



EL5101-0090 | TwinSAFE SC: Incremental encoder interface

The EL5101-0090 EtherCAT Terminal allows direct connection of incremental encoders with differential inputs (RS422). A 32/16 bit counter with a quadrature decoder and a 32/16 bit latch for the zero pulse can be read, set or enabled. Interval or frequency measurement are possible. The gate input allows the counter to be halted. The counter state is taken over with a rising edge at the latch input.

With the aid of the TwinSAFE SC technology (TwinSAFE Single Channel) it is possible to make use of standard signals for safety tasks in any network or fieldbus. The standard functions and features of the I/Os remain available. The data from these TwinSAFE SC I/Os is fed to the TwinSAFE Logic, where they undergo safety-related multi-channel processing. In the Safety Logic the data originating from different sources is analysed, checked for plausibility and submitted to a "voting". This is done by certified function blocks such as Scale, Compare/Voting (1oo2, 2oo3, 3oo5), Limit, etc. For safety reasons, however, at least one of the data sources must be a TwinSAFE SC component. The remainder of the data can originate from other standard I/Os, drive controllers or measuring transducers.

With the aid of the TwinSAFE SC technology it is typically possible to achieve a safety level equivalent to PL d/Cat. 3 in accordance with EN ISO 13849-1 or SIL 2 in accordance with EN 62061.

Technical data	EL5101-0090
Technology	incremental encoder interface RS422
Encoder type	Incremental, differential (RS422)
Number of channels	1
Encoder connection	A, A (inv), B, B (inv), C,C (inv), differential inputs (RS422); status input 5 V DC; gate/latch input 24 V DC
Encoder operating voltage	5 V DC/max. 0.5 A
Encoder output current	0.5 A
Counter	1 x 16/32 bit switchable
Input frequency	max. 4 million increments/s (with 4-fold evaluation)
Quadrature decoder	4-fold evaluation
Zero-pulse latch	32 or 16 bits
Commands	read, set, enable
Input signal	difference signal (RS422), single-ended possible
Supply voltage	24 V DC (-15 %/+20 %)
Nominal voltage	24 V DC at power contact
Resolution	1/256 bit microincrements
Bit width in the process image	1 x 32 bit input, 1 x 16 bit output, 8 bit control, 8 bit status
Current consumption power contacts	typ. 100 mA + load
Current consumption E-bus	typ. 130 mA
Distributed clocks	yes
Special features	TwinSAFE SC, wire breakage detection, latch and gate function, period duration and frequency measurement, microincrements, time-stamping of edges, filters
Weight	approx. 100 g
Operating/storage temperature	-25...+60 °C/-40...+85 °C
Relative humidity	95 %, no condensation
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4
Protect. class/installation pos.	IP 20/variable
Approvals	CE, UL, Ex

Option for the second channel	
EL5151	1-channel incremental encoder interface, 32 bit
EL5021	1-channel SinCos encoder interface, 1 V _{PP}
EL5001	1-channel SSI encoder interface
EL5032	2-channel EnDat 2.2 interface
EL5042	BiSS-C interface, unidirectional, 5/9 V DC, IP 20

Related products	
EK1960	TwinSAFE Compact Controller
EL6910	TwinSAFE Logic (TwinCAT 3)

System	
TwinSAFE SC	For further TwinSAFE SC products please see the system overview .