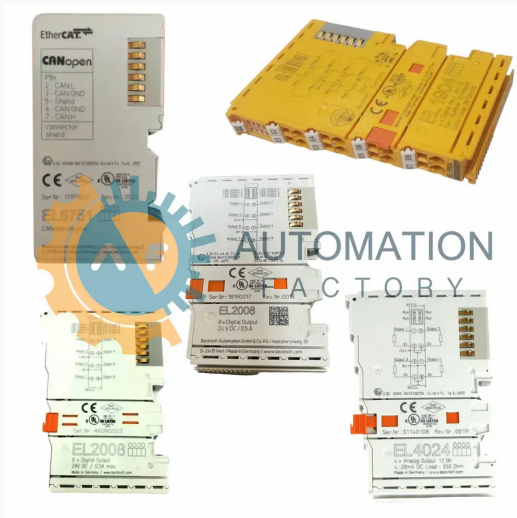




Beckhoff — EL EtherCAT Terminals

EL3174



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The **EL3174** is a four-channel analog input terminal manufactured by Beckhoff for the EL EtherCAT Terminals series. It converts differential or single-ended field measurements into digital data that travels through the EtherCAT backplane, allowing PLCs to capture process parameters with millisecond precision. Because it participates in the EtherCAT Distributed Clocks mechanism, the terminal aligns every conversion with the network reference time. This synchronization supports coordinated motion and data logging applications in machine tools, packaging lines, and process skids.

An internal **successive-approximation register converter** samples each channel through time-division multiplexing. The module accepts **four analog inputs**, and every sample is inserted into the network with an EtherCAT cycle time of **200 µs**. Before conversion, a hardware filter limits the input bandwidth to **5 kHz**, removing higher-frequency noise that could cause aliasing in the measurement. The conversion depth is **16 bits**, so the full-scale range is quantized into 65,536 discrete levels. Common-mode voltage may reach 35 V without affecting accuracy. The ground reference is differential for voltage channels, while current channels share a single-ended return. Distributed Clocks support provides sub-microsecond alignment between this terminal and motion axes driven from the same bus.

The digitized values occupy a process image of **16 bytes**, which the controller reads in one deterministic transaction. Field installation follows Beckhoff passive-ventilation guidelines because the housing is rated **IP20**. The terminal electronics draw up to **40 mA** from the auxiliary 5 V rail, and this current must be included when sizing the

power feed. The input circuitry includes protection against reverse polarity and short-term overdrive. Voltage channels have an absolute maximum input of 50 V, while current channels have an absolute maximum of **30 V** without physical damage.

Specifications

Adc Type:	SAR	Analog Inputs:	4	Approvals:	CE, UL
Common-mode Voltage:	35 V max.	Connection:	Spring cage terminals	Conversion Time:	2 ms
Current Consumption E-bus:	Approx. 110 mA	Current Destruction Limit:	30 V	Distributed Clocks:	Yes
Ethercat Cycle Time:	200 µs	Ground Reference:	U differential; I single-ended	Input Filter:	5 kHz
Input Signal Range:	0/4...20 mA	Input Type:	3-channel analog input	Max Terminal Current:	40 mA
Mounting:	DIN rail	Number Of Channels:	4 (electrically isolated in pairs)	Operating Temperature:	0...55°C
Process Image:	16 Byte	Protection Class:	IP20	Resolution:	16 bit
Sampling Type:	Multiplex	Storage Temperature:	-25...+85°C	Voltage Destruction Limit:	50 V
Last Verified:	10/23/2026 5:10 AM				

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