

Safety over EtherCAT – Safety solution for EtherCAT

In the interest of realizing safe data communication for EtherCAT, the Safety over EtherCAT protocol has been disclosed within the EtherCAT Technology Group (ETG). This protocol has been assessed by German Technical Inspection Agency (TÜV). It is certified as a protocol for transferring process data between Safety over EtherCAT devices up to SIL 3 according to IEC 61508. The implementation of the Safety over EtherCAT protocol in a device must meet the requirements of the safety target. The associated product-specific requirements must be taken into account.

The focus is on EtherCAT as the communication system for the safety protocol, although in principle any transmission link can be used, including fieldbus systems, Ethernet or similar transfer routes, as well as optical fiber cables, copper cables, or radio links. There are no restrictions or requirements for bus couplers or other devices located along the transfer route. The transport medium is regarded as a "black channel" and not included in safety considerations. A safety frame containing the safe process data and the required data guard is included in the EtherCAT process data. This "container" is safely analyzed in the devices at the application level.

Through suitable measures Safety over EtherCAT reliably handles all error assumptions that are relevant in the context of transferring safe information via a communication system (corruption, repetition, interchanging, loss, delay, insertion, masquerading, and invalid addressing of messages). Based on suitable procedures the frame is designed such that a minimum container length of 6 bytes is sufficient for transferring all error detection and correction information, including one byte of safe process data. The protocol does not impose any limits regarding the length of safe process data. With appropriate selection of the error detection and correction information, the transfer rate has no influence on residual error probability for the Safety over EtherCAT protocol.

EtherCAT Technology Group

Martin Rostan
Ostendstraße 196
90482 Nuremberg
Germany

Phone: +49 (0) 9 11 / 5 40 56 20
Fax: +49 (0) 9 11 / 5 40 56 29
m.rostan@ethercat.org
www.ethercat.org

EtherCAT Technology Group

Dr. Guido Beckmann
Ostendstraße 196
90482 Nuremberg
Germany

Phone: +49 (0) 9 11 / 5 40 56 20
Fax: +49 (0) 9 11 / 5 40 56 29
g.beckmann@ethercat.org
www.ethercat.org

Press Contact

Andrea Bock
Beckhoff Automation GmbH
Eiserstr. 5
33415 Verl
Germany

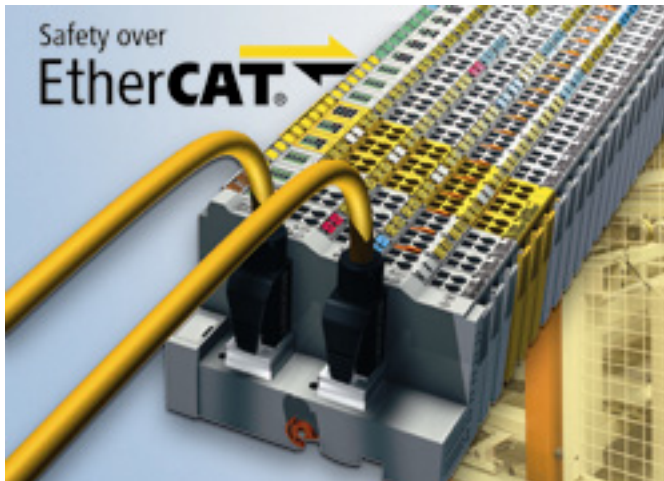
Phone: +49 (0) 52 46 / 9 63 140
Fax: +49 (0) 52 46 / 9 63 199
pr@beckhoff.com
www.ethercat.org/press/

A conformance test for supporting implementation of the protocol in devices is currently being developed. This test is a pure protocol test for checking the behavior of the safety protocol via the communication interface of a test device (black box test). An independent conformance test laboratory will be established in the near future. Test cases will be made available to device manufacturers during development activities.

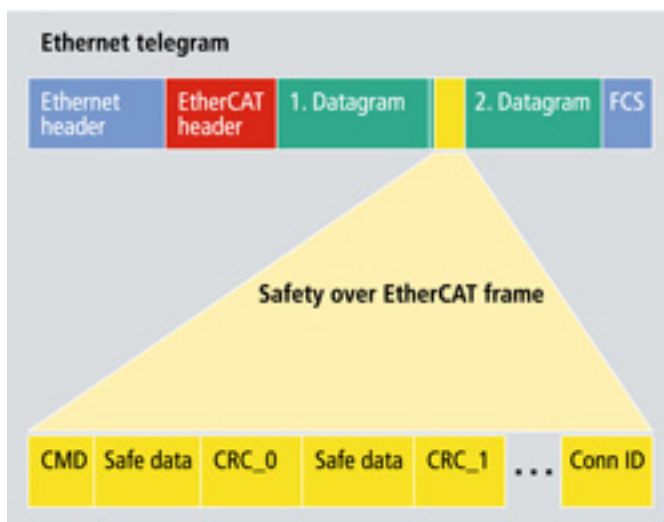
The safety and functionality of a safe transfer protocol can only be proven through implementation of the specification in a product. Devices with the Safety over EtherCAT protocol have been available since 2005. Safety over EtherCAT is therefore one of the first Industrial Ethernet real-time communication systems supporting a safe protocol. Various applications with several thousand Safety over EtherCAT components have already been configured and are used on a daily basis, providing evidence of the availability and robustness of the system.

→ ETG booth at Hanover Fair: **Hall 9, Booth F13**

Press pictures



Picture caption:
Safety over EtherCAT – Safety solution for EtherCAT



Picture caption:
Embedding of the Safety over EtherCAT frame in the EtherCAT process data

For further information please also see www.ethercat.org