

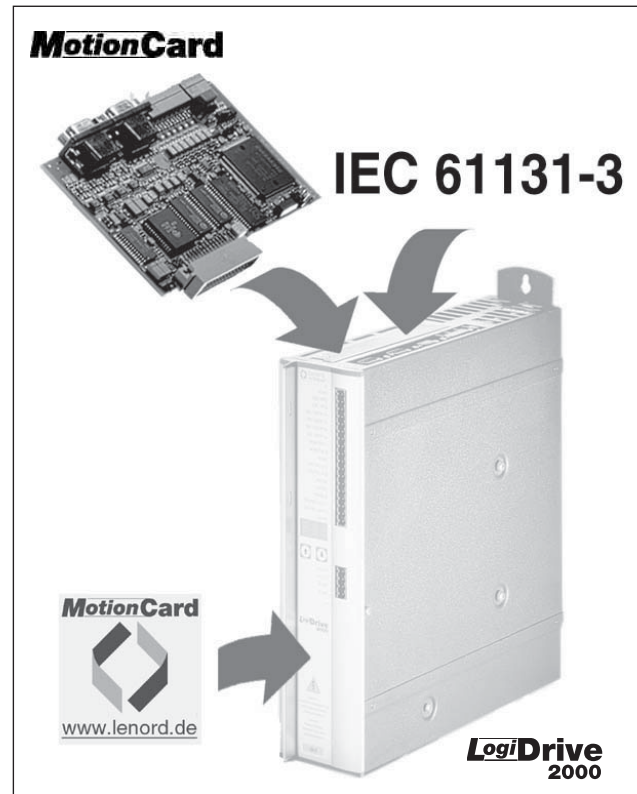
### PLC and cam-plate functions integrated in the servo-converter

With the MotionCard LD 100, you pack the functions of a PLC and the technological functions together into a servo-converter and design your projects in a standardized IEC 61131-3 programming environment. Max. 8 additional external converters can be controlled via CAN bus of MotionCard LD 100.

I/O extensions can be connected at any time as needed via a bus system. Open protocols and the consistent incorporation of existing standards make for an open and transparent system with regard to external products. The simple and uniform project design in accordance with proven standards and the flexibility with respect to hardware enlargements are innovative advantages.

Comprehensive libraries offer ready-made solutions that can be easily enlarged or integrated into your own function blocks. With today's possibilities for exchanging such libraries fast and comfortably worldwide, the development of programs has become a simple matter with a support that is only a mouse-click away.

This technology is already used with great success in machines for packing, cutting, labelling and in rewinding stands where its application was encouraged by the new and highly efficient possibilities of changing curve profiles and lengths online.



### Technological functions

- Cam-plate
- Flying saw \*
- Rotating cutter \*
- Marker synchronization \*
- Positioning
- Auto Calibrate
- Travel instruction
- Intelligent stop function
- Drive parameter setting functions

\* based on cam-plate

**Max. 8 external axes can be connected via CAN bus.**

### PLC range of functions

- Programming in conformity with IEC 61131-3 (IL, LD, FBD, ST, SFC, CFC)
- Time-controlled, event-controlled and cyclic tasks selectable
- Ready-made technological functions
- Program library (ld100.lib) for easy integration of the servo-converter into the PLC program

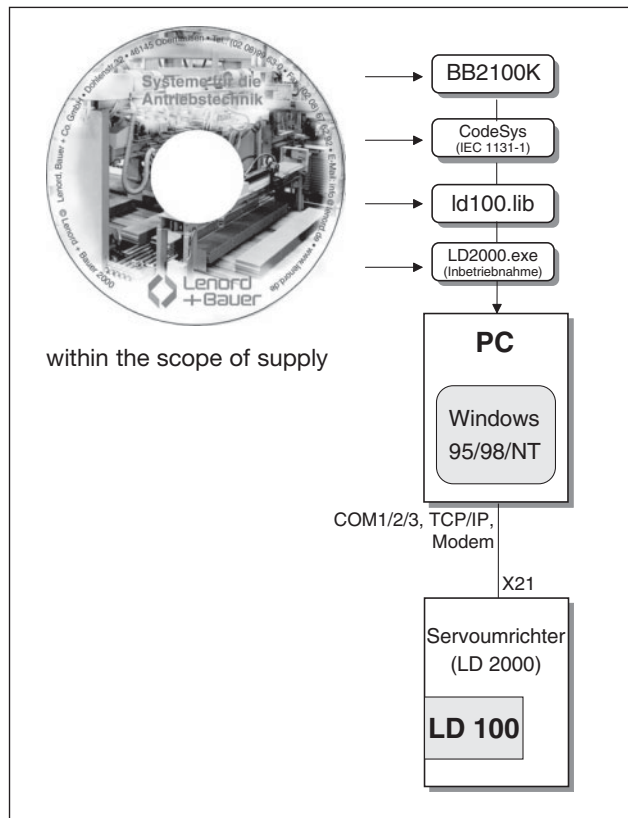
### Fieldbus module

- InterBus-S
- PROFIBUS-DP
- DeviceNet

# Operating software

## Technological cam-plate function

- Curve modification without set-up times
- Reduced jerking during movements due to harmonic and cycloid curve shapes
- Engagement and disengagement of the slave axis
- Virtual master function: permits displacement of the curve drive
- Dynamic adaptation of curve shapes: lengthening, shortening, etc.



Available on our homepage [www.lenord.de](http://www.lenord.de):

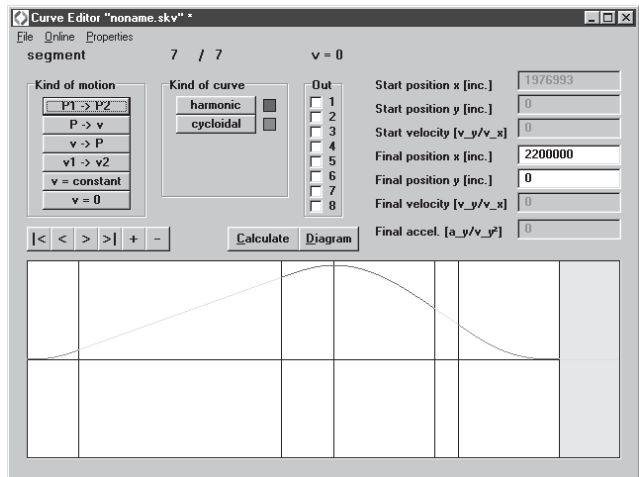
**bb2100k.exe** Curve editor BB2100K for operation and monitoring of servo-converter LD 2000 with cam-plate module.

**ld2000.exe** Start-up software for servo-converter LogiDrive LD 2000

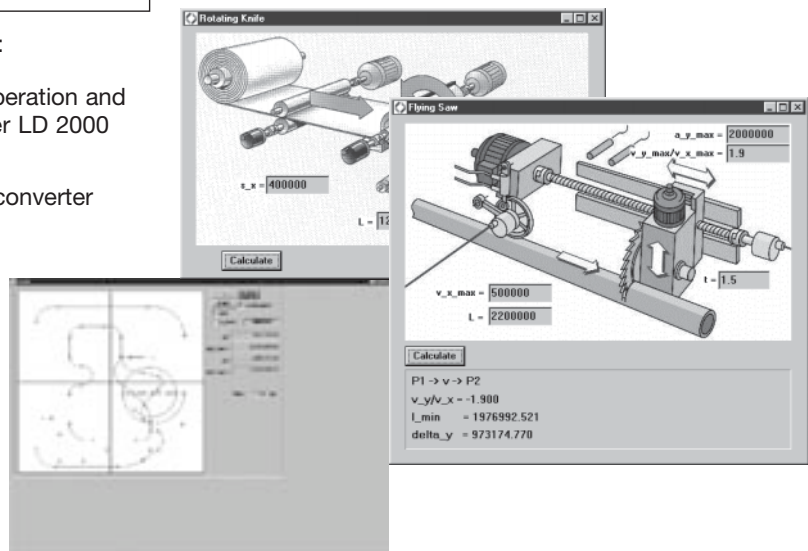
## BB2100K operating software (curve editor)

The BB2100K operating software can be used to define the desired curve characteristics on a PC. The PC is connected to the MotionCard via the serial interface. The parameter editor for the servo-converter LD 2000 can also be started out of this program. Other program characteristics:

- System parameter editor
- Oscilloscope function



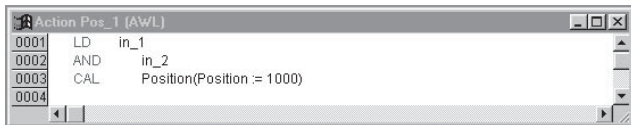
- Individual programming due to free editing of program texts
- Assistance with the analysis of curves (position, speed, acceleration and torque)
- Graphics-aided editing of parameters for special applications (e.g. rotating cutter and flying saw)



# PLC programming environment

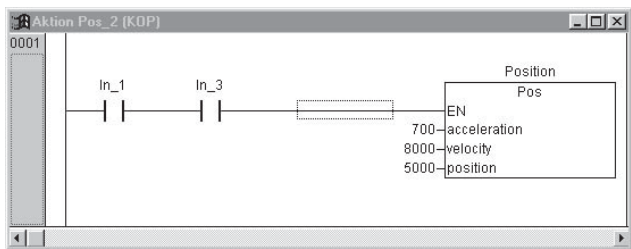
## PLC programming environment

IEC 61131-3 is an international standard for programming languages adapted to stored-program control units. The programming languages realized in **CoDeSys** are in conformity with the requirements of the standard. They can be mixed whenever needed and are partially convertible.



## Instruction list (IL)

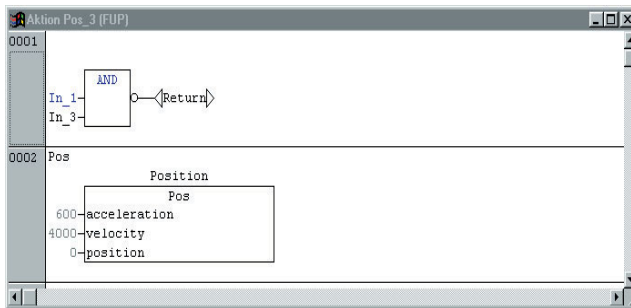
An instruction list (IL) is composed of a sequence of instructions. Each instruction begins in a new line and consists of an operator and - depending on the type of operation - of one or several operands separated by commas.



## Ladder diagram (LD)

The ladder diagram, too, is a graphics-oriented programming language which is basically similar to an electrical circuit.

It consists of a series of networks. A network is limited on the right and left side of the plan by a vertical current path. In between, there is a circuit comprising contacts, inductances and connecting lines.



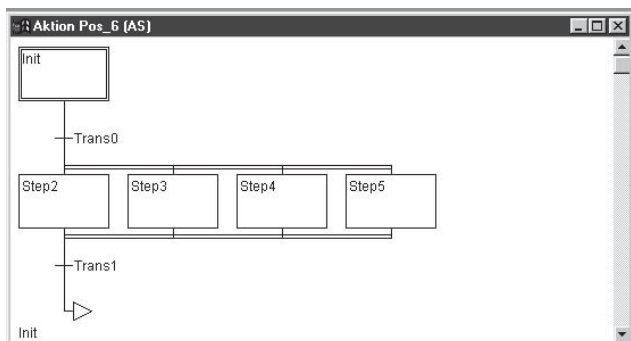
## Function block diagram (FBD)

The function block diagram is another graphics-oriented programming language. It is organized by lines and uses a list of networks, each containing a structure representing respectively a logical or an arithmetical expression, the recall of a function block, a jump or a return instruction.



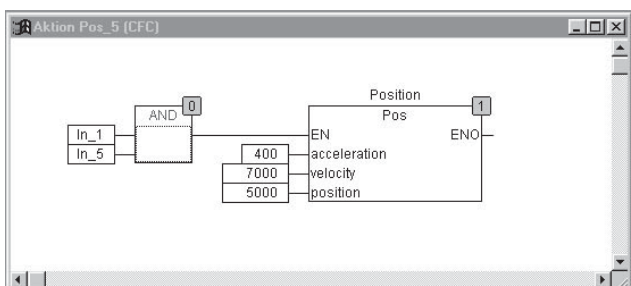
## Structured text (ST)

The structured text is a series of instructions which can be executed - as in the higher programming languages - depending on a condition („IF..THEN..ELSE“) or iteratively (WHILE..DO).



## Sequential function chart (SFC)

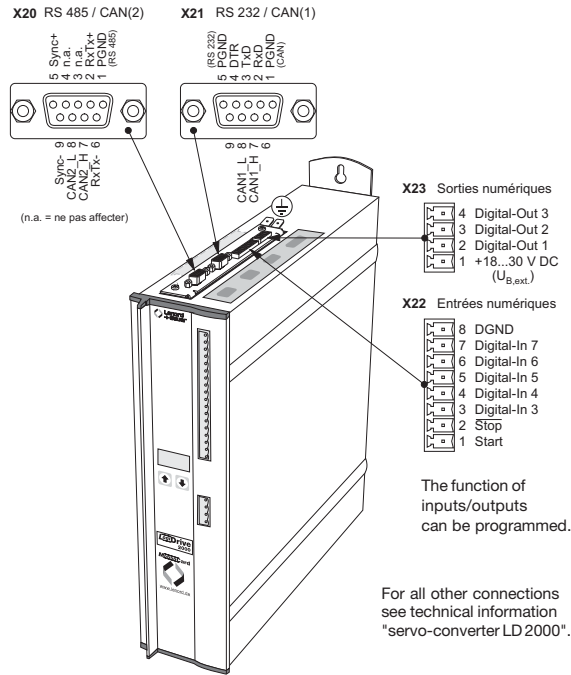
The sequential function chart is a graphics-oriented language to describe the sequential execution of different actions in a program.



## Continuous Function Chart Editor (CFC)

The essential difference with regard to the FBD is the free arrangement of function blocks. CFC is a useful enlargement of the IEC 1131-3 standard.

# Technical data



Microprocessor	SAB C 167
<b>Memory</b>	
RAM	1 MByte
Flash	1 MByte
NV-RAM	8 KByte
PLC program memory	256 KByte
PLC data memory	128 KByte
<b>Curves</b>	
Curve scan time	500 $\mu$ s
Number of curves	100
Segments per curve	30
Presettable outputs per segment	8

Types of motion per segment	position 1	→ position 2	(harmonic or cycloid)
	position	→ speed	(harmonic or cycloid)
	speed	→ position	(harmonic or cycloid)
	speed 1	→ speed 2	(cycloid)
	speed	= constant	
	speed	= 0	
	free curves defined in tables		

<b>Interfaces</b>	
RS 232 C	specification acc. to EIA-232-E standard, galvanically separated
max line length	10 m, shielded
transmission rate	optional 9600, 19200, 38400 and 57600 baud
RS 485	specification acc. to EIA-485 standard, galvanically separated
max line length	1000 m, shielded twisted pair
transmission rate	optional 9600, 19200, 38400 and 57600 baud
CAN bus	galvanically separated
transmission rate	500 kbaud max (depending on line length)
terminating resistor	approx. 120 $\Omega$ external
I/O extension	128 inputs and outputs respectively
<b>Inputs</b>	
Digital inputs	7, galvanically separated and further 4 (per servo-converter X3)
Analog inputs	2 (per servo-converter, X3)
Input resistance	> 2 k $\Omega$
Logic level	low: 0 ... +5 V, high: +15 ... 30 V
<b>Outputs</b>	
Digital outputs	3, galvanically separated and further 2 (per servo-converter X3)
Analog outputs	2 (per servo-converter, X3)
Auxiliary supply voltage ( $U_{Bext}$ )	24 V DC $\pm$ 10 %
Output voltage	approx. $U_{Bext} - 2$ V
Max. load current ( $I_{max}$ )	20 mA

## Accessories

(optional)

- GEL 89022 Connection cable RS 232 C between PC and MotionCard LD 100
- GEL 89120 Fieldbus module (PROFIBUS-DP)
- GEL 89121 Fieldbus module (InterBus-S)
- GEL 89122 Fieldbus module (DeviceNet)

Subject to technical modifications and typographical errors.  
For the latest version please visit our web site : [www.lenord.de](http://www.lenord.de).