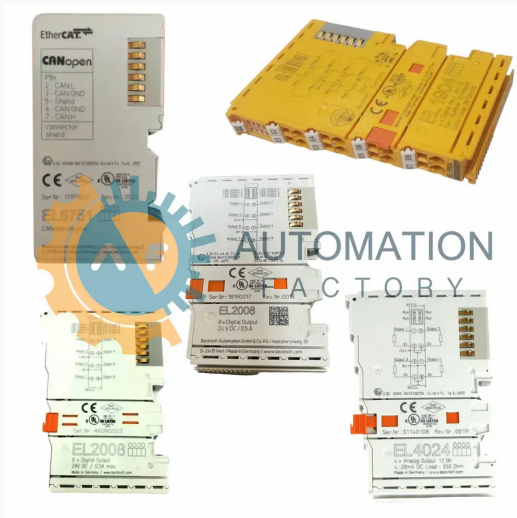




Beckhoff — EL EtherCAT Terminals

EL3004



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The **EL3004** is an analog input terminal produced by Beckhoff for the EL EtherCAT Terminals series. Installed on a DIN rail with adjacent I/O slices, the module converts field-level voltage signals into digital data that an EtherCAT controller can analyze for feedback, monitoring, or closed-loop regulation in automated machinery. A unique slot address is assigned through the E-Bus backplane, allowing compact voltage acquisition for drives, temperature converters, and sensor arrays on manufacturing equipment.

The terminal provides **4 analog inputs** that accept bipolar signals up to **±10 V**. Each channel is digitized at **12 bits**, providing 4,096 steps across the input range. An input filter of **1 kHz** attenuates higher-frequency noise, and measurement deviation remains within **±0.3% FSV** from 0 °C to 55 °C. The front end has an internal resistance greater than 130 k Ω , minimizing sensor loading. Dielectric strength is 30 V, so external overvoltage protection may be required. The process image provides 2 bytes of status data and 2 bytes of value data for each channel. The electronics draw power from the E-Bus, and distributed clock functionality is unavailable on this model.

Field wiring uses a **2-wire scheme**, and the channels share a **single-ended ground reference** that simplifies connections to transducers with common return lines. The conversion sequence uses a **multiplexed method**, cycling through the inputs so that only one channel is sampled at a time. Screwless push-in clamps are protected to **IP20**, making them suitable for typical cabinet environments. The power contacts are connected through the side of the module, allowing upstream terminals to pass the 24 V supply without interruption. The isolation limit restricts the module to extra-low-voltage circuits. Time stamping can be implemented in the EtherCAT master when

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deterministic sampling is required.

Specifications

Analog Inputs:	4	Connection Type:	2-Wire	Conversion Time:	0.625 ms (multiplex, configurable)
Current Consumption (E-bus):	typ. 130 mA	Dielectric Strength:	30 V Max.	Digital Filters:	activatable FIR/IIR
Distributed Clocks:	No	Ground Reference:	Single-Ended	Input Filter:	1 kHz
Input Filter Cutoff Frequency:	1 kHz	Input Type:	Single-ended	Internal Resistance:	>130 k?
Limit Value Monitoring:	yes	Measurement Uncertainty:	< ±0.3% full scale	Measuring Data Representation:	switchable
Measuring Error (0 To 55 C):	<±0.3% FSV	Number of Inputs:	4 (single-ended)	Operating Temperature:	-25 to +60°C
Overload Display:	in process data	Power Contacts:	Through-Connected	Power Supply:	Via E-Bus
Process Image:	2 B Status + 2 B Value/Ch	Protection Rating:	IP20	Resolution:	12 Bits
Sampling Type:	Multiplex	Signal Voltage:	±10 V	Signal Voltage Range:	±10 V
Storage Temperature:	-40 to +85°C	Weight:	approx. 70 g	Last Verified:	10/23/2026 2:03 PM

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