

# MasterMACS

## High Performance Motion Control Modules

### for the control of intelligent drives and synchronization of axes

Typical fields of use are applications where many axes must be synchronized perfectly and in high speed. For this purpose the high-performance **MasterMACS** offers ideal conditions with its fast control cycles (positioning control cycle from 100  $\mu$ s).

The maximum number of axes depends on the complexity and required update rate of the drives. Example: 32 axes with high complexity and jerk limitation still allow an update rate of 3 kHz.

#### Interfaces

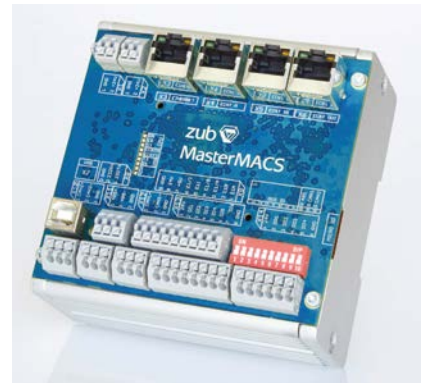
EtherCAT (master and slave) and Ethernet, CANopen (master or slave), USB, RS232, RS485.

#### Application Areas

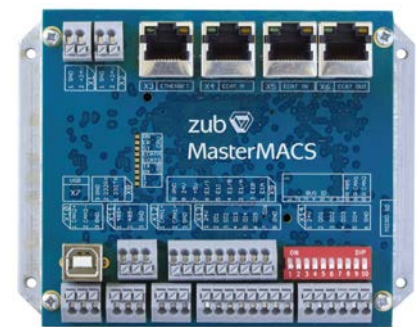
The **MasterMACS** can be used in numerous applications, but it was developed for the path control (for example robots with multiple axes) – but is also suitable for all applications with many axes and high precision as in print finishing (feeder), for metering machines as well as packaging, filling and labelling machines.

#### zub Standards

- ◆ **Positioning:** Absolute & relative, configurable homing, programmable velocity profiles.
- ◆ **Synchronization:** Velocity synchronization, position/angle synchronization including correction depending on slave / master marker.
- ◆ **Path Control:** Any number of axes can be used under path control.
- ◆ **Free Programming** 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.

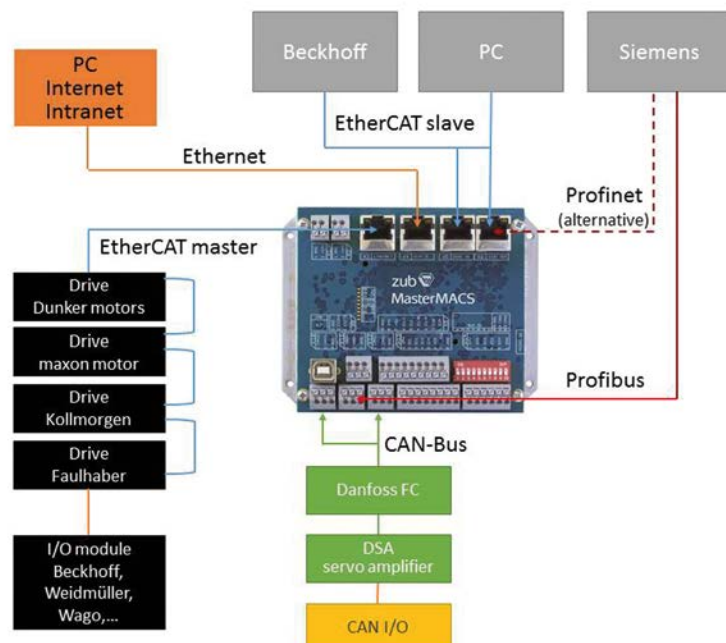


Variant MasterMACS DIN housing



Variant MasterMACS compact housing

*You can control all drives which have a CANopen or an EtherCAT-Interface (CoE).*



## MasterMACS

### Electrical Data

Supply voltage, Current consumption 24 V DC  $\pm 25\%$  200 mA current consumption without I/O-load

### CPU & Memory

Microprocessor	Cortex A8 AM3359	800 MHz	
Workspace & program memory	512 Mbyte DDR3 RAM	512 Mbyte Flash	firmware, application, and data
Micro SD memory card	up to 1 Gbyte		e.g. for SW update, backup, or data recording

### Control Characteristic

Axis control: number	Number depends on the requirements (complexity and necessary update rate)		
Axis control: type	PID mit Feed-forward		
Positioning control cycle	10 kHz	from 100 $\mu$ s cycle time	configurable

### Drives

You can control all drives which have a CANopen or an EtherCAT interface (CoE).

Additional IO is realized by external EtherCAT or CANopen modules which allow a very good price performance ratio: e.g. frequency controller with or without CAN from Danfoss, Lenze, and other servo motors for brushed and brushless motors.

### Motion-Control Functionality combined with free 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

### Encoder Connection

Encoder 1 (Input)	Inkremental encoder	5 V, max.5 MHz	differential
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### Input & Outputs

Digital I/O	6/4, bus, and via EtherCAT or CAN terminals, e.g. from Weidmüller, Beckhoff, Wago, ...
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Analog I/O	via EtherCAT or CAN terminals, e.g. from Weidmüller, Beckhoff, Wago, ...
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### Interfaces

Ethernet	Ethernet TCP/IP	max. 100 Mbaud	Data exchange & visualization
EtherCAT® - Slave		max. 100 Mbaud	CoE
EtherCAT® - Master		max. 100 Mbaud	
2 x CAN	CANopen	max. 1 Mbaud	
USB, RS232, RS485			
PowerLink, Profibus, ProfiNet	On request for OEM products (min. 500 pcs.)		

### Displays / LEDs

Status / USB / EtherCAT	3 / 2 / 3
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### Powerdown Save

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

### Mechanical Data

Type of housing, mounting

Variant DIN housing	Aluminum rail housing with top hat rail mounting Dimensions: 108 x 108 x 67 mm Width x height x depth till the top edge of the Ethernet plug Weight: 0.5 kg
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Variant compact housing	Sheet housing for rear panel mounting Dimensions: 125 (108) x 98 x 42 mm Total width (only construction) x height x depth till the top edge of the Ethernet plug Weight: 0.3 kg
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Connector type	Tension spring clamp on a pluggable connector board
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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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### Variants and Part Number

MasterMACS DIN housing	001563
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MasterMACS Compact housing	001565
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