

## MACS5-OEM

### Motion Control Module with integrated high power stage

#### Open Interfaces: CANopen, Ethernet, USB

Every **MACS5-OEM** module offers full featured functionality for multi-axis positioning and synchronization of servo or asynchronous motors. An interface for incremental encoder is onboard.

Free programmability makes it possible to adapt the functionality exactly to the machine or device requirements and enable you even to enhance the DS402 features.

The MACS5-OEM module can be used for autarkic control of devices.

For more complex machines, multiple MACS5-OEM modules can be linked by CANopen, Ethernet, and USB to a PLC or PC network. The MACS5-OEM module can also serve as a CANopen master of a sub-network and command servo amplifiers, frequency converters, and I/O modules.

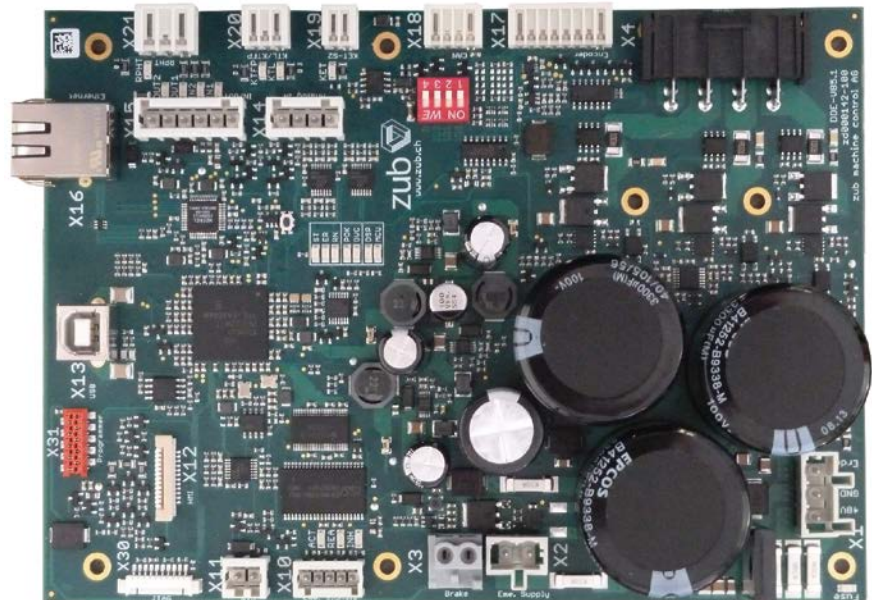
The MACS5-OEM is the most competitive and high-performance link in between your process control and drive units. Your supervisor PLC needs no processing power and no special features for the motion control tasks, thus downsizing of the PLC hardware is possible. The integrated encoder inputs and the license free, highly sophisticated motion control functions of reduces the hardware and software expenses.

#### Application Range

- ◆ **X/Y/Z-Positioning**
- ◆ **Storage:** Cart positioning
- ◆ **Feeding:** Synchronous feeding
- ◆ **Winding:** Position synchronization
- ◆ **Labeling:** Marker synchronization

Did we miss your application?

Please, call us! zub machine control AG will offer you an appropriate solution for that as well.



#### Multiple Bus Interfaces

- ◆ USB and Ethernet for PC, PLC or visualization
- ◆ CANopen interface to integrate the MACS5-OEM module as "intelligent" slaves into any kind of PLC systems
- ◆ CANopen master functionality for drives and I/Os

#### zub Standards

- ◆ **Control Functions:** Interrupts reacting on inputs, position data, bus bits, timer, etc.; arithmetic and bit handling; conditional branches and loops; Safety Torque OFF
- ◆ **Positioning Functions:** Configurable homing, absolute and relative positioning, programmable velocity profiles.
- ◆ **Synchronization Functions:** Velocity synchronization, position / angle synchronization, Synchronization including correction depending on slave / master marker.
- ◆ **Free programmability** by the extensive automation software APOSS®-win and license free Motion Control Library.
- ◆ **Interactive graphic editors** like CAM-, Array- and Path-Editor.
- ◆ **Debugging & Optimization:** Smart-Oscilloscope and integrated graphic CAM-Editor.
- ◆ **State-Machine Support:** APOSS® supports the automatic execution of hierarchic State Machines.
- ◆ **On-the-fly Flexibility:** The entire set of motion or regulation parameters and the mode of operation can be altered on the fly with automatic recalculation of the motion profile.

## MACS5-OEM

### Electrical Data

Supply voltage, current cons.	26 – 48 V DC $\pm 5\%$	100 mA @48 V	current cons. without I/O and motor load
Emergency supply voltage	7 – 48 V $\pm 5\%$		digital outputs disabled if the supply voltage is below 26V!

### CPU & Memory

Microprocessor	Concerto TI F28M36P63C2	150 MHz	
Workspace & program memory	1 Mbyte SRAM	4 Mbyte Flash	firmware, application, and data

### Control Characteristic

Axis control: number and type	1	PID with feed forward	
Position control frequency	1 kHz	1 ms cycle time	configurable

### Motion-Control Functionality combined with Programmability

Velocity and position control with linear, S-profile or jerk limited ramps  
Velocity and position / angle synchronization with or without master / slave marker correction,  
CAM profile synchronization  
Safety Torque OFF

### Encoder Terminal

Encoder	Incremental encoder	5 V, max. 5 MHz	
Encoder power supply output	5 V DC, max. 200 mA		
Add. supported encoder types	CANopen absolute encoder (max. 1 Mbaud)		

### Digital Inputs / Outputs

Digital Inputs	6	Low: < 4.6 V / High: > 18 V	max. 45 V, max. 200 kHz
	6	5 V, Low: < 1.0 V / High: > 3.8 V	max. 10 V, max. 1 kHz
Digital Outputs	2	Push-up, 15 mA, 1 kHz	24 V encoder simulation configurable
	3	5 V, Push-up with 100 Ohm resistor, 1 kHz	
	4	5V, Pull-down, max. 20 mA, max. 10 V, 1 kHz	

### Analog Inputs

Analog inputs	2	0 – 10 V, 12 Bit, 1 kHz	
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### Interfaces

USB			data exchange & visualization
Ethernet	Ethernet TCP/IP	max. 100 Mbaud	data exchange & visualization
CAN bus	ISO/DIS 11898	max. 1 Mbaud (switchable bus termination)	master or slave functionality

### Integrated Power Amplifier

Quantity and type of motors	1 x DC or 1 x EC		
Amplifier type	4Q-PWM		
Supply voltage	26 – 48 V DC		
Continuous / peak output current	15 A / 50 A (max. 2 sec.)		
Speed / current control frequency	1 kHz / 12 kHz		

### Brake-Chopper

Cont./ peak output current	1 A / 10 A	external load	resistive load only!
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### Safety Torque OFF

Output	Periodical 5 V STO signal		
Input	5 V STO signal		not yet certificated

### Displays

LEDs	8 inputs / 3 outputs / 8 status / 3 Ethernet		
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### Power-down Save

User-defined data can be saved automatically at power-down (e.g. in case of mains failure).

### Mechanical Data

PCB dimension	180 x 130 x 60 mm		
Connector types	Wago and Molex		
Different OEM versions with customized housings or connector types on request.			

### Temperature Range

Operation / storage	0...+40° C / -20°...+85° C; 20...80 % humidity, not condensing		
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### Type Name

MACS5-OEM			
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