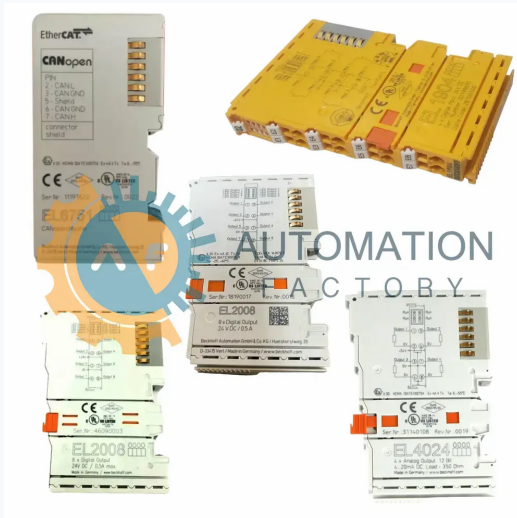


Beckhoff — EL EtherCAT Terminals

ELX5151



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The **ELX5151** is a single-channel digital input terminal produced by Beckhoff within the EL EtherCAT Terminals series. Installed on a DIN rail alongside other I/O modules, it forwards the state of one field sensor to the EtherCAT process image, allowing PLCs to react to fast edges or count pulses from proximity switches or rotary encoders. The terminal provides an intrinsically safe, bus-coupled interface that eliminates the need for separate barrier modules while maintaining precise timing through its compact and standard PDO mappings.

The module handles signal bursts up to **50 kHz**, so high-speed transducers can be connected without missing events. A rising edge is recognized once the loop current reaches **at least 2.1 mA**, and the signal is considered low when the current falls to **1.2 mA or less**. The fixed **0.2 mA** switching hysteresis suppresses contact bounce. Internal timestamping lets the controller poll the captured value with **100 ns** accuracy, supporting deterministic motion or counting tasks. The terminal transfers data in two formats: a 10-byte compact PDO that minimizes bus load and a 16-byte standard PDO that exposes extended diagnostic flags. One logical channel is present, and the interpolation engine offers 8-bit resolution when finer time-domain reconstruction is required.

Wire integrity is supervised, and a cable-break alarm is generated when the current drops to **200 µA or less**. A short circuit is detected when the line current exceeds 6.0 mA, while the intrinsically safe short-circuit current is limited to 12.4 mA. For sensor excitation, the terminal delivers an intrinsically safe **8.2 VDC** supply. Under open-circuit conditions, the voltage rises to **10.72 V**, but the output power is limited to **33 mW** to meet Ex ia requirements. The intrinsically safe circuit limits thermal and spark energy so the channel can connect to suitable

field devices in hazardous areas.

Specifications

"0" Signal Current:	<= 1.2 mA	"1" Signal Current:	>= 2.1 mA	Cable-break Limit:	<=200 μ A
Compact Pdo Width:	10 byte	Current Consumption E-bus:	Typ. 80 mA	Current Consumption Power Contacts:	Typ. 15 mA + load
Encoder Connection:	A, B	Encoder Operating Voltage:	8.2 V DC	Encoder Supply:	8.2 VDC
Ex Open-circuit Voltage:	10.72 V	Ex Output Power:	33 mW	Ex Short-circuit Current:	12.4 mA
Fault Detection:	I <= 200 μ A (cable break), I >= 6.0 mA (short circuit)	High-level Current:	>=2.1 mA	Input Frequency:	50 kHz
Interpolation Resolution:	8 bit	Low-level Current:	<=1.2 mA	Number Of Channels:	1
Open Circuit Voltage:	Typ. 8.2 V DC	Query Cycle Accuracy:	100 ns	Sensor Inputs:	1
Short-circuit Current:	Typ. 9 mA	Short-circuit Limit:	>=6.0 mA	Specification:	IEC 60947-5-6
Standard Pdo Width:	16 byte	Supply Voltage Electronics:	24 V DC (via power contacts), ELX9560 power supply	Switching Hysteresis:	0.2 mA
Warranty:	One-year	Last Verified:	10/23/2026 9:16 PM		

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