

## Data Sheet

# MasterMACS

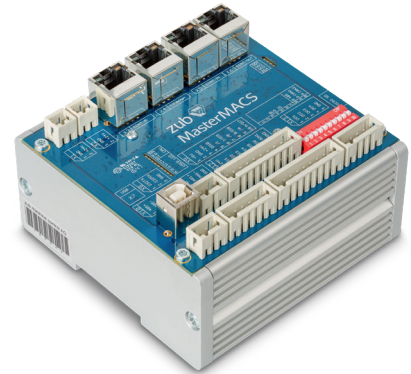
## High Performance Motion Control Modules

### 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 Master MACS 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 1 kHz



## 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:** on C basis with powerful Motion control commands, support of hierarchical State machines by means of license-free automation software AposSIDE®
- **Interactive graphic editors** like CAM-, Array and Path-Editor
- **Debugging & Optimization:** Smart Oscilloscope and integrated graphic CAM Editor
- **State Machine Support:** AposSIDE® supports the automatic execution of hierarchic State Machines

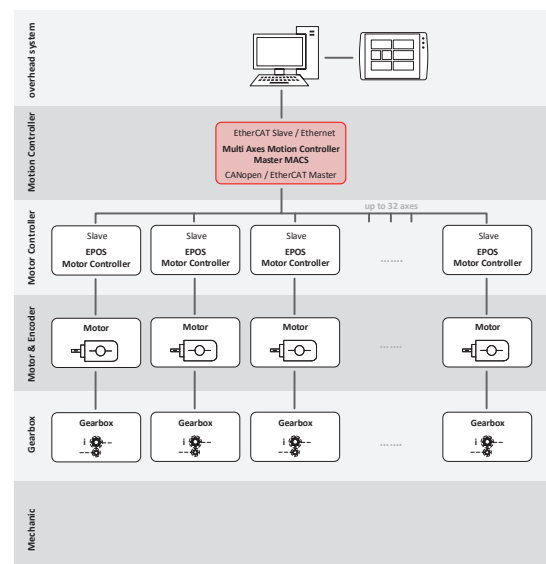
## Selection of interfaces

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

## Application Areas

The Master MACS 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.

### System Architecture for Multi Axes Motion Controller



## MasterMACS

<b>Electrical Data</b>			
Supply voltage, Current consumption	24 V DC ±25 %	200 mA	current consumption without I/O load
<b>Memory</b>			
Workspace & program memory	512 MB DDR3 RAM	512 MB Flash	firmware, application, and data
Micro SD memory card	up to 1 Gbyte		e.g. for SW update , or data recording
<b>Control Characteristic</b>			
Axis control: number	up to 32 axes, number depends on the requirements (complexity and necessary update rate)		
Axis control: type	PID mit Feed-forward		
Positioning control cycle	1 kHz		
<b>Drives</b>			
You can control all drives which have a CAN open 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.			
<b>Motion Control Functionality</b>			
Free programmable speed control and positioning with linear, s ramp or jerk limitation speed, position (angle) and cam synchronisation without / with marker correction			
<b>Encoder Connection</b>			
Encoder 1 (input)	Inkremental encoder	5 V, max.5 MHz	differential
<b>Input Outputs</b>			
Digital I/O	6/4, bus and via EtherCAT or CAN terminals , e.g. from Weidmüller, Beckhoff, Wago, ...		
Analog I/O	via EtherCAT or CAN terminals , e.g. from Weidmüller, Beckhoff, Wago, ...		
Analog inputs	2 analog sensor signal inputs 0-10V, 10 Bit, max 1 kHz		
<b>Interfaces</b>			
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		
<b>Displays / LEDs</b>			
Status / USB / EtherCAT	3 / 2 / 3		
<b>Powerdown Save</b>			
User defined data can be saved automatically at power down (e.g. in case of mains failure)			
<b>Mechanical Data</b>			
Variant DIN housing	Alu minum 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: 500 g		
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: 300 g		
Connector type	Tension spring clamp on a pluggable connector board		
OEM versions with customized housings or connector types on request			
<b>Temperature Range</b>			
Operation / Storage	0...+40°C / -20...+85°C	20...80% humidity	not condensing
<b>Typical product types</b>			
	<b>001563</b> MasterMACS – in DIN housing 4ax <b>001716</b> MasterMACS – in DIN housing 10ax <b>001724</b> MasterMACS – in DIN housing 20ax <b>001725</b> MasterMACS – in DIN housing 32ax  <b>001565</b> MasterMACS – in compact housing 4ax <b>001726</b> MasterMACS – in compact housing 10ax <b>001727</b> MasterMACS – in compact housing 20ax <b>001728</b> MasterMACS – in compact housing 32ax		