Data sheet LD 2000
An intelligent digital drives system

General
With the LD2000 translatory and rotary movements can be automated in nearly all fields of application.

Description of the LogiDrive 2000:
• actual value indication either via the CAN bus or as analogue signal (0 ... ± 10 V)
• actual feedback value via the CAN bus or an incremental signal
• simple operation
• power categories from 0.5 ... 10 kW
• compact size
• suitable for 300 mm-switch cabinet
• all filters integrated
• Windows software with oscilloscope function for current and speed
• according to CE requirements and standards
• possible connection to all international voltage mains from 230 V ... 480 V + 10 %
• the open hard- and software architecture offers unrestricted possibilities of application and communication
• high cycle time (62 µs) of current regulator
• free programming for individual drives requirements
• little internal loss
• patented switching for distribution of ballast capacities

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Concept, Operation software

Concept
Operation and parameterizing
- via software LD2000
- emergency operation via two buttons directly installed at the servo amplifier and three-digit LED display for the indication of the actual status
- completely programmable via RS 232-interface

Capacities
- current supply: B6-bridge rectifier, directly installed at the three-phase earthed mains, mains filter and starting switch integrated
- connections: all shield connections directly installed at the amplifier
- power amplifier: IGBT-module with potential free current measurement
- ballast switch: with dynamic distribution of ballast capacity to several amplifiers at the same intermediate circle, external ballast resistor acc. to requirements.
- intermediate circuit voltage: 300 ... 900 V DC, parallel switching

Controlling
- freely programmable, digital current regulator (62 µs) and freely programmable, digital speed controller (250 µs)
- evaluation of resolver signals, respectively sine and cosine signals of a highly defined encoder
- encoder emulation

Functions
- adjustable actual value ramps
- 2 programmable, analogue monitor outputs
- 4 programmable, digital inputs and 2 programmable, digital outputs
- freely programmable connections (logic) of all digital messages

Software manual LD2000.exe
(incl. in the scope of supply)
The comfortable software operation manual LD2000 in conjunction with a PC enables modifications of the servo converter’s operating parameters. The PC is connected serially to the servo converter with a null modem cable. Thus, parameters are amendable with little efforts. At the drive, the reaction is directly recognizable as a permanent connection exists. Simultaneously, the converter supplies important actual values which are displayed by the PC (oscilloscope function).

Operation parameters can be stored on a data carrier and re-loaded.

Hardware prerequisites
processor : 80486 or higher
operating system : Windows 95/98 and Windows NT 4.0 (not operational under Windows 3.xx)
disk drive : 3,5"
working memory : min. 8 MB
interface : one free, serial interface (COM1 or COM2)

LD 2000 and EcoController GEL 8100
Via the CAN Bus which is installed in the LD 2000 up to 6 servo converters may be connected to the L+B EcoController series GEL 81XX.
With this low priced drives system you will be in a position to realise simple positioning tasks as well as special applications i.e. „flying saw“, „rotating cutter“, „synchronisations“ or the L+B „EcoPLC“. L+B will also supply cables according to your requirements.
### Technical data

<table>
<thead>
<tr>
<th>Nominal data</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>DIM</td>
<td>2001</td>
<td>2003</td>
<td>2006</td>
<td>2010</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>nominal connecting voltage</td>
<td>V-</td>
<td>3 x 230 &lt;sup&gt;±10%&lt;/sup&gt; ... 480 &lt;sup&gt;±10%&lt;/sup&gt;, 50 ... 60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nominal connecting power for S1-operation</td>
<td>kVA</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>nominal output current (effective value, ±3%)</td>
<td>Arms</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>peak output current (max. approx. 5s, ±3%)</td>
<td>Arms</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>rest power dissipation, power amplifier disabled</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>power dissipation for nominal current (incl. mains part power dissipation, without ballast-power dissipation)</td>
<td>W</td>
<td>30</td>
<td>40</td>
<td>60</td>
<td>90</td>
<td>165</td>
</tr>
</tbody>
</table>

### Internal safety

| auxiliary voltage 24V | internal 3.15 AT |
| ballast resistor | internal electronical |

### External safety

| AC-supply | 6 AT | 10 AT | 20 AT |
| 24V-supply | F<sub>N1/2/3</sub> | max. 16 AF |
| ballast resistor | F<sub>B1/2</sub> | 4 AF | 6 AF |

### Inputs

| nominal value 1/2, resolution 14bit/12bit | V | ±10 |
| common-mode voltage max. | V | ±10 |
| input resistance | kΩ | 20 |
| digital control inputs | V | low 0...7 / high 12...36 |
| mA | 7 |
| auxiliary voltage supply, potentially separated without brake | V | 20 ... 36 |
| A | 1 |
| auxiliary voltage supply, potentially separated with brake | V | 24 (-0% +15%) |
| A | 3 |
| max. output current brake | A | 2 |

### Mechanics

| weight | kg | 2.5 | 3 |
| measurements (HxBxT) without connector | mm | 275x70x265 | 275x100x265 |

### Admissible ambient conditions

| transport temperature / -air humidity (rel.) | -25 ... +70 °C, max. 20 K/h unsteady / 95%, not condensing |
| storage temperature / -air humidity (rel.) | -25 ... +55 °C, max. 20 K/h unsteady / 95%, not condensing |
| ambient temperature in operation | 0 ... +40 °C for nominal data, +40 ... +55 °C with decrease of performance 2.5%/°C |
| air humidity (rel.) in operation | 85%, non condensing |
| installation height | to 1000 m over msl without limit, 1000 ... 2500 m over msl with decrease of performance, 1.5%/100 m |
| contamination level | 2 according to EN 60204/EN 50178 |
| protection class | IP 20 |
| assembly position | generally vertical |
| ventilation | free convection | integrated fan |

LD 2000
**Pin layout**

**X6** PC/CAN

- CAN H: Pin 7
- CAN L: Pin 5
- B+ (DATA): Pin 6
- B- (DATA): Pin 7
- +5 V: Pin 8
- N.C.: Pin 9
- PGND: Pin 10

**X5** ROD/SSI, pulse running, master - slave

- B+ (DATA): Pin 3
- 0 (DATA): Pin 2
- B- (DATA): Pin 1
- +5 V: Pin 4
- N.C.: Pin 5
- PGND: Pin 6

**X2** RESOLVER

- /G4A: Pin 1
- /G4A: Pin 2
- S1: Pin 3
- S2: Pin 4
- S3: Pin 5
- S4: Pin 6

**X1** ENCODER

- CLOCK: Pin 1
- DATA (+485): Pin 2
- DATA (-485): Pin 3
- Up Sense: Pin 4
- B-(REF COS): Pin 5
- 0 V Sense: Pin 6
- A-(REF SIN): Pin 7
- AGND: Pin 8
- BTB/RTO: Pin 9
- SW/SETP.1+: Pin 10
- SW/SETP.1-: Pin 11
- SW/SETP.2+: Pin 12
- SW/SETP.2-: Pin 13
- MONITOR1: Pin 14
- MONITOR2: Pin 15
- DIGITAL-IN1: Pin 16
- DIGITAL-IN2: Pin 17
- DIGITAL-OUT1: Pin 18
- DIGITAL-OUT2: Pin 19
- DGND: Pin 20

**X3** I/O

- AGND: Pin 1
- BTB/RTO: Pin 2
- BTB/RTO: Pin 3
- SW/SETP.1+: Pin 4
- SW/SETP.1-: Pin 5
- SW/SETP.2+: Pin 6
- SW/SETP.2-: Pin 7
- MONITOR1: Pin 8
- MONITOR2: Pin 9
- AGND: Pin 10
- DIGITAL-IN1: Pin 11
- DIGITAL-IN2: Pin 12
- PSTOP: Pin 13
- NSTOP: Pin 14
- ENABLE: Pin 15
- DIGITAL-OUT1: Pin 16
- DIGITAL-OUT2: Pin 17
- DGND: Pin 18

**X4** 24 V

- +24 V: Pin 1
- +24 V: Pin 2
- XGND: Pin 3
- XGND: Pin 4

**X6** Motor/Brake

- +DC: Pin 1
- -DC: Pin 2
- +DC: Pin 3
- -DC: Pin 4

**X7** intermediate circle

- X0: Mains A
- X9: Motor/Brake

**X8** R resistor

- 24 V

**X9** X resistor

- Code

**Note:** CAN: If the analogue nominal value inputs are not used, AGND and DGND must be bridged at X3!

**Top view of installed connectors**
## Accessories

<table>
<thead>
<tr>
<th>Type Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 SM 27M-4000</td>
<td>Mo=0.32 Nm, Io=0.8 Arms</td>
</tr>
<tr>
<td>6 SM 27M-4000 G</td>
<td>Mo=0.32 Nm, Io=0.8 Arms with brake</td>
</tr>
<tr>
<td>6 SM 37S-6000</td>
<td>Mo=0.50 Nm, Io=1.0 Arms</td>
</tr>
<tr>
<td>6 SM 37S-6000 G</td>
<td>Mo=0.50 Nm, Io=1.0 Arms with brake</td>
</tr>
<tr>
<td>6 SM 37M-6000</td>
<td>Mo=1.00 Nm, Io=1.6 Arms</td>
</tr>
<tr>
<td>6 SM 37M-6000 G</td>
<td>Mo=1.00 Nm, Io=1.6 Arms with brake</td>
</tr>
<tr>
<td>6 SM 47L-3000</td>
<td>Mo=3.00 Nm, Io=2.3 Arms</td>
</tr>
<tr>
<td>6 SM 47L-3000 G</td>
<td>Mo=3.00 Nm, Io=2.3 Arms with brake</td>
</tr>
<tr>
<td>6 SM 57S-3000</td>
<td>Mo=4.60 Nm, Io=2.8 Arms</td>
</tr>
<tr>
<td>6 SM 57S-3000 G</td>
<td>Mo=4.60 Nm, Io=2.8 Arms with brake</td>
</tr>
<tr>
<td>6 SM 57M-3000</td>
<td>Mo=8.00 Nm, Io=4.3 Arms</td>
</tr>
<tr>
<td>6 SM 57M-3000 G</td>
<td>Mo=8.00 Nm, Io=4.3 Arms with brake</td>
</tr>
<tr>
<td>6 SM 77K-3000</td>
<td>Mo=11.00 Nm, Io=6.0 Arms</td>
</tr>
<tr>
<td>6 SM 77K-3000 G</td>
<td>Mo=11.00 Nm, Io=6.0 Arms with brake</td>
</tr>
<tr>
<td>6 SM 77S-3000</td>
<td>Mo=17.00 Nm, Io=10.0 Arms</td>
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<tr>
<td>6 SM 77S-3000 G</td>
<td>Mo=17.00 Nm, Io=10.0 Arms with brake</td>
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<tr>
<td>6 SM 107K-3000</td>
<td>Mo=26.00 Nm, Io=17.0 Arms</td>
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<tr>
<td>6 SM 107K-3000 G</td>
<td>Mo=26.00 Nm, Io=17.0 Arms with brake</td>
</tr>
<tr>
<td>6 SM 107S-3000</td>
<td>Mo=32.00 Nm, Io=21.4 Arms</td>
</tr>
<tr>
<td>6 SM 107S-3000 G</td>
<td>Mo=32.00 Nm, Io=21.4 Arms with brake</td>
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## Type code motor cable

<table>
<thead>
<tr>
<th>KM 129</th>
<th>X</th>
<th>X</th>
<th>XXX</th>
<th>Description</th>
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<tbody>
<tr>
<td>002</td>
<td>cross section</td>
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<tr>
<td>A</td>
<td>1.0 mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>1.5 mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2.5 mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0.25 mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>motor cable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>motor cable incl. wires for the brake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>resolver cable</td>
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</tbody>
</table>
## Accessories

<table>
<thead>
<tr>
<th>type</th>
<th>description</th>
</tr>
</thead>
</table>
| **ballast resistor** 33 Ohm | BW 121.1 BAR 250 W  
 BW 121.2 BAR 500 W  
 BW 121.3 BAR 1500 W |
| **motor choke for motor cables > 25 m** | MD 121.1 3YL-06, choke for Logidrive LD 200600  
 MD 121.2 3YL-10, choke for Logidrive LD 201000  
 MD 121.3 3YL-20, choke for Logidrive LD 202000 |
| **screen connection clamps** | SK 121.1 SR6SKL1, 6-7 mm  
 SK 121.2 SR6SKL2, 8-9 mm  
 SK 121.3 SR6SKL3, 10-11 mm |
| **connection line** | AA 121.1 adapter for LD 2000, for simultaneous use of RS 232- and CAN bus interface to connector X6  
 AL 121.9 connection line PC-LD2000, 9-pole PC-plug, 3 m  
 AL 121.25 connection line PC-LD2000, 25-pole PC-plug, 3 m  
 ALC 121.1 connection line EcoController with 1 converter, 2 m  
 ALC 121.2 connection line EcoController with 2 converters, 2 m / 0.2 m  
 ALC 121.3 connection line EcoController with 3 converters, 2 m / 0.2 m  
 ALC 121.4 connection line EcoController with 4 converters, 2 m / 0.2 m  
 ALC 121.5 connection line EcoController with 5 converters, 2 m / 0.2 m  
 ALC 121.6 connection line EcoController with 6 converters, 2 m / 0.2 m |
| **connector (motor)** | LS 129-L2 motor connector  
 SS 129-L2 resolver connector |
| **connector (converter)** | GG 121.0 counterplug a. c. mains (X0)  
 GG 121.3 counterplug I/O (X3)  
 GG 121.4 counterplug 24 V (X4)  
 GG 121.7 counterplug intermediate circle (X7)  
 GG 121.8 counterplug ballast resistor (X8)  
 GG 121.9 counterplug motor (X9), kit  
 GG 121.10 9-pole sub-D-counterplug PC/CAN (X6); female  
 GG 121.11 9-pole sub-D-counterplug incr./SSI (X5); female  
 GG 121.12 9-pole sub-D-counterplug resolver (X2); pin  
 GG 121.13 15-pole sub-D-counterplug sin-cos-encoder (X1); pin |

The counterplugs GG 121.0, GG 121.3, GG 121.4, GG 121.7, GG 121.8 are included in the scope of supply.

The following items are not included in the scope of supply (please order separately):
- the sub-D-counterplug
- servo motor 6 SM
- motor line (ready for use), or both motor connectors LS 129-L2 and GG 121.9 separately with motor line by the metre
- resolver line (ready for use), or bothe resolver connectors SS 129-L2 and GG 121.12 separately with resolver line by the metre
- motor choke (for line length of more than 25 m)
- external ballast resistor
- communication line for the PC or adapter for parameterizing a servo-amplifier at a PC
- CAN bus-line EcoController-LD2000
Dimensioned drawing

Type code LD2000

<table>
<thead>
<tr>
<th>LD 2</th>
<th>X</th>
<th>XX</th>
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<td></td>
<td>0</td>
<td>0</td>
<td>nominal current output</td>
</tr>
<tr>
<td>01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.5 A</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
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<td>3 A</td>
</tr>
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