maxon | zub

Data Sheet

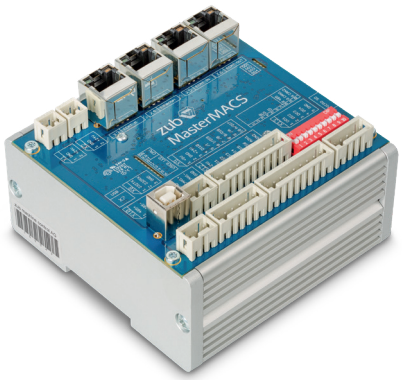
# MasterMACS

## 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 µs)

The maximum number of axes depends on the complexity and required update rat e of the drives .

**Example:** 32 ax es with high complexity and jerk limitation still allow an update rate of 3 kHz




## zub Standards

- **Positioning:** Absolute & relative , configurable homing, programm able 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 AposslDE®
- **Interactive graphic editors** like CAM-, Array and Path-Editor
- **Debugging & Optimization:** Smart Oscilloscope and integrated graphic CAM Editor
- **State Machine Support:** AposslDE® supports the automatic execution of hierarchic State Machines

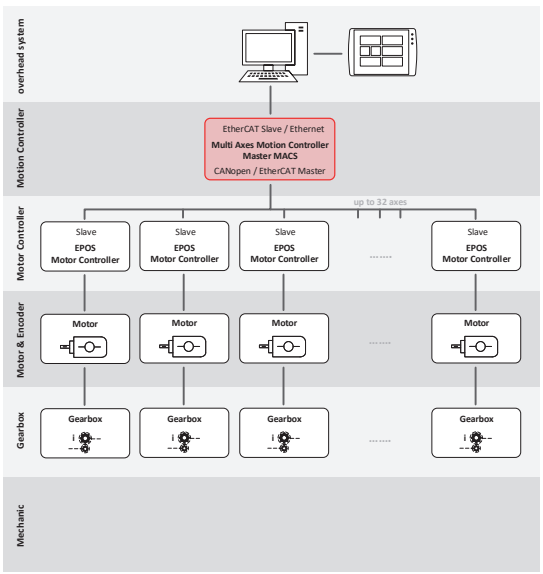
## Selection of interfaces

EtherCAT (master a nd s lave) 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**



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|---|---|---|---|
| **Electrical Data** | | | |
| Supply voltage, Current consumption | 24 V DC ±25 % | 200 mA | current consumption without I/O load |
| **Memory** | | | |
| 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 |
| **Control Characteristic** | | | |
| Axis control: number | up to 32 axes, n umber depends on the requirements (complexity and necessary update rate) | | |
| Axis control: type | PID mit Feed-forward | | |
| Positioning control cycle | 1 kHz | | |
| **Drives** | | | |
| You can control all drives which have a CAN open or an EtherCAT interface (CoE).<br>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 , a nd other servo motors fo r brushed and brushless motors. | | | |
| **Motion Control Functionality** | | | |
| Free programmable speed control and positioning with linear, s ramp or jerk limitation speed, position (angle) and cam synchronisation without / with marker correction | | | |
| **Encoder Connection** | | | |
| Encoder 1 (input) | Inkremental encoder | 5 V, max.5 MHz | differential |
| **Input Outputs** | | | |
| Digital I/O | 6/4, b us a nd 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 | | |
| **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 f or OEM products | | |
| **Displays / LEDs** | | | |
| Status / USB / EtherCAT | 3 / 2 / 3 | | |
| **Powerdown Save** | | | |
| User defined data can be saved automatically at power down (e.g. in case of mains failure) | | | |
| **Mechanical Data** | | | |
| Variant DIN housing | Alu minum rail housing with top hat rail mounting<br>Dimensions : 108 x 108 x 67 mm<br>Width x height x depth till the top edge of the Ethernet plug<br>Weight: 500 g | | |
| Variant compact housing | Sheet housing fo r rear panel mounting<br>Dimensions: 125 (108) x 98 x 42 mm<br>Total width (only construction) x height x depth till the top edge of the Ethernet plug<br>Weight: 300 g | | |
| Connector type | Tension spring clamp on a pluggable connector board | | |
| 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 |
| **Typical product types** | | | |
| | **001563** MasterMACS – in DIN housing 4ax<br>**001716** MasterMACS – in DIN housing 10ax<br>**001724** MasterMACS – in DIN housing 20ax<br>**001725** MasterMACS – in DIN housing32ax<br><br>**001565** MasterMACS – in compact housing 4ax<br>**001726** MasterMACS – in compact housing 10ax<br>**001727** MasterMACS – in compact housing 20ax<br>**001728** MasterMACS – in compact housing 32ax | | |