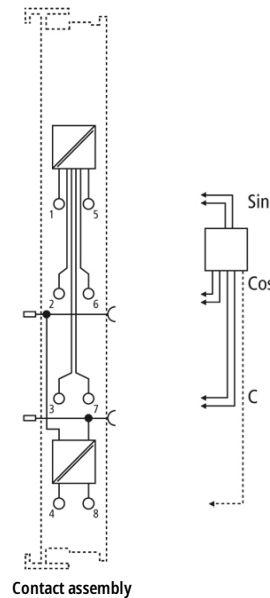
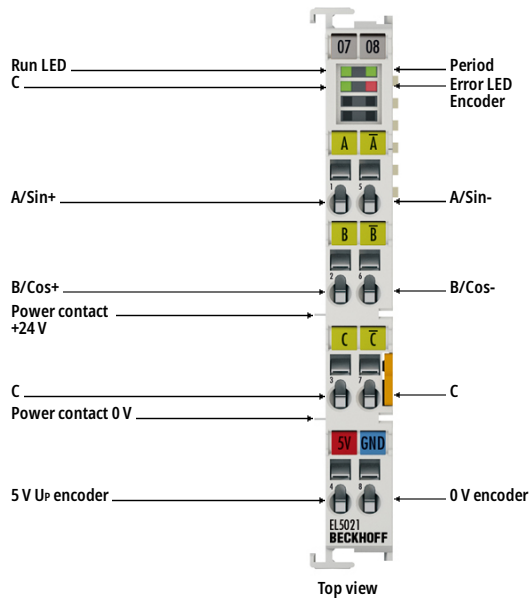
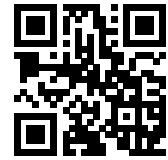


# EL5021 | EtherCAT Terminal, 1-channel encoder interface, SinCos, 1 V<sub>PP</sub>



**i Product status:** Regular delivery

The EL5021 EtherCAT Terminal is used for the direct connection of a measuring probe or encoder with sinusoidal, differential voltage output 1 V<sub>PP</sub>. Input frequencies of max. 250 kHz can be evaluated. The current counter reading can be zeroed (reset) or stored separately via the C track of the encoder, which is also called reference mark. The 5 V supply to the encoder is provided directly via the terminal connection points. The EL5021 features amplitude and frequency error detection of the input signals.

Special features:

- store, lock, set counter
- diagnosis: frequency error and amplitude error of input signals
- integrated frequency measurement
- integrated 5 V DC encoder operating voltage

The analog input signal is processed, interpolated and made available as a 32-bit count value. The count value is a combination of the number of whole periods, max. 24 bits, and the value within one sine period, with max. 13 bit resolution. The EL5021 also provides an internal frequency measurement. It also supports synchronous reading of the encoder value together with other input data in the EtherCAT system via the high-precision EtherCAT distributed clocks (DC). The use of encoder profiles enables simple and fast linking of process data to motion control applications.

## Product information

### Technical data

Technical data

EL5021, ES5021

Technology	SinCos encoder interface for differential 1 V <sub>PP</sub> signal
Number of channels	1
Encoder connection	1 x A, B, C: differential inputs 1 V <sub>pp</sub> : A, $\bar{A}$ (inv), B, $\bar{B}$ (inv), C, $\bar{C}$ (inv)
Encoder operating voltage	5 V DC/max. 0.5 A (generated from the 24 V DC power contacts)
Counter	max. 24 bit (adjustable)
Input frequency	250 kHz @ 10 bit (sampling rate 70 MHz)
Distributed clocks	yes
Nominal voltage	24 V DC at power contact
Current consumption power contacts	typ. 50 mA + load
Resolution	max. 13 bit, 8192 steps per period
Electrical isolation	500 V (E-bus/field potential)
Current consumption E-bus	typ. 120 mA
Special features	latch, reset, change counting direction, amplitude and frequency error recognition, frequency-dependent period resolution, frequency counter max. 24 bit
Weight	approx. 55 g
Operating/storage temperature	0...+55 °C/-25...+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. rating/installation pos.	IP20/variable
Pluggable wiring	for all ESxxx terminals
Approvals/markings	CE, UL, ATEX
Ex marking	II 3 G Ex nA IIC T4 Gc

Housing data	EL-12-8pin	ES-12-8pin
Design form	compact terminal housing with signal LEDs	terminal housing with pluggable wiring level
Material	polycarbonate	
Dimensions (W x H x D)	12 mm x 100 mm x 68 mm	
Installation	on 35 mm DIN rail, conforming to EN 60715 with lock	
Side by side mounting by means of	double slot and key connection	
Marking	labeling of the BZxxx series	
Wiring	solid conductor (e), flexible conductor (f) and ferrule (a): spring actuation by screwdriver	
Connection cross-section	s*: 0.08...2.5 mm <sup>2</sup> , st*: 0.08...2.5 mm <sup>2</sup> , f*: 0.14...1.5 mm <sup>2</sup>	s*: 0.08...1.5 mm <sup>2</sup> , st*: 0.08...1.5 mm <sup>2</sup> , f*: 0.14...1.5 mm <sup>2</sup>
Connection cross-section AWG	s*: AWG 28...14, st*: AWG 28...14, f*: AWG 26...16	s*: AWG 28...16, st*: AWG 28...16, f*: AWG 26...16

Stripping length	8...9 mm	9...10 mm
Current load power contacts	I <sub>max</sub> : 10 A	

\*s: solid wire; st: stranded wire; f: with ferrule

## Ordering information

Ordering information	
EL5021	EtherCAT Terminal, 1-channel encoder interface, SinCos, 1 V <sub>PP</sub>
ES5021	EtherCAT Terminal, 1-channel encoder interface, SinCos, 1 V <sub>PP</sub> , pluggable wiring