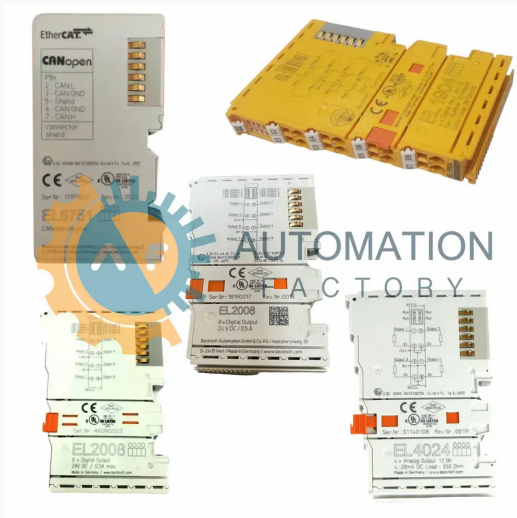




Beckhoff — EL EtherCAT Terminals

EL3311



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The **EL3311** is a single-channel thermocouple input module produced by Beckhoff within the EL EtherCAT Terminals series. It inserts into an EtherCAT I/O strand and forwards temperature data to a controller in real time. Inside automated systems, the terminal conditions microvolt signals from industrial thermocouples so the PLC can supervise heating, cooling, or safety interlocks.

It provides bus-side isolation of **500 V**, shielding the control network from field-level transients and minimizing ground-loop currents in mixed-signal systems. The internal cold-junction sensor maintains an accuracy of **±2.0 °C** and has a temperature coefficient below 40 mK/K, so compensation error stays low even when cabinet temperature drifts. The default thermocouple type is **K**, and input voltages are captured over a **±75 mV** range, providing coverage for Types J, T, and other low-level sensors as well. Conversion is handled by a **16-bit** sigma-delta converter that oversamples and filters noise before data are reported to the EtherCAT master at a granularity of **4 µV/digit**. One input is connected through two-wire terminals, and differential voltage to ground must remain within **±2 V** to preserve measurement integrity.

Open-circuit recognition is active, so broken sensor lines are flagged to the PLC without extra wiring and can trigger immediate fault routines. Temperature values are reported with a resolution of **0.1 °C/digit**, enabling precise oven or chiller regulation from a supervisory HMI. Field wiring may extend up to **30 m**, providing flexibility for distributed probes inside machinery while staying within the supported analog bandwidth. The housing carries an **IP20** rating, indicating finger-safe protection for cabinet installation and requiring installation in a suitable enclosure when

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moisture or dust is present.

Specifications

Bus-side Isolation:	500 V	Cold Junction Accuracy:	±2.0 °C	Cold Junction Sensor:	Per-channel internal
Cold Junction Tempco:	<40 mK/K	Connection Method:	2-wire	Connection Technology:	2-wire
Conversion Time:	approx. 750 ms to 20 ms, default ~75 ms	Current Consumption E-bus:	200 milliampere	Default Tc Type:	K
Differential To Ground:	±2 V max	Electrical Range Used:	±75 mV	Input Filter Limit Frequency:	typ. 1 kHz
Installation Position:	Variable	Internal Resolution:	16-bit	Max Cable Length:	30 m
Number Of Inputs:	1	Open-circuit Recognition:	Yes	Pdo Resolution (±75 Mv):	4 µV/digit
Power Supply:	Via the E-bus	Preset Temp Resolution:	0.1 °C/digit	Protection Class:	IP20
Protection Rating:	IP20	Resolution:	16 bit, adjustable (0.1/0.01°C, 1/2/4 µV)	Temperature Measurement (type K Default):	Type B, C, E, J, K, L, N, R, S, T, U
Voltage Measurement:	±30/±60/±75 mV	Weight:	60 g	Last Verified:	10/24/2026 2:37 AM

Contact Us

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Shipping Options



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