

Datasheet

MiniMACS6-AMP-4/50/10

Motion Control Unit with integrated High-Power Amplifiers

MiniMACS6-AMP-4/50/10 combines a cost efficient, programmable motion control unit with high power amplifiers in a compact housing. Each of the internal amplifiers offers 540 W continuous and 1.62 kW peak power for direct control of powerful drives.

The MiniMACS6-AMP-4/50/10 is the economic solution to move up to six brush-type or up to four brushless motors in the most dynamic and accurate way. Position feedback or master signals are processed by encoder inputs for direct connection of incremental and hall sensors. Four encoder inputs are available and supporting SSI, Sin/Cos or incremental encoders. A variety of digital inputs and outputs process sensor signals and commands actuators. The number of I/Os can easily be extended by CAN-open I/O modules. Bus interfaces like two times CANopen and USB are integrated and allows communication with computers or other devices, commissioning, firmware updates and programming possibilities. Optionally, it can be extended with other industrial ethernet interfaces such as EtherCAT, etc. An easy but very efficient programming language combined with powerful motion control commands is the key for standalone control of machines and devices (without the need of a PC or PLC at all).



Figure: MiniMACS6-AMP-4/50/10-IF1

zub Standards

- **Control functions:** Interrupts reacting on inputs, position data, bus bits, timer, etc.; arithmetic and bit handling; conditional branches and loops
- **Closed loop control:** Position and speed control, current control and current limitation
- **Positioning functions:** Absolute and relative positioning, configurable homing, configurable speed profiles
- **Free programming:** C like programming with powerful motion commands, hierarchical state machine support with the extensive automation software AposSIDE®
- **Tools:** Smart-Oscilloscope

Application examples

- Special machine designs or
- Special devices asking for compact control unit
- X/Y/Z-positioning, portal robots, lab automation devices
- Robotic systems
- AGV controller
- Mobile Robots

Advantages

Compact multi-axis solution with integrated power amplifiers.

Configurable for brush-type and brushless motors up to 540 W continuous power and up to 1.62 kW peak power.

This controller can be integrated into CANopen and optionally in EtherCAT networks as a fully featured DS402 multi axis slave device.

No hidden additional costs: All motion control features, servo amplifiers, encoder inputs, bus interfaces and development tools are included!

MiniMACS6-AMP-4/50/10

Electrical Data			
Control Unit: Supply voltage / Current	24 V DC ±25 %	200 mA	without I/O load
Amplifiers: Supply voltage	12 ... 60 V DC	40 Arms	
Memory			
Workspace and program memory	1 MByte SRAM	8 MByte Flash	Application & Data
Closed loop Controls			
Number of drives and control type	1 ... 6	Position, Speed, Current	Closed loop control
Position control	1 kHz	1 ms cycle time	PID-control with feed forward
Speed control	8 kHz	125 µs cycle time	PI control
Current / Torque Control	24 kHz	41 µs cycle time	PI control plus current limitation
Internal Servo Amplifiers			
Quantity and type of motors	6 x brush-type or 4 x brushless or 3 steppers or mixed operation		
Amplifier type & chopping frequency	4Q-PWM / 48 kHz		
Max. output current (configurable)	10 A continuous current / 30 A peak current (max. 5 seconds) per servo amplifier		
STO (Safe Torque Off) in preparation			
Motion Control Features			
Programmable velocity, position, synchronization and process control in structured text			
Highly accurate position control by single or duplex evaluation of encoders mounted on the motor shaft and moved load			
Optional "DS402 Multi-Axis drive" functionality for the integrations as EtherCAT Slave (CoE)			
Encoder			
All encoder inputs configurable as feedback signal inputs of the motor control or as master signal inputs for drive synchronization			
Hall sensors 1 ... 4		5 V, max. 12 kHz	
Encoder 1 ... 4 (Inputs)	Incremental Encoder	5 V, max. 6.25 MHz	
Encoder 1 ... 4 (Inputs)	Sin/Cos Encoder	+ 1.2 V (differential), max. 150 kHz	extended incremental encoder
Encoder 1 ... 4 (Inputs)	SSI Encoder	up to 25 bit	single / multiturn
Output supply voltage (for Encoders/Hall)	5 V DC, max. 200 mA per Encoder or Hall sensor, max. 1A for all encoders and Hall sensors		
Digital Inputs and Outputs			
Digital inputs	16 digital inputs	Low: < 4,6 V / High: > 18 V	max. 30 V, max. 1 kHz digital input 1-4 with hw-latch function
Digital outputs	8 digital outputs	24 V, 100 mA, 1 kHz	short circuit protection
Analog Connections			
Analog inputs	4 analog inputs	0 ... +10V, 12 Bit	eliminates 4 Digital Inputs and 2 Sin/Cos Encoder, activated by Parameter
Interfaces			
1x CAN / 1x CAN	CANopen	max. 1 MBaud	2 x CAN
USB 2.0			
EtherCAT Slave (optional)	Option-IF1	max. 100 MBaud	CoE
Ethernet (optional)	Option-IF1	max. 100 MBaud	with integrated Ethernet switch
Other industrial ethernet interfaces such as Profinet, IO-Link and wireless options (e.g. Bluetooth) can be offered on request			
Displays / LEDs			
Status	3		
Mechanical Data			
Type of housing and mounting	backplane mounting		
Size (HxWxL) w. housing and -IF1 Option	ca. 34 x 110 x 141 mm		
Weight	600 g		
Connector types	USB, RJ45 (optional -IF1), Molex CLIK-Mate		
OEM versions with customized housings or connector types on request!			
Temperature Range			
Operation / storage	-30 ... +70°C / -30 ... +85°C		5 ... 90% humidity non-condensing
Product Versions			
Part number / description	001755 MiniMACS6-AMP-4/50/10		
	001756 MiniMACS6-AMP-4/50/10-OEM		
	001757 MiniMACS6-AMP-4/50/10-IF1 EtherCAT		
	001784 MiniMACS6-AMP-4/50/10-IF1 Ethernet		