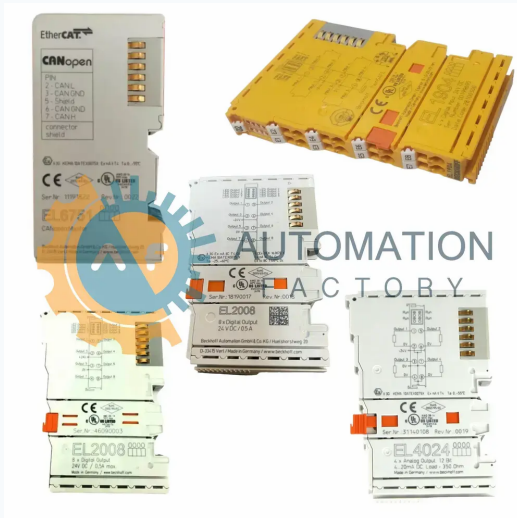




Beckhoff — EL EtherCAT Terminals

EL3022



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The EL EtherCAT Terminals series from Beckhoff includes the **EL3022**, a two-channel differential analog input terminal used to acquire ± 10 V signals from sensors or transducers within an EtherCAT segment. It digitizes these voltages and places the measured values in the controller process image so that PLC logic, motion loops, or data-logging tasks can respond in real time. By combining conversion electronics, a bus interface, and spring-clamp connections, the device provides compact signal conditioning directly on DIN rail systems where centralized racks are impractical.

Each input channel is isolated from system ground through a differential front end that tolerates up to **10 V** of common-mode potential. The module provides **2 analog inputs** and uses a multiplexed internal sampling sequence. A single conversion cycle requires **0.625 ms**, enabling synchronized acquisition when several EL terminals share an EtherCAT frame. Signal integrity is supported by an analog filter with a cutoff frequency of **1 kHz**, which attenuates higher-frequency noise before digitization. After filtering, a successive-approximation analog-to-digital converter resolves the voltage with **12 bits** of granularity, providing 4,096 discrete levels for scaling and alarm evaluation by the PLC.

For electrical loading calculations, the terminal draws **130 mA** from the E-bus supply, and each input has a differential resistance of **85 Ω** . Total measurement uncertainty is limited to **$\pm 0.3\%$ FSV**, allowing process controllers to maintain narrow tolerance bands without external calibration tables. During cyclic data exchange, each channel uses two bytes for status information and two bytes for its measured value, allowing the EtherCAT master to map

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diagnostic information alongside the raw data. The housing has an **IP20** rating, making the terminal suitable for installation inside a control cabinet. Its enclosure protects against accidental contact with hazardous internal parts but does not provide protection against water, so the surrounding cabinet must supply the required protection for the installation environment.

Specifications

Analog Inputs:	2	Common-mode Voltage:	10 V max.	Common-mode Voltage Ucm:	max. 10 V
Conversion Time:	0.625 ms typ.	Current Consumption (e-bus):	typ. 130 mA	E-bus Current:	130 mA typ.
Ground Reference:	Differential	Input Filter Cutoff:	1 kHz	Input Filter Limit Frequency:	1 kHz
Internal Resistance:	85 ? typ.	Measurement Error/uncertainty:	< ~0.3% (relative to full scale value)	Measuring Error:	±0.3% FSV max
Number Of Inputs:	2 (differential)	Operating Temperature:	-25...+60 degrees C	Power Supply:	via the E-bus
Process Image Width:	2 B status + 2 B value/ch	Protection Rating:	IP20	Resolution:	12 bits
Sampling Type:	Multiplex	Signal Current:	4...20 mA	Storage Temperature:	-40...+85 degrees C
Surge Voltage Resistance:	max. 35 V	Last Verified:	10/25/2026 2:11 PM		

Contact Us

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