



EL5101-0011 | Incremental encoder interface with oversampling

The EL5101-0011 EtherCAT Terminal is an interface for direct connection of incremental encoders with differential inputs (RS422). It resolves the position value via oversampling, a process that makes it possible to increase the resolution of the position value to n times the bus cycle time. A traditional incremental encoder interface detects a counter value with each bus cycle and forwards it to the higher-level controller during the next fieldbus cycle. The EL5101-0011 repeatedly detects – configurable and equidistant – the actual counter value between two fieldbus communication cycles with an adjustable multiple integer of the bus cycle time (oversampling factor: n) and transfers 32-bit packages of n position values to the controller during the next fieldbus communication cycle. The minimum sampling time is 10 μ s (100 kcps). The EL5101-0011 is used predominantly in areas where high-resolution position detection is critical.

The 5101-0011 supports distributed clocks, i.e. the input data can be acquired synchronously with other data sources that are connected to distributed slave clocks. The system accuracy is < 100 ns.

Technical data	EL5101-0011
Encoder connection	A, A (inv), B, B (inv), C, C (inv), differential inputs (RS422)
Sensor inputs	1
Encoder operating voltage	5 V DC/max. 0.5 A
Encoder output current	0.5 A
Counter	1 x 32 bit
Input frequency	max. 20 million increments/s (with 4-fold evaluation)
Quadrature decoder	4-fold evaluation
Commands	read, set
Oversampling factor	$n = 1 \dots 100$ selectable
Cycle time	min. 500 μ s
Supply voltage	24 V DC (-15 %/+20 %)
Resolution	–
Conversion time	10 μ s/100 kcps
Current consumption power contacts	typ. 100 mA + load
Current consumption E-bus	typ. 130 mA
Distributed clocks	yes
Special features	oversampling, wire breakage detection
Electrical isolation	500 V (E-bus/field potential)
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

Related products	
EL5101	Incremental encoder interface with differential input, 16/32 bit
EL5101-0010	incremental encoder interface, 20 million increments/s (with 4-fold evaluation), no single-ended operation
EL5101-0090	incremental encoder interface with differential input, 16 bit, TwinSAFE SC