
Speed control via pulse input

Drive solutions with position control

These drive solutions include the variants:
- Electronic gearing with stepper motor
- Electronic gearing
- Point-to-point positioning

These variants have an internal position controller with a sampling time of 250 µs. They offer the following advantages over an external position controller:
- No need for encoder evaluation in the controller
- Less cabling
- High control quality based on minimal dead times in the position control loop

Electronic gearing

Electronic gears are increasingly replacing mechanical gears and line shafts in engineering applications, because in many cases they are more accurate and cheaper, offer greater flexibility in machine design and reduce down times on product changes. The electronic gearing of the CDD3000 servocontroller offers the following features:
- Actuation by:
  - Signals from a square incremental encoder
  - Encoder simulation of a CDD3000
  - Stepper motor control (pulse/direction)
- Gear transmission ratios programmable online by way of 32-bit numerators and denominators
- Synchronization accuracy down to less than 0.1°
- Homing with zero correction
- Jog mode
- Limit switch evaluation
- Shifting of the synchronous position (register control)
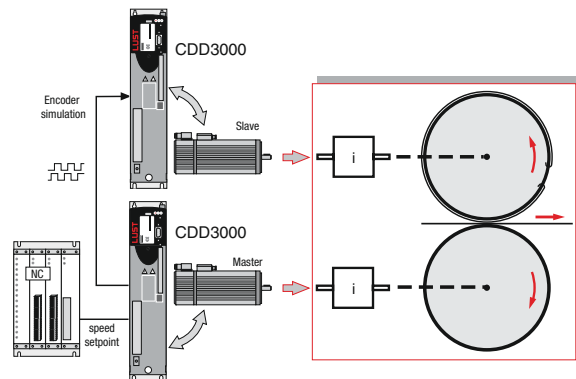
Point-to-point positioning

In the point-to-point positioning preset drive solution the DRIVEMANAGER or a higher-level controller can be used to generate up to 32 positioning sets and transfer them offline to the CDD3000. They can be selected by way of five binary coded inputs or a field bus system. The point-to-point positioning of the CDD3000 offers the following features:
- 32 selectable positioning sets for absolute and relative positioning
- Positioning ramps linear or with adjustable jerk for movements with low impact on the mechanism
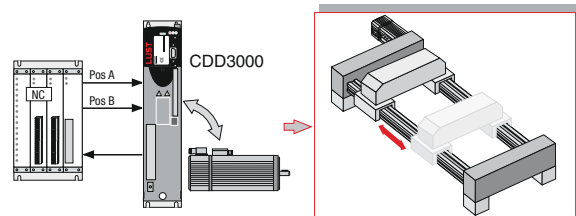- Homing mode
- Limit switch evaluation

Application examples:
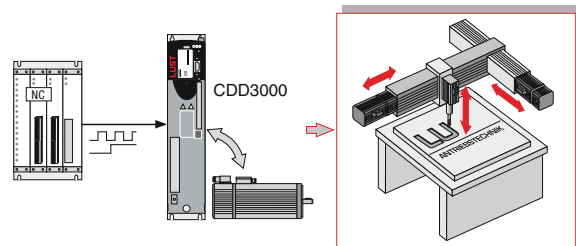
Engraving machine:
Electronic gearing in stepper motor operation

**Driving of a pressure cylinder:**
Electronic gearing

Linear axis:
Point-to-point positioning

iMotion positioning and sequence control

The iMotion fully programmable positioning and sequence control controls the movement of the motor as well as simple NC sequences.

Sequence control:

- Processing of inputs and outputs
- Logic links and basic computing modes
- Compare operations
- Processing of variables, flags, numerators and timers
- Up to 100 programs with a maximum of 700 positioning sets

CDD3000 servocontroller

sequence control | positio-ning | motor controller

I/O
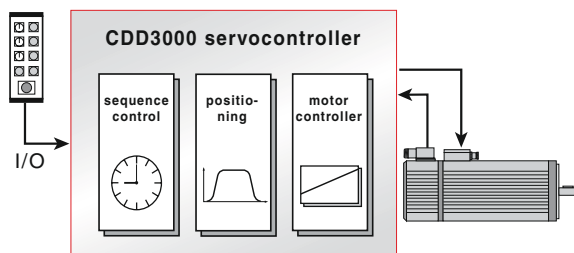
Position control:

- Absolute or relative positioning, endless travel (e.g. conveyor belts)
- Positioning ramps linear or with adjustable jerk for movements with low impact on the mechanism
- Eight different homing runs
- Point-to-point positioning
- Speed profile
- Travel-optimized positioning of rotary axes
- Superimposing of synchronous movement and point-to-point positioning

Application examples:
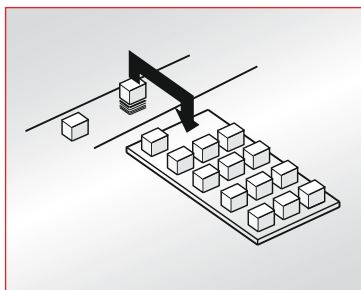
Palletizing
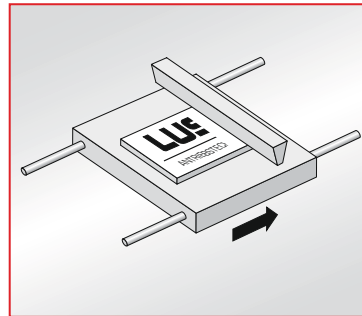
Drive for film processing units or scanners
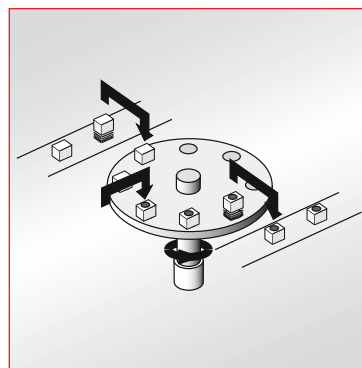
Indexing table drive
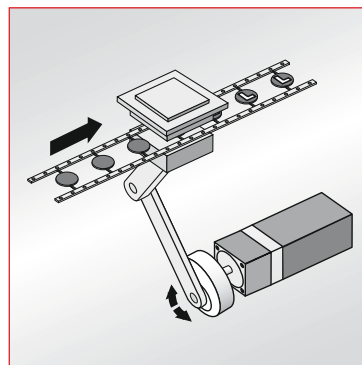
Press drive
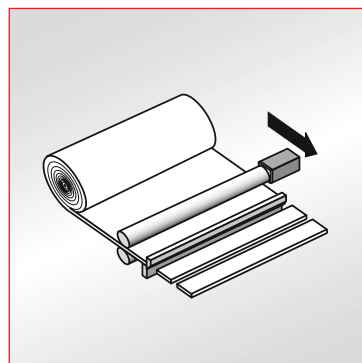
Roller feed

Programming interface of the iMotion positioning and sequence control

To create sequence programs a programming interface is provided within the DRIVEMANAGER (requires DRIVEMANAGER version 3.x or higher).

The programming language is easy to understand and is similar to the command set of the commonly used programming language BASIC.

The command set is divided into the following categories:

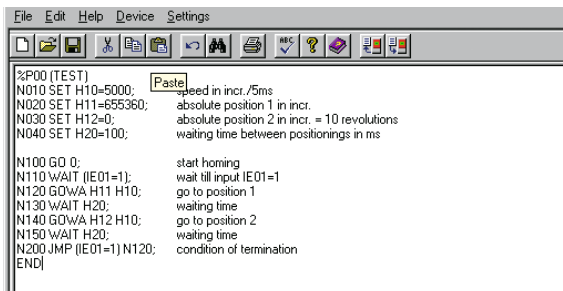- Jump command JMP (to scan inputs, positions, variables etc.; jump to record Nxxx or subroutine Pxx)
- Set command SET (to set outputs, variables, flags, numerators, etc.)
- Positioning and traversing command GO (to approach an absolute or relative position at a specific velocity)
- Wait command WAIT (wait for a time delay to elapse, reaching of a position or an input level)

The execution time for a command is 1 ms.

Program example - iMotion positioning and sequence control

The positioning of an indexing table is a frequently encountered task in automation. The diagram shows a schematic view in which a CDD3000 servocontroller with a servomotor is driving the indexing table by way of a gear unit.

The indexing table receives the workpiece at the start position and rotates it through 120° to the machining position. The machining position should be adjustable by way of an operator terminal. Here the workpiece is drilled (processing time 2 seconds) and then rotated a further 120° to the end position. The sequence control of the CDD3000 controls the movement of the indexing table and initiates the machining process.
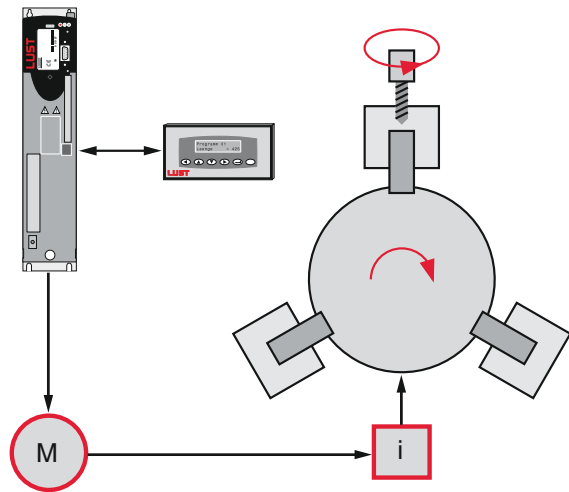
Sequence program:

%P01 (positioning of an indexing table)

N010	**SET H01=120**	Variable for machining position
N020	**SET H02=25**	Variable for positioning speed 250 rpm
N030	**GO 0**	Start homing (start position)
N040	**WAIT (IE01=1)**	Scan start input
N050	**GOW R H01 H02**	Approach position
N060	**WAIT 2000**	Machining process 2000 ms
N070	**JMP N040**	Repeat process
end		

v/t diagram
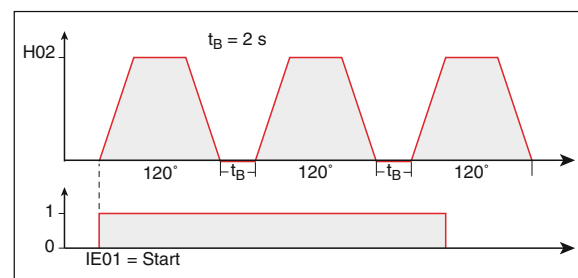
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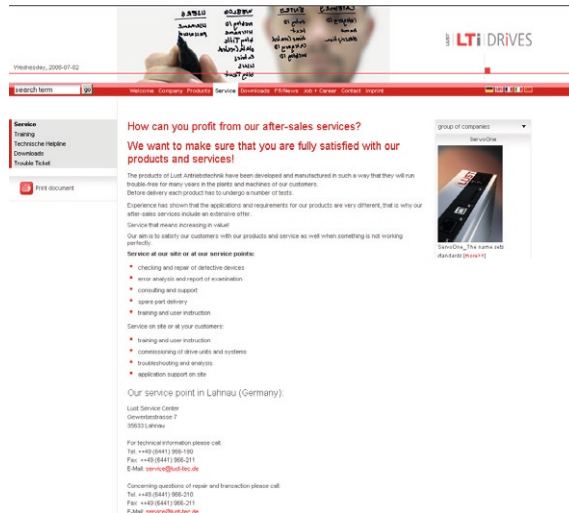
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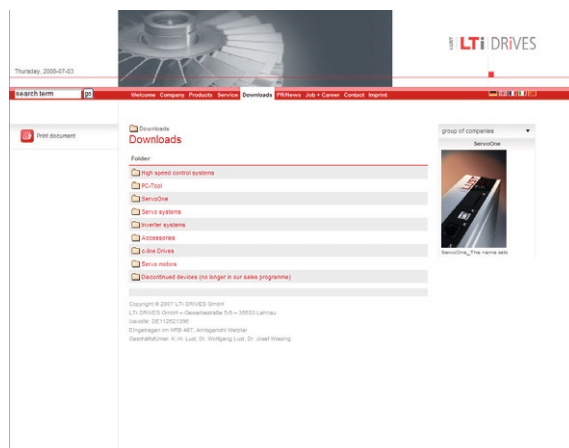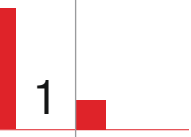
Overview of servocontrollers 2.2 A to 32 A

BG1

BG2

CDD32.006
CDD32.008
CDD34.003
CDD34.005
CDD34.006

BG3

CDD32.003
CDD32.004
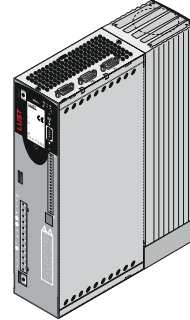
CDD34.008
CDD34.010

BG4
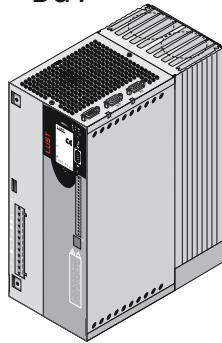
CDD34.014
CDD34.017

BG5
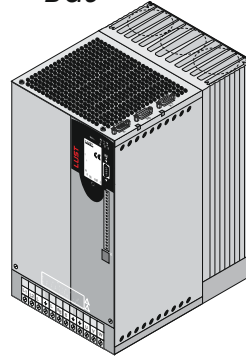
CDD34.024
CDD34.032

Servocontroller sizes	BG1	BG2	BG2	BG3	BG4	BG5
Rated current	2.4 A 4.0 A	5.5 A 7.1 A	2.2 A 4.1 A 5.7 A	7.8 A 10.0 A	14 A 17 A	24 A 32 A
Mains voltage	1 x 208, **230**, 240 V		3 x **400**, 440, 460 V			
Peak current			1.8 times rated current for 30 s			
Page	2-4	2-6	2-42-6	2-8	2-10	2-12

Current capacity of servocontrollers

The maximum permissible controller output current and the peak current are dependent on the mains voltage, the motor cable length, the power stage switching frequency and the ambient temperature. If the conditions change, the maximum permissible current capacity of the servo-controllers also changes. Refer to the following charts and tables for details of which current load is permissible under which changed service conditions.
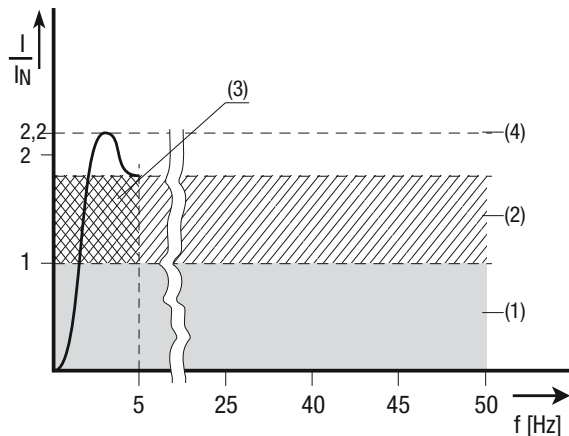
(1)   **Continuous**

(2)   **Intermittent* > 5 Hz rotating field frequency**

Servocontrollers 2.4 to 32 A
I/I_N = **1.8** (for 30 s at 4 kHz)
I/I_N = **1.8** (for 30 s at 8 kHz)
I/I_N = **1.8** (for 30 s at 16 kHz)

(3)   **Intermittent* 0 to 5 Hz rotating field frequency**

Servocontrollers 2.4 to 32 A
I/I_N = **1.8** (for 30 s at 4 kHz)
I/I_N = **1.25-1.8** (for 30 s at 8/16 kHz)

* Intermittent $I_N > I_{eff}$

$$I_{eff} = \sqrt{\frac{1}{T} \cdot \sum_{i=1}^{n} \cdot I_i^2 \cdot t_i}$$

(4)   **Pulse mode**

Servoregler für 230 V Netze

Servocontroller	Device ratedpo-wer [kVA]	Switching fre-quency of power stage [kHz]	Rated current [A]	Peak current for intermittent mode0 to 5 Hz [A]	Peak current for intermittent mode> 5 Hz [A]
CDD32.003,Cx.x	1,0	4	2.4	4.3	4.3
		8	2.4	4.3	4.3
		16	1.8	3.2	3.2
CDD32.004,Cx.x[1]	1,6	4	4	7.2	7.2
		8	4	7.2	7.2
		16	3	5.4	5.4
CDD32.006,Cx.x[1]	2,2	4	6.5	9.9	9.9
		8	5.5	9.9	9.9
		16	4.3	7.7	7.7
CDD32.008,Cx.x[1]	2,8	4	7.1	12.8	12.8
		8	7.1	12.8	12.8
		16	5.5	8	9.9

Peak current for 30 s with servocontrollers 2.4 to 7 A

Cooling air temperature   45 °C at power stage switching frequency 4 kH
                                    40 °C at power stage switching frequency 8, 16 kHz

1) With heat sink HS3... or additional cooling surface

Mains voltage 1 x 230 V -20 % +15 %

Motor cable length 10 m

Mounting height 1000 m above MSL

End-to-end mounting

Servocontrollers for 400/460 V systems:

Servo-controller	Device rated-power [kVA]	Switching frequency of power stage [kHz]	Rated current I_N[A] at 400 V[2]	Rated current I_N[A] at 460 V[3]	Peak current for intermittent mode0 to 5 Hz	Peak current for intermittent mode> 5 Hz [A]
CDD34.003,Cx.x	1.5	4 8 16	2.2 2.2 1.0	2.2 2.2 1.0	4 4 1.1	4 4 1.8
CDD34.004,Cx.x[1]	2.8	4 8 16	4.1 4.1 2.4	4.1 3.6 -	7.4 7.4 4.3	7.4 7.4 4.3
CDD34.006,Cx.x[1] CDD34.006,Wx.x	3.9	4 8 16	5.7 5.7 2.6	5.7 5.7 -	10.3 10.3 4.7	10.3 10.3 4.7
CDD34.008,Wx.x	5.4	4 8 16	7.8 7.8 5	7.8 7.8 -	14 14 7.8	14 14 9
CDD34.010,Wx.x	6.9	4 8 16	10 10 6.2	10 8.8 -	18 16.5 7.8	18 18 11
CDD34.014,Wx.x	9.7	4 8 16	14 14 6.6	14 12.2 -	25 25 11.9	25 25 11.9
CDD34.017,Wx.x	11.8	4 8 16	17 17 8	17 13.5 -	31 31 14.4	31 31 14.4
CDD34.024,Wx.x	16.6	4 8 16	24 24 15	24 24 -	43 40 22	43 43 27
CDD34.032,Wx.x	22.2	4 8 16	32 32 20	32 28 -	58 40 22	58 58 36

Peak current for 30 s with servocontroller 2.2 to 32 A
Peak current for 60 s with servocontroller 45 to 170 A
Cooling air temperature   45 °C at power stage switching frequency 4 kHz
                                      40 °C at power stage switching frequency 8, 16 kHz

1) With heat sink HS3... or additional cooling surface
2) Mains voltage 3 x 400 V ±10 %
3) Mains voltage 3 x 460 V ±10 %
Motor cable length 10 m
Mounting height 1000 m above MSL
End-to-end mounting

Servocontrollers 2.2 A to 4 A (BG1 + BG2)
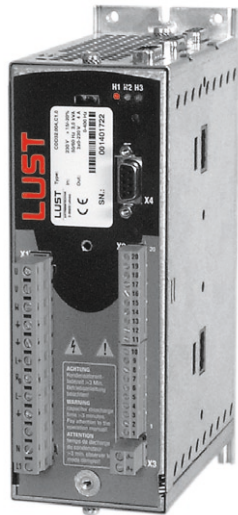
Type CDD-32.004,Cx.x

CDD3 □.□□□,□ x.xx, □□, ...□□

Technical
data

Cooling method

Version

For complete ordering data please refer to the fol-
lowing tables.

Order code

Technical data	CDD32.003	CDD32.004	CDD34.003
Output, motor end[1]			
voltage	3 x 0 ... 230 V	3 x 0 ... 230 V	3 x 0 ... 400/460 V
Rated current, effective I_N	2.4 A	4.0 A	2.2 A
Peak current 1.8 x I_N for 30 s	4.3 A	7.2 A	4.0 A
Device rated power	1.0 kVA	1.6 kVA	1.5 kVA
Rotating field frequency	0 ... 400 Hz		
Switching frequency of power stage	4, **8**, 16 kHz (factory setting 8 kHz at 40 °C cooling air temperature)		
Input, mains side			
Mains voltage	1 x 230 V -20 % +15 %	1 x 230 V -20 % +15 %	3 x 400/460 V -25 % +10 %
Current (with line reactor)	4.4 A	7.3 A	2.3 A
Asymmetry of mains voltage	-	-	±3 % max.
Frequency	50 / 60 Hz ±10 %	50 / 60 Hz ±10 %	50 / 60 Hz ±10 %
Power loss at 4 /8, 16 kHz	49/ 52 W	63/ 70 W	90/ 97 W
Braking chopper power electronics			
Minimum ohmic resistance of an externally installed braking resistor	100 Ω	100 Ω	180 Ω

1) Data referred to 230 V / 400 V output voltage and 8 kHz switching frequency.

Cooling method	CDD32.003,Cx.x	CDD32.004,Cx.x	CDD34.003,Cx.x
	Cold plate		
Mechanism			
Protection	IP20		
Cooling air temperature	45 °C (at 4 kHz switching frequency of power stage)		
Weight	1.6 kg		2.3 kg
Mounting type			
Single mounting	Additional cooling via mounting plate (unpainted) of 0.3 m²		
End-to-end mounting of multiple servocontrollers	with accessory HS32.1BR		with accessory HS32.200or HS34.2BR
Dimensions	BG1[mm]		BG2[mm]
W (width)	70		70
H (height)	223		248
D (depth)	120		145
A	50		50
C	205		230
D ⌀	4,8		4,8
E	215		240

Dimensional drawings

CDD32...,Cx.x

CDD34...,Cx.x

Note: The devices of the BG1 and BG2 series are fitted with fans as standard. You will find the matching heat sinks in the „Accessories" section.

Servocontrollers 4.0 A to 7 A (BG2)
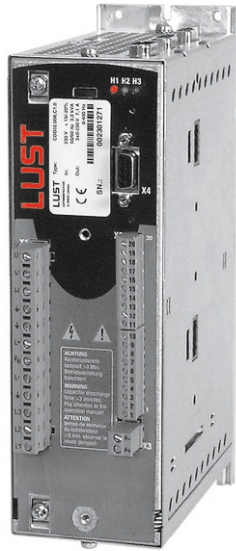
Type CDD-34.005,Cx.x

CDD3 □.□□□,□ x.xx, □□, ...□□

Technical
data

Cooling method

Version

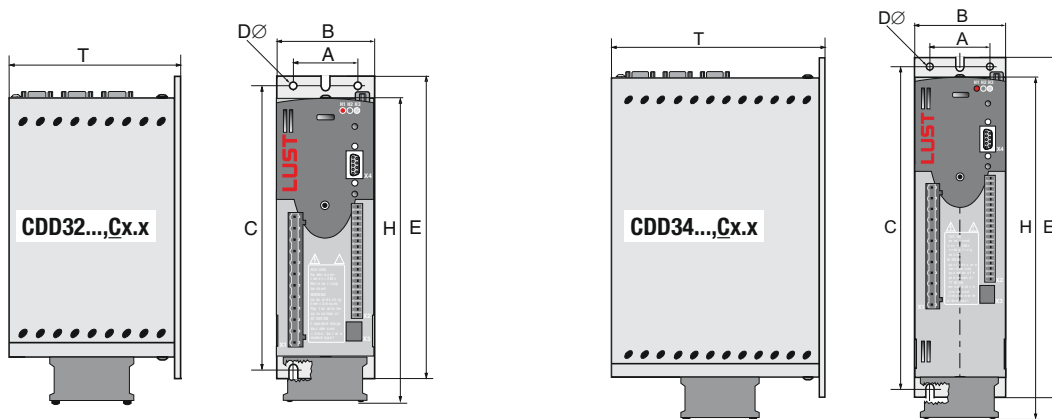For complete ordering data please refer to the following tables.

Order code

Technical data	CDD32.006	CDD32.008	CDD34.005	CDD34.006
Output, motor end[1)]				
voltage	3 x 0 ... 230 V	3 x 0 ... 230 V	3 x 0 ... 400/460 V	3 x 0 ... 400/460 V
Rated current, effective I_N	5.5 A	7.1 A	4.1 A	5.7 A
Peak current 1,8 x I_N for 30 s	9.9 A	12.8 A	7.4 A	10.3 A
Device rated power	2.2 kVA	2.8 kVA	2.8 kVA	3.9 A
Rotating field frequency	0 ... 400 Hz			
Switching frequency of power stage	4, **8**, 16 kHz (factory setting 8 kHz at 40 °C cooling air temperature)			
Input, mains side				
Mains voltage	1 x 230 V -20 % +15 %	1 x 230 V -20 % +15 %	3 x 400/460 V -25 % +10 %	3 x 400/460 V -25 % +10 %
Current (with line reactor)	10 A	12.9 A	4.3 A	6.0 A
Asymmetry of mains voltage	-	-	±3 % max.	±3 % max.
Frequency	50 / 60 Hz ±10 %			
Power loss at 4 /8, 16 kHz	90/ 97 W	110/ 120 W	95/ 127 W	121/ 163 W
Braking chopper power electronics				
Peak braking power with int. braking resistor (only with version CDD34 ...,Wx.x,BR)	–	-	-	1,6 kWat 360 Ω
Minimum ohmic resistance of an externally installed braking resistor	56 Ω	56 Ω	180 Ω	180 Ω

1) Data referred to 230 V / 400 V output voltage and 8 kHz switching frequency.

Cooling method	CDD32.006,Cx.x	CDD32.008,Cx.x	CDD34.005,Cx.x	CDD34.006,Cx.x	CDD34.006,Wx.x
	Cold plate				Wall mounting
Mechanism					
Protection	IP20				IP20
Cooling air temperature	45 °C (at 4 kHz switching frequency of power stage)				
Weight	2.3 kg				3.5 kg
Mounting type					
Single mounting	Additional cooling via cabinet mounting plate (unpainted) of 0.3 m²				-
End-to-end mounting of multiple	Only with accessory HS32.200 or HS32.2BR		Only with accessory HS32.200 or HS34.2BR		-
Dimensions	BG2[mm]				BG2[mm]
W (width)	70				70
H (height)	248				258
D (depth)	145				220
A	50				40
C	230				260
D Ø	4.8				4.8
E	240				240

Dimensional drawings

CDD32...,Cx.x

CDD34...,Wx.x

Version	Characteristic
CDD34.006,Wx.x,BR	Internal braking resistor only for housings with „wall mounting" cooling method, **CDD34 ..., Wx.x**

Note: You will find the matching heat sinks in the „Accessories" section.

Servocontrollers 7.8 A to 10 A (BG3)

Type CDD-34.008,Wx.x

CDD3 □.□□□,□ x.xx, □□, ...□□

Technical data

Cooling method

Version

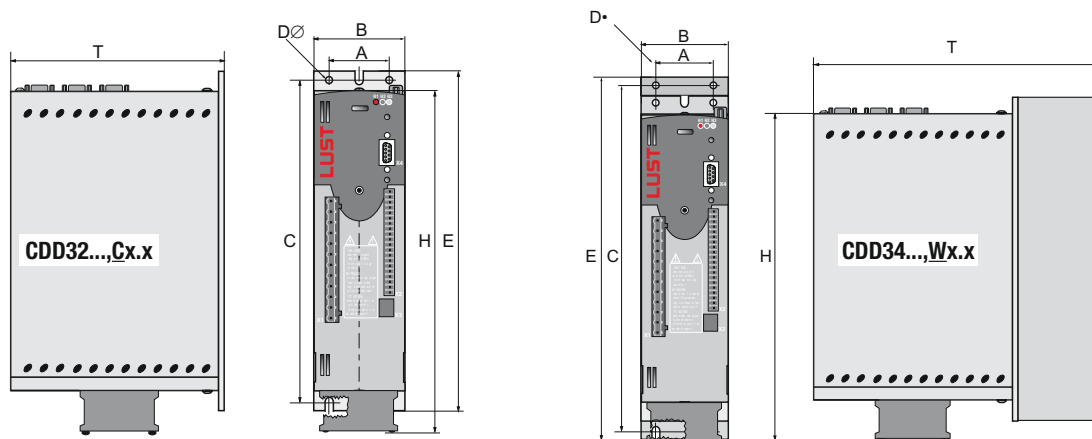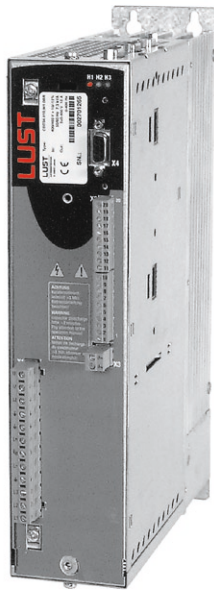For complete ordering data please refer to the following tables.

Order code

Technical data	CDD34.008	CDD34.010
Output, motor end[1]		
voltage	3 x 0 ... 400/460 V	
Rated current, effective I_N	7.8 A	10 A
Peak current 1.8 x I_N for 30 s	14 A	18 A
Device rated power	5.4 kVA	6.9 kVA
Rotating field frequency	0 ... 400 Hz	
Switching frequency of power stage	4, 8, 16 kHz (factory setting 8 kHz at 40 °C cooling air temperature)	
Input, mains side		
Mains voltage	3 x 400/460 V-25 % +10 %	
Current (with line reactor)	8.2 A	10.5 A
Asymmetry of mains voltage	±3 % max.	
Frequency	50 / 60 Hz ±10 %	
Power loss at 4 /8, 16 kHz	150/ 177 W	187/ 222 W
Braking chopper power electronics		
Peak braking power with int. braking resistor(only with version CDD34 ...,Wx.x,BR)	6.0 kWat 90 Ω	6.0 kWat 90 Ω
Minimum ohmic resistance of an externally installed braking resistor	81 Ω	81 Ω

1) Data referred to 400 V output voltage and 8 kHz switching frequency.

Cooling method	CDD34...,Wx.x	CDD34...,Cx.x	CDD34...,Dx.x
	Wall mounting	Cold plate	Push-through heat sink
Mechanism			
Protection	IP20		IP20 (device), IP54 (heat sink)
Cooling air temperature	45 °C (at 4 kHz switching frequency of power stage)		
Weight	4.4 kg	3.2 kg	4.6 kg
Mounting type	Vertical mounting with unhindered air flow	Vertical mounting on mounting plate or cooling section	Vertical mounting, heat sink pushed through mounting plate
Dimensions	**BG3 [mm]**		
W (width)	70	70 (100)	70 (110)
H (height)	300	300	300
D (depth)	218	150	T1 138. T2 80
A	40	85	90
C	320	200	320
D Ø	4,8	5.5	4.8
E	330	-	340
F	-	100	200

CDD34...,Wx.x

CDD34...,Cx.x

CDD34...,Dx.x

Version	Characteristic

CDD34 ..., BR — Internal braking resistor only for housings with „wall mounting" **CDD34 ...,Wx.x** or „push-through heat sink" cooling method **CDD34...,Dx.x**.

ℹ Note: Note that for the cold plate and push-through heat sink cooling methods special conditions regarding the dissipation of power loss must be met. For more details refer to the CDD3000 Operation Manual.

Servocontrollers 14 A to 17 A (BG4)

Type CDD-34.014,Wx.x

CDD3 □.□□□,□ x.xx, □□, ...□□

Technical data

Cooling method

Version

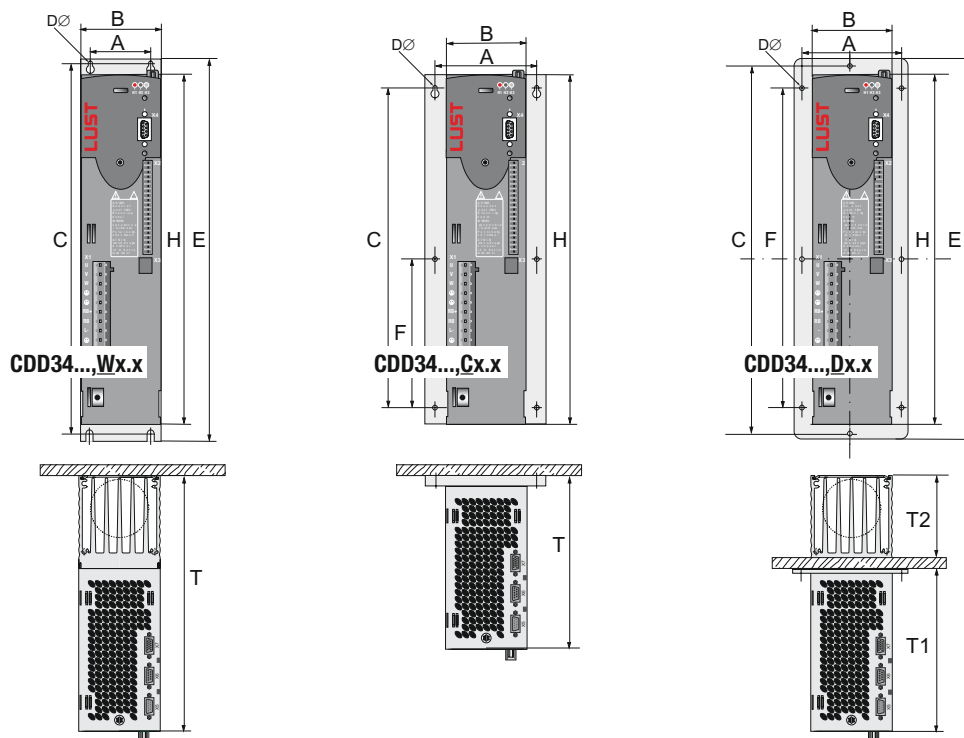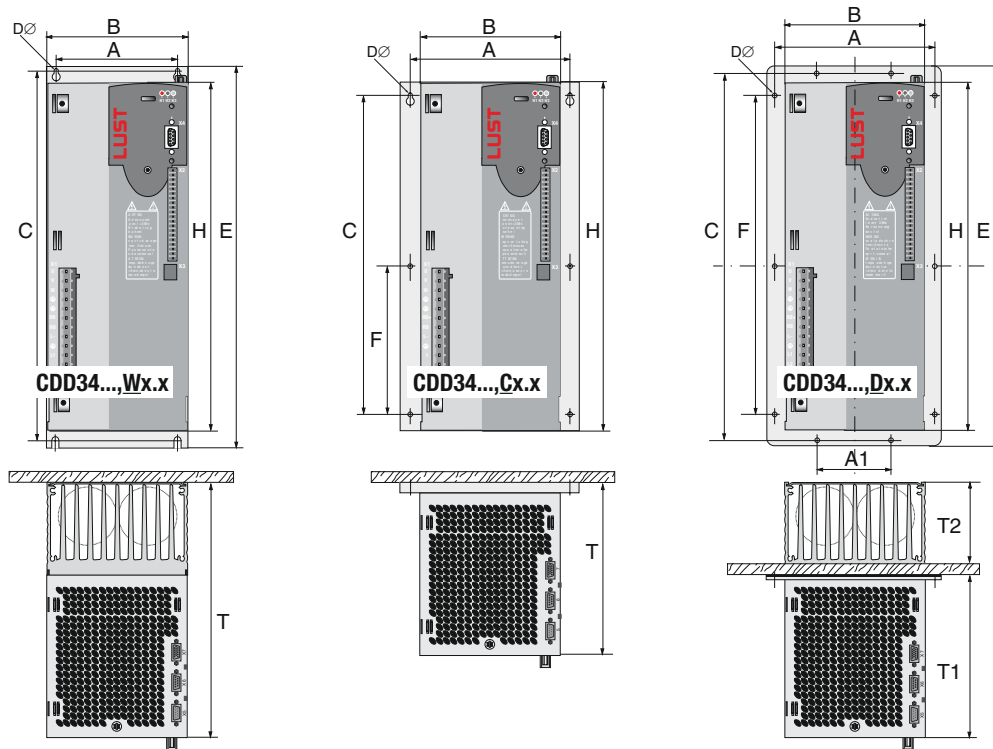For complete ordering data please refer to the following tables.

Order code

Technical data	CDD34.014	CDD34.017
Output, motor end[1)		
voltage	3 x 0 ... 400/460 V	
Rated current, effective I_N	14 A	17 A
Peak current 1.8 x I_N for 30 s	25 A	31 A
Device rated power	9.7 kVA	11.8 kVA
Rotating field frequency	0 ... 400 Hz	
Switching frequency of power stage	4, **8**, 16 kHz (factory setting 8 kHz at 40 °C cooling air temperature)	
Input, mains side		
Mains voltage	3 x 400/460 V-25 % +10 %	
Current (with line reactor)	14.7 A	17.9 A
Asymmetry of mains voltage	±3 % max.	
Frequency	50 / 60 Hz ±10 %	
Power loss at 4 /8, 16 kHz	225/ 283 W	270/ 340 W
Braking chopper power electronics		
Peak braking power with int. braking resistor(only with version CDD34 ...,Wx.x,BR)	6.0 kWat 90 Ω	6.0 kWat 90 Ω
Minimum ohmic resistance of an externally installed braking resistor	47 Ω	47 Ω

1) Data referred to 400 V output voltage and 8 kHz switching frequency.

Cooling method	CDD34...,Wx.x	CDD34...,Cx.x	CDD34...0,Dx.x
	Wall mounting	**Cold plate**	**Push-through heat sink**
Mechanism			
Protection	IP20		IP20 (device), IP54 (heat sink)
Cooling air temperature	45 °C (at 4 kHz switching frequency of power stage)		
Weight	6.5 kg	5.2 kg	6.7 kg
Mounting type	Vertical mounting with unhindered air flow	Vertical mounting on mounting plate or cooling section	Vertical mounting, heat sink pushed through mounting plate
Dimensions	**BG4 [mm]**		
W (width)	120	120 (150)	120 (160)
H (height)	300	300	300
D (depth)	218	150	T1 138. T2 80
A	80	135	A 140 , A1 180
C	320	200	320
D Ø	4.8	5.5	4.8
E	330	-	340
F	-	100	200

Dimensional drawings

CDD34...,Wx.x

CDD34...,Cx.x

CDD34...,Dx.x

Version	Characteristic
CDD34 ...,BR	Internal braking resistor only for housings with „wall mounting" **CDD34 ...,Wx.x** or „push-through heat sink" cooling method **CDD34...,Dx.x**.

Note: Note that for the cold plate and push-through heat sink cooling methods special conditions regarding the dissipation of power loss must be met. For more details refer to the CDD3000 Operation Manual.

Servocontrollers 24 A to 32 A (BG5)

CDD3 □.□□□,□ x.xx, □□, ...□□

Technical data

Cooling method

Version

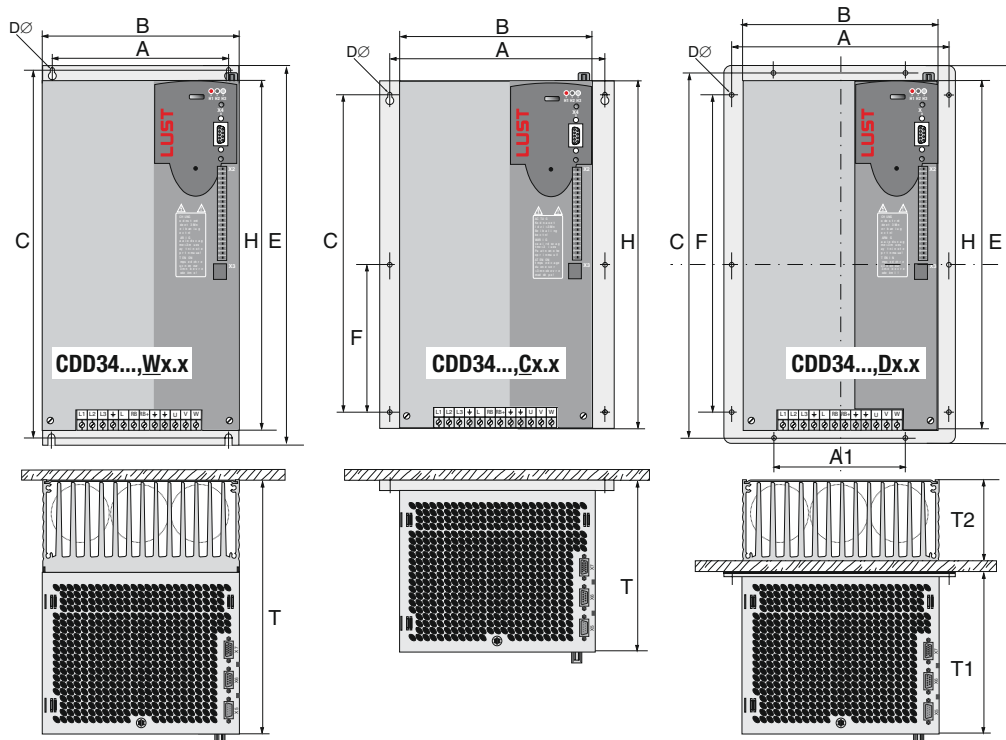For complete ordering data please refer to the following tables.

| Type CDD-34.024,Wx.x | Order code |

Technical data	CDD34.024	CDD34.032
Output, motor end[1)]		
voltage	3 x 0 ... 400/460 V	
Rated current, effective I_N	24 A	32 A
Peak current 1.8 x I_N for 30 s	43 A	58 A
Device rated power	16.6 kVA	22.2 kVA
Rotating field frequency	0 ... 400 Hz	
Switching frequency of power stage	4, **8**, 16 kHz (factory setting 8 kHz at 40 °C cooling air temperature)	
Input, mains side		
Mains voltage	3 x 400/460 V-25 % +10 %	
Current (with line reactor)	25.3 A	33.7 A
Asymmetry of mains voltage	±3 % max.	
Frequency	50 / 60 Hz ±10 %	
Power loss at 4 /8, 16 kHz	330/ 415 W	415/ 525 W
Braking chopper power electronics		
Peak braking power with int. braking resistor(only with version CDD34 ...,Wx.x,BR)	6.0 kWat 90 Ω	6.0 kWat 90 Ω
Minimum ohmic resistance of an externally installed braking resistor	22 Ω	22 Ω

1) Data referred to 400 V output voltage and 8 kHz switching frequency.

| Cooling method	CDD34...,Wx.x	CDD34...,Cx.x	CDD34...0,Dx.x
	Wall mounting	**Cold plate**	**Push-through heat sink**
Mechanism			
Protection	IP20		IP20 (device), IP54 (heat sink)
Cooling air temperature	45 °C (at 4 kHz switching frequency of power stage)		
Weight	7.2 kg	6.4 kg	7.4 kg
Mounting type	Vertical mounting with unhindered air flow	Vertical mounting on mounting plate or cooling section	Vertical mounting, heat sink pushed through mounting plate
Dimensions	**BG5 [mm]**		
W (width)	170	170 (200)	170 (210)
H (height)	300	300	300
D (depth)	218	150	T1 138. T2 80
A	130	185	A 190 , A1 100
C	320	200	320
D Ø	4.8	5.5	4.8
E	330	-	340
F	-	100	200

Dimensional drawings

| Version	Characteristic
CDD34 ...,BR	Internal braking resistor only for housings with „wall mounting" **CDD34 ...,Wx.x** or „push-through heat sink" cooling method **CDD34...,Dx.x**.

Note: Note that for the cold plate and push-through heat sink cooling methods special conditions regarding the dissipation of power loss must be met. For more details refer to the CDD3000 Operation Manual.
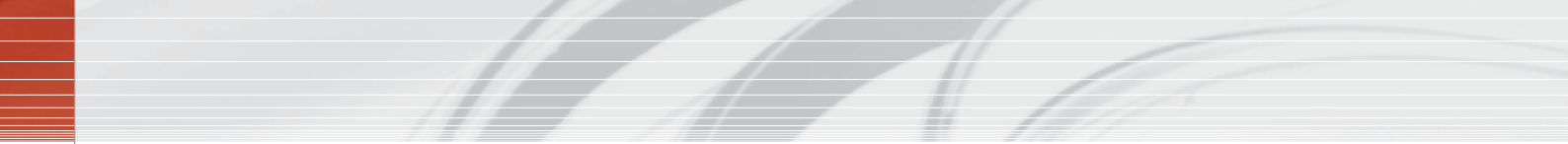
Overview of accessories for servo drives
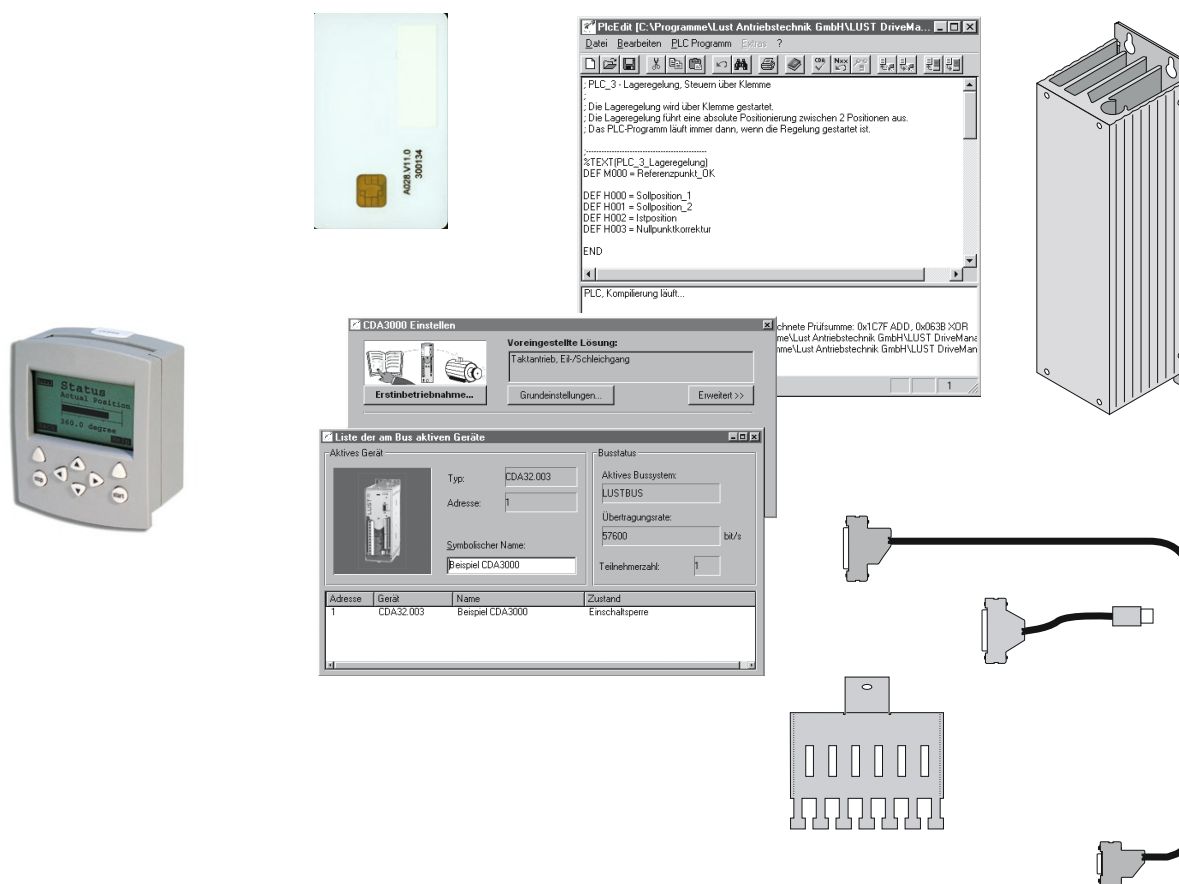
Contents	Type	Page
Operator modules	KP300	3 - 2
Memory card	SC-XL	3 - 3
PC environment	DRIVEMANAGER	3 - 4
Connecting cable	CCD-SUB90X	3 - 5
Terminal cover	TB1-EB/TB2-EB/TB3-EB/TB4-EB/TB5-EB	3 - 6
EM shield connection	ST02 ... ST06 / SMC50 / SMB50	3 - 7
Heat sinks for BG1 and BG2	HS32.1BR / HS32.200 / HS32.2BR / HS34.2BR	3 - 9

Operator module

KP □00 □□

KEYPAD

Series

Version
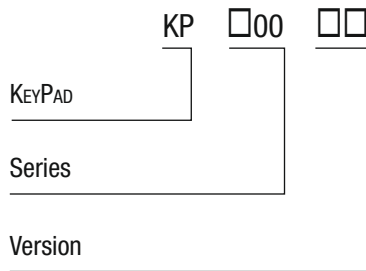
KP300   Order code

| Order designation	Summary explanation
KP300	KEYPAD with graphical display (128 x 64 Pixel) for parameter setting, actual value display and serial commissioning of positioning controllers. Graphical display including device status and parameter texts. Language: German or English (configurable).The KEYPAD supports the SmartCard „SC-XL".

Note: The KEYPAD is suitable for use only with the drive controllers in the c-line-Drives range. For handling, please refer to the relevant operating manual.

| Mechanism KP300	
Dimensions	70 x 84 x 37 mm (B x H x T)
Weight	120 g
Connection (RS232)	Standard (1), Can be plugged directly into the positioning controller
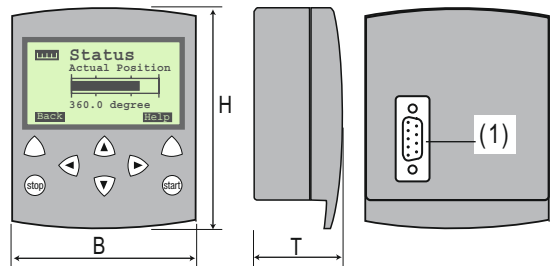
| Cable connection	Installation in switch cabinet door
Connection between KP300/ and servocontroller CDD3000 is made using cable CCD-SUB90X	Mounting in the cabinet door requires two holes for the fixing screws and a break-through for the connector.
	Please use only self-tapping screws for thermoplastics (e.g. EJOT PT screw, type K30 x 8 WN1412).

SMARTCARD Memory Card

SC ☐☐

SMARTCARD

Memory version
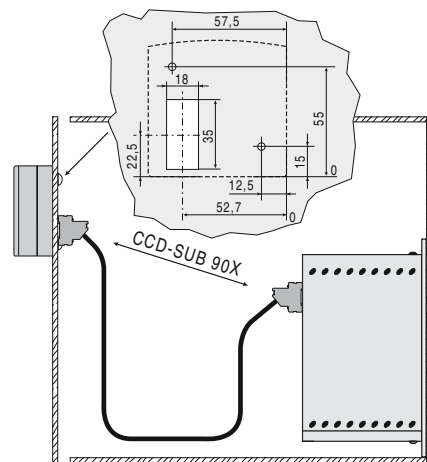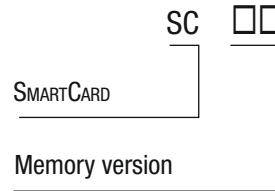
SMARTCARD - XL   Order code

Order designation	Summary explanation
SC-XL	The data set of the servocontroller can be stored and easily transferred to other controllers. Suitable for KP200-XL.

System layout	Explanation
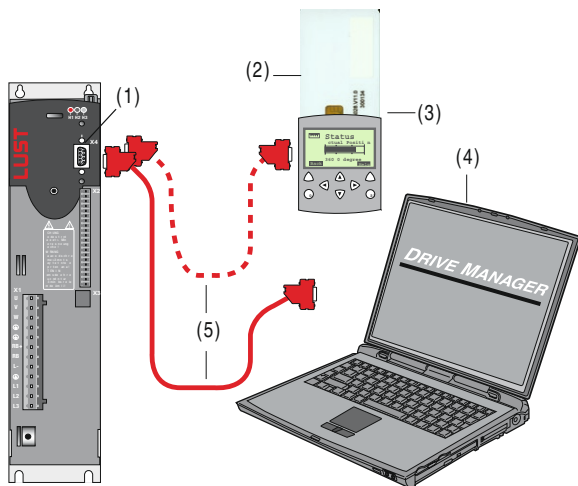
(1)   Terminal X4 for operator modules
        or PC connection (RS232 port)
(2)   SC-XL chipcard
(3)   KP200-XL, KP300 operator moduls
(4)   PC with DRIVEMANAGER user software

3

PC User Software

DRIVEMANAGER   3.x

PC User
Software

Software default configuration

DRIVEMANAGER 3.x   Order code

Technical data	DRIVEMANAGER
Software features	The "DRIVEMANAGER" PC user software delivers the following functions:
	- Setup screen-based, highly user-friendly handling
	- Status display to monitor the operation-specific actual and setpoint values
	- Direct control of the inverter by PC
	- User-friendly four-channel digital scope for real-time recording of actual values such as current curve or v/t diagram
	- Comparison function for problem solving, data administration and print functions
Minimum configuration	Microsoft Windows® 98, NT4.0, ME, 2000 or XP, CD-ROM drive, Pentium III, 64 MB RAM
Supply package	1 CD-ROM for installation of the DriveMananger user software, all user manuals and software descriptions for the various device series as PDF documents
Languages	On installation you can choose between German, English or French.

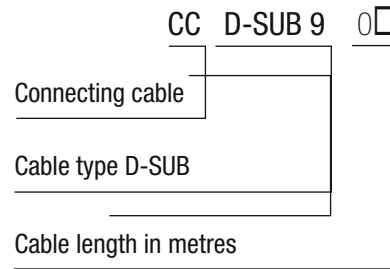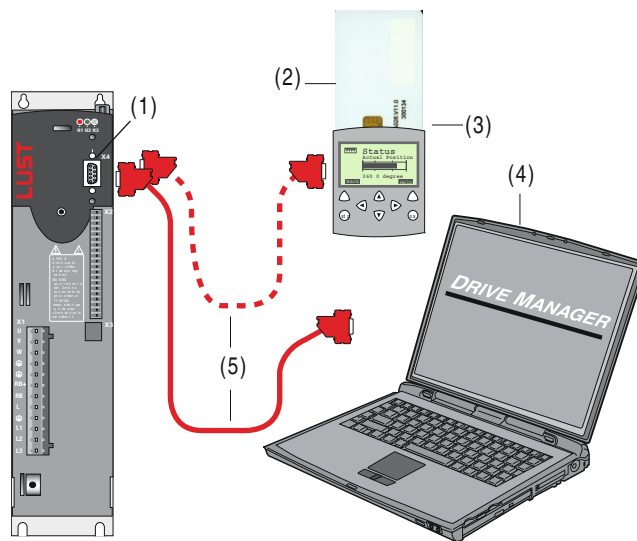| Order designation	Licences
DRIVEMANAGER 3.x	Contains the full functionality for parameter-setting, control and monitoring. The runtime is unlimited. The software license permits simultaneous use on any number of workstations.
DRIVEMANAGER 3.x test	Contains the full functionality and is intended for test and demo purposes. The runtime is limited to 180 days from date of installation.

3

Connecting cable

CC   D-SUB 9   0☐

Connecting cable

Cable type D-SUB

Cable length in metres

CCD-SUB 90x	Order code

Order designation	Technical data
CCD-SUB 901	Cable for link between servocontroller and KEYPAD or drive controller and PC with DRIVEMANAGER, length 1 m
CCD-SUB 902	Cable for link between servocontroller and KEYPAD or drive controller and PC with DRIVEMANAGER, length 2 m
CCD-SUB 903	Cable for link between servocontroller and KEYPAD or drive controller and PC with DRIVEMANAGER, length 3 m

Explanation	System layout

(1) Terminal X4 for KEYPAD
    or PC RS232 port
(2) Chipcard SMARTCARD SC-XL
(3) Operator module KP200-XL
(4) PC with DRIVEMANAGER user software
(5) Connecting cable CCD-SUB90X, x.x
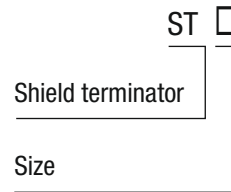

3

Terminal cover

TB3   TB5

TB ☐

Terminal box

Size

Order designation	TB1	TB2	TB3	TB4	TB5
				Order code	
Suitable for servocontrollers	CDD32.003 CDD32.004	CDD32.006 CDD32.008 CDD34.003 CDD34.005 CDD34.006	CDD34.008 CDD34.010	CDD34.014 CDD34.017	CDD34.024 CDD34.032
Rated current of servocontrollers	2.4 - 4 A	2.2 - 7.1 A	7.8 - 10 A	14 - 17 A	24 - 32 A
D (depth)	32.5 mm	32.5 mm	32.5 mm	32.5 mm	32.5 mm
Diagram					

Shield connection

ST ☐

Shield terminator

Size
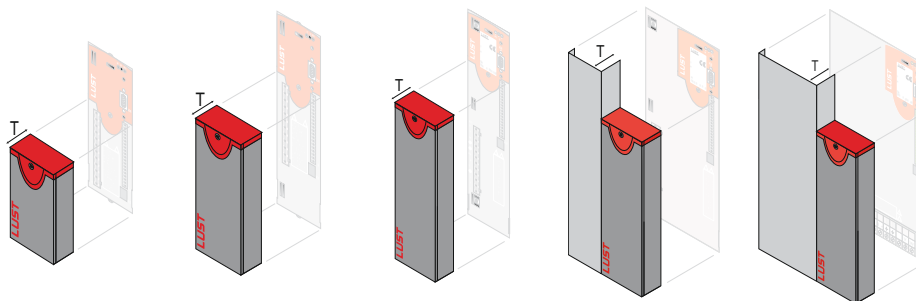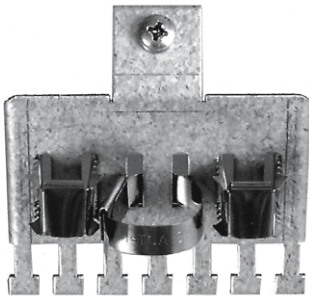
ST02 (incl. metal clips. metal cable band and screw)   Order code

Order designation	ST02			ST04	ST05
Suitable for servocontrollers	CDD32.003 CDD32.004	CDD32.006 CDD32.008 CDD34.003 CDD34.005 CDD34.006	CDD34.008 CDD34.010	CDD34.014 CDD34.017	CDD34.024 CDD34.032
Rated current of servocontrollers	2.4 - 4 A	2.2 - 7.1 A	7.8 - 10 A	14 - 17 A	24 - 32 A
D (depth)	238 mm	263 mm	345 mm	345 mm	355 mm

Diagram
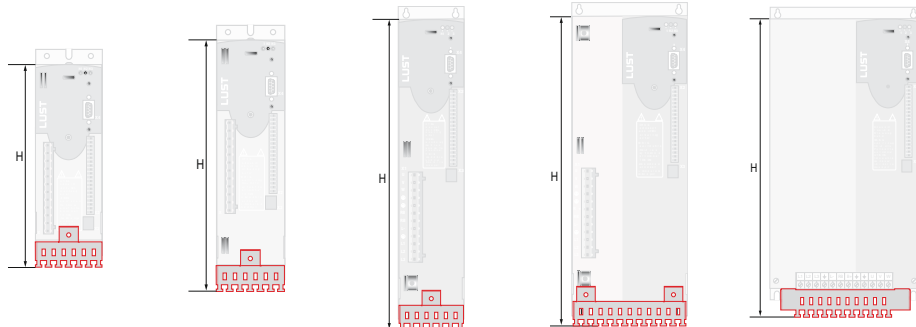
Note: For servocontroller sizes 6 and 7 (cable cross-sections > 32 mm²) we recommend connecting the shields of the motor/mains lead directly to a shield rail in the cabinet.

Metal clips
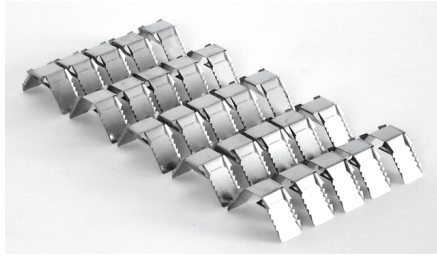
SMC ☐☐

Shield metal clip
360° contacts

Quantity per pack

SMC50   Order code

Order designation	Packing unit	Suitable for EM shielding	Usable in cable shield diameter	Material
SMC50	Pack of 50	ST xx	<12 mm²	Spring steel

Metallkabelbinder

SMB ☐☐

Shield metal band
360° contacts
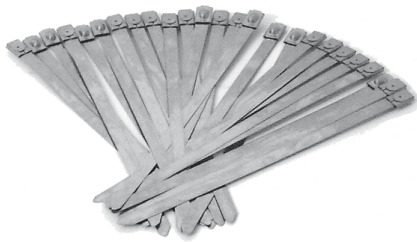
Quantity per pack

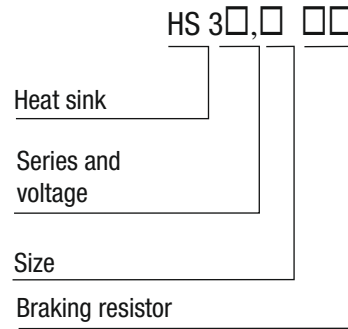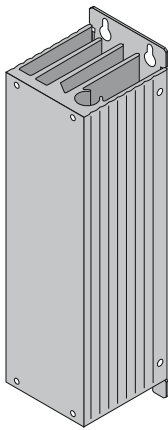SMB50   Order code

Order designation	Packing unit	Suitable for EM shielding	Usable in cable shield diameter	Material
SMB50	Pack of 50	ST xx	>12 mm²	Stainless steel

System layout

Heat sink / braking resistor for BG1 + BG2

HS 3☐,☐ ☐☐

Heat sink

Series and voltage

Size

Braking resistor

HS3X.xxx   Order code

Technical data	HS32.1BR	HS32.200	HS32.2BR	HS34.2BR
Continuous braking power when mounted on servocontroller	25 W / CDD32.004	-	30 W / CDD32.006 0 W / CDD32.008	35 W / CDD34.003 5 W / CDD34.005
Braking resistor	162 Ω	-	90 Ω	360 Ω
Peak braking power	0.9 kW	-	1.7 kW	1.6 kW
Suitable for servocontrollers	-	CDD32.006 CDD32.008 CDD34.005	-	-

Order code	Description	B (Width) [mm]	H (Height) [mm]	T (Depth) [mm]	A [mm]	C [mm]	D [mm]	E [mm]
HS32.1BR	Heat sink with integrated raking resistor (230 V Net)	70	215	75	40	235	4,8	245
HS32.200	Heat sink							
HS32.2BR	Heat sink with integrated raking resistor (230 V Net)	70	240	75	40	260	4,8	270
HS34.2BR	Heat sink with integrated raking resistor (460 V Net)							

Maßbilder

HS32.1BR

HS32.200

HS32.2BR
HS34.2BR
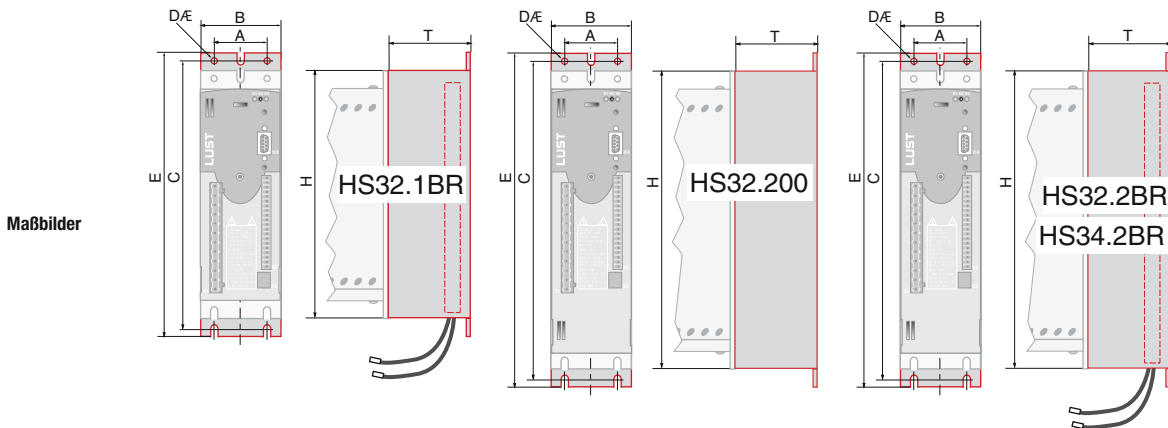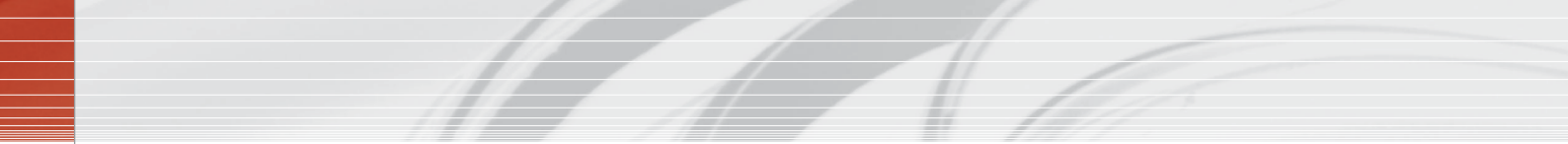
3

Overview of user and communication modules
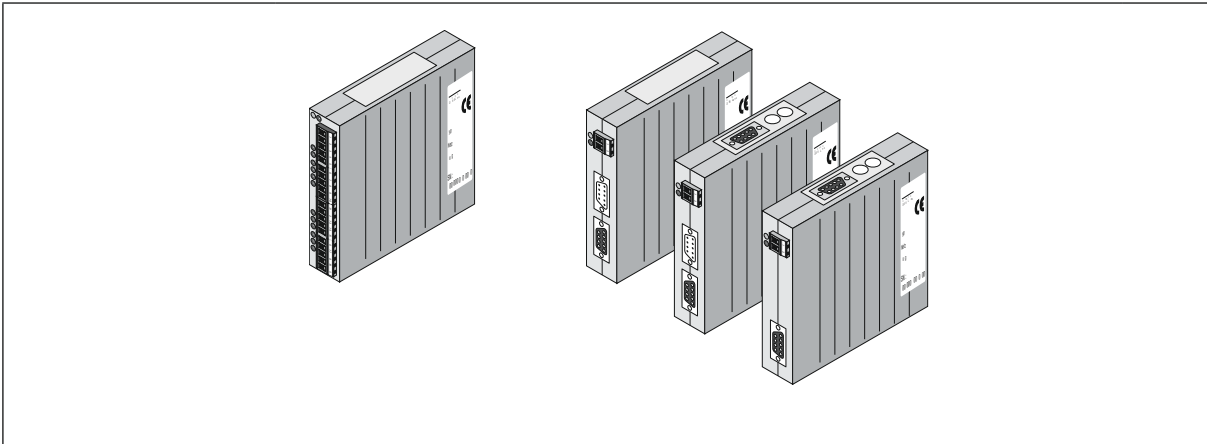
Contents	Type	Page
User modules	UM-8140	4 - 2
	UM-2AO	4 - 3
Communication modules	CM-CAN1CM-CAN2CM-DPV1	4 - 4

User module (I/O expansion)

UM-□□□□

user module

characteristics

8I 4O (z. B.)

4 outputs (O expansion)

8 outputs (I expansion)

UM-8I4O	Order code

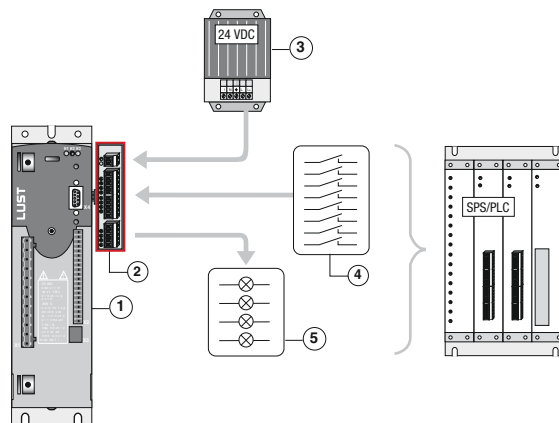| Order designation	Summary explanation
UM-8I4O	Terminal expansion by 8 inputs and 4 outputs, function of inputs/outputs programmable

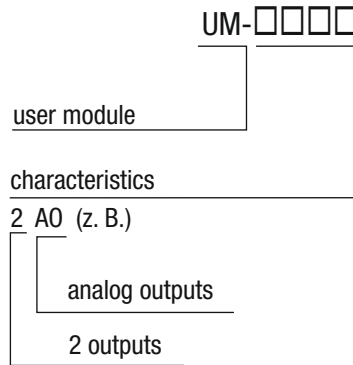| Technical data		UM-8I4O
Voltage supply		24 V DC ±20 %
Current consumption		0.6 A
8 inputs	Input voltage for signal „0"	from 0 to 5 V
	Input voltage for signal „1"	>15 V
	Input voltage for signal „1"	2.5 mA to 7.0 mA (6 mA at 24 VDC)
4 outputs	Permissible range with signal „1"	min. 5 mA, max. 0.5 A
	Mean	125 mA
	Total current	0.5 A
	Short-circuit current per output	max. 1.2 A short-time
Dimensions (w x h x d)		28 x 90 x 90 [mm]

Explanation	System layout, UM-8I4O

(1) Servocontroller CDD3000

(2) User module UM-8I4O

(3) External power pack 24 VDC

(4) 8 control inputs (programmable)

(5) 4 control outputs (programmable)

User module (expansion of analog outputs)

UM-□□□□

user module

characteristics

2 AO (z. B.)

analog outputs

2 outputs

UM-2AO   Order code

Order designation	Summary explanation
UM-2AO	Terminal expansion by 2 analog outputs, function of outputs programmable to output current, speed, torque and position

Technical data	UM-2AO
Voltage supply	18 ... 30 V DC ±20 %
Current consumption	0.1 A
Resolution	10 bits
Accuracy	± 0.1 % or ± 19.5 mV
Output voltage	- 10 V ... + 10 V
Current capacity of outputs	3 mV max., short-circuit-proof
Filtering (fixed)	4. order filter
Refresh cycle time	5 ms
Dimensions (w x h x d)	28 x 90 x 90 [mm]

Explanation	System layout, UM-2AO

(1) Servocontroller CDD3000

(2) User module UM-2AO

(3) External power pack 24 VDC

(4) Analog display ± 10 V, programmable

4

Communication module

CM- ☐☐☐☐

communication module

bus and/or protocol
CM-DPV1 (z. B.)

PROFIBUS-DPV1
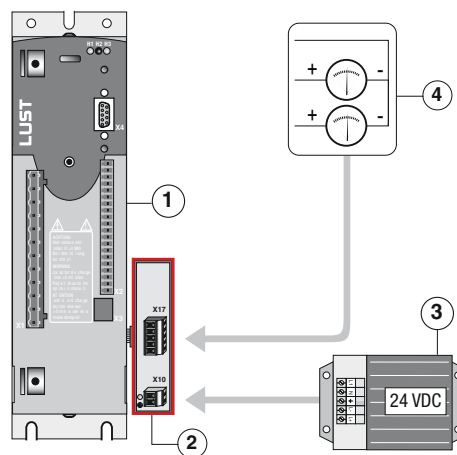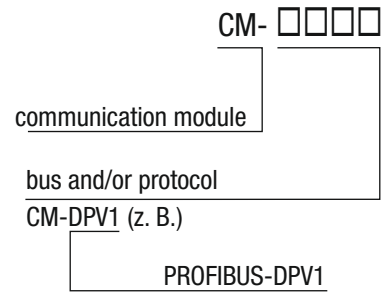
CM-CAN1, CM-CAN2, CM-DPV1   Order code

Order designation	Summary explanation
CM-CAN1	Communication module for CAN bus with CANintern data transfer protocol (isolation module)
CM-CAN2	Communication module for CAN bus with CANopen data transfer protocol
CM-DPV1	Communication module for PROFIBUS-DPV1 without CD-ROM

Technical data	CM-CAN1	CM-CAN2	CM-DPV1
Standardization	ISO 11898	ISO 11898	EN 50170
Communication	CiA/ DS102	CiA/ DS301	Directive 2.084
Device profile	CANLust or CiA/DS402	CiA/ DS402	PROFIBUS
Transfer rate/ line length	25 kBit/s up to 1000 m500 kBit/s up to 100 m	20 kBit/s up to 1000 m1 MBit/s up to 40 m	9.6 kBit/s up to 1,200 m12 MBit/s up to 100 m
voltage supply	19 ... 29 V DC	18 ... 30 V DC	18 ... 30 V DC
Current consumption	max. 80 mA	max. 100 mA	max. 250 mA
Dimensions (w x h x d) [mm]		28 x 90 x 90	

Explanation

System layout, CANintern / CANopen

(1) Servocontroller CDD3000

(2) Communication module CM-CAN1 or CM-CAN2

(3) Connecting cable CCD 90x, x.x

(4) Bus termination plug

(5) CAN bus controller

(6) Power pack (24 VDC)

max. 100 stations CANintern (CAN-Lust) (CM-CAN1)

max. 127 stations CANopen(CM-CAN2)
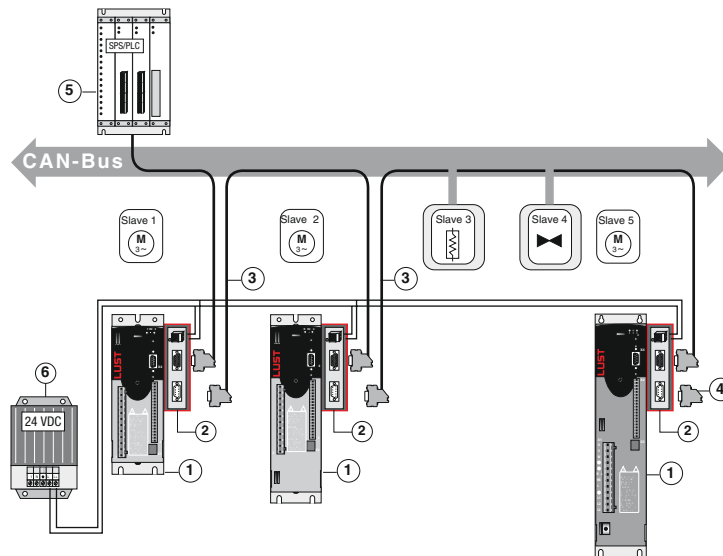
Explanation

System layout, PROFIBUS-DP

(1) Servocontroller CDD3000

(2) Communication Module CM-DPV1

(3) PROFIBUS-DP system cable

(4) Power pack 24 VDC

(5) DP-Master

max. 127 stations (CM-DPV1)
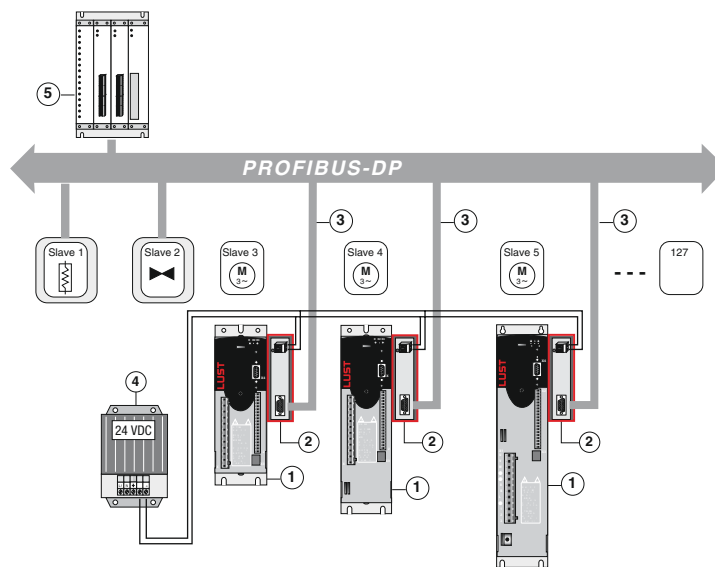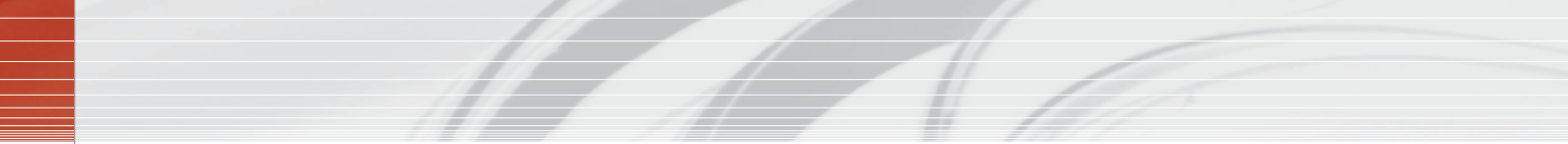
Supplementary Components
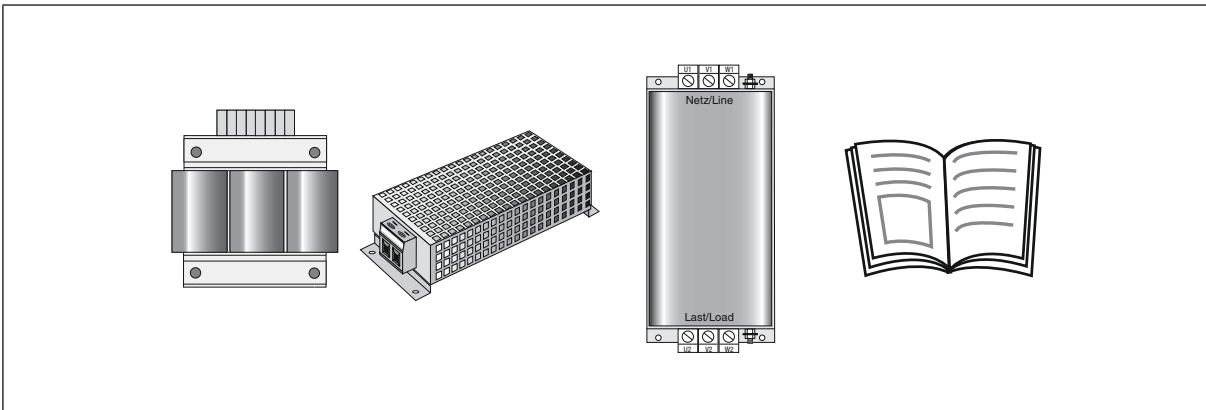
Contents	Type	Page
Line reactors	LR 32.5 ... LR32.8 and LR32.14-UR LR34.4-UR ... LR34.032-UR	5 - 2
Braking resistors	BR 090.01,540-UR BR 090.03,540-UR	5 - 5
Mains filter	EMCXX	5 - 8
User information	all documents	5 - 9

Line reactors
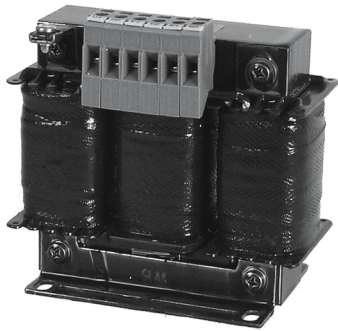
LR34.10

LR 3□. □□□

Line reactor

Series and voltage

Rated current

Order code

Ambient conditions	LR32.xxx	LR34.xxx
Mains voltage	1 x 230 V -20 % +15 %, 50/60 Hz[1]	3 x 460 V -25 % +10 %, 50/60 Hz[1]
Overload factor	1,8 x I_N for 40 s	1,8 x I_N for 40 s to 32 A rated current 1,5 x I_N for 60 s to 45 A rated current
Ambient temperature	-25 °C bis +45 °C, with power reduction up to 60 °C (1.3 % per °C)	
Mounting height	1000 m, with power reduction up to 4,000 m (6 % per 1000 m)	
Relative air humidity	15 ... 95 %, condensation not permitted	15 ... 95 %, condensation not permitted
Storage temperature	-25 °C to +70 °C	-25 °C to +70 °C
Protection	IP00, terminals VBG4	IP00, terminals VBG4
Short-circuit voltage	U_K 4 % (corresponding to 9.2 V at 230 V)	U_K 4 % (corresponding to 9.24 V at 400 V) Applies to controllers with I_N = 4.0 A to 32 A U_K 2 % (corresponding to 4.6 V at 400 V) Applies to controllers with I_N = 45 A to 170 A
Permissible contamination	P2 to EN 61558-1	P2 to EN 61558-1
Thermal configuration	$I_{eff} < I_N$	$I_{eff} < I_N$
UL recognition	Version LR3X.xxx-UR has UL Recognition for the USA and Canadian markets	

1) At mains frequency 60 Hz the power loss increases by approx. 5 - 10 %

Single-phase line reactors

Order ref.	Suitable for servocontrollers	Rated current [A]	Power loss tot. [W]	Inductance [mH]	Weight [kg]	Connection [mm²]
LR32.5	CDD32.003 (EN 61000-3-2)	4,5	11	9,76	0,7	4
LR32.8	CDD32.003 CDD32.004	8	10	3,66	0,8	4
LR32.14-UR	CDD32.006 CDD32.008	14	16	2,1	1,5	4

Dimensions [mm]	LR32.5	LR32.8	LR32.14-UR
W (width)	60	60	85
H (height)	75	75	100
D (depth)	57	57	65
A	44	44	64
C	46	46	50
D	3.6	4.8	4.8

Dimensional drawing
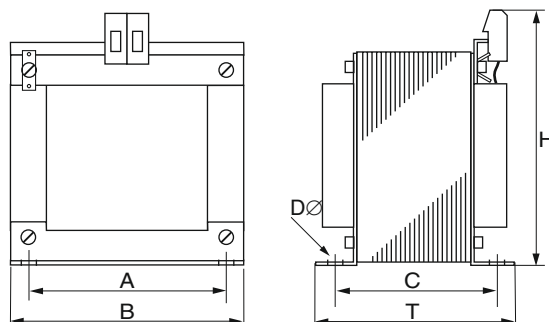
Three-phase line reactors

Order designation	Suitable for servocontrollers	Rated current [A]	Power loss tot. [W]	Inductance [mH]	Weight [kg]	Connection [mm²]
LR34.4-UR	CDD34.003	4.2	20	7	1.6	4
LR34.6-UR	CDD34.005 CDD34.006	6	26.1	4.88	2.0	4
LR34.8-UR	CDD34.008	8	29	3.66	2.4	4
LR34.10-UR	CDD34.010	10	33	2.93	3.0	4
LR34.14-UR	CDD34.014	14	45	2.09	3.8	4
LR34.17-UR	CDD34.017	17	45	1.72	4.5	4
LR34.24-UR	CDD34.024	24	50	1.22	5.8	4
LR34.32-UR	CDD34.032	32	67	0.92	6.7	10

5

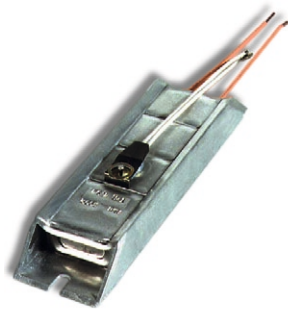| Dim. [mm]	LR34.4-UR	LR34.6-UR	LR34.8-UR	LR34.10-UR	LR34.14-UR	LR34.17-UR	LR34.24-UR	LR34.32-UR
W (width)	100	125	125	125	155	155	155	190
H (height)	120	140	140	140	160	160	160	195
D (depth)	70	65	65	75	80	80	95	85
A	63	100	100	100	130	130	130	170
C	50	47	47	57	57	57	74	57
DØ	5	5	5	5	8	8	8	8

Dimensional drawing
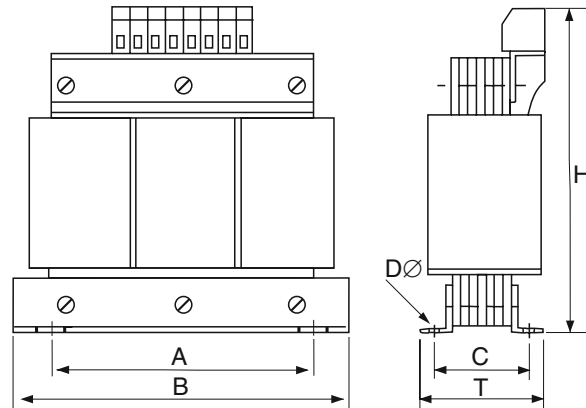
System layout
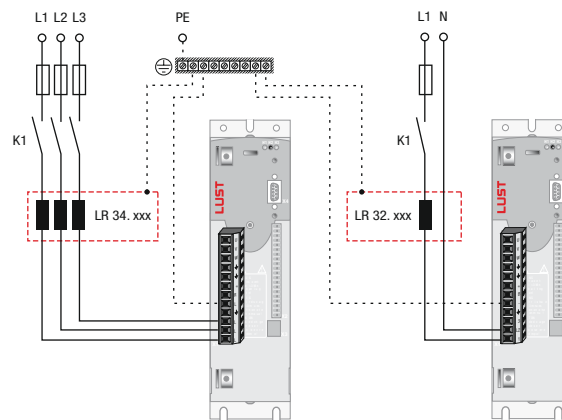
Braking resistors

BR - ☐☐☐ .☐☐, ☐☐☐

Braking resistor

Ω Value

Power output in (W)
01 = 100 W
10 = 1 kW

Connection type

1 = With touch protection
0 = Without touch protection

BR-090.01,540,UR	BR-090.03,540,UR	Order code

Technical data	as per diagram A1	as per diagram A2	as per diagram A3	as per diagram A4
Surface temperature	> 250 °C	> 250 °C	> 250 °C	> 250 °C
Touch protection	nein	nein	nein	nein
Voltage	max. 970 V DC	max. 970 V DC	max. 970 V DC	max. 970 V DC
High-voltage strength	4000 V DC	4000 V DC	4000 V DC	4000 V DC
Temperature monitoring	yes with bimetal protector (switching capacity 0.5 A/ 230 V)			
Acceptance tests	CE-konform; UL-Recognition			
Connection	1 m long PTFE - insulated litz wire			Terminal box with PG gland

Diagrams
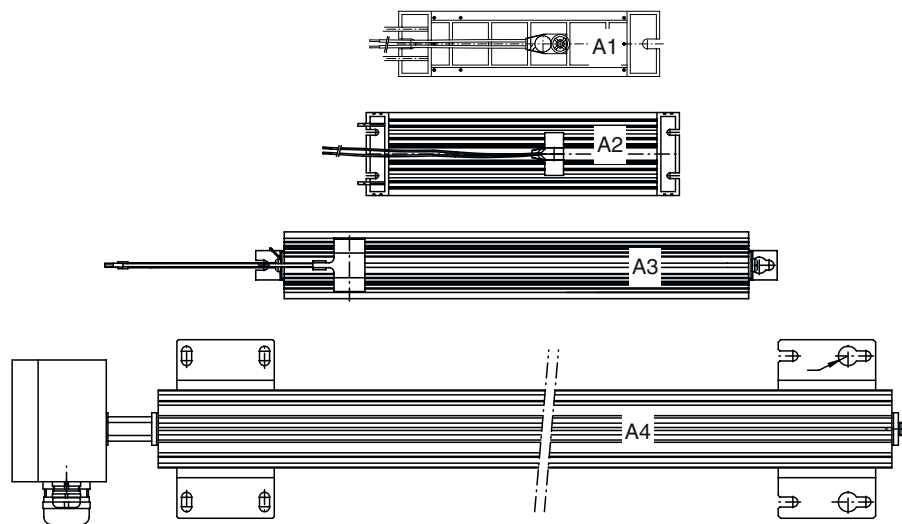
| Order code	Cont. brake power [W]	Resistor [Ω ±10 %]	Peak braking power [W]		Protecion	Diagram
			750 VDC			
BR-200.01, 540,UR	35	200	2800		IP54	A1
BR-200.02, 540,UR	150	200	2800		IP54	A2
BR-200.03, 540,UR	300	200	2800		IP54	A3
BR-090.01, 540,UR	35	90	6250		IP54	A1
BR-090.02, 540,UR	150	90	6250		IP54	A2
BR-090.03, 540,UR	300	90	6250		IP54	A3
BR-090.10, 650,UR	1000	90	6250		IP65	A4
BR-026.01,540,UR	35	26	21600		IP54	A1
BR-026.02,540,UR	150	26	21600		IP54	A2
BR-026.03,540,UR	300	26	21600		IP54	A3
BR-026.10,650,UR	1000	26	21600		IP65	A4

System layout
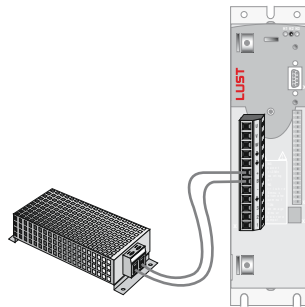
Dimension [mm]	BR-XXX.01, 540,UR	BR-XXX.02, 540,UR	BR-XXX.03, 540,UR	BR-XXX.10, 540,UR
B (Width)	40	80	42	114
H (Height)	160	300	320	865
T (Depth)	26	28	122	105
Abbildung	A1	A2	A3	A4

A1

A2

Diagrams
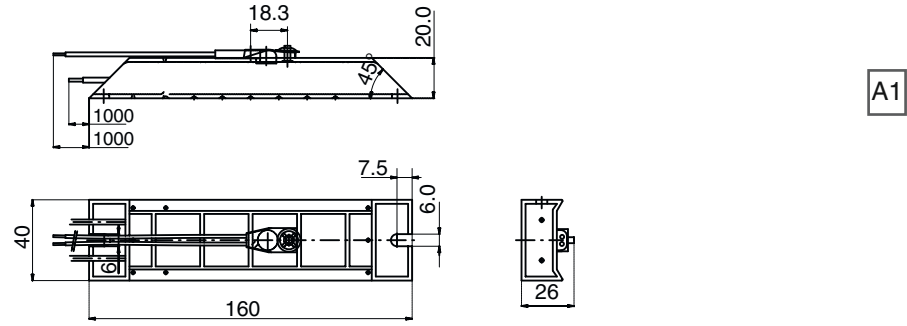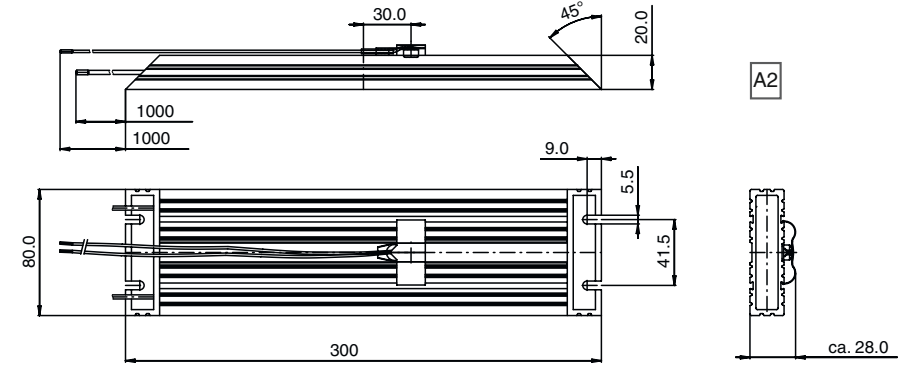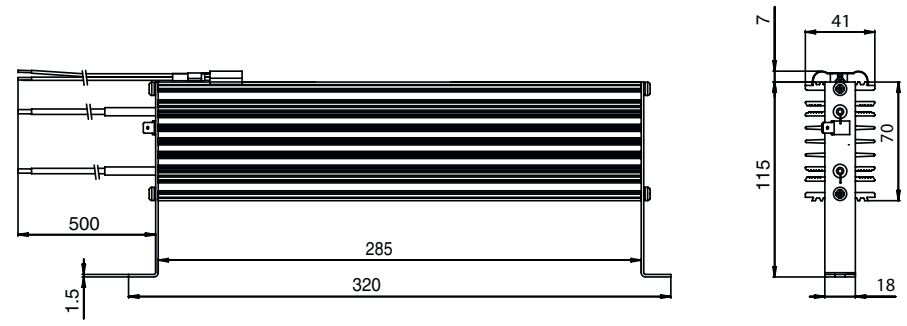
A3
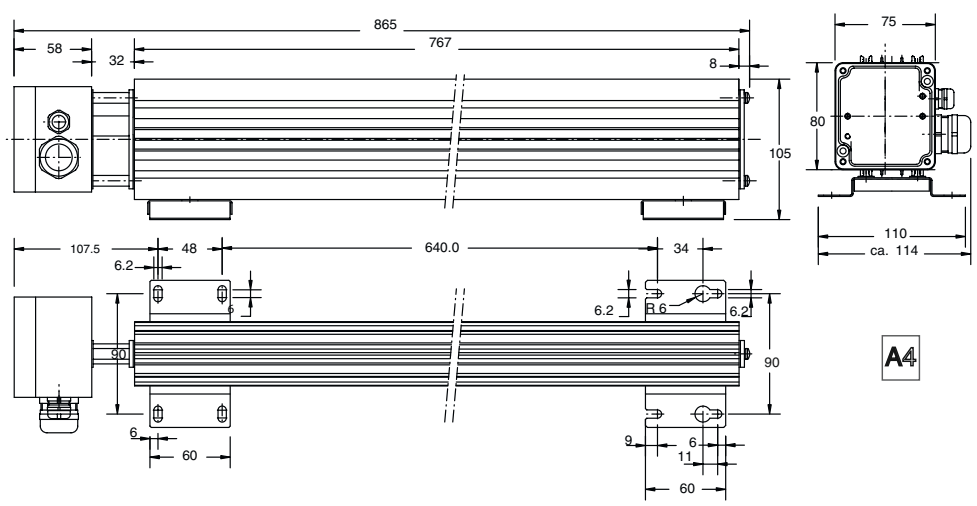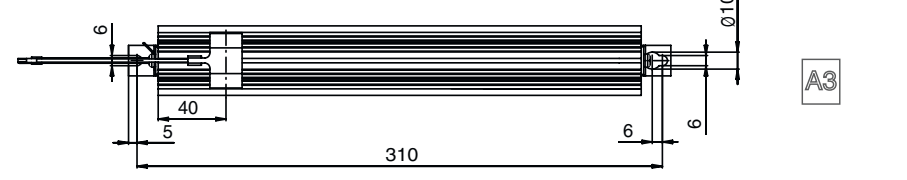
A4

Mains filter

EMC □□□.□

Electro
Magnetic
Compatibility

Rated current

Version

EMC17	Order code

Ambient conditions	EMCxx.x
Rated voltage	3 x 480 V, max. +10 %, 50/60 Hz
Ambient temperature	typically -25 °C to +40 °C, with power reduction up to 60 °C (1.3 % per °C)
Mounting height	1000 m, with power reduction up to 4,000 m (6 % per 1000 m)
Relative air humidity	15 ... 85 %, condensation not permitted
Storage/transportation temperature	-25 °C bis +70 °C / -40 °C bis +85 °C
Protection	IP00, input terminals VBG4
Permissible contamination	P2 to EN 61558-1
UL recognition	All mains filters have UL recognition for the US and Canadian markets.
RFI suppression to EN 61800-3 -residential-	Motor cable length up to 100 m permitted
RFI suppression to EN 61800-3 -industrial-	Motor cable length up to 150 m permitted

Three-phase mains filters

Order ref.	Suitable for servocontrollers	Rated current [A]	Power loss tot. [W]	Leakage current [mA]	Weight [kg]	Terminals
EMC10.0	CDD34.008 CDD34.010	10	13	< 1.3	1.7	0.2 ... 4 mm². PE (M5)
EMC17.0	CDD34.014 CDD34.017	17	21	< 1.2	1.8	0.2 ... 4 mm². PE (M5)
EMC35.0	CDD34.024 CDD34.032	35	27	< 1.1	2.5	0.2 ... 6 mm². PE (M5)

Dimensions [mm]	EMC10.0/17.0/35.0
W (width)	55
H (height)	270
D (depth)	100
G	260
C	260
E	36
D	4.5 Ø
Dimensional drawing	Type Ia
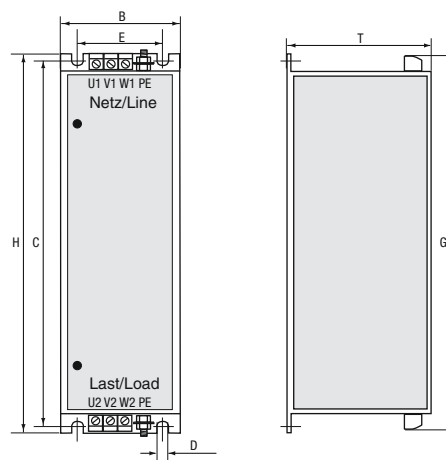
Typ Ia

User information

0☐☐☐ .☐☐B.☐-xx

Doc ID no.

Status

Order designation	User information	Language
0931.04B.x	CDD3000 Bestellkatalog	DE
0931.24B.x	CDD3000 Order Catalogue	EN
0931.00B.x	CDD3000 Operation Manual: Installation and initial commissioning	DE, EN, FR, IT
0931.02B.x	Anwendungshandbuch.CDD3000: Softwarebeschreibung	DE
0931.22B.x	CDD3000 Application Manual: Software description	EN
0916.01B.x	Benutzerhandbuch.Kommunikationsmodul.CM-CAN1: Feldbus CANintern (CANLUST) projektieren, installieren und in Betrieb nehmen.	DE
0916.21B.x	Communication module CM-CAN1 user manual: Project planning, installation and commissioning of the CAN_{intern} (CAN_{LUST}).	EN
0916.02B.x	Benutzerhandbuch Kommunikationsmodul CM-CAN2: Feldbus CANopen projektieren, installieren und in Betrieb nehmen. commissioning of the CANopen field bus.	DE
0916.22B.x	Communication module CM-CAN21 user manual: Project planning, installation and commissioning of the CANopen field bus.	EN
0916.00B.x	Benutzerhandbuch Kommunikationsmodul CM-DPV1: Feldbus PROFIBUS-DP projektieren, installieren und in Betrieb nehmen..	DE
0916.20B.x	Communication module CM-DPV1 user manual: Project planning, installation and commissioning of the PROFIBUS-DP field bus.	EN
0916.04B.x	Communication module installation instructions	DE, EN
0923.00B.x	Braking resistor installation instructions: Installation and connection	DE, EN
0925.00B.x	Line reactor installation instructions: Installation and connection	DE, EN
0917.00B.x	User module installation instructions (I/O slot expansion)	DE, EN

Information and specifications may be subject to change at any time. Please visit www.lt-i.com for details of the latest versions.

Overview of servomotors
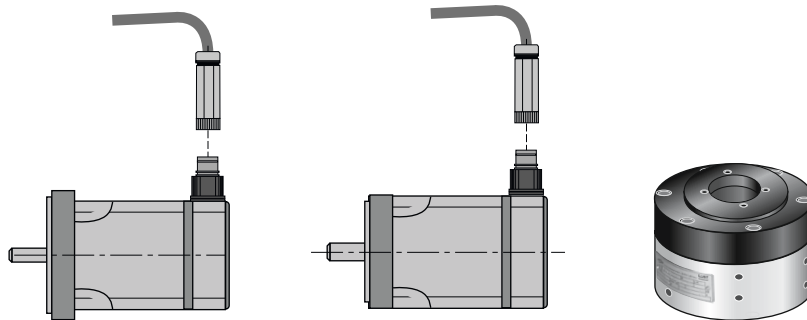
Contents	Type	Page
LSH servomotor	LSH-050	6-2
	LSH-074	6-2
	LSH-097	6-2
	LSH-127	6-2
LST servomotor	LST-037	6-3
	LST-050	6-3
	LST-074	6-3
	LST-097	6-3
	LST-127	6-3
	LST-158	6-3
MTC motor	MTC1-145-2	6-4
	MTC1_145-3	6-4
	MTC1-200-2 (LC)	6-4
	MTC1-200-3 (LC)	6-4

The LSH motor - the power pack

Using a completely new winding technology known as concentrated winding, the new LSH generation of motors improves power density by between 30 % and 70 % compared with conventional technologies.

For the user this means up 100 % improvement in dynamics and significantly reduced space requirements combined with smooth running.

Overview of technical data

Motor	Standstill torque M_0 [Nm]	Rated torque M_N [Nm]	Rated current I_N[A] at 560 V	Rated current I_N[A] at 320 V	Rated speed n_N [rpm]
LSH-050-1 [1]	0,26	0,24	-	0,68	4500
LSH-050-2 [1]	0,53	0,45	-	1,11	4500
LSH-050-3 [1]	0,74	0,67	-	1,55	4500
LSH-050-4 [1]	0,95	0,84	-	1,90	4500
LSH-074-1 [2]	0,95	0,86	1,28	1,43	3000
LSH-074-2 [2]	1,90	1,60	1,46	2,40	3000
LSH-074-3 [2]	3,30	2,90	2,30	4,00	3000
LSH-074-4 [2]	4,20	3,10	2,30	3,70	3000
LSH-097-1 [2]	4,10	3,20	2,80	5,00	3000
LSH-097-2 [2]	6,30	4,60	3,60	7,00	3000
LSH-097-3 [2]	8,60	6,10	4,80	8,3	3000
LSH-127-1 [3]	11,60	8,40	7,90	-	3000
LSH-127-2 [3]	14,90	10,90	9,60	-	3000
LSH-127-3 [3]	18,70	14,30	13,10	-	3000
LSH-127-4 [3]	27,30	21,00	14,90	-	3000

1) DC link voltage 320 V
2) DC link voltage 320 V/560 V
3) DC link voltage 560 V

Note: For detailed electrical data and accessories, such as system cables, refer to the Servomotors order catalogue (article no.: 0814.05B.X-XX).

The LST motor - the versatile one

Featuring conventional winding technology, the LST motor combines all the advantages of a 6-pole synchronous servomotor.
- Well suited to speeds up to 9000 rpm. Special windings are possible on request.

- High overload capacity even at standstill based on efficient heat distribution in the stator packet.
- Increased rotor moment of inertia for torque adaptation.

Overview of technical data

Motor	Standstill torque M_0 [Nm]	Rated torque M_N [Nm]	Rated current I_N[A] at 560 V	Rated current I_N[A] at 320 V	Rated speed n_N [rpm]
LST-037-1	0,10	0,09	-	0,56	6000
LST-037-2	0,20	0,18	-	0,92	6000
LST-037-3	0,30	0,27	-	0,89	6000
LST-050-1	0,20	0,19	-	0,60	4500
LST-050-2	0,40	0,36	-	0,88	4500
LST-050-3	0,60	0,55	-	1,18	4500
LST-050-4	0,80	0,72	-	1,47	4500
LST-050-5	0,95	0,85	-	1,71	4500
LST-074-1	0,65	0,60	0,64	1,04	3000
LST-074-2	1,30	1,15	0,95	1,58	3000
LST-074-3	1,90	1,60	1,26	2,20	3000
LST-074-4	2,50	2,20	1,62	2,70	3000
LST-074-5	3,00	2,50	1,82	3,00	3000
LST-097-1	2,60	2,30	1,85	3,00	3000
LST-097-2	3,90	3,30	2,60	4,30	3000
LST-097-3	5,30	4,60	3,80	5,90	3000
LST-097-4	7,50	6,40	4,40	8,10	3000
LST-097-5	9,50	8,50	6,20	10,5	3000
LST-127-1	6,60	5,70	4,00	-	3000
LST-127-2	10,5	8,80	6,30	-	3000
LST-127-3	13,5	11,0	9,50	-	3000
LST-127-4	17,0	14,5	10,0	-	3000
LST-127-5	22,0	17,0	13,0	-	3000
LST-158-1	13,5	13,0	8,20	-	3000
LST-158-2	19,0	17,0	10,6	-	3000
LST-158-3	22,0	19,0	12,3	-	3000
LST-158-4	29,0	24,0	14,7	-	3000
LST-158-5	35,0	26,0	18,2	-	3000
LST-190-1	27,0	21,0	13,5	-	3000
LST-190-2	32,0	23,0	15,0	-	3000
LST-190-3	40,0	26,0	17,9	-	3000
LST-220-1	40,0	30,0	17,8	-	3000
LST-220-2	68,0	50,0	31,1	-	3000
LST-220-3	93,0	60,0	43,6	-	3000
LST-220-4	115,0	50,0	29,3	-	3000

Note: For detailed electrical data and accessories, such as system cables, refer to the Servomotors order catalogue (article no.: 0814.05B.X-XX).

MTC torque motors - Hollow-shaft direct drive motor

- The hollow shaft permits simple feed-through of cables, hoses or laser beams through the motor.
- The integrated measurement system with 8,388,608 increments per revolution and single-turn absolute information means no homing is required.

- The MTC motor is an external-rotor motor. It can be coupled with a high degree of torsional rigidity without gearing directly to the mechanism. This means it has the following advantages:
  - No gear play
  - No wear
  - No maintenance
  - Very high drive dynamics

Overview of technical data

Tech. data Motor	Standstill torque M_0 [Nm]	Pulse torque M_I [Nm]	Standstill current I_0 [A]	Pulse current I_I [A]	Rated voltage [V]	Number of motor poles	Rated speed n_N [rpm]
MTC1-145-2-G7	10	20	5.4	12.8	400	64	550
MTC1-145-3-G7	14	34	4.0	12.0	400	64	550
MTC1-200-2-G7	25	50	3.8	10.3	400	88	250
MTC1-200-3-G7	35	75	3.5	8.4	400	88	250
MTC1-200-2-G7-LC	35	50	5.4	10.3	400	88	250
MTC1-200-3-G7-LC	50	75	5.2	8.4	400	88	250

Note: For detailed electrical data and accessories, such as system cables, refer to the Torque Motors supplementary sheet (article no.: 0814.06B.X-XX).

LTi|DRiVES