

TwinSAFE | Option cards for AX5000 Servo Drives

Significant hazards to persons arise from the dynamic movements of electrical drive equipment of machines. With the AX58xx TwinSAFE drive option cards numerous safety functions can be easily implemented by the user. Safe stop functions, safe motion functions and safe brake functions can be realised.

AX5801 | Personal protection against inadvertent restart of the drive axis (STO/SS1):

- Safe Torque Off (STO) according to IEC 61800-5-2
- control through safe 24 V DC outputs
- mains voltage and motor line remain connected

AX5805, AX5806 | Further drive-integrated safety functions according to IEC 61800-5-2. Control is performed via EtherCAT; no further wiring is required:

- stop functions (STO, SOS, SS1, SS2)
- speed functions (SLS, SSM, SSR, SMS) with up to 8 speeds
- position functions (SLP, SCA, SLI) with reference cams
- acceleration functions (SAR, SMA)
- rotating direction functions (SDIp, SDIn)

The AX5805/AX5806 option cards are capable of switching the motor torque-free or monitoring speed, position and direction of rotation (in accordance with DIN EN ISO 13849-1:2008 (Cat 4, PL e)). No further circuits are necessary for this, such as circuit breakers or contactors in supply lines, or special external encoder systems.

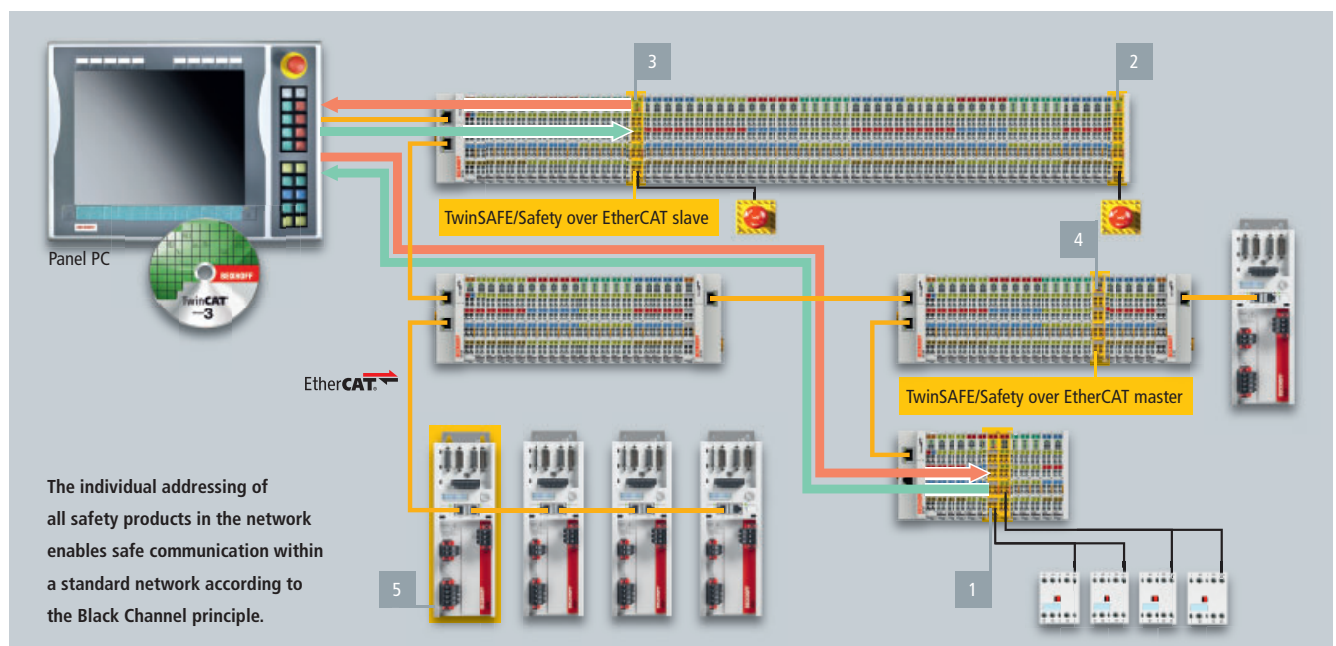
This enables a very lean installation and helps to lower costs and control cabinet space. No special encoder system is required in order to implement the SDI (Safe Direction) or SLS (Safety Limited Speed) functions; all Beckhoff standard motors can be used without modifications and without additional encoder systems for these functions. Even safe position monitoring or position range monitoring is simple to implement by means of the AX5805/AX5806 module. No additional wiring is required, since EtherCAT communication is used in the AX5000 Servo Drives. The safety option card communicates directly through the AX5000 with the TwinSAFE logic terminal present in the network.

Like the programming or configuration of the safety application, the entire parameterisation of the AX5805/AX5806 option cards takes place in TwinCAT. All system-specific settings are stored together with



With the AX5805 TwinSAFE drive option card, the AX5000 servo drive is easily converted into a safe drive solution that offers the user numerous safety functions.

the application in the TwinSAFE logic terminal. For this reason, the AX5805/AX5806 TwinSAFE drive option card can be exchanged at any time without software. The card receives all necessary parameters at the next power-on or boot-up.



The individual addressing of all safety products in the network enables safe communication within a standard network according to the Black Channel principle.

TwinSAFE drive
option card

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Technical data	AX5801-0200
Safety standard	DIN EN ISO 13849-1:2008 (Cat 4, PL e) and IEC 61508:2010 (SIL 3)

Technical data	AX5805-0000, AX5806-0000
Safety standard	DIN EN ISO 13849-1:2008 (Cat 4, PL e) and IEC 61508:2010 (SIL 3)



Drive-integrated safety functions:
– stop functions (STO, SS1)

Drive-integrated safety functions:

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Operating voltage of the relays	24 V DC (-15 %/+20 %)
Operating voltage of the feedback contacts	24 V DC (-15 %/+20 %)
Max. switching current of the feedback contacts	0.35 A
Cross-section of the connections (use of ferules is recommended)	0.2...1.5 mm ²
Stripping length of the wires	10 mm
Current consumption (total for both relays)	50 mA
Weight	approx. 85 g
Operating temperature	0...+55 °C
Storage temperature	-25...+70 °C
Permissible humidity	5...95 %, non-condensing
Further environmental and operating conditions	see AX5000, page 798
Approvals	CE, UL, TÜV SÜD
Further information	www.beckhoff.com/AX5801

Protocol	TwinSAFE/Safety over EtherCAT
Fault response time	≤ watchdog time (parameterisable)
Weight	approx. 75 g
Environmental and operating conditions	see AX5000, page 798
Approvals	CE, UL, TÜV SÜD
Further information	www.beckhoff.com/AX5805