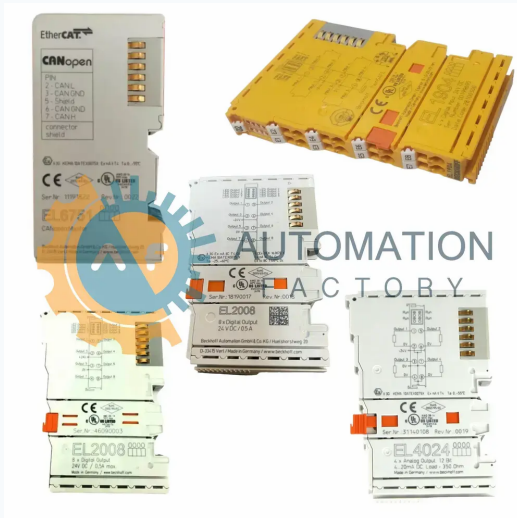




Beckhoff — EL EtherCAT Terminals

EL3102

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The **EL3102** is a compact analog input terminal manufactured by Beckhoff in the EL EtherCAT Terminals series. Installed on a standard DIN rail next to other E-bus modules, it serves as a front end that digitizes low-level process signals for the automation controller. By capturing voltage measurements directly at the machine, the module reduces wiring to the PLC cabinet and preserves signal integrity, making it suitable for decentralized data acquisition in motion control, packaging lines, and general-purpose process monitoring.

The module provides **2 analog inputs**, each accepting bipolar signals up to **±10 V**. Signals use a **differential input configuration**, which helps minimize ground loops. A conversion depth of **16-bit resolution** delivers 65,536 discrete codes for fine measurement granularity. Conversion is executed on both channels at once through simultaneous sampling, and an analog front end with a **5 kHz input filter** suppresses higher-frequency noise before digitization. The resulting values occupy an input data width of 2×16 bits, while per-channel diagnostic flags are transferred in 2×8 -bit status bytes. The measurement circuit tolerates a common-mode voltage of 35 V. Synchronization features are integrated into the EtherCAT communication system. The terminal supports distributed clocks and provides **<1 µs clock precision**, allowing time-aligned acquisition across multiple modules. Power for the converters and logic is derived directly through the E-bus backplane, reducing external wiring. Electrical loading on the sensor is negligible because the input stage presents an **internal resistance greater than 200 kΩ**, while the signal contact can carry up to **40 mA** without damage. The housing is rated **IP20**, so installation is limited to dry control cabinets that provide basic touch protection against hazardous voltages.

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Specifications

Analog Inputs:	2	Bit Width In Process Image:	Inputs: 8 bytes	Clock Precision:	<<1 μs
Common Mode Voltage:	35 V Max	Dimensions (w X H X D):	12 mm x 100 mm x 68 mm	Distributed Clocks:	Yes
Ground Reference:	Differential	Input Data Width:	2 x 16 bit	Input Filter Freq:	5 kHz
Input Filter Limit Frequency:	5 kHz	Internal Resistance:	>200 k?	Number Of Inputs:	2 (differential)
Operating Temperature Range:	-25AC to +60AC	Power Supply:	Via the E-bus	Protection Class:	IP20
Resolution:	16 bit	Sampling Type:	Simultaneous	Signal Contact Current:	40 mA
Signal Voltage:	±10 V	Signal Voltage Range:	-10 V to +10 V	Special Features:	Switchable measuring data representation, FIR/IIR filters
Status Data Width:	2 x 8 bit	Supply Voltage:	Via E-bus	Weight:	Approx. 60 g
Last Verified:	10/24/2026 3:49 PM				

Contact Us

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