

## EtherCAT Terminal with Safety PLC inside: compact, flexible, powerful

The TwinSAFE Terminals for the EtherCAT I/O system fully utilize EtherCAT's high performance: up to 128 safety-relevant bus devices can be connected to the EL6900 Safety PLC terminal. Integrated into a standard terminal block housing, this safety solution is extremely compact and offers the highest flexibility through its nearly limitless positioning in EtherCAT Terminal systems. A total of 256 function blocks are integrated into the Safety PLC that can be configured or programmed according to the application.

TwinSAFE – the safety technology from Beckhoff – has already been successfully integrated into the Bus Terminal system (K-bus) and is in use worldwide in a wide range of applications. With the integration of TwinSAFE technology into the EtherCAT Terminal system (E-bus), the high performance of EtherCAT with its fast communication and enhanced diagnostics, is now also available for safety technology.

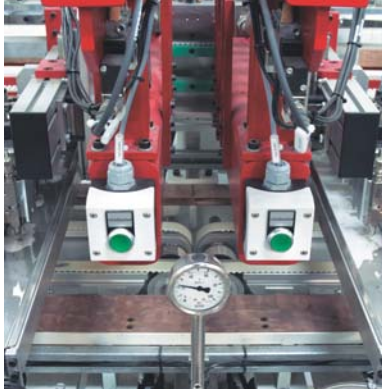
### Extensive safety functionality in EtherCAT Terminal format

Housed in an electronic terminal block that is just 12 mm wide (less than 0.5-inch), the EL6900 Safety PLC is exceptionally compact and is suitable

for safety applications up to SIL 3 and conforms to IEC 61508 and EN ISO 13849-1 PL e. The EL6900 can integrate up to 128 devices and is capable of processing 256 safety-relevant function blocks.

Systems can be expanded with additional EL6900 Safety PLCs if necessary. In this way, the safety-relevant control tasks for machines and plants can be implemented locally or centrally according to the application.

24 V DC digital input terminals (EL1904) and 24 V DC digital output terminals (EL2902: 2.3 A and EL2904: 0.5 A) are available for connecting the safety sensors or actuators. The TwinSAFE Terminals can be installed in any position in the terminal system and in distributed I/O systems. The EL6900 Safety PLC can also be used as a safety controller for the Beckhoff AX5000 Servo Drives, which use EtherCAT as a motion bus.



The compact safety solution can be used in many different industries: from the typical machine safety functions in the areas of woodworking, the packaging industry and manufacturing technology to safety functions in wind turbines, lifts and cable cars, and even medical technology.

The safety solution for the EtherCAT Terminal system enables the implementation of a simple, flexible and inexpensive local safety controller.

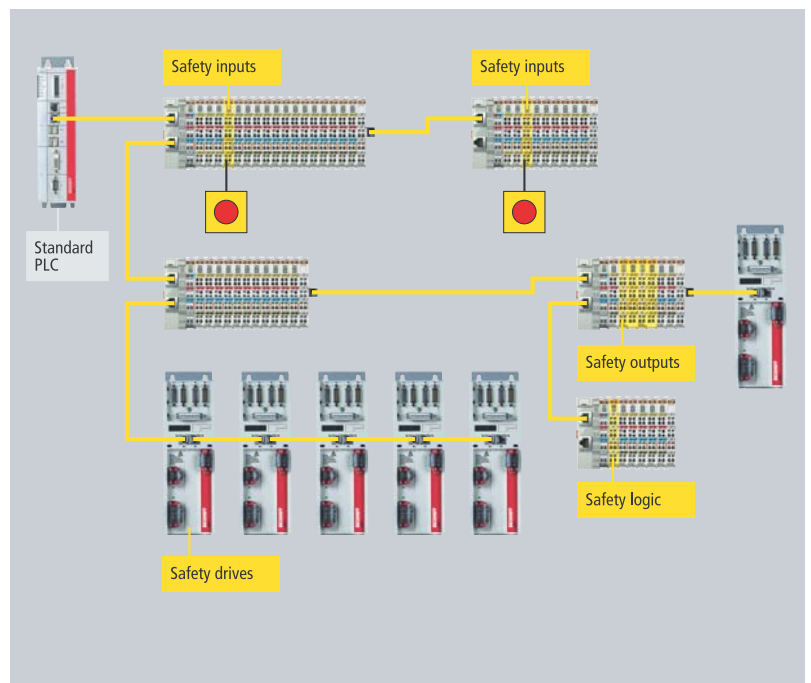
## Seamless integration of safety solutions in TwinCAT software

The safety function blocks integrated in the EL6900 Safety PLC are configured according to each unique application. In this way, safety functions such as emergency stop, safety door monitoring, two-hand control, serial/parallel muting, valve control, feedback loop control and typical drive functions can be selected and linked very simply.

The application can be created optionally by means of simple configuration in the TwinCAT System Manager or – in the case of more complex applications – programmed using the TwinCAT PLC (IEC 61131-3). All safety-relevant parameters of the Safety PLC are available in TwinCAT and can be used in the standard controller. Extensive diagnostic and monitoring functions are available in a PLC library within TwinCAT PLC.

In the case of possible required service, the EL6900 Safety PLC terminal can be replaced quickly and easily without the program having to be explicitly reloaded and verified. The configuration is automatically loaded and verified by the system so trouble-prone removable media can now be dispensed with. The manual loading or saving of the project is also no longer necessary in the case of service.

A further highlight is the integration of a tool in TwinCAT for calculating and determining the SIL or PL according to EN IEC 62601 and EN ISO 13849-1. The previous complicated analysis of the safety application and the transfer of this information to an additional tool are no longer



ger required. This can lead to significant work reduction and cost savings. The TwinSAFE system uses the open Safety over EtherCAT protocol for the secure exchange of data. Secure data transmission is also possible via different media: optical fiber, copper cable, radio or other data links, such as data light barriers, are allowed. Safety over EtherCAT was developed in order to implement secure data transmission for EtherCAT and has been disclosed within the EtherCAT Technology Group (ETG). This safety protocol is already supported by many manufacturers worldwide.

[www.beckhoff.com/EL6900](http://www.beckhoff.com/EL6900)

[www.beckhoff.com/Safety-over-EtherCAT](http://www.beckhoff.com/Safety-over-EtherCAT)