



EK1960 | TwinSAFE Compact Controller

The EK1960 TwinSAFE Compact Controller extends the application range of the integrated TwinSAFE safety solution. Thanks to its compact design, with 20 safe digital inputs and 24 safe digital outputs, it covers the safety requirements in particular for compact machines. The EK1960 can be operated in stand-alone mode or it can be networked with other controllers over the EtherCAT connectors. Like every EtherCAT Coupler the EK1960 can be extended by all EL/ES terminals.

The TwinSAFE Compact Controller is programmed via the TwinCAT Safety Editor in the same way as other TwinSAFE components. A TwinSAFE project is created and loaded over EtherCAT into the EK1960. The EK1960 supports the establishment of 128 TwinSAFE connections. For flexible adaptation to different safety functions, the TwinSAFE Compact Controller can be combined with TwinSAFE I/O components in IP 20 and IP 67 protection and the TwinSAFE drive option card via the Safety over EtherCAT protocol.

The fieldbus-neutral safety protocol Safety over EtherCAT enables the integration of TwinSAFE devices into arbitrary fieldbus systems. The safety I/Os form the interfaces to the safety-relevant sensors and actuators. The possibility to transmit safety-relevant signals over a standard bus system results in substantial advantages in terms of planning, installation, operation, maintenance, diagnostics and costs.

In addition to the Safety over EtherCAT protocol, the EK1960 also supports the TwinSAFE SC technology. This enables the secure transmission of data from TwinSAFE SC terminals to the EK1960 TwinSAFE Compact Controller.

The EK1960 also supports the processing of analog signals (16/32-bit, signed and unsigned). These signals can be transferred to the logic as standard, TwinSAFE SC or Safety over EtherCAT signals. Analog signals can thus be checked for plausibility within the logic. The entire calculation and scaling process is carried out at the SIL 3/PL e safety level in the safety-related EK1960 TwinSAFE Compact Controller.

Certified function blocks such as ADD, SUB, MUL, DIV and also more complex ones such as Counter, Limit or Compare are available for the processing of analog signals.

Technical data	EK1960
Technology	TwinSAFE Compact Controller
Task within EtherCAT system	– stand-alone TwinSAFE Compact Controller (without EtherCAT network) – TwinSAFE Compact Controller with integration into an EtherCAT network for communication and diagnostics (extendable with safe and standard EtherCAT Terminals) – TwinSAFE I/O module without use of the logic function
Data transfer medium	Ethernet/EtherCAT cable (min. Cat.5), shielded
Distance between stations	100 m (100BASE-TX)
Number of EtherCAT Terminals	up to 65,534
Delay	approx. 1 µs
Data transfer rates	100 Mbit/s
Configuration	not required
Bus interface	2 x RJ45 or 2 x M8
Safety standard	EN ISO 13849-1:2015 (Cat 4, PL e) and EN 61508:2010 (SIL 3)
Number of communication partners	max. 128
Protocol	EtherCAT
Safety protocol	TwinSAFE/Safety over EtherCAT
Function blocks	max. 512
Nominal voltage	24 V DC (-15 %/+20 %)
Cycle time	< 10 ms
Response time	dependent on application (< 15 ms)
Fault response time	≤ watchdog time (parameterisable)

Connection method	1-wire
Number of inputs	20
Number of outputs	24
Max. output current	2 A (simultaneity factor 50 % at 2 A)
Permitted degree of contamination	2
Climate class EN 60721-3-3	3K3
Operating/storage temperature	-25...+55 °C/-40...+70 °C
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27
Protect. class/installation pos.	IP 20/horizontal
Approvals	CE, TÜV SÜD

Accessories	
Cordsets	cordsets and connectors