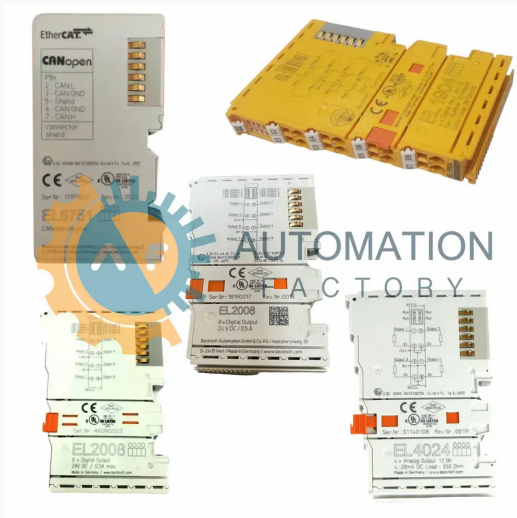




Beckhoff — EL EtherCAT Terminals

EL3114



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The Beckhoff **EL3114** is an analog input module in the EL EtherCAT Terminals series. As part of a distributed I/O system, the terminal digitizes field-level sensor signals and forwards the data over EtherCAT to machine controllers. Differential measurement channels allow process instrumentation to be connected without creating ground loops. This arrangement is useful in precision measurement sections of industrial automation cells where compact DIN-rail modules simplify cabinet layouts.

It provides **4 differential analog inputs**, each converted with a **16-bit** quantization depth to support fine voltage measurement. An internal analog front end tolerates a common-mode potential of up to **10 V**, while a programmable low-pass filter limits the signal bandwidth to **5 kHz** and prevents high-frequency noise from entering the control system. Conversion results and corresponding status data are packed into the process image for transmission to the controller. The differential ground reference helps minimize measurement offsets caused by potential differences between connected devices. Power for the electronics flows directly from the EtherCAT **E-bus**. Integrated distributed clocks synchronize sampling instants with submicrosecond accuracy across multiple terminals, supporting coordinated data acquisition in distributed systems.

The terminal draws **40 mA** of input contact current from the upstream segment and can be mounted on a **35 mm** rail. Its variable installation position permits mounting in any orientation that meets the enclosure and wiring requirements. The housing provides **IP20** protection, making the terminal suitable for closed electrical enclosures that prevent contact with conductive debris. When EtherCAT sampling commands are set to **Simultaneous**, all

channels acquire data at the same moment, eliminating phase skew in multichannel calculations. This synchronized acquisition is useful when related voltage signals must be compared during the same sampling cycle. The lack of CoE storage means configuration data is not retained locally, so the controller must provide the required settings during startup.

Specifications

Analog Inputs:	4 (differential)	Approvals/markings:	CE, CCC, UL, ATEX, IECEx	Common Mode Voltage:	10 V
Conversion Time:	~ 100 µs	Distributed Clock Precision:	<< 1 µs	Distributed Clocks:	Yes
Electronics Supply:	E-bus	Ground Reference:	Differential	Input Contact Current:	40 mA
Input Filter Limit:	5 kHz	Input Filter Limit Frequency:	5 kHz	Installation Position:	Variable
Internal Resistance:	typ. 85 ? + diode voltage	Measurement Error/uncertainty:	< ±0.3% (relative to full scale value)	Mounting Rail:	35 mm
Nocoestorage Support:	Yes	Number Of Inputs:	4 (differential)	Operating Temperature:	-25...+60°C
Power Supply:	via the E-bus	Process Image:	4 x 16 bit + 4 x 8 bit	Protection Class:	IP20
Resolution:	16 bit	Sampling Type:	Simultaneous	Signal Current:	0...20 mA
Storage Temperature:	-40...+85°C	Surge Voltage Resistance:	35 V DC	Last Verified:	10/23/2026 6:25 AM

Contact Us

-  1620 Old Apex Road, Cary, NC 27513, USA
-  **Toll Free:** [1-888-551-3082](tel:1-888-551-3082)
-  **International:** [1-919-443-0207](tel:1-919-443-0207)
-  **Fax:** [1-919-867-6204](tel:1-919-867-6204)
-  **Email:** sales@wakeindustrial.com

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