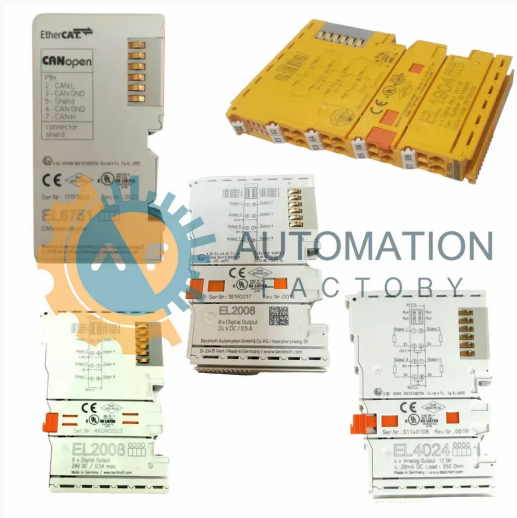


Beckhoff — EL EtherCAT Terminals

EL3312



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The **EL3312** is a temperature-measurement input terminal from Beckhoff that belongs to the EL EtherCAT Terminals series. It accepts thermocouple signals and digitizes them so that an EtherCAT controller can monitor process temperatures without separate wiring hubs or analog cards. By occupying a single slice on a DIN rail, the unit streamlines distributed data acquisition in industrial automation cells where compact signal conditioning and networked I/O are required.

This terminal provides **2 channels**, allowing two thermocouples to be connected through 2-wire connection technology that simplifies field cabling. Conversion is performed with an internal resolution of **16-bit**, providing sufficient granularity for precise control loops. A **500 V** bus isolation barrier separates the sensor side from the system backplane, protecting the controller from ground shifts. The EtherCAT backplane has a current draw of only **200 mA**, an important figure when planning total station current. Installation follows the 35 mm mounting rail standard, and plug-in wiring can be routed up to 30 m without repeaters. A built-in mechanism detects broken leads so that the controller can recognize open circuits immediately. The housing has an **IP20** rating, making it suitable for enclosed control cabinets.

The integrated cold-junction sensor has an accuracy of **±2.0 °C**, and its 40 mK/K temperature coefficient keeps reference error low across ambient temperature changes. An analog input filter with a **1 kHz** cutoff attenuates high-frequency noise before conversion. Once the data are processed, the EtherCAT process image delivers **16 bytes** of input to the PLC while sending 8 bytes in the other direction for configuration and diagnostics. Temperature values

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are reported with a display increment of **0.1 °C/digit**, allowing small changes to be represented clearly. The combination of cold-junction compensation, input filtering, and broken-wire detection supports stable thermocouple monitoring under changing operating conditions.

Specifications

Bus Isolation:	500 V	Channels:	2	Cold Junction Accuracy:	±2.0 °C
Cold Junction Tempco:	40 mK/K	Connection Method:	2-wire	Connection Technology:	2-wire
Conversion Time:	approx. 1.2 s up to 20 ms, default: approx. 125 ms	Current Consumption (e-bus):	200 mA	E-bus Current:	200 mA
Input Filter Cutoff:	1 kHz	Input Filter Limit Frequency:	typ. 1 kHz	Internal Resolution:	16-bit
Max Cable Length:	30 m	Measurement Uncertainty (temperature At 23°C):	varies per type, e.g., B: ±8.5°C, C: ±6.2°C	Mounting Rail:	35 mm
Number Of Inputs:	2	Open-circuit Recognition:	Yes	Operating Temperature:	-25 to +60°C
Power Supply:	via the E-bus	Process Image Input:	16 bytes	Process Image Output:	8 bytes
Protection Class:	IP20	Resolution:	16 bit, adjustable	Special Features:	Channel-by-channel wire break detection, firmware filter adjustable
Storage Temperature:	-40 to +85°C	Temp Display Resolution:	0.1 °C/digit	Temperature Measurement (thermocouple Types):	B, C, E, J, K, L, N, R, S, T, U
Voltage Measurement:	±30/±60/±75 mV	Weight:	approx. 60 g	Last Verified:	10/23/2026 11:52 AM

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