

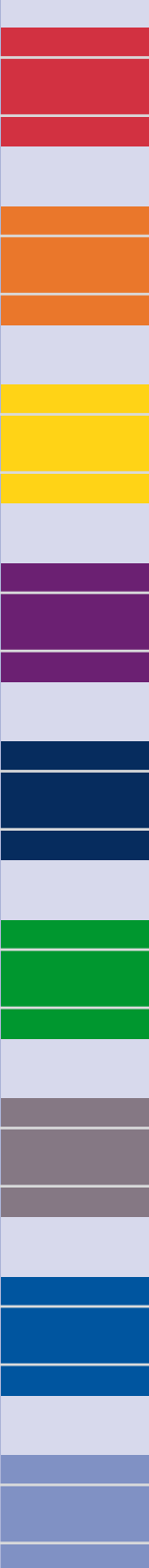




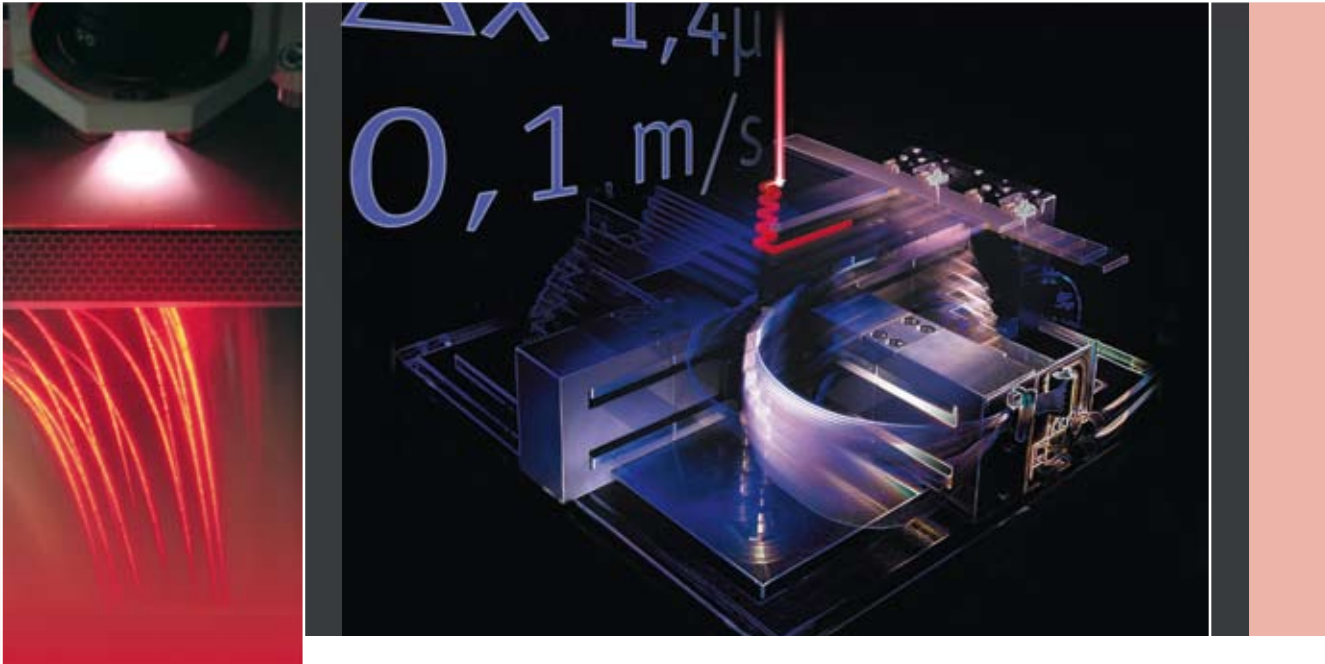
LPKF Motion & Control GmbH manufactures high performance, digital motor controllers that enable not only simple point to point positioning but also synchronous path motion of multiple motor axes.

Over twenty years of experience and continuous development of control components and algorithms now enable us to offer motor controllers that meet the high requirements for dynamic, high-end positioning systems with a combination of state of the art power electronics and perfect digital control structures.

LPKF Motion & Control GmbH is a company of LPKF Laser & Electronics AG.



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## The motion.net™ Concept



motion.net™ – the innovative control concept from LPKF Motion & Control GmbH – is based on interconnecting compact motor controllers with high performance communication channels. Mounting the controller units directly in the machine substantially reduces the amount of wiring and significantly increases reliability.

Interconnecting individual motor controllers to form a complex, decentralized machine control based on standardized communication protocols enables our drive components to be very easily integrated into existing control concepts as well as facilitating the flexible expansion of existing systems.



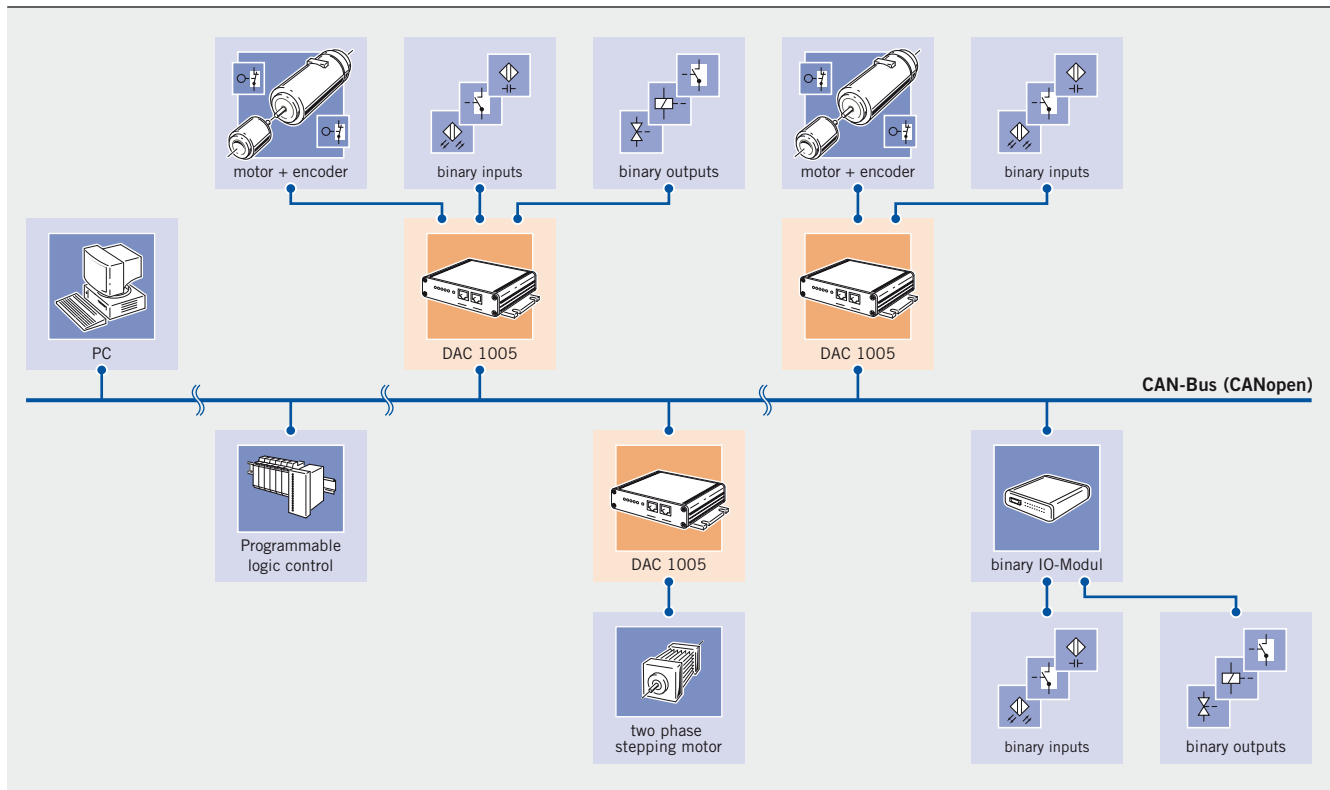
LPKF Motion & Control GmbH manufactures its motion.net™-controller family in compliance with the EU directive 2002/95/EC (Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment).

The SMCU II two-axis controller and the axis controllers of the DAC1005 series are connected by a CAN bus.

The DAC1005 axis controller can be operated in a CANopen network. A maximum of 127 decentrally arranged DAC1005 axis controllers can be interconnected via the CAN bus to form

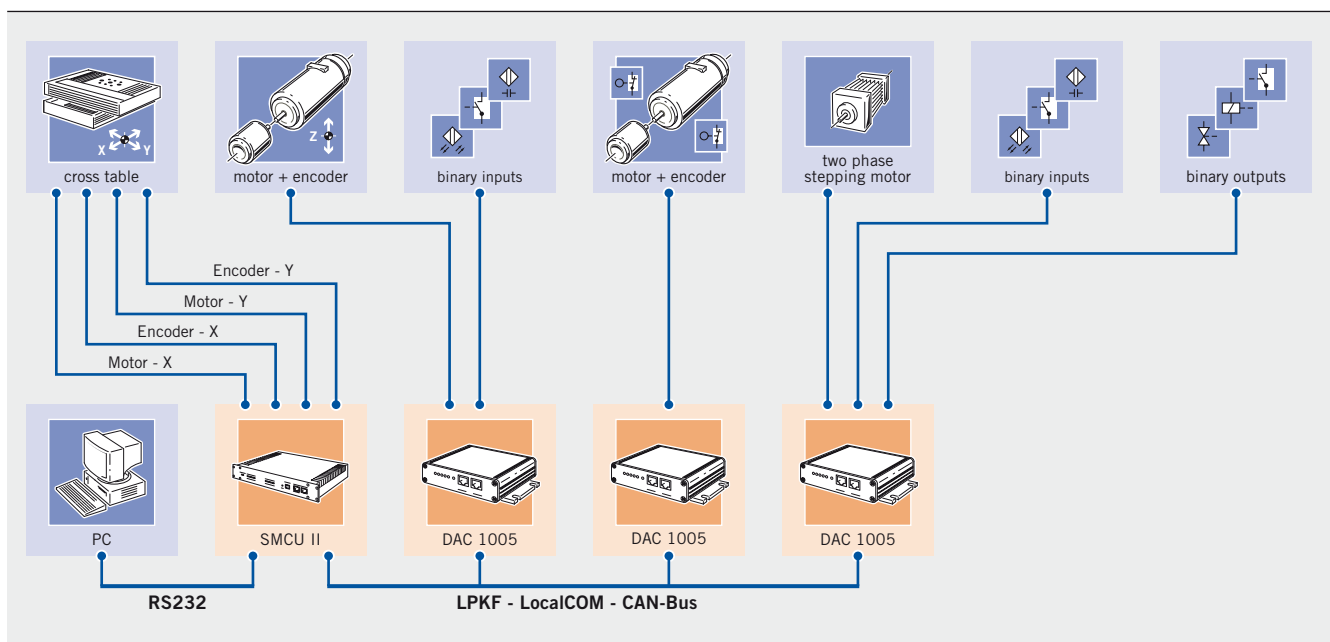
a very powerful machine control. The DAC1005 axis controllers meet the CANopen standards CiA 301 (communication profile) and CiA 402 (device profile) and have been certified by the "CAN in Automation e. V."

**Use in a CANopen network**



The combination of a SMCU II two-axis controller with up to three DAC1005 axis controllers creates a path control that controls up to five axes with highly synchronous motion.

**Use in a LocalCOM network with a SMCU II as master**



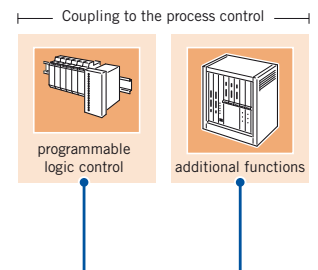


## SMCU II

Universal motor controller for two synchronous axes

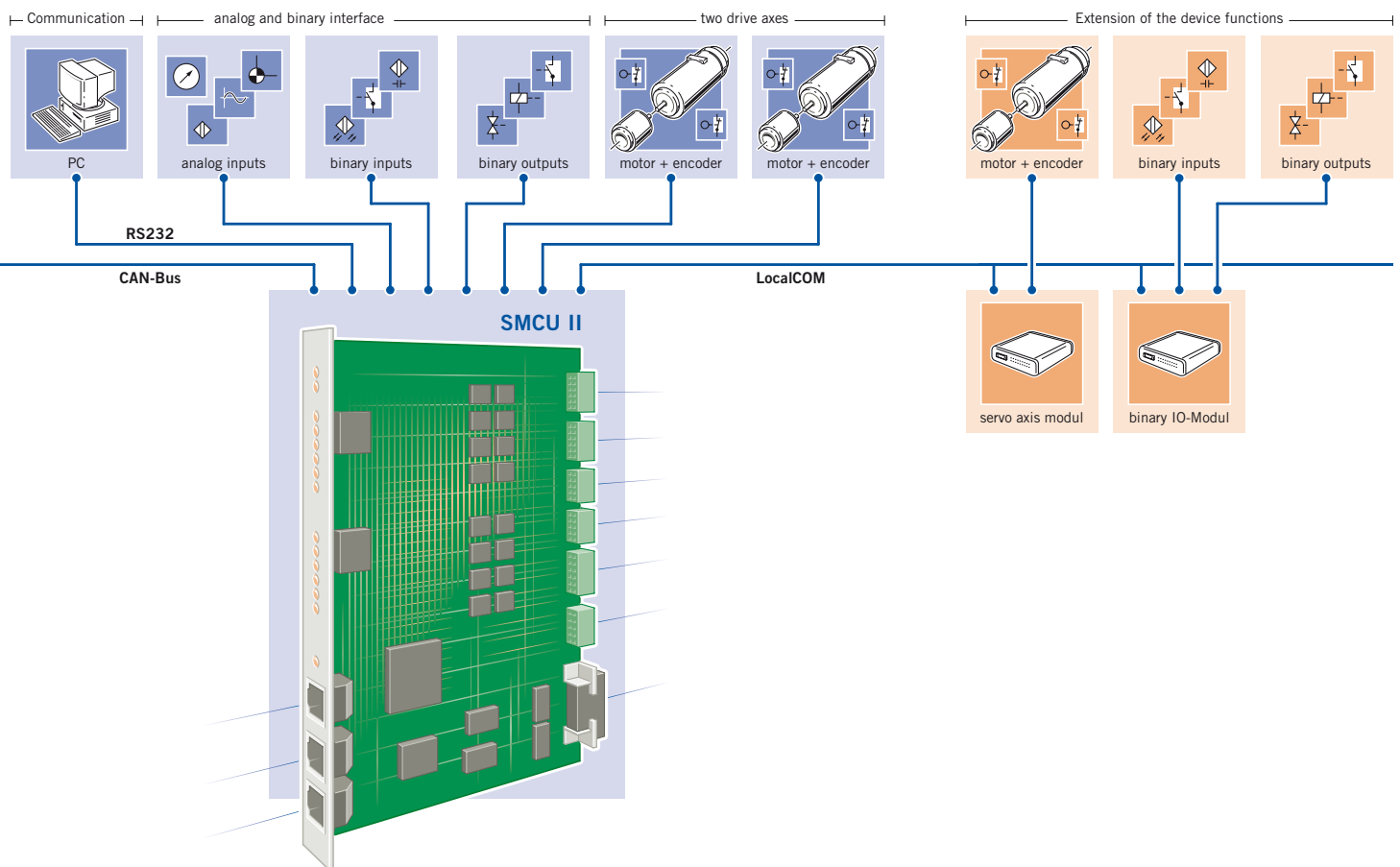
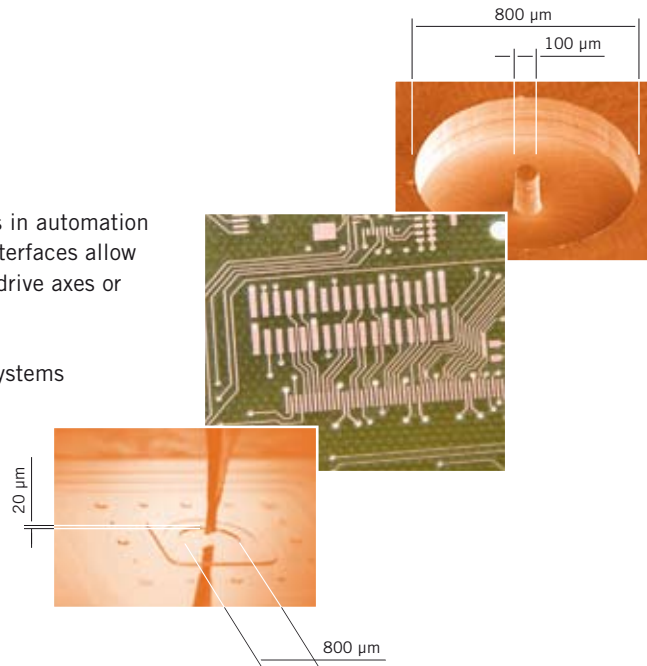
The SMCU II is a very compact motor controller for the highly synchronous path control of two axes. DC-, 2- or 3-phase servo, stepper and linear motors can be connected. Powerful algorithms and high sampling rates guarantee high quality control. The SMCU II can be expanded with up to three DAC1005 axis controllers on a local CAN bus so that up to five axes can be controlled on one path.

The interfaces for limit switches, digital and analog inputs and outputs are integrated. The SMCU II can be optionally expanded with one encoder interface per axis and with a trigger interface. Communication with the master computer is done via the serial port (RS232). The VisualControl® programming interfaces provide extensive support for users programming their own Windows applications. The LPKF MotionTools supplied is the tool for setting up and parameterizing the controller.



The SMCU II can be used on an universal basis in automation technology and device control. The available interfaces allow the complete control of devices which include drive axes or motors in addition to other binary or analog actors or sensors as, e. g.:

- positioning drives in milling and engraving systems
- fast and precise measuring equipment
- micromachining systems
- analysis and check devices



## i

## SMCU II

Digital two-axis controller for 2- or 3-phase stepper motors

Designation	SMCU II – Basic	SMCU II-P – Power
Ordering designation	SMCU II	SMCU II-P
Item number	780016	780030



## Features

Output classes	Basic, 5 A / 100 V
	Power, 15 A / 100 V
Two digital power stages	Digital current controller
	Adjustment of the PWM modes to the motor inductivity
	short-circuit-proof
	Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
Stepper motor control	Smooth running motor through continuous sinusoidal commutating
	Positioning with 256-fold microstep resolution
Integrated path generator	Synchronizes the motion of up to 5 axes
	Linear and circular interpolation taking into account the maximum axis velocities and accelerations as well as the path velocity and jerk
I/O port	8 digital power outputs
	Output 0 can be configured as a PWM output
	8 digital inputs
	2 analog inputs
	PLC functions of inputs and outputs
Communication	Trigger event
	RS232 to PC
	USB to PC, for configuration
Additional functions	LocalCOM for simple expansion to a 3 to 5 axis control
	Monitoring the limit switches and ranges of motion of the axes
	Various modes for referencing the axes
	Controlling a motor brake with the possibility of reducing the drive current
Software	Fast stop
	LPKF MotionTools for setting up and parameterizing
Technical Data	VisualControl®- Programming interfaces for Windows applications (optional)
	see pages 12 and 13

## i

## SMCU II - M

Digital two-axis controller for servo-controlled DC-, 2- or 3-phase servo and linear motors

SMCU II-M – Basic

SMCU II-MP – Power

SMCU II-M

SMCU II-MP

780017

780031



## Features

Output classes	Basic, 5 A / 100 V
	Power, 15 A / 100 V
Two digital power stages	Digital current controller
	Adjustment of the PWM modes to the motor inductivity short-circuit-proof
	Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
One integrated encoder interface per axis	Connection of incremental encoders or analog encoders with differential output signals
	4-fold to 2048-fold interpolation of the analog signals
	Amplitude, offset and phase error correction of the analog signals
Servo control	Monitoring the amplitude of the analog signals
	PID cascade or model-based control
Integrated path generator	Monitoring the maximum permissible control deviation
	Synchronizes the motion of up to 5 axes
I/O port	Linear and circular interpolation taking into account the maximum axis velocities and accelerations as well as the path velocity and jerk
	8 digital power outputs
	Output 0 can be configured as a PWM output
Communication	8 digital inputs
	2 analog inputs
	PLC functions of inputs and outputs
	Trigger event
Additional functions	RS232 to PC
	USB to PC, for configuration
	LocalCOM for simple expansion to a 3 to 5 axis control
Software	Monitoring the limit switches and ranges of motion of the axes
	Various modes for referencing the axes
	Controlling a motor brake with the possibility of reducing the drive current
Technical Data	Fast stop
	LPKF MotionTools for setting up and parameterizing
	VisualControl®- Programming interfaces for Windows applications (optional)
	see pages 12 and 13

## i

## SMCU II - AM

Digital two-axis controller with trigger interface for servo-controlled DC-, 2- or 3-phase servo and linear motors. The trigger interface can be used for process synchronization.

Designation	SMCU II-AM – Basic	SMCU II-AMP – Power	SMCU II-A*– Basic	SMCU II-AP*– Power
Ordering designation	SMCU II-AM	SMCU II-AMP	SMCU II-A	SMCU II-AP
Item number	780130	780132	780129	780131
				*available on request

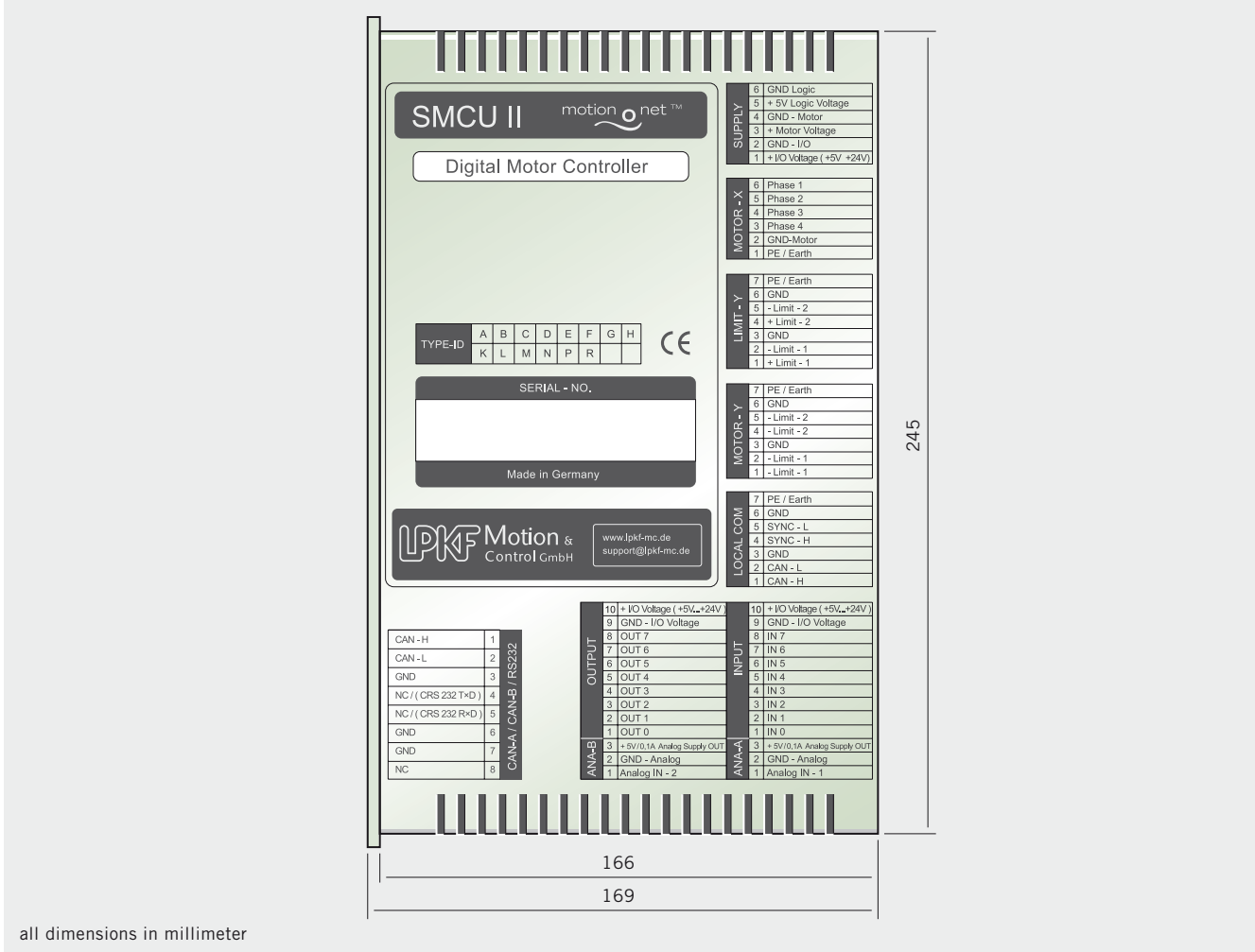
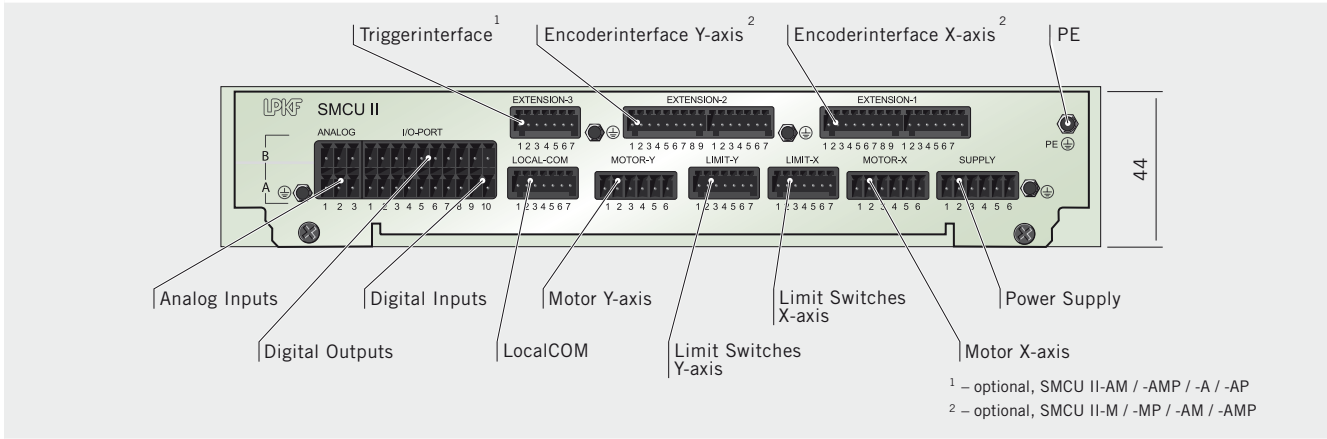
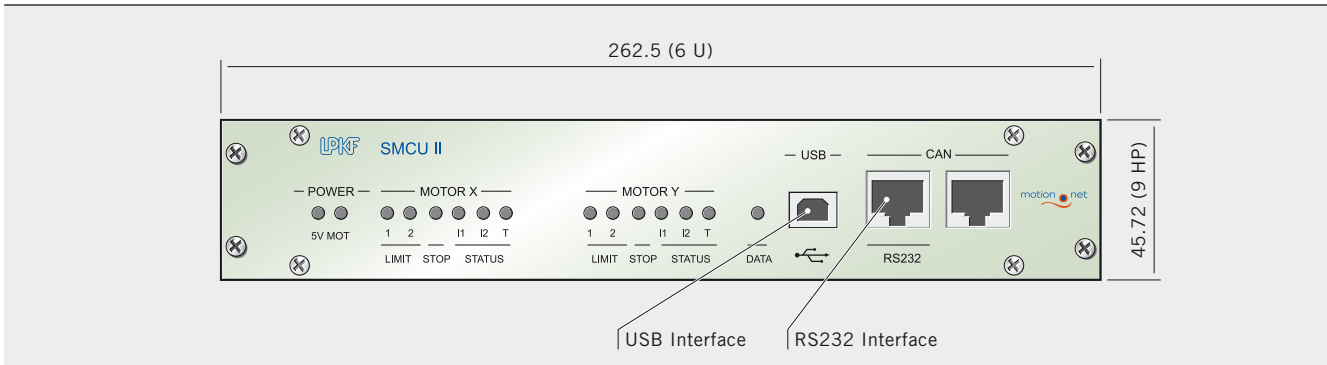


## Features

Output classes	Basic, 5 A / 100 V Power, 15 A / 100 V
Two digital power stages	Digital current controller Adjustment of the PWM modes to the motor inductivity short-circuit-proof Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
One integrated encoder interface per axis	Connection of incremental encoders or analog encoders with differential output signals 4-fold to 2048-fold interpolation of the analog signals Amplitude, offset and phase error correction of the analog signals Monitoring the amplitude of the analog signals
Servo control	PID cascade or model-based control Monitoring the maximum permissible control deviation
Integrated path generator	Synchronizes the motion of up to 5 axes Linear and circular interpolation taking into account the maximum axis velocities and accelerations as well as the path velocity and jerk
I/O port	8 digital power outputs Output 0 can be configured as a PWM output 8 digital inputs and 2 analog inputs PLC functions of inputs and outputs Trigger event
Trigger interface with two operating modes	Constant velocity – a trigger pulse is generated at the start and finish of the constant running phase ( $v_{\text{path}} = \text{const.}$ ) Constant position interval – a trigger pulse is generated at a constant, settable position interval $\Delta s$
Communication	RS232 to PC USB to PC, for configuration LocalCOM for simple expansion to a 3 to 5 axis control
Additional functions	Monitoring the limit switches and ranges of motion of the axes Various modes for referencing the axes Controlling a motor brake with the possibility of reducing the drive current Fast stop
Software	LPKF MotionTools for setting up and parameterizing VisualControl®- Programming interfaces for Windows applications (optional)
Technical Data	see pages 12 and 13

# Mounting dimensions and connection options

SMCU II / SMCU II-M / SMCU II-AM



all dimensions in millimeter

## Technical Data

SMCU II				
	Parameter	Min	Nom	Max
Operating voltages				
Logic	+ 5 V Logic voltage	4.9 V	5 V	5.1 V
I/O port	+ I/O voltage	5 V	24 V	28 V
Motor circuit	+ Motor voltage	12 V	48 V	100 V
Power consumption				
	+ 5 V Logic voltage = + 5 V	2.7 VA *	5.3 VA **	16 VA ***
	+ I/O voltage = + 24 V	< 0.1 VA *		48 VA ***
Power stage				
	PWM frequency	10 kHz	20 kHz	40 kHz
	Current control sampling period	25 µs	50 µs	100 µs
	Maximum voltage			100 V
SMCU II performance data	Continuous output current			± 5 A
	Maximum output current			± 5 A
SMCU II-P performance data	Continuous output current			± 7 A
	Maximum output current			± 15 A
Path generator				
	Synchronized	2 axes		5 axes
	Types of path interpolation	Linear and cyclical path interpolation		
Stepping motor operation				
	Control	LPKF internal		
	Resolution	corresponds to 256-fold microstep		
Limit switch interface				
	Supported limit switches	NPN, PNP, NC and NO		
	Quantity	2 limit switches per axis		
	Inputs	differential or single end		
Differential input (RS422)	Input voltage Low	0 V		0.5 V
	Input voltage High	2.5 V		5 V
Single End input	Input voltage Low	0 V		1 V
	Input voltage High	2 V		5 V
Inputs / Outputs				
Digital inputs (electrically decoupled)	Number		8	
	Input voltage Low	0 V		1.5 V
	Input voltage High	4.3 V		12 V
	Input frequency	0 Hz		500 Hz
Digital Open Collector Outputs (short-circuit proof, feedback protected and electrically decoupled)	Number		8	
	Output voltage Low	0.2 V		
	Output voltage High			+ I/O voltage
	Output current		0.2 A	0.4 A
	Permissible feedback voltage	45 V	50 V	
	Switching frequency	0 Hz		1 MHz
Output 0 (in PWM mode)	PWM frequency		5 kHz	
	PWM resolution			16 Bit
Analog inputs	Number		2	
	Input voltage	0 V		5 V
	Input frequency	0 Hz		150 kHz
	Resolution		10 Bit	
Communication				
RS232 (electrically decoupled)	Number		1	
	Baud rate	19.2 kBit/s		57.6 kBit/s ****
	Protocol	LPKF internal		
USB	Number		1	
	Standard	USB 1.1		
LocalCOM (CAN)	Number		1	
	Baud rate		1 MBit/s ****	
	Protocol	LPKF internal		
		* Without external load		
		** With 2 encoders (2 x 0.2 A)		
		*** With maximum external load		
		**** Factory setting		

SMCU II (continued)				
	Parameter	Min	Nom	Max
Mechanical data				
	Dimension	6U cassette / 9 HP (255 × 169 × 45 mm)		
	Weight	800 g		
	Protection rating	IP 20		

SMCU II-M (basic data like SMCU II)				
	Parameter	Min	Nom	Max
Encoder interface				
Incremental encoder	Connection	Incremental or analog encoder		
	Number	1 interface per axis		
	Encoder supply voltage	5 V, max. 800 mA		
	Signals (RS422)	A, /A, B, /B, I, /I		
	Input voltage Low	0 V		0.5 V
	Input voltage High	2.5 V		5 V
	Input frequency	0 Hz		1.25 MHz
Analog encoder (interpolator)	Interpolation factor	4 times		
	Signals (differential)	SIN, /SIN, COS, /COS, REF, /REF		
	Input voltage	0.6 V <sub>SS</sub>	1 V <sub>SS</sub>	1.2 V <sub>SS</sub>
	Input frequency	0 Hz		120 kHz
	Interpolation factor	4 times		2048 times
Servo control				
PID cascade	Sampling period		200 μs	
model-based controller without Notch filter	Sampling period		250 μs	
model-based controller with Notch filter	Sampling period		300 μs	

SMCU II-AM (basic data like SMCU II)				
	Parameter	Min	Nom	Max
Encoder interface				
Incremental encoder	Connection	Incremental or analog encoder		
	Number	1 interface per axis		
	Encoder supply voltage	5 V, max. 800 mA		
	Signals (RS422)	A, /A, B, /B, I, /I		
	Input voltage Low	0 V		0.5 V
	Input voltage High	2.5 V		5 V
	Input frequency	0 Hz		1.25 MHz
Analog encoder (interpolator)	Interpolation factor	4 times		
	Signals (differential)	SIN, /SIN, COS, /COS, REF, /REF		
	Input voltage	0.6 V <sub>SS</sub>	1 V <sub>SS</sub>	1.2 V <sub>SS</sub>
	Input frequency	0 Hz		120 kHz
	Interpolation factor	4 times		2048 times
Servo control				
PID cascade	sampling period		200 μs	
model-based controller without Notch filter	sampling period		250 μs	
model-based controller with Notch filter	sampling period		300 μs	
Trigger interface				
Outputs (RS422)	Operating modes	Constant velocity*, Constant position interval Δs**		
	Number of outputs	2***		
	Output voltage Low at I <sub>Low</sub> = 20 mA	0 V		0.5 V
	Output voltage High at -I <sub>High</sub> = 20 mA	2.5 V		5 V
	Output frequency	0 Hz		5 kHz
	Pulse width	10 μs		
		* A trigger pulse is generated at the start and finish of the constant velocity motion phase.		
	** A trigger pulse is generated at a constant, settable position interval Δs.			
	*** Shutter control und trigger pulse			



## DAC1005 – universal motor controller

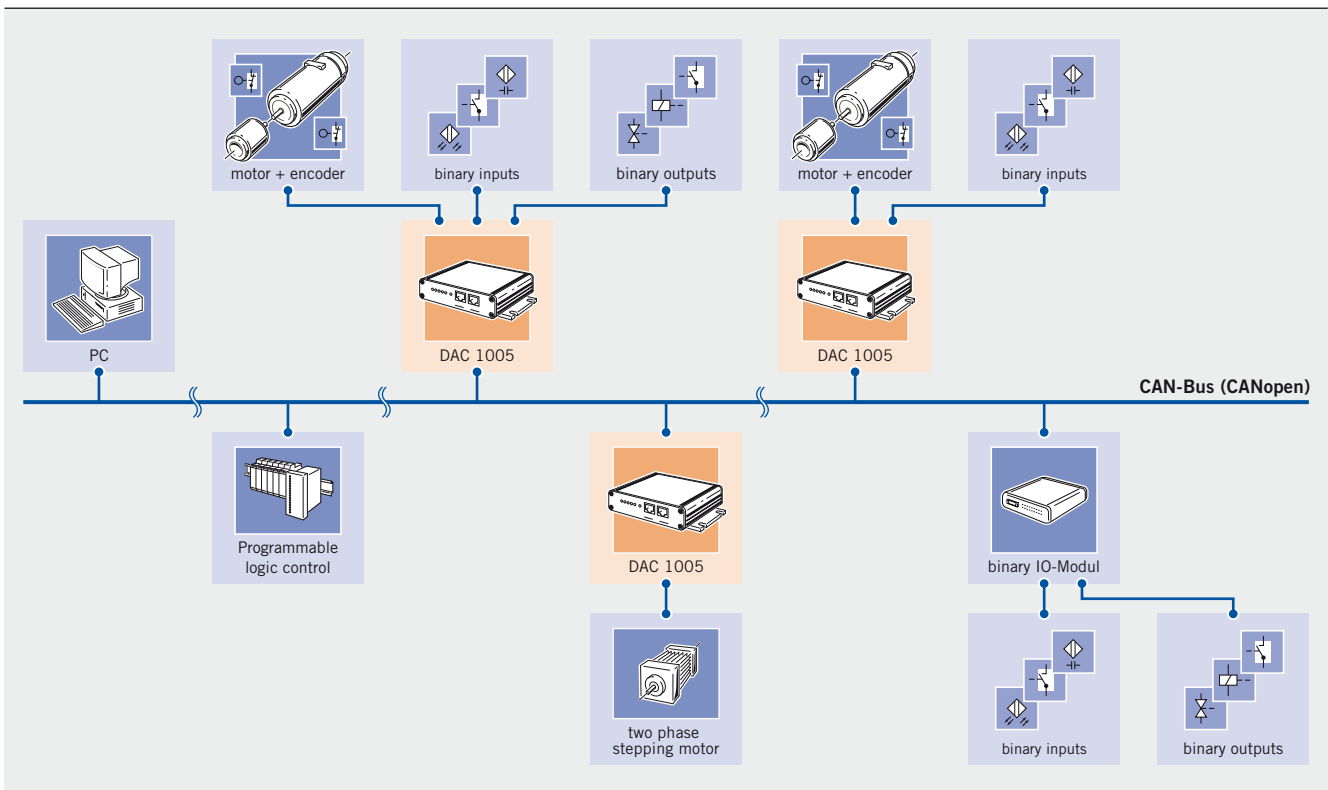
The DAC1005 axis controller is an universal motor controller for one axis. DC-, 2- or 3-phase stepper, servo and linear motors can be connected.

Powerful algorithms and high sampling rates guarantee high quality control. The interfaces for limit switches, digital and analog inputs and outputs, and encoders are integrated.

The DAC1005 axis controller has two industrial-standard communication interfaces: the CAN interface and the serial RS232 interface.

The DAC1005 axis controller meets the CANopen standards CiA 301 (communication profile) and CiA 402 (device profile) and has been certified by the "CAN in Automation e. V.". A maximum of 127 decentrally arranged DAC1005 axis controllers can be interconnected via the CAN bus to form a very powerful machine control.

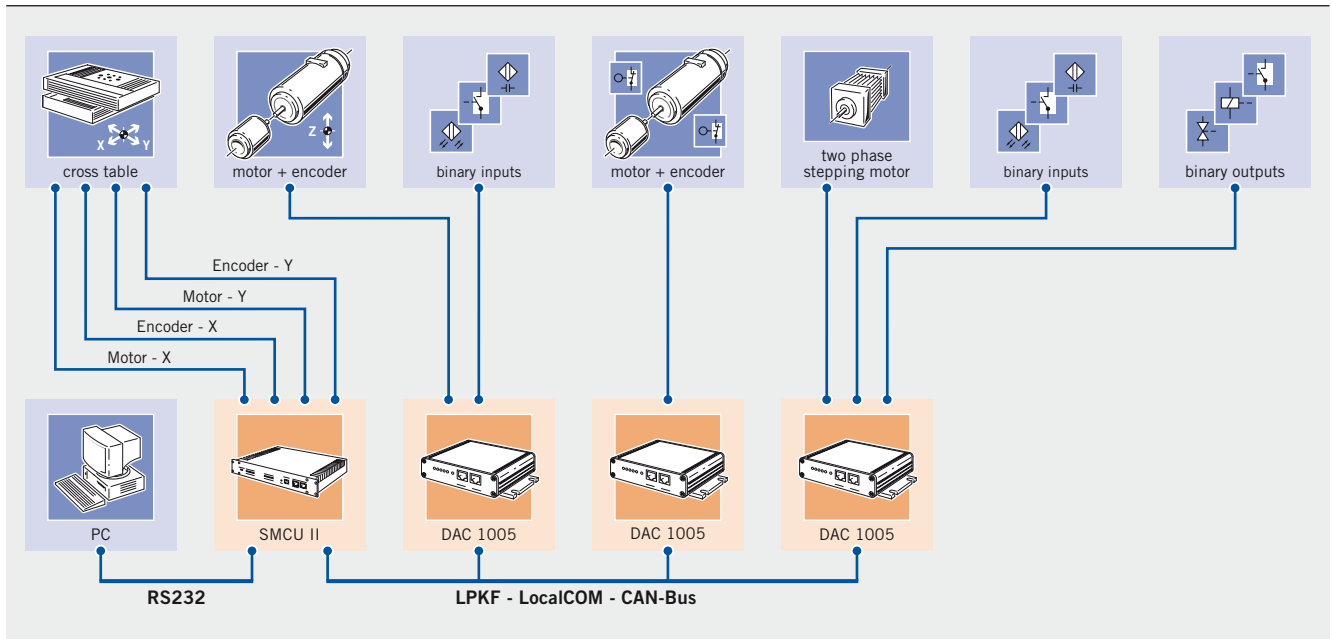
### CANopen network with multiple DAC1005s



The combination of the SMCU II two-axis controller with three DAC1005 axis controllers creates a path controller that controls the five axes with high synchronicity.

The individual modules communicate via an LPKF LocalCOM CAN bus.

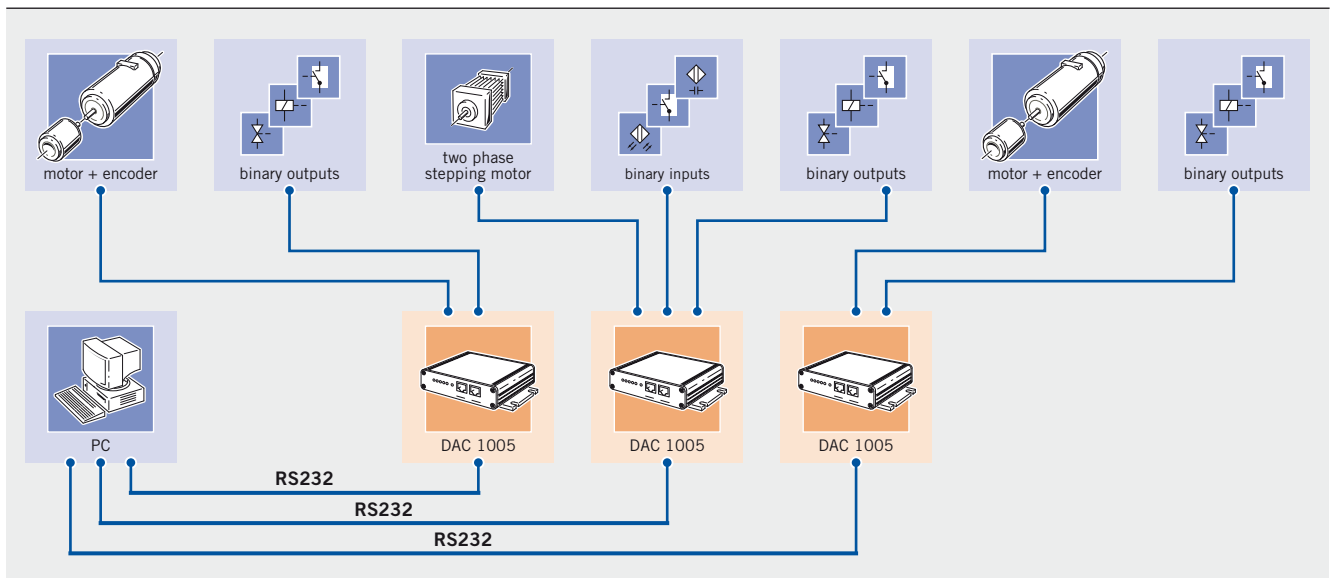
**LocalCOM Network with SMCU II as master and 3 x DAC1005**



The serial interface (RS232) is the other industrial-standard communication interface. The application software communicates with the DAC1005 axis controller via the VisualControl®-API.

The serial interface is used by the LPKF MotionTools for setting up and parameterizing the DAC1005 axis controller.

**PC with several independent DAC1005**



The DAC1005 axis controller is suitable for universal use in automation engineering and device control. The available interfaces allow the complete control of devices which include drive axes or motors in addition to other binary or analog actors or sensors.

Typical application examples are:

- positioning drives in milling and engraving systems
- fast and precise measuring equipment
- analysis and check devices
- micromachining systems
- handling systems

## i

## DAC1005

Digital axis controller for 2- or 3-phase stepper motors or servo-controlled DC-, 2- or 3-phase servo and linear motors

Designation

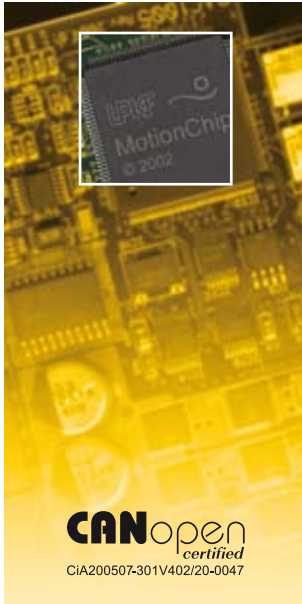
DAC1005 – Basic

Ordering designation

DAC1005

Item number

780142

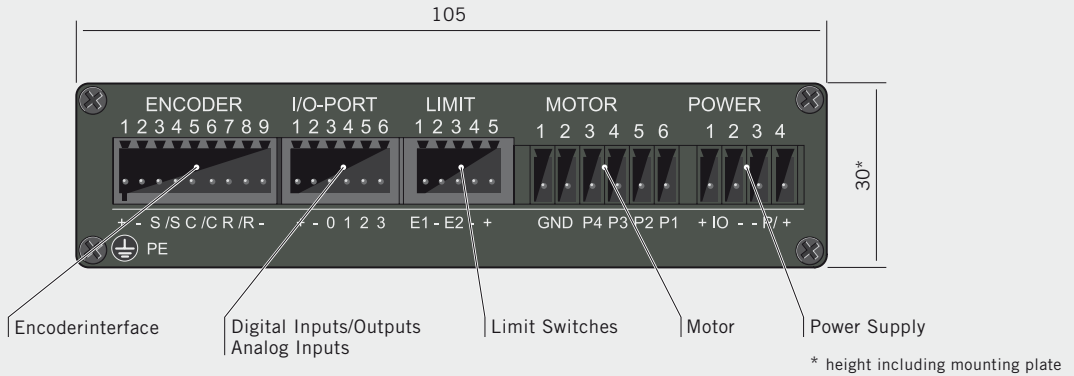
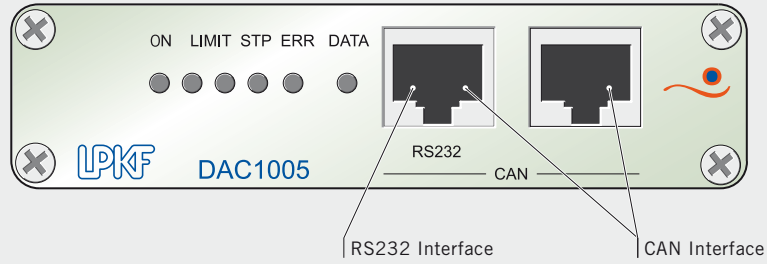


## Features

Output classes	Basic, 5 A / 100 V
Digital power stage	Digital current controller Adjustment of the PWM modes to the motor inductivity Short-circuit-proof Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
Built-in encoder interface	Connection of incremental encoders or analog encoders with differential output signals 4-fold to 2048-fold interpolation of the analog signals Amplitude, offset and phase error correction of the analog signals Monitoring the amplitude of the analog signals
Stepper motor control	Smooth running motor through continuous sinusoidal commutating Positioning with 256-fold microstep resolution
Servo control	PID cascade or model-based control Monitoring the maximum permissible control deviation
Integrated path generator	Controls the motion of an axis Linear interpolation taking into account the maximum axis velocity and acceleration as well as the path velocity and jerk
I/O port	4 channels, 1 digital channel and 3 digital or analog channels Each digital channel can be used as an input or output Output 0 can be configured as a PWM output PLC functions of inputs and outputs Trigger event
Communication	RS232 to PC CAN, CANopen CiA 301 / CiA 402 or LocalCOM
Additional functions	Monitoring the limit switches and range of motion of the axis Various modes for referencing the axis Controlling a motor brake with the possibility of reducing the drive current Fast stop
Software	LPKF MotionTools for setting up and parameterizing VisualControl®- Programming interfaces for Windows applications (optional)
Technical data	see pages 22 and 23

# Mounting dimensions and connection options

DAC1005



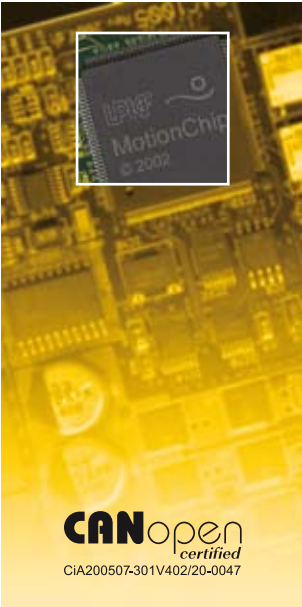
all dimensions in millimeter



# DAC1005-R

Digital axis controller for 2- or 3-phase stepper motors or servo-controlled DC- 2- or 3-phase servo and linear motors mountable on a 35 mm mounting rail

Designation	DAC1005-R – Basic
Ordering designation	DAC1005-R
Item number	780200

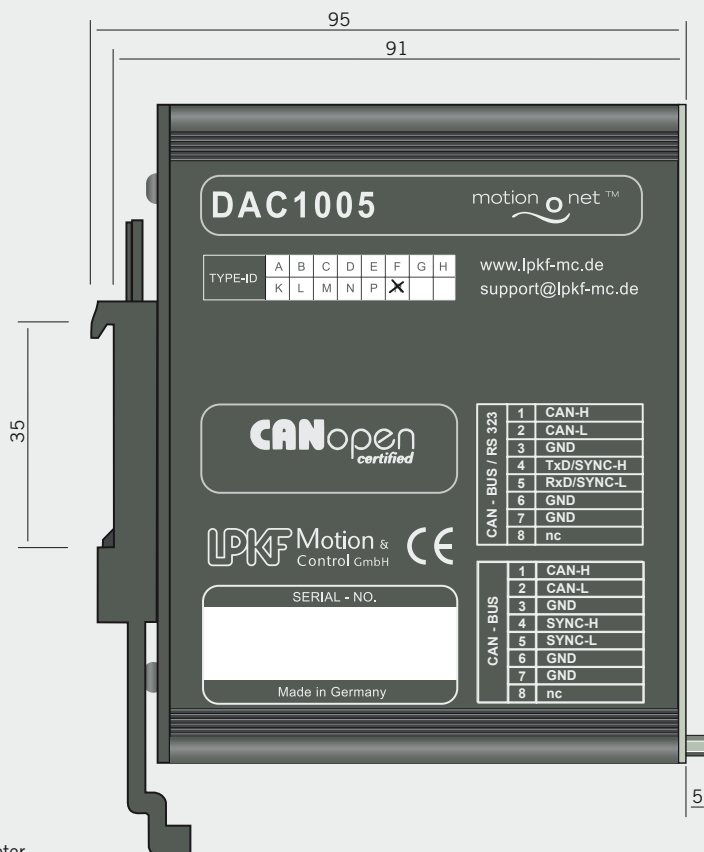
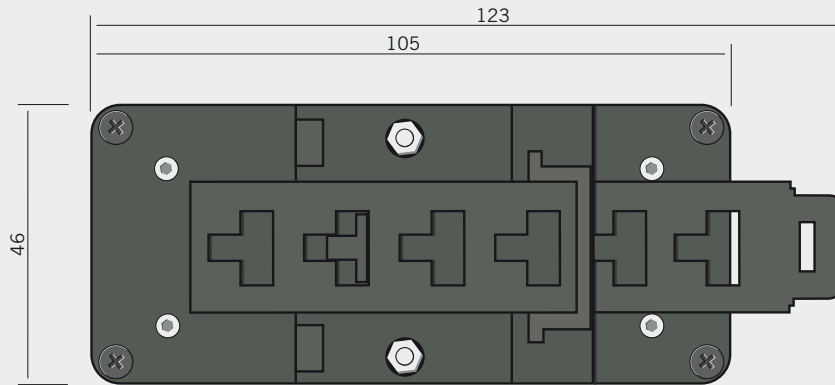
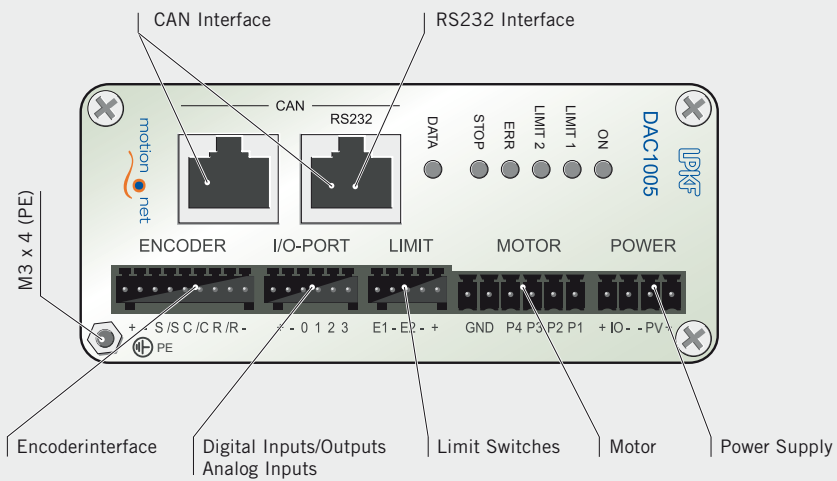


## Features

Output classes	Basic, 5 A / 100 V
Digital power stage	Digital current controller Adjustment of the PWM modes to the motor inductivity Short-circuit-proof Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
Built-in encoder interface	Connection of incremental encoders or analog encoders with differential output signals 4-fold to 2048-fold interpolation of the analog signals Amplitude, offset and phase error correction of the analog signals Monitoring the amplitude of the analog signals
Stepper motor control	Smooth running motor through continuous sinusoidal commutating Positioning with 256-fold microstep resolution
Servo control	PID cascade or model-based control Monitoring the maximum permissible control deviation
Integrated path generator	Controls the motion of an axis Linear interpolation taking into account the maximum axis velocity and acceleration as well as the path velocity and jerk
I/O port	4 channels, 1 digital channel and 3 digital or analog channels Each digital channel can be used as an input or output Output 0 can be configured as a PWM output PLC functions of inputs and outputs Trigger event
Communication	RS232 to PC CAN, CANopen CiA 301 / CiA 402 or LocalCOM
Additional functions	Monitoring the limit switches and range of motion of the axis Various modes for referencing the axis Controlling a motor brake with the possibility of reducing the drive current Fast stop
Software	LPKF MotionTools for setting up and parameterizing VisualControl®- Programming interfaces for Windows applications (optional)
Technical data	see pages 22 and 23

# Mounting dimensions and connection options

## DAC1005-R



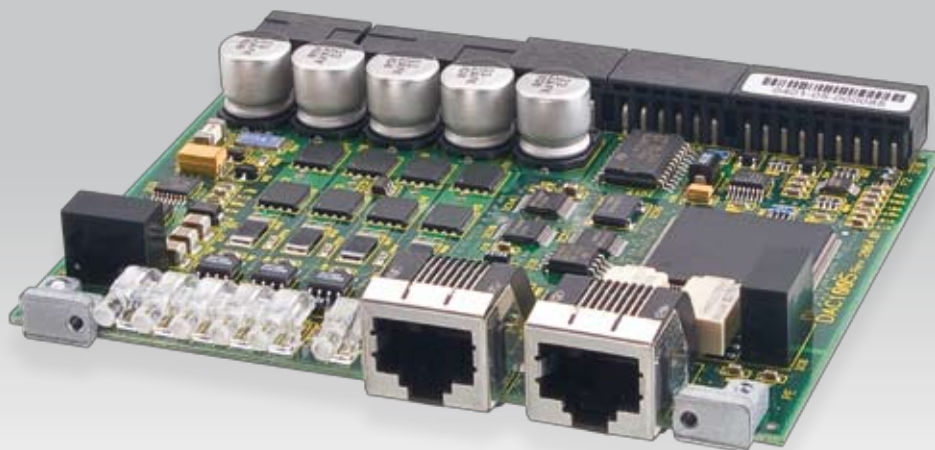
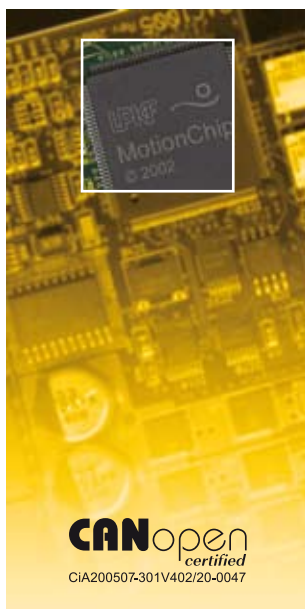
all dimensions in millimeter

## i

## DAC1005-OEM

Digital axis controller for 2- or 3-phase stepper motors or servo-controlled DC-, 2- or 3-phase servo and linear motors

Designation	DAC1005-OEM – Basic
Ordering designation	DAC1005-OEM
Item number	420300

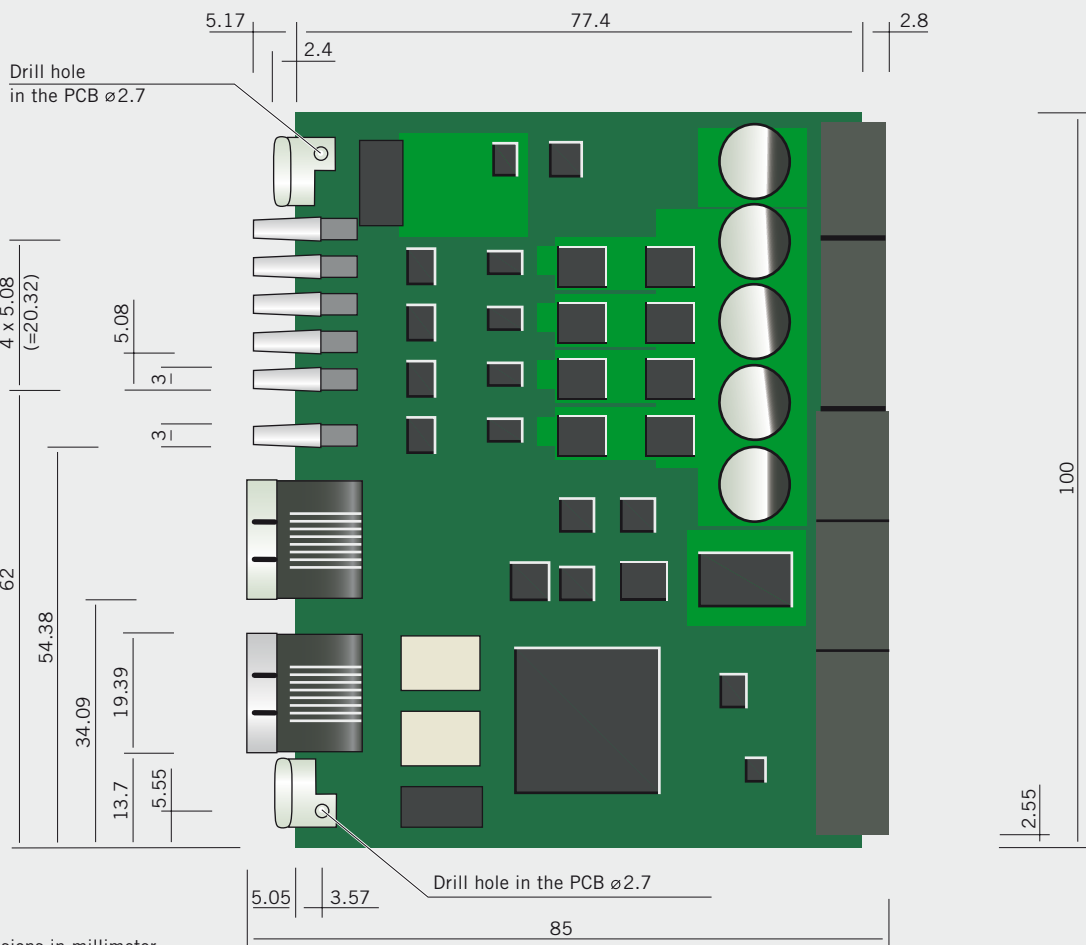
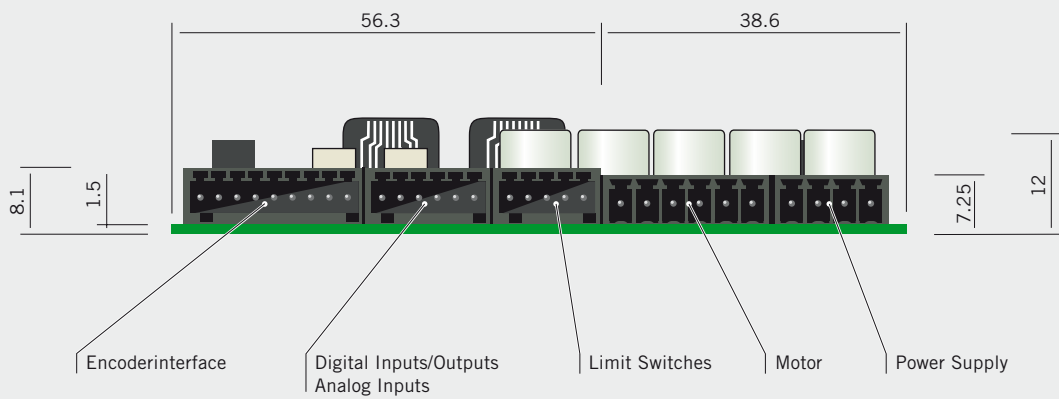
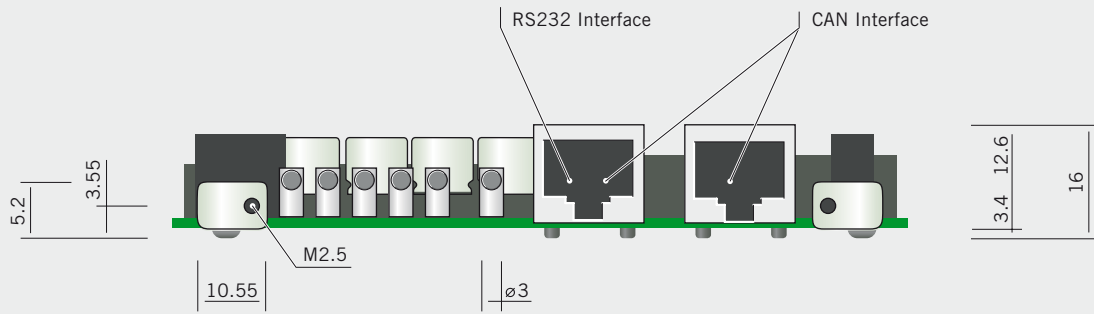


## Features

Output classes	Basic, 5 A / 100 V
Digital power stage	Digital current controller Adjustment of the PWM modes to the motor inductivity Short-circuit-proof Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
Built-in encoder interface	Connection of incremental encoders or analog encoders with differential output signals 4-fold to 2048-fold interpolation of the analog signals Amplitude, offset and phase error correction of the analog signals Monitoring the amplitude of the analog signals
Stepper motor control	Smooth running motor through continuous sinusoidal commutating Positioning with 256-fold microstep resolution
Servo control	PID cascade or model-based control Monitoring the maximum permissible control deviation
Integrated path generator	Controls the motion of an axis Linear interpolation taking into account the maximum axis velocity and acceleration as well as the path velocity and jerk
I/O port	4 channels, 1 digital channel and 3 digital or analog channels Each digital channel can be used as an input or output Output 0 can be configured as a PWM output PLC functions of inputs and outputs Trigger event
Communication	RS232 to PC CAN, CANopen CiA 301 / CiA 402 or LocalCOM
Additional functions	Monitoring the limit switches and range of motion of the axis Various modes for referencing the axis Controlling a motor brake with the possibility of reducing the drive current Fast stop
Software	LPKF MotionTools for setting up and parameterizing VisualControl®- Programming interfaces for Windows applications (optional)
Technical data	see pages 22 and 23

# Mounting dimensions and connection options

DAC1005-OEM



all dimensions in millimeter

## Technical Data

DAC1005 / DAC1005-R / DAC1005-OEM				
	Parameter	Min	Nom	Max
Operating voltages				
Logics and I/O port	+ I/O voltage	12 V	24 V	28 V
Motor circuit	+ Motor voltage	12 V	48 V	100 V
Power consumption				
	+ I/O Voltage = + 24 V	1.5 VA *	2.8 VA **	36 VA ***
Power stage				
DAC1005 Performance data	PWM frequency	10 kHz	20 kHz	40 kHz
	Current control sampling period	25 µs	50 µs	100 µs
	Maximum voltage			100 V
	Continuous output current		± 5 A	
	Maximum output current		± 5 A	
Encoder interface				
Incremental encoder	Connection	Incremental or analog encoder		
	Number	1 interface		
	Encoder supply voltage	5 V, max. 800 mA		
	Signals (RS422)	A, /A, B, /B, I, /I		
	Input voltage Low	0 V		0.5 V
	Input voltage High	2.5 V		5 V
	Input frequency	0 Hz		1.25 MHz
Analog encoder (interpolator)	Interpolation factor	4 times		
	Signals (differential)	SIN, /SIN, COS, /COS, REF, /REF		
	Input voltage	0.6 V <sub>SS</sub>	1 V <sub>SS</sub>	1.2 V <sub>SS</sub>
	Input frequency	0 Hz		120 kHz
	Interpolation factor	4 times		2048 times
Stepping motor operation				
	Control	LPKF internal		
	Resolution	Corresponds to 256-fold microstep		
Servo control				
PID cascade	Sampling period		200 µs	
model-based controller without Notch filter	Sampling period		250 µs	
model-based controller with Notch filter	Sampling period		300 µs	
Path generator				
	Controls	1 axis		
	Types of interpolation	Linear path interpolation		
Limit switch interface				
Single end input	Supported limit switches	NPN, PNP, NC and NO		
	Number	2 limit switches		
	Inputs	single end		
	Input voltage Low	0 V		1 V
	Input voltage High	2 V		+ I/O Voltage
		* Without external load		
		** With one encoder (+ 5 V / 0.2 A)		
		*** With maximum external load		

DAC1005 / DAC1005-R / DAC1005-OEM (continued)					
		Parameter	Min	Nom	Max
<b>Inputs / Outputs</b>					
Digital inputs	Number				4
	Input voltage Low		0 V		0.8 V
	Input voltage High		2 V		28 V
	Input frequency		0 Hz		500 Hz
Digital Open Collector Outputs (short-circuit proof and feedback protected)	Number				4
	Output voltage Low		0.2 V		
	Output voltage High				+ I/O voltage
	Output current			0.2 A	0.4 A
	Permissible feedback voltage		45 V	50 V	
	Switching frequency		0 Hz		1 MHz
Output 0 (in PWM mode)	PWM frequency			5 kHz	
	PWM resolution				16 Bit
Analog inputs	Number				3
	Input voltage		0 V		5 V
	Input frequency		0 Hz		1 kHz
	Resolution			10 Bit	
<b>Communication</b>					
RS232 (electrically decoupled)	Number			1	
	Baud rate		19.2 kBit/s	38.4 kBit/s *	57.6 kBit/s
	Protocol		LPKF internal		
CAN (electrically decoupled)	Number			1	
	Baud rate		125 kBit/s		1 MBit/s *
	Protocol		CANopen or LocalCOM (LPKF internal)		
* Factory setting					

DAC1005					
		Parameter	Min	Nom	Max
<b>Mechanical data</b>					
	Dimensions (W x H x D)		105 x 30 x 85 mm		
	Weight		300 g		
	Protection rating		IP 40		

DAC1005-R					
		Parameter	Min	Nom	Max
<b>Mechanical data</b>					
	Dimensions (W x H x D)		46 x 123 x 95 mm		
	Weight		300 g		
	Protection rating		IP 40		

DAC1005-OEM					
		Parameter	Min	Nom	Max
<b>Mechanical data</b>					
	Dimensions (W x H x D)		100 x 16 x 85 mm		
	Weight		80 g		
	Protection rating		None		



## SMCU II.Box

The SMCU II.Box is a complete, powerful and cost-effective multi-axis controller in a compact 19 inch tabletop casing. All essential control components are integrated into the SMCU II.Box, such as power packs, digital power stages and servo controllers, high resolution, error resilient encoder interfaces, analog and digital I/O channels and a powerful path interpolator. The 19 inch compatible frame size enables the SMCU II.Box to be installed in all standard cabinet systems and module holders.

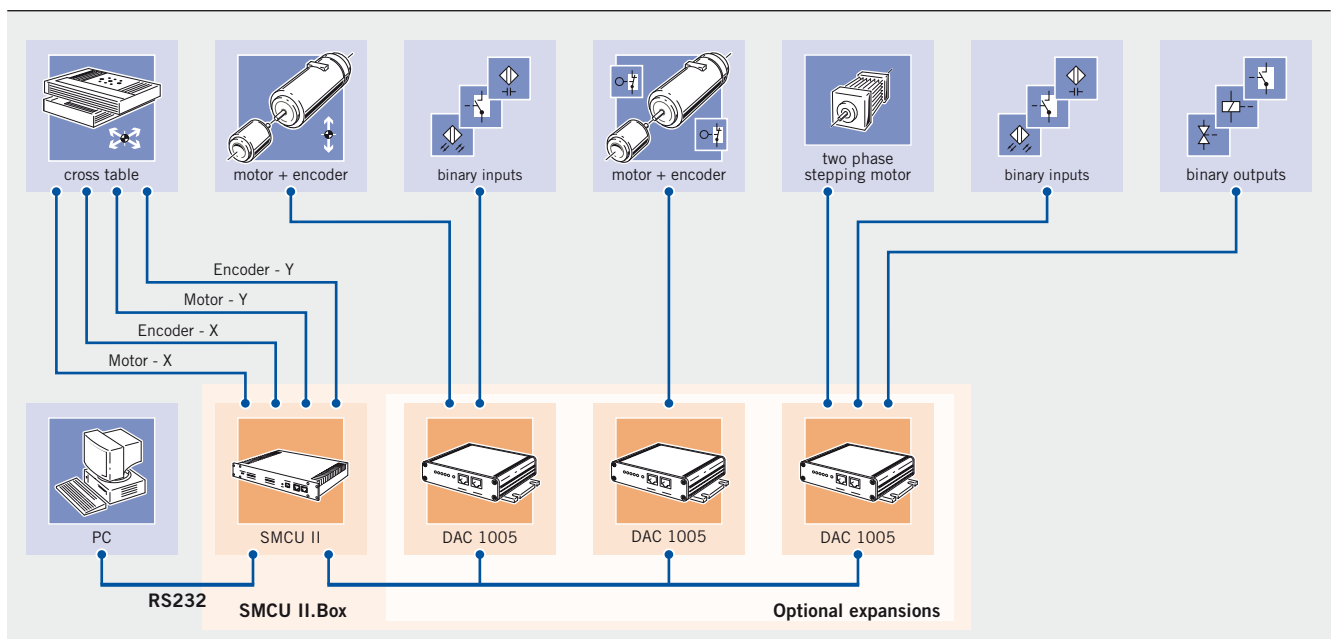
The standard version of the SMCU II.Box is a highly synchronous path controller for 2 axes, which is based on our SMCU II two-axis controller. It can be equipped with any variant of the SMCU II two-axis controller. The details and technical data of the individual variants of the SMCU II are to be found on catalog pages 6 to 13.

The SMCU II.Box can be optionally expanded with up to 3 DAC1005 axis controllers to become a very powerful, highly synchronous 5 axis controller.

The compact frame size of the SMCU II.Box enables it to be used for controlling devices almost everywhere, such as in:

- Measurement equipment
- Laser and micro-material machining
- Ink-jet printing technology
- Analysis and control equipment

#### PC with SMCU II.Box, configured as 5 axis controller



Further optional expansions for the SMCU II.Box are:

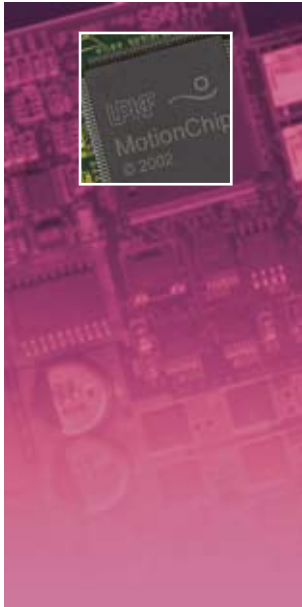
- Emergency stop – safety switching device that meets the requirements of EN60204-1 and VDE0113-1.
- Additional encoder signal interpolators – MI1000
- Additional encoder signal splitters Analog / Digital – MT33 / MI1000
- Additional encoder signal splitters Analog / Analog – MT33 / MT33

## i

## SMCU II.Box

Complete, powerful and cost-effective multi-axis controller in a compact tabletop casing

Designation	SMCU II.Box-48-M	SMCU II.Box-48-MP	SMCU II.Box-60-M	SMCU II.Box-60-MP
Ordering designation	SMCU II.Box-48-M	SMCU II.Box-48-MP	SMCU II.Box-60-M	SMCU II.Box-60-MP
Item number	780201	780202	780203	780204

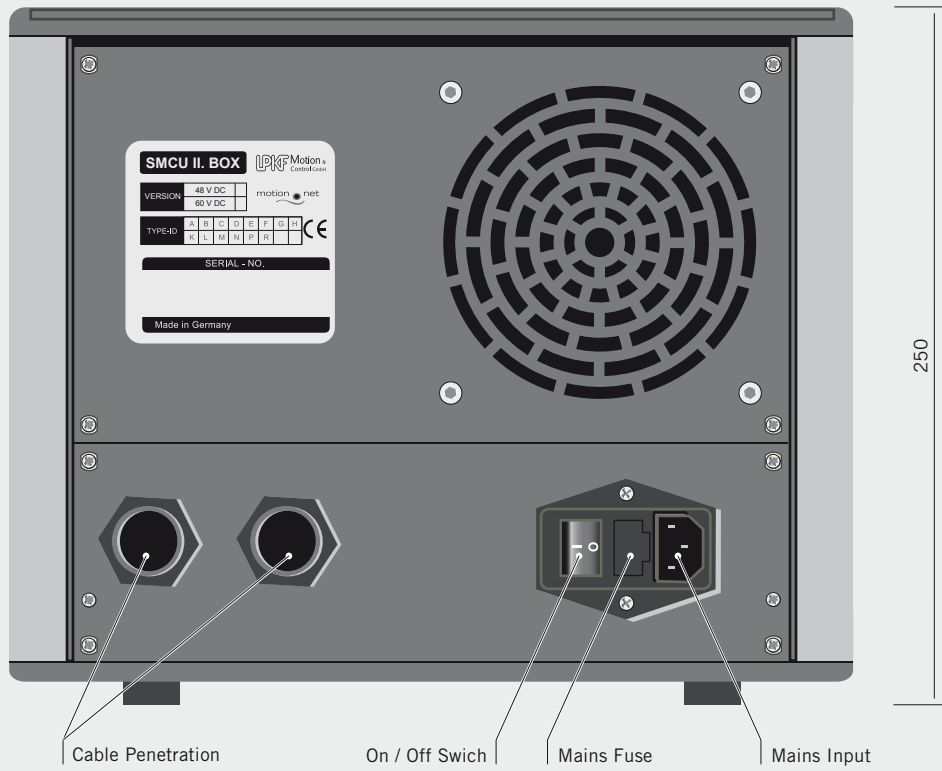
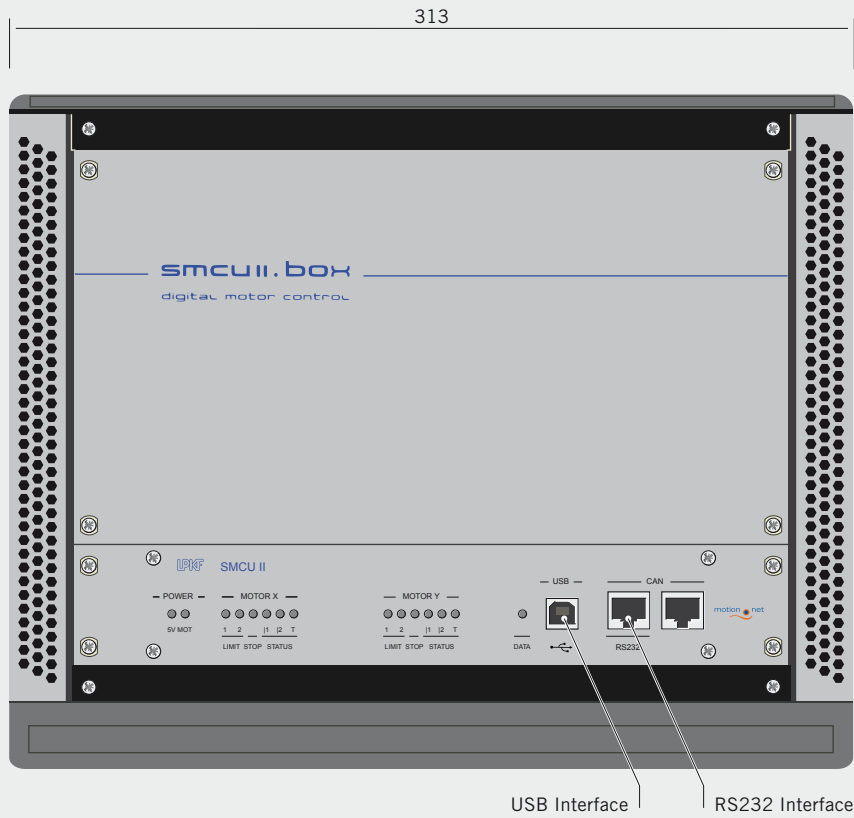


## Features

Input voltage	AC 100 – 240 V, 47- 63 Hz, max. 3.15 A
Output classes	max. 15 A / 48 V – SMCU II.Box-48-M / SMCU II.Box-48-MP max. 15 A / 60 V – SMCU II.Box-60-M / SMCU II.Box-60-MP
Two digital power stages	Short-circuit-proof Digital current controller with adjustment of the PWM modes to the motor inductivity*
One integrated encoder interface per axis	Connection of incremental encoders or analog encoders 4-fold to 2048-fold interpolation of the analog signals*
Servo control	PID cascade or model-based control Monitoring the maximum permissible control deviation
Integrated path generator	Synchronizes the motion of up to 5 axes Linear and circular interpolation taking into account the maximum axis velocities and accelerations as well as the path velocity and jerk
I/O port	8 digital power outputs 8 digital and 2 analog inputs*
Communication	RS232 to PC*
Additional functions	Monitoring the limit switches and ranges of motion of the axes*
Software	LPKF MotionTools for setting up and parameterizing VisualControl® – Programming interfaces for Windows applications (option)
Dimensions (W x H x D)	313 x 250 x 361 mm
Weight	7.5 kg – SMCU II.Box-48-M / SMCU II.Box-48-MP 8.4 kg – SMCU II.Box-60-M / SMCU II.Box-60-MP
Optional expansions**	Expansion with up to 3 DAC1005 axis controllers. The details and technical data of the DAC1005 are to be found on catalog pages 14 to 23. Installation of an emergency stop switching device that meets the requirements of EN60204-1 and VDE0113-1 Installation of different motor power packs: +32 V / 360 W or +48 V / 240 W or +60 V / 360 W Additional encoder signal interpolators MI1000 or encoder signal splitters MT33 / MI1000 and MT33 / MT33 Installation of a different SMCU II variant. Details of the SMCU II variants are to be found on catalog pages 8 and 10.
	* Further details and the technical data of the SMCU II-M / SMCU II-MP are to be found on catalog pages 9, and 12 to 13.
	** At the customer's request, the basic version of the SMCU II.Box can, in conjunction with our technical sales, be expanded in accordance with the stated options.

# Mounting dimensions and connection options

**SMCU II.Box**



all dimensions in millimeter







## Software



We provide high-performance software packages that allow to use our motion.net™ control technology easily, quickly and successfully.


The LPKF MotionTools is the software tool that enables you to install and parameterize our controllers. A multitude of wizards and monitoring functions, for example the axis configuration wizard makes it easier for you to parameterize our controllers.





	<b>LPKF MotionTools</b>	
<b>MotionTools</b> <b>Item no. 730033</b>	Configuration and diagnostic software for motion.net™ controllers	
	<b>Technical Data</b>	<ul style="list-style-type: none"> <li>Wizard-based configuration of the controllers</li> <li>User-friendly, clear operation</li> <li>Versatile diagnostic functions</li> <li>Visualization tool for user-friendly control loop tuning</li> <li>Execution of MotionScript files</li> <li>Wizard for the firmware update</li> <li>Runs on Windows 2000 / XP Vista (32-bit) / 7</li> <li>Free of charge product updates on request</li> <li>Documents: Manual</li> <li>Use free of charge</li> </ul>


	<b>VisualControl® – API – Developer license</b>	
<b>VisualControl – API</b> <b>Item no. 730023</b>	Full version of programming interface for implementing motion.net™ controllers in your own Windows applications	
	<b>Technical Data</b>	<ul style="list-style-type: none"> <li>Supports all the functions of the motion.net™ controllers</li> <li>Supported programming languages: C / C++, VisualBasic</li> <li>Runs on Windows 2000 / XP / Vista (32-bit) / 7</li> <li>One-off license fee including 8 hours support by e-mail</li> <li>Free of charge product updates for 12 months from date of purchase.</li> <li>Extension of support beyond 12 months by concluding a maintenance agreement</li> <li>Documents: Manual and Help file</li> <li>Training: see trainings</li> </ul>

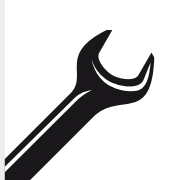
	<b>VisualControl® – API-Easy – Developer license</b>	
<b>VisualControl – API-Easy</b> <b>Item no. 730038</b>	Compact, easy to handle programming interface for implementing motion.net™ controllers in your own Windows applications	
	<b>Technical Data</b>	<ul style="list-style-type: none"> <li>Supports the basic functions of the motion.net™ controllers</li> <li>Prerequisite: The controllers must be preconfigured by LPKF MotionTools</li> <li>Supported programming languages: C / C++, VisualBasic, LabView™</li> <li>Runs on Windows 2000 / XP / Vista (32-bit) / 7</li> <li>One-off license fee including 8 hours support by e-mail</li> <li>Free of charge product updates for 12 months from date of purchase.</li> <li>Extension of support beyond 12 months by concluding a maintenance agreement</li> <li>Documents: Manual and Help file</li> <li>Training: see trainings</li> </ul>

<b>i</b>	<b>VisualControl® – LabView™-Toolbox – Developer license</b>	
	VisualControl – LabView-Toolbox Item no. 730040	Comprehensive toolbox with LabView™-VIs, which enables simple integration of motion.net™ controllers into your own LabView™ applications.
	Technical Data	Extends VisualControl®-API and VisualControl®-API-Easy with LabView™-VIs
		Supports all the functions of the motion.net™ controllers
		Supported LabView™ versions: 7.x, 8.x
		Runs on Windows 2000 / XP / Vista (32-bit) / 7
		One-off license fee including 8 hours support by e-mail
		Free of charge product updates for 12 months from date of purchase.
		Extension of support beyond 12 months by concluding a maintenance agreement
		Documents: Manual and Help file
		Training: see trainings

<b>i</b>	<b>VisualControl® – CAA package – Developer license</b>	
	VisualControl – CAA package Item no. 730041	Software package for compensating systematic errors in positioning drives.
	Technical Data	Expands the functionality of the VisualControl®-API and VisualControl®-API-Easy
		Two-dimensional, sampling point based corrective algorithm for improving static positional accuracy.
		Supported programming languages: C / C++, VisualBasic, LabView™
		Runs on Windows 2000 / XP / Vista (32-bit) / 7
		One-off license fee including 8 hours support by e-mail
		Free of charge product updates for 12 months from date of purchase.
		Extension of support beyond 12 months by concluding a maintenance agreement
		Documents: Manual
		Training: see trainings

<b>i</b>	<b>VisualControl® – CANopen-API – Developer license</b>	
	VisualControl – CANopen-API Item no. 730039	Compact, easy to use programming interface for integrating CAN bus networked motion.net™ controllers in your own applications
	Technical Data	Supported CANopen profiles: CiA 301, CiA 402
		Functionality: Starting / Stopping the network or individual nodes
		Error handling
		SDO- / PDO communication
		Maximum 8 network nodes
		Prerequisite: The controllers must be preconfigured by LPKF MotionTools
		Supported programming languages: C / C++, VisualBasic, LabView™
		Runs on Windows 2000 / XP / Vista (32-bit) / 7 (32-bit)
		Supported CAN hardware: see accessories
		One-off license fee including 8 hours support by e-mail
Free of charge product updates for 12 months from date of purchase.		
Extension of support beyond 12 months by concluding a maintenance agreement		
Documents: Manual and Help file		
Training: see trainings		

<b>i</b>	<b>LPKF Controller Design Tool</b>	
Controller Design Tool Item no. A1000147	Design and configuration software for model-based control loops in motion.net™ controllers.	
	Technical Data	User-friendly, clear operation Automatic analysis of the controlled system (identification) to find the model Simple control loop design based on dynamic specifications for the entire system Improvement of the dynamic characteristics of the system by filters (low-pass, notch filter) Simulation of the expected results of the designed control loop User-friendly visualization of the results of the simulation and the control design Only available with training Free of charge product updates for 12 months from date of purchase. Extension of support beyond 12 months by concluding a maintenance agreement Runs under Windows 2000 / XP / Vista (32-bit) / 7 Documentation: Manual

<b>i</b>	<b>Software Maintenance Agreement</b>													
Maintenance Agreement	Service and support agreement for the software products of the VisualControl® – API family and for the LPKF Controller Design Tool. Includes all updates by e-mail and support by e-mail for the duration of the agreement. Support is limited to 8 hours per year.													
	Item no.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>VisualControl® – API – Maintenance</td> <td style="text-align: right;">A1006176</td> </tr> <tr> <td>VisualControl® – API-Easy – Maintenance</td> <td style="text-align: right;">A1006173</td> </tr> <tr> <td>VisualControl® – LabView™-Toolbox – Maintenance</td> <td style="text-align: right;">A1006175</td> </tr> <tr> <td>VisualControl® – CANopen-API – Maintenance</td> <td style="text-align: right;">A1006177</td> </tr> <tr> <td>VisualControl® – CAA package – Maintenance</td> <td style="text-align: right;">A1006174</td> </tr> <tr> <td>LPKF Controller Design Tool – Maintenance</td> <td style="text-align: right;">A1006185</td> </tr> </table>	VisualControl® – API – Maintenance	A1006176	VisualControl® – API-Easy – Maintenance	A1006173	VisualControl® – LabView™-Toolbox – Maintenance	A1006175	VisualControl® – CANopen-API – Maintenance	A1006177	VisualControl® – CAA package – Maintenance	A1006174	LPKF Controller Design Tool – Maintenance	A1006185
	VisualControl® – API – Maintenance	A1006176												
	VisualControl® – API-Easy – Maintenance	A1006173												
	VisualControl® – LabView™-Toolbox – Maintenance	A1006175												
	VisualControl® – CANopen-API – Maintenance	A1006177												
	VisualControl® – CAA package – Maintenance	A1006174												
	LPKF Controller Design Tool – Maintenance	A1006185												



## Accessories for control modules

We offer a wide range of accessories to complete our motion.net™ control technology.

We provide:

- Power packs
- Starter kits
- Connector sets
- Communication interfaces for the PC
- Communication cables
- Joysticks

i

## Power pack +5 V / 25 W

Power pack +5 V / 25 W  
Item no. 420178

Compact switch mode power pack +5 V / 25 W with international approval



## Technical Data

Input voltage	AC 100 – 240 V (Wide Range), 47–63 Hz
Output voltage	DC 5.1 V
Output current	5 A (continuous)
Approvals	UL, EN, CSA, CB
Dimensions (W×H×D)	45 × 75 × 91 mm
Weight	240 g
Assembly	On the 35 mm wide DIN mounting rail

i

## Power pack +24 V / 50 W

Power pack +24 V / 50 W  
Item no. 420179

Compact switch mode power pack +24 V / 50 W with international approval



## Technical Data

Input voltage	AC 100 – 240 V (Wide Range), 47– 63 Hz
Output voltage	DC 24 V
Output current	2.1 A (continuous)
Approvals	UL, EN, CSA, CB
Dimensions (W×H×D)	45 × 75 × 91 mm
Weight	240 g
Assembly	On the 35 mm wide DIN mounting rail

i

## Power pack +32 V / 360 W

Power pack +32 V / 360 W  
Item no. 420232

Compact and feedback protected switch mode power pack +32 V / 360 W with active PFC and international approval



## Technical Data

Input voltage	AC 100 –240 V (Wide Range), 47– 63 Hz
Output voltage	DC 32 V
Output current	8 A (continuous)
Approvals	UL, EN, CSA, CB
Dimensions (W×H×D)	60 × 124 × 117 mm
Weight	900 g
Assembly	On the 35 mm wide DIN mounting rail

i

## Power pack +48 V / 240 W


Power pack +48 V / 240 W  
Item no. 420227


Compact and feedback protected switch mode power pack +48 V / 240 W with active PFC and international approval





## Technical Data


Input voltage	AC 100 – 240 V (Wide Range), 47– 63 Hz
Output voltage	DC 48 V
Output current	5 A (continuous)
Approvals	UL, EN, CSA, CB
Dimensions (W×H×D)	60 × 124 × 117 mm
Weight	900 g
Assembly	On the 35 mm wide DIN mounting rail

<b>i</b>	<b>Starter kit for SMCU II / SMCU II-P</b>	
Starter kit		
SMCU II / SMCU II-P		
Item no. 780069		
	Components	Connector set for SMCU II / SMCU II-P RS232 cable – 2.0 m CD with LPKF MotionTools and documentation

<b>i</b>	<b>Starter kit for SMCU II-M / SMCU II-MP</b>	
Starter kit		
SMCU II-M / SMCU II-MP		
Item no. 780069-1		
	Components	Connector set for SMCU II-M / SMCU II-MP RS232 cable – 2.0 m CD with LPKF MotionTools and documentation

<b>i</b>	<b>Starter kit for SMCU II-A / SMCU II-AP</b>	
Starter kit		
SMCU II-A / SMCU II-AP		
Item no. 780069-2		
	Components	Connector set for SMCU II-A / SMCU II-AP RS232 cable – 2.0 m CD with LPKF MotionTools and documentation

<b>i</b>	<b>Starter kit for SMCU II-AM / SMCU II-AMP</b>	
Starter kit		
SMCU II-AM / SMCU II-AMP		
Item no. 780069-3		
	Components	Connector set for SMCU II-AM / SMCU II-AMP RS232 cable – 2.0 m CD with LPKF MotionTools and documentation

<b>i</b>	<b>Starter kit for DAC1005 / DAC1005-R / DAC1005-OEM</b>	
Starter kit		
DAC1005 / -R / -OEM		
Item no. 780089		
	Components	Connector set for DAC1005 / DAC1005-R / DAC1005-OEM RS232 cable – 2.0 m CD with LPKF MotionTools and documentation

**i****Connector set for SMCU II / SMCU II-P**

Connector set

SMCU II / SMCU II-P

Item no. 390391



All plugs for the I/O, limit switch, motor and power supply interfaces

**i****Connector set for SMCU II-M / SMCU II-MP**

Connector set

SMCU II-M / SMCU II-MP

Item no. 390391-1



All plugs for the I/O, limit switch, encoder, motor and power supply interfaces

**i****Connector set for SMCU II-A / SMCU II-AP**

Connector set

SMCU II-A / SMCU II-AP

Item no. 390391-2



All plugs for the I/O, limit switch, motor, trigger and power supply interfaces

**i****Connector set for SMCU II-AM / SMCU II-AMP**

Connector set

SMCU II-AM / SMCU II-AMP

Item no. 390391-3



All plugs for the I/O, limit switch, encoder, motor, trigger and power supply interfaces

**i****Connector set for DAC1005 / DAC1005-R / DAC1005-OEM**


Connector set


DAC1005 / -R / -OEM


Item no. 390407





All plugs for the I/O, limit switch, encoder, motor and power supply interfaces


<b>i</b>	<b>PCI interface board RS232</b>	
	PCI-RS232 Interface Item no. 440309	
	Standard PCI-RS232 interface for the PC, suitable for connecting devices with an RS232 interface	
	Technical Data	2 RS232 interfaces with 16C550 UART
		Data transfer rates up to 1 Mbps
		Port plug: 9 pin sub-D plug
		Driver software for Windows 98/2000/XP

<b>i</b>	<b>Interface converter USB 2.0 to RS232</b>	
	USB-RS232 Item no. 730037	
	Universal USB 2.0 to RS232 converter for connecting a device with an RS232 interface to the PC's USB interface	
	Technical Data	Compatible with USB 2.0
		Supports hardware handshake
		LED for indicating data traffic
		Driver software for Windows 98/2000/XP

<b>i</b>	<b>PCI interface board CAN – PCI-CAN</b>	
	PCI-CAN Item no. 730035	
	CAN interface for the PCI bus	
	Technical Data	CAN-Controller Philips SJA1000, electrically decoupled
		Supports the CAN protocols 2.0A and 2.0B
		Driver software for Windows / XP / Vista
		CAN-Monitor for Windows 2000 / XP / Vista
		Documents
VisualControl®-CANopen-API supports this CAN Interface		

<b>i</b>	<b>PC Card – CAN Interface – PC-CAN</b>						
	PC-CAN Item no. 730036	CAN interface for PC card slots (type II)					
	Technical Data	<table border="1"> <tr><td>Two channels equipped with the CAN Controller Philips SJA1000</td></tr> <tr><td>Driver software for Windows 2000 / XP / Vista</td></tr> <tr><td>CAN-Monitor for Windows 2000 / XP / Vista</td></tr> <tr><td>Documents</td></tr> <tr><td>VisualControl® – CANopen-API supports this CAN Interface</td></tr> </table>	Two channels equipped with the CAN Controller Philips SJA1000	Driver software for Windows 2000 / XP / Vista	CAN-Monitor for Windows 2000 / XP / Vista	Documents	VisualControl® – CANopen-API supports this CAN Interface
	Two channels equipped with the CAN Controller Philips SJA1000						
Driver software for Windows 2000 / XP / Vista							
CAN-Monitor for Windows 2000 / XP / Vista							
Documents							
VisualControl® – CANopen-API supports this CAN Interface							


<b>i</b>	<b>USB to CAN Interface – USB-CAN-GTI</b>									
	USB-CAN-GTI Item no. 730015	USB to CAN interface for industrial applications								
	Technical Data	<table border="1"> <tr><td>High-performance 32-bit microcontroller with internal CAN interface and electrical decoupled CAN controller SJA1000</td></tr> <tr><td>Supports the CAN protocols 2.0A and 2.0B</td></tr> <tr><td>USB communication and CAN data transfer are indicated by LED</td></tr> <tr><td>Power supply via USB</td></tr> <tr><td>Driver software for Windows 2000 / XP / Vista</td></tr> <tr><td>CAN-Monitor für Windows 2000 / XP / Vista</td></tr> <tr><td>Documents</td></tr> <tr><td>VisualControl® – CANopen-API supports this CAN Interface</td></tr> </table>	High-performance 32-bit microcontroller with internal CAN interface and electrical decoupled CAN controller SJA1000	Supports the CAN protocols 2.0A and 2.0B	USB communication and CAN data transfer are indicated by LED	Power supply via USB	Driver software for Windows 2000 / XP / Vista	CAN-Monitor für Windows 2000 / XP / Vista	Documents	VisualControl® – CANopen-API supports this CAN Interface
	High-performance 32-bit microcontroller with internal CAN interface and electrical decoupled CAN controller SJA1000									
Supports the CAN protocols 2.0A and 2.0B										
USB communication and CAN data transfer are indicated by LED										
Power supply via USB										
Driver software for Windows 2000 / XP / Vista										
CAN-Monitor für Windows 2000 / XP / Vista										
Documents										
VisualControl® – CANopen-API supports this CAN Interface										

<b>i</b>	<b>Ethernet to CAN-Interface – EtherCAN-CI</b>									
	Ethernet-CAN-CI Item no. 730022	Ethernet to CAN interface for industrial applications								
	Technical Data	<table border="1"> <tr><td>Filters and intermediate storage of the CAN bus data transfer</td></tr> <tr><td>Microcontroller (ARM7-Core) with CAN controller SJA1000</td></tr> <tr><td>Supports the CAN protocols 2.0A and 2.0B</td></tr> <tr><td>Serial interface for configuring the device</td></tr> <tr><td>Treibersoftware für Windows 2000 / XP / Vista</td></tr> <tr><td>CAN-Monitor für Windows 2000 / XP / Vista</td></tr> <tr><td>Documents</td></tr> <tr><td>VisualControl® – CANopen-API supports this CAN Interface</td></tr> </table>	Filters and intermediate storage of the CAN bus data transfer	Microcontroller (ARM7-Core) with CAN controller SJA1000	Supports the CAN protocols 2.0A and 2.0B	Serial interface for configuring the device	Treibersoftware für Windows 2000 / XP / Vista	CAN-Monitor für Windows 2000 / XP / Vista	Documents	VisualControl® – CANopen-API supports this CAN Interface
	Filters and intermediate storage of the CAN bus data transfer									
Microcontroller (ARM7-Core) with CAN controller SJA1000										
Supports the CAN protocols 2.0A and 2.0B										
Serial interface for configuring the device										
Treibersoftware für Windows 2000 / XP / Vista										
CAN-Monitor für Windows 2000 / XP / Vista										
Documents										
VisualControl® – CANopen-API supports this CAN Interface										

i

## RS232 cable


RS232 cable for connecting an SMCU II two-axis controller or a DAC1005 axis controller to the serial port of the PC. Suitable RS232 interfaces for the PC, see accessories.

Ordering designation:	RS232 cable	RS232 cable	RS232 cable
	2 m long	5 m long	10 m long
Item number:	710336	710336-5M	710336-10M
	Technical Data		Plug: RJ45 – 9 pin SUB-D socket
			Colour: grey
			Length: 2 m / 5 m / 10 m

i

## CAN interface cable T


CAN cable for connecting a DAC1005 axis controller to a CAN interface on the PC. Suitable CAN interfaces for the PC, see accessories.

Ordering designation:	CAN interface cable T	CAN interface cable T	CAN interface cable T
	2 m long	5 m long	10 m long
Item number:	710413	710413-5M	710413-10M
	Technical Data		PC-side, permanently integrated termination resistor, 120 ohms
			Plug: RJ45 – 9 pin SUB-D socket
			Colour: green
			Length: 2 m / 5 m / 10 m

i

## CAN cable


CAN cable for connecting a DAC1005 axis controller to the CAN interface (LocalCOM) on the back of the SMCU II two-axis controller.


Ordering designation:	CAN cable	CAN cable	CAN cable	CAN cable
	0.5 m long	1 m long	5 m long	10 m long
Item number:	710403	710236	710403-5M	710403-10M
	Technical Data		Plug: RJ45 – 7 pin Phoenix socket	
			Colour: green	
			Length: 0.5 m / 1 m / 5 m / 10 m	


i

## CAN patch cable

CAN patch cable for connecting two DAC1005 axis controllers

Ordering designation:	CAN patch cable	CAN patch cable	CAN patch cable	CAN patch cable	CAN patch cable
	0.3 m long	0.5 m long	1 m long	5 m long	10 m long
Item number:	710412	710319	710235	710410	710411
	Technical Data		Plug: RJ45 – RJ45		
			Colour: green		
			Length: 0.3 m / 0.5 m / 1 m / 5 m / 10 m		

<p><b>i</b></p>	<h3>3D joystick – RS232</h3>	
<p>3D Joystick – RS232 Item no. 780127</p>	<p>User-friendly joystick for controlling of up to 6 axes. Three axes can be controlled simultaneously.</p>	
	<p>Technical Data</p>	<p>The motion velocities of the axes can be configured and selected on the integrated keyboard</p> <p>The axes to be moved are selected on the keyboard</p> <p>RS232 Interface to PC</p> <p>Supply adapter for fitting in the PC</p> <p>Length of the connection cable: 5 m</p>

<p><b>i</b></p>	<h3>3D joystick – USB</h3>	
<p>3D Joystick – USB Item no. 501583</p>	<p>User-friendly joystick for controlling of up to 3 axes</p>	
	<p>Technical Data</p>	<p>The motion velocities of the axes can be configured and selected on the integrated keyboard</p> <p>USB interface to PC</p> <p>Length of the connection cable: 2 m</p>



## Training and service

We offer you a well-matched training package for our motion.net™ controller family and the VisualControl® programming interfaces.

Our tutors will show you how to optimally configure, parameterize and use our motion.net™ controllers. In our advanced training, we provide you detailed knowledge of our VisualControl® programming interfaces.

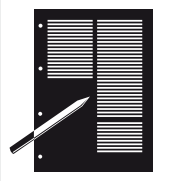
As a service, we can assemble customized controls for you based on our motion.net™ controllers, and install them on-site. We will also adapt your application software to our control technology.



## Module 1 – An introduction to the hardware, configuration and parameterization of the DAC1005 and SMCU II axis controllers.

Training Module 1  
Item no. 760005

Let our engineers show you how to optimally configure, parameterize and use our motion.net™ controllers.



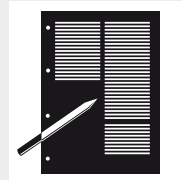
Training location	LPKF Motion & Control GmbH or in your company (see item no. 760006)
Length of training	1 day ( 7 hours)
Training syllabus	See agenda
Number of participants	Two up to four people
The price includes	Participation fee per person, training documentation, participation certificate, food and drinks



## Module 2 – Introduction to VisualControl® - API

Training Module 2  
Item no. 760007

Our tutors give you detailed knowledge of the VisualControl® programming interfaces.



Training location	LPKF Motion & Control GmbH or in your company (see item no. 760006)
Length of training	1 day (7 hours)
Training syllabus	See agenda
Prerequisite	Successful participation in module 1, knowledge of PC programming
Number of participants	Two up to four people
The price includes	Participation fee per person, training documentation, participation certificate, food and drinks




## Additional charge for holding the training in your company

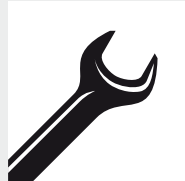
Additional charge for external training  
Item no. 760006

We offer you the option of one of our tutors holding the training in your company.




Daily rate for the trainer	
Overnight accommodation, travel and other expenses	

<p><b>i</b></p>	<p><b>Customized control solutions based on motion.net™ controllers</b></p>
<p>Ordering designation on request</p>	
	<p>Assembly of a control adapted to your requirements, including solutions for the wiring and installation</p> <p>Configuration and commissioning of the entire control</p> <p>Commissioning on-site: Is offered separately</p> <p>Manufacturing of single items and series</p> <p>Documents</p>

<p><b>i</b></p>	<p><b>Support for the configuration and commissioning of motion.net™ controllers and/or customized controls on-site</b></p>
<p>Ordering designation on request</p>	
	<p>Support for the configuration and commissioning of motion.net™ controllers and/or customized controls on-site</p> <p>Assembly, configuration and commissioning are done by one of our qualified service workers</p> <p>Billing is on the basis of daily rates, plus overnight accommodation, travel costs and other expenses for our employee.</p>

<p><b>i</b></p>	<p><b>Adaptation of your application software to our motion.net™ control technology</b></p>
<p>Ordering designation on request</p>	
	<p>We adapt your application software to our motion.net™ control technology so that you can establish your product quickly and successfully in the market.</p> <p>Billing on the basis of a detailed offer</p>

<p><b>i</b></p>	<p><b>Support for the adaptation of your application software to our motion.net™ control technology</b></p>
<p>Ordering designation on request</p>	
	<p>The support is provided by one of our highly qualified software engineers.</p> <p>Billing on the basis of daily rates, plus overnight accommodation, travel costs and other expenses for our engineer.</p>



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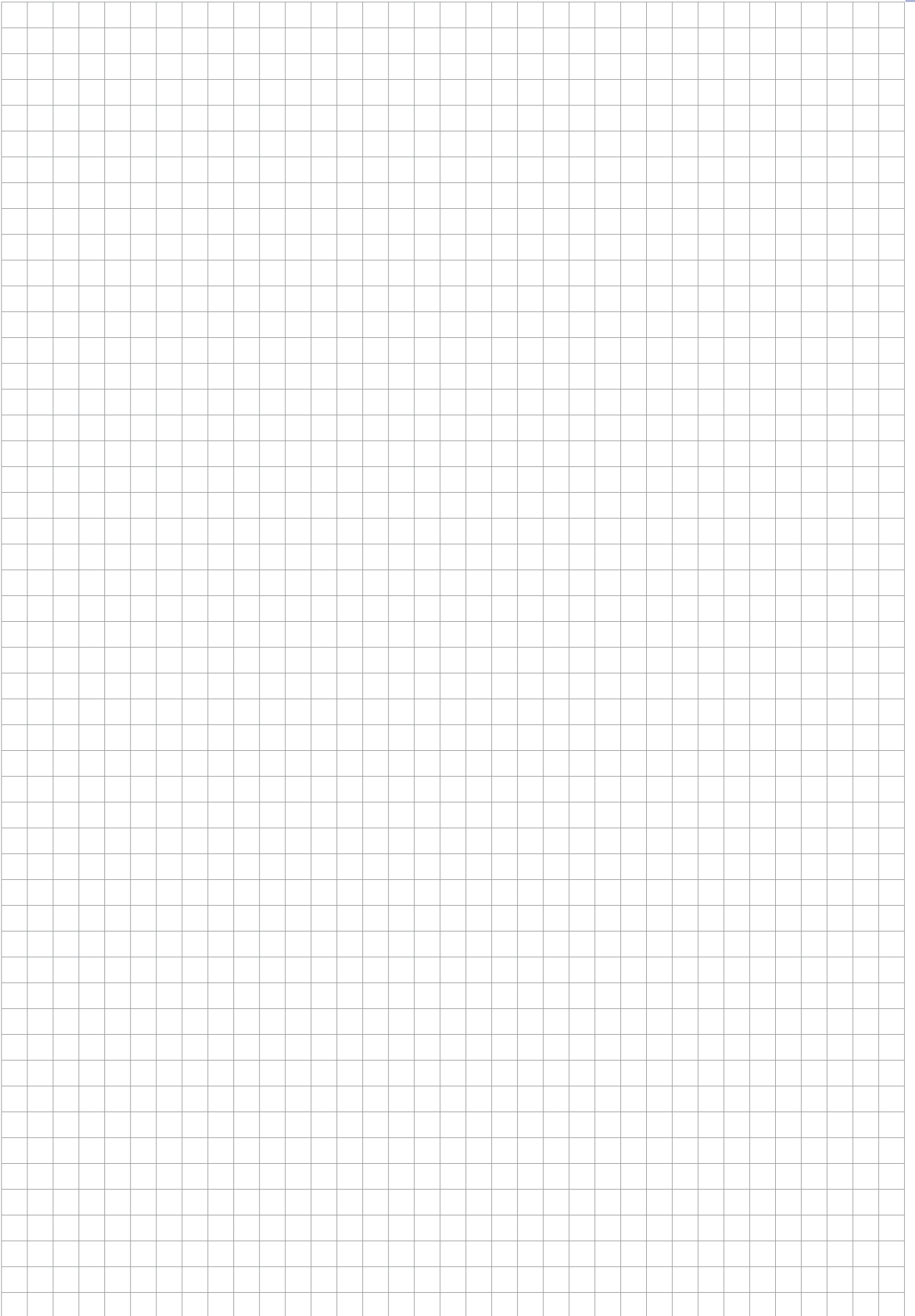
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Your LPKF-Distributor

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