



EtherCAT Technology Group develops new Safety Drive Profile

Because current Drive Profiles do not cover functional safety, the EtherCAT Technology Group (ETG) is developing a new Safety Drive Profile to close this gap. With this new drive profile, the Safety Functionality of EtherCAT drives with CiA402 (CANopen) or SERCOS Drive Profile can be used and configured in a manufacturer-independent way.

The IEC 61800-5-2 standard defines safety-relevant functions for drives. With these functions, safe stopping of the drive, e.g. Safe Torque Off (STO) or Safe Stop 2 (SS2), or safe monitoring of motion, e.g. Safe Limited Speed (SLS), can be achieved. With these features, dangerous movements at startup or during manual interaction with a machine can be avoided or limited in a safe manner.

In order to configure and control these internal drive safety functions in an open fashion, the ETG is now enhancing the Safety over EtherCAT protocol with a safety-related device profile for drives (Safety Drive Profile). Based on the functions defined by IEC 61800-5-2, a control word is specified which enables the separate activation of these functions within the drive. Each function is represented by a bit in the control word. If a safety function is selected and operates within its boundaries, it is reported back to the supervision safety logic with a status word. All communication makes use of the underlying safety protocol.

The definition of a uniform control and status word allows the user to operate safety drives from different vendors in the same way with their safety controller. The variety of function blocks inside the controller is reduced and the operation is simplified.

The configuration of the safety-relevant drive functions is also standardized within the profile. Typical implementations of the safety functions, which are defined by the IEC standard only in a very generic way, are considered and the corresponding parameters are described. Thus, an object dictionary is established, and the user receives a uniform implementation and a vendor-independent understanding of the embedded functions within the drive.

The EtherCAT Technology Group also intends to make the Safety Drive Profile available to other interested organizations and technologies since, by design, the profile is independent from the safety bus system being utilized.

