

## EtherCAT Master Stack

The EtherCAT Master Stack is specifically optimized to run on embedded (real-time) operating systems:

- Compliant to EtherCAT Master Classes Directive (ETG.1500)
- Operating system and compiler independent
- Small footprint, no file system required
- High performance, minimum usage of CPU time
- CPU architectures: x86, ARM, PowerPC, SH, MIPS
- Optimized for SMP multi-core operation (symmetric multi-processing)
- Reliable and well proven in more than 40 customer applications worldwide
- Two product editions available:  
Class A: Full-featured  
Class B: Basic features

Ready-to-run implementations are already available for VxWorks, Windows CE, Windows 7, QNX, On Time RTOS-32, Linux, RTX and INtime®.

### Features Class B Edition

- Support of EtherCAT network information (ENI) configuration file
- Compare configured and existing network configuration during boot-up
- Cyclic process data exchange
- CANopen over EtherCAT (CoE) protocol: SDO upload and download, SDO information services (to access CANopen object dictionary), emergency request
- Servo Profile over EtherCAT (SoE) protocol
- Ethernet over EtherCAT (EoE) protocol (virtual switch)



- Slave to Slave Communication
- Support of Safety over EtherCAT (FSoE) slaves
- Access to Slave EEPROM and Registers
- Sophisticated error detection and diagnosis functions

### Features Class A Edition

- All Class B features
- Synchronization with Distributed Clocks (DC) including Master Synchronization (DCM)
- ADS over EtherCAT (AoE) mailbox protocol
- File Transfer over EtherCAT (FoE) mailbox protocol
- Vendor over EtherCAT (VoE) mailbox protocol

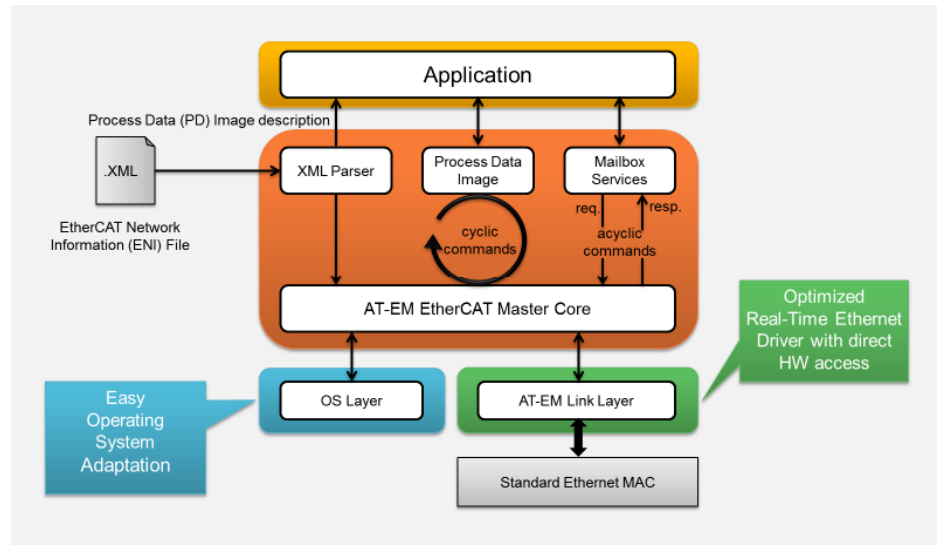
### Feature Packs (Options)

- Hot Connect support to dynamically connect and disconnect slaves while others are in full operation
- Redundancy support (ring topology), can be combined with Hot Connect Feature Pack
- Control of multiple, independent EtherCAT busses
- Master Object Dictionary with objects for master and slave state, error history, bus-scan result.
- TCP/IP remote interface with identical API for remote and local operation. Useful feature for diagnostic and configuration tools.

### Modular Architecture

EC-Master consists of the following components:

- **EtherCAT-Master-Core:**  
The main EtherCAT master functionality is implemented in the core layer. All protocol handling, e.g. process data transfer and mailbox protocols (CoE, EoE, FoE, SoE, AoE) are executed here.
- **Ethernet-Link-Layer:**  
Data exchange between master and slaves. Zero-copy and/or polling techniques together with the core layer are supported to achieve best real-time performance and minimize CPU load.
- **OS-Layer:**  
The operating system calls are encapsulated here. To achieve best performance the most functions are implemented using simple „C“-language macros.



### System integration

- You will get professional partnership in setting up your custom control system. On request we will handle complete system integration.
- Customer specific development including porting the EtherCAT master to other embedded operating systems
- Workshops and Consulting
- Analyses and optimization of system performance
- Development of Ethernet network drivers and software

### EtherCAT Out-of-the-box

#### Wind River VxWorks

- All VxWorks Versions from 5.4 up to 6.9 (SMP)
- VxWin (VxWorks + Windows)
- x86, ARM, PowerPC, SH, MIPS
- Optimized Link Layers

#### Microsoft Windows CE

- Windows CE 5.0, 6.0, 7.0
- CeWin (WinCE + Windows)
- x86, XScale, ARM
- Optimized Link Layers

#### On Time RTOS-32

- Version 5.x
- RTOS32Win Real-Time extension (real-time virtualization) for Windows
- Optimized Link Layers

#### QNX Neutrino

- Version 6.x
- x86
- Optimized Link Layers

#### IntervalZero RTX

- RTX 8.1, RTX2009, RTX2011
- Optimized Link Layers

#### TenAsys INtime®

- Version 3.x and 4.x
- Optimized Link Layers

#### Windows without Real-Time

- Windows 7 (32-Bit and 64-Bit)
- WinPCap Link Layer

## acontis technologies – EtherCAT Products and Services

As a services company we offer both, the product as well as support and development services. Get your benefits using our knowledge on many different embedded operating systems as well as in implementing high-performance networking solutions.

Well known companies rely on our knowledge in real-time Ethernet to get optimum solutions.