



Beckhoff — IE Extension Box Units

IE5009



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The **IE5009** is an extension box unit manufactured by Beckhoff within the IE Extension Box Units series. It functions as a compact single-channel sensor interface that brings SSI encoder signals directly into a distributed I/O architecture, allowing controllers to monitor absolute position data without a local panel-mounted coupler. Installed on the machine frame, the module receives power and provides communication through standardized circular connectors, simplifying field wiring in industrial automation lines.

The module supports **one measurement channel**. It translates shaft position through an **SSI sensor interface**, and the clock line can operate at up to **1 MHz** when maximum throughput is required. A dedicated output rail supplies encoders with **24 VDC**, eliminating the need for an external supply block. Incoming telegrams enter the process image as **32 input bits**, while the serial frame feeding that image is 24 bits wide. Data flow is unidirectional because the interface is read-only. Timing is referenced to the screw-in M23 encoder connector, which has 12 pins that carry the differential signal pairs and auxiliary power.

For applications that do not require the highest bandwidth, the unit can use a preset clock of **250 kHz** to reduce cable-borne interference. Output diagnostics are grouped within a control byte containing **8 output bits**, while returned quality information occupies a status byte containing **8 input bits**. Communication uses **differential RS-485 signaling** to maintain signal integrity across long machine segments. The measured data leave the housing through a downstream four-pin M8 socket. A four-pin M8 plug supplies the module with 24 V field power and ground, keeping the power and communication connections compact. The separate encoder connector accommodates the

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position signal, clock line, and sensor power within the same machine-mounted assembly.

Specifications

Channel Count:	1	Control Byte:	8 Output Bits	Current consumption (without sensor):	55 mA
Data direction:	Read	Data transfer rate default:	250 kHz	Data transfer rate max:	1 MHz
Downstream Connection:	1 x M8 Socket, 4-Pin	Encoder Connection:	M23 Screw-In, 12-Pin	Encoder supply voltage:	24 V DC (from load)
Interface Type:	SSI Sensor Interface	Max Data Rate:	1 MHz	Nominal voltage:	24 V DC (-15%/+20%)
Number of channels:	1	Operating temperature:	0...55°C	Power downstream connector:	M8 female, 4-pin, A-coded
Power Feed:	1 x M8 Connector, 4-Pin	Power feed connector:	M8 male, 4-pin, A-coded	Preset Data Rate:	250 kHz
Process Data Input:	32 Input Bits	Process image control/status width:	8 bit (optional)	Process image data width:	32 bit
Protection rating:	IP65/66/67 (EN 60529)	Sensor Supply:	24 VDC	Serial Input:	24 Bits
Serial input resolution:	24 bit (adjustable)	Signal input type:	RS-485 differential	Signal Type:	Differential Signal (RS485)
SSI encoder connector:	M23, 12-pin outer thread	Status Byte:	8 Input Bits	Storage temperature:	-25...+85°C
Last Verified:	10/24/2026 12:49 AM				

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