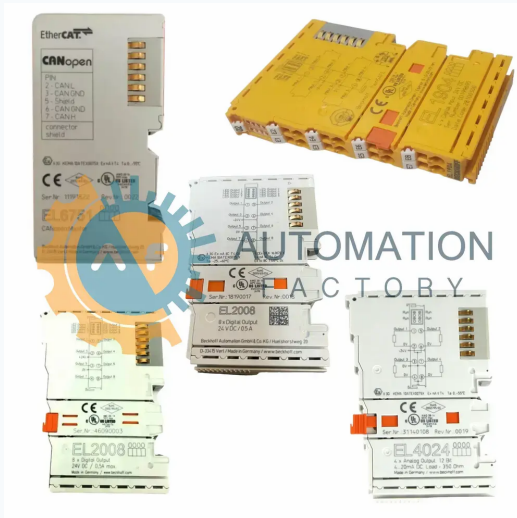




Beckhoff — EL EtherCAT Terminals

EL4031

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The **EL4031** is an analog output terminal produced by Beckhoff for the EL EtherCAT Terminals series. It occupies a single slot on an EtherCAT bus coupler and provides one voltage channel that a controller can map directly into its process image. By translating digital setpoints into a controllable voltage for actuators or signal converters, the unit supports positioning, dosing, and other continuous-value tasks on distributed machine nodes.

The output stage can generate a programmable range of **-10 to +10 V**, allowing a straightforward connection to drives or transducers that accept symmetrical control voltages. Internally, the value is produced with a **12-bit converter**, so each step represents 4.88 mV across the full span. Update latency is limited by a conversion time of **approximately 100 µs**, which keeps closed-loop cycles responsive when fast setpoint changes are required. During full-scale operation, the terminal draws a **typical current of 40 mA** from the 24 V power contacts, and this consumption must be included in the segment power budget. The output requires a load greater than **5 kΩ** to prevent overloading the voltage source and maintain accuracy. The terminal samples channels in multiplex mode and supports EtherCAT distributed clocks, allowing consistent time alignment across nodes.

The bus electronics are supplied through the E-bus and require a **typical current of 140 mA**, which must be considered when sizing coupler power feeds. Output linearity and gain drift remain within **±0.1% FS**, reducing the need for calibration in precision applications. The housing has an **IP20 protection rating**, so the terminal is intended for installation inside a control cabinet with limited dust exposure. Reliable operation is supported across a temperature range of **-25 °C to +60 °C**, covering cold startups and continuous use in warm cabinets. The terminal

uses a single-ended reference and multiplex sampling for its analog output. Its process image has a width of 1 × 16 bits, allowing the controller to exchange the output value through the EtherCAT network.

Specifications

24 V Current:	Typ. 40 mA At Full Output	Analog outputs:	1 channel	Bit width (process image):	16-bit
Conversion time:	~ 100 µs	Current consumption (E-bus):	140 mA (typical)	Current consumption (power):	40 mA (typical)
DAC resolution:	12-bit	Distributed clock precision:	<1 µs	Distributed clock support:	Yes
Distributed Clocks:	Yes	E-bus Current:	Typ. 140 mA	Ground Reference:	Single Ended
Load:	> 5 k?	Load impedance:	>5 k?, short-circuit proof	Measuring Error:	< ±0.1% FS
Number Of Outputs:	1	Operating temperature:	-25°C...+60°C	Optional watchdog:	User-specific output ramp
Output accuracy:	<0.1% FS	Power supply:	24 VDC Via Power Contacts	Process Image Width:	1 x 16-Bit AO Output
Protection Class:	IP20	Resolution:	12 Bit	Sampling Type:	Multiplex
Signal Voltage:	-10..+10 V	Signal voltage range:	-10 to +10 V	User synchronization:	Available
Warranty:	1 year	Last Verified:	10/23/2026 12:58 PM		

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