

## i

## SMCU II - AM

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

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
				* supplied on request

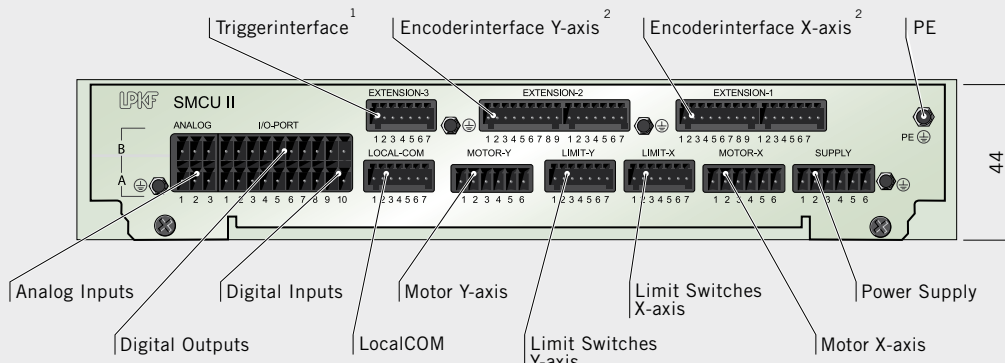
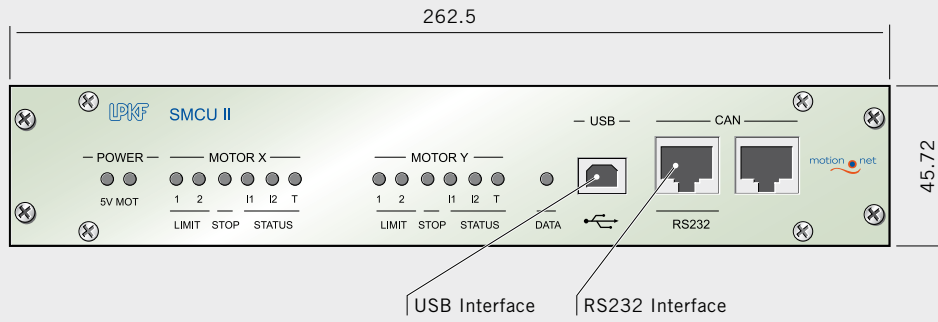


## Features

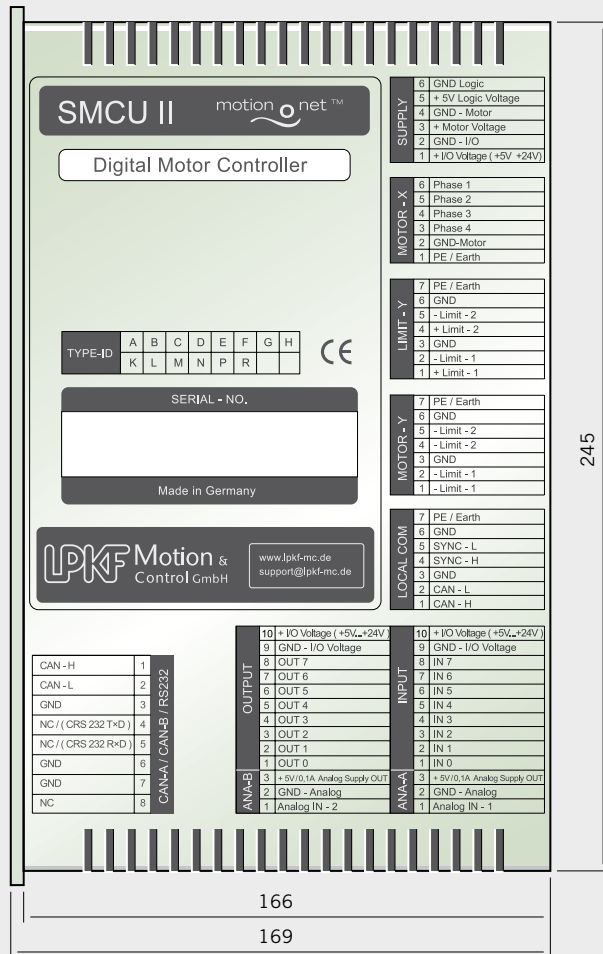
Output classes	Basic, 5 A / 100 V Power, 15 A / 100 V
Two digital power stages	Digital current controller Adaptive adjustment of the PWM modes to the motor inductivity short-circuit-proof Monitoring of the maximum current, the motor circuit voltage and the temperature of the power stage
One integrated 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 Event generation
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 distance – a trigger pulse is generated at constant, settable motion distances
Communication	RS232 to PC USB to PC, only 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 commissioning and parameterizing VisualControl®- Programming interfaces for Windows applications
Technical Data	see pages 12 and 13

# Mounting dimensions and connection options

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



<sup>1</sup> – optional, SMCUII-AM / -AMP / -A / -AP  
<sup>2</sup> – optional, SMCUII-M / -MP / -AM / -AMP



all dimensions in millimeter

## Technical Data

SMCU II				
	Parameter	Min	Nom	Max
<b>Operating voltages</b>				
Logic	+5V 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
<b>Power stage</b>				
SMCU II 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
SMCU II-P performance data	Maximum output current			± 5 A
	Continuous output current			± 7 A
	Maximum output current			± 15 A
<b>Path generator</b>				
	synchronized	2 axes		5 axes
	Types of path interpolation	Linear and cyclical path interpolation		
<b>Stepping motor operation</b>				
	Control	LPKF internal		
	Resolution	corresponds to 256-fold microstep		
<b>Limit switch interface</b>				
	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
<b>Inputs / Outputs</b>				
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	
Output 0 (in PWM mode)	Switching frequency	0 Hz		500 Hz
	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	
<b>Communication</b>				
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		
<b>Mechanical data</b>				
	Dimensions	6U cassette / 9 HP (255 × 169 × 45 mm)		
	Weight	800 g		
	Protection rating	IP 20		
* Factory setting				

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
	Interpolation factor	4 times		
Analog encoder	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
	Interpolation factor	4 times		
Analog encoder	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				
Output (RS422)	Operating modes	Constant velocity *, constant distance **		
	Number of outputs	1		
	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 constant, settable distances.			

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