



EL5101 | Incremental encoder interface

The EL5101 EtherCAT Terminal is an interface for the 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. Incremental encoders with alarm outputs can be connected at the interface's status input. Interval measurement with a resolution of up to 100 ns is possible. The gate input allows the counter to be halted. The counter state is taken over with a rising edge at the latch input.

Due to the optional interpolating microincrement function, the EL5101 can supply even more precise axis positions for dynamic axes. In addition, it supports the synchronous reading of the encoder value together with other input data in the EtherCAT system via high-precision EtherCAT distributed clocks (DC).

| Technical data | EL5101 ES5101 |
|------------------------------------|--|
| 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 |
| Oversampling factor | – |
| 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 |
| Conversion time | – |
| Current consumption power contacts | typ. 100 mA + load |
| Current consumption E-bus | typ. 130 mA |
| Distributed clocks | yes |
| Special features | wire breakage detection, latch and gate function, period duration and frequency measurement, microincrements, timestamping 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 |
| Pluggable wiring | for all ESxxxx terminals |
| Approvals | CE, UL, Ex |

| Related products | |
|--------------------|--|
| EL5101-0010 | incremental encoder interface, 20 million increments/s (with 4-fold evaluation), no single-ended operation |
| EL5101-0011 | Incremental encoder interface with oversampling |
| EL5101-0090 | incremental encoder interface with differential input, 16 bit, TwinSAFE SC |