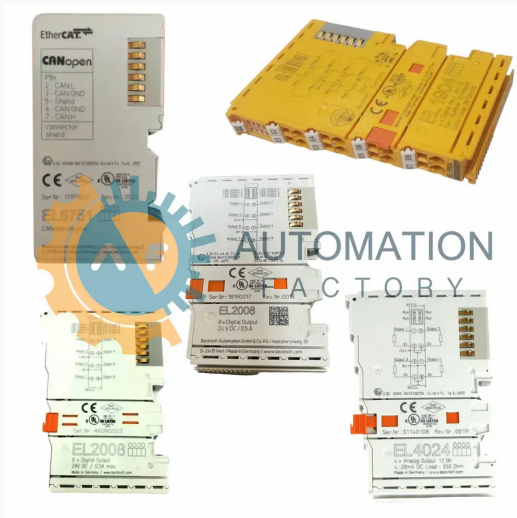




Beckhoff — EL EtherCAT Terminals

EL4004



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The **EL4004** analog output terminal is produced by Beckhoff within the EL EtherCAT Terminals series. It occupies a single I/O slice on an EtherCAT string and supplies voltage-based output channels that allow programmable logic controllers to control drives, valves, or other field devices in automated machinery. By converting digital setpoints in the process image to analog levels ranging from 0 to 10 V, the terminal provides a compact interface between control logic and field devices.

Synchronization accuracy is maintained by the terminal's EtherCAT distributed clock unit. Its timing deviation is less than **100 ns**, so simultaneous updates remain synchronized across a machine. The internal electronics have a typical E-bus current consumption of **140 mA**, which helps keep network power requirements predictable. The integrated ground path can carry up to **500 mA**, so reference potentials on adjacent slices are not disrupted by return currents from external loads. Each analog channel is designed for a load resistance greater than **5 k Ω** , preventing excessive current draw that could distort the voltage output. Output accuracy has a total error of **< $\pm 0.1\%$** , limiting offset and gain deviations over the specified temperature range. The module provides four separate analog outputs, allowing independent actuators to be driven from a single terminal.

Multiplexed sampling keeps the conversion hardware compact, and the channels together draw a typical current of **40 mA** from the power contacts while receiving field power through a looped **24 V DC** supply. In the controller's memory, the module occupies a **4 $\times$ 16-bit analog output area**, and each converter resolves analog values with **12-bit precision**. The architecture uses a single-ended ground reference, which simplifies field wiring and provides

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a common reference potential for all four voltage outputs. A molded IP20 housing protects the components against accidental contact, supporting safe installation inside a control cabinet without requiring additional terminal covers.

Specifications

Analog outputs:	4 channels	Conversion time:	~250 µs	D/A resolution:	12 bit
Distributed clock precision:	< 100 ns	Distributed clocks supported:	Yes	E-bus Current:	Typ. 140 mA
E-bus current consumption:	typ. 140 mA	Ground Current Capacity:	500 mA	Ground Reference:	Single ended
Load:	> 5 k?	Measuring Error:	< ±0.1%	Number Of Outputs:	4
Operating temperature:	-25 to +60 °C	Output error:	<0.1% FS	Output load resistance:	>5 k? (short-circuit proof)
Power contact current consumption:	typ. 40 mA	Power Contacts Current:	Typ. 40 mA at full output	Power supply:	24 VDC via power contacts
Process image bit width:	16 bit per channel	Process Image Width:	4 x 16-bit AO output	Protection Class:	IP20
Resolution:	12 bit	Sampling Type:	Multiplex	Signal output range:	0-10 V
Signal Voltage:	0..10 V	User synchronization:	optional	Watchdog feature:	optional with output ramp
Last Verified:	10/24/2026 8:26 AM				

Contact Us

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