

The EtherCAT terminal product range covers a wide range of different I/O terminals and special versions for the time stamp, oversampling and fast I/O XFC technologies.

Beckhoff I/O terminals with oversampling and time stamp technology



→ EtherCAT Terminals for XFC

The EtherCAT Terminal system from Beckhoff offers a comprehensive I/O construction kit for a wide range of applications. The EtherCAT protocol is maintained right into each individual I/O terminal, thereby enabling high data throughput and distributed clock synchronizations with a jitter of $\ll 1 \mu\text{s}$. In order to meet extreme performance requirements, the system was extended with the XFC terminals, which offer, for example, oversampling or time stamp capability. XFC (eXtreme Fast Control Technology) offers gains in performance and efficiency for high-end and standard machines.

XFC represents a control technology that enables very fast and highly deterministic responses. Its implementation requires integrated support of all hardware and software components involved in the control system: EtherCAT as fieldbus, EtherCAT Terminals as I/O system, IPCs as hardware platform, and TwinCAT as higher-level software.

Standard EtherCAT Terminals already offer full support for XFC technology. Synchronization of the I/O conversion with the communication or – more precisely – with the distributed clocks is a standard feature of EtherCAT and is therefore supported by a wide range of terminals.

Newly developed XFC terminals offer additional special features that make them particularly suitable for fast or high-precision applications:

- | EtherCAT Terminals with **time stamp** latch the exact system time at which edge changes occur. Output of digital values can occur at exactly predefined times.

- | EtherCAT Terminals with **oversampling** enable actual value acquisition or set value output with significantly higher time resolution than the communication cycle time. Distributed clocks with a jitter of $\ll 1 \mu\text{s}$ and a time resolution of $1 \mu\text{s}$ are used for time synchronization across the whole system.
- | **Fast I/O** is supported by digital EtherCAT Terminals with very short input delays or switching times of $< 1 \mu\text{s}$.

→ www.beckhoff.com/XFC

XFC terminal overview:

EtherCAT Terminal	XFC technology	Signal type
EL1262	oversampling	2-channel digital input 24 V DC
EL2262	oversampling	2-channel digital output 24 V DC
EL3702	oversampling	2-channel analog input -10 V...+10 V
EL3742	oversampling	2-channel analog input 0...20 mA
EL4732	oversampling	2-channel analog output -10 V...+10 V
EL4712	oversampling	2-channel analog output 0...20 mA
EL1252	time stamp	2-channel digital input 24 V DC
EL2252	time stamp	2-channel digital output 24 V DC
EL1202	fast I/O	2-channel digital input 24 V DC
EL2202	fast I/O	2-channel digital output 24 V DC