

Преобразователи сигналов EIB 700

Технические характеристики

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EIB 700

Signal converter for computer-aided measured-value acquisition



For use as evaluation units, the EIB 700 signal converters feature connections for four encoders. These units are particularly well suited for the following applications:

- Precise position measurement, especially for inspection stations and multi-gauging fixtures
- Portable, on-site data acquisition (e.g., for machine calibration)
- Integration into customized applications (e.g., high-precision measuring machines)

The EIB 700 series is ideal for applications requiring high-resolution encoder signals and rapid measured-value acquisition. Its Ethernet transmission also enables the use of switches or hubs for connecting more than one EIB. Wireless LAN transmission, for example, can be used as well.

Design

The EIB 700 features a bench-top housing. With a mounting bracket accessory, it can also be easily installed into a 19-inch housing. The device is suitable for the following supply voltages:

EIB 741: AC 100 V to 240 V

EIB 742: DC 24 V

Functions

For **measured-value generation**, the EIB 700 subdivides the signal periods of the incremental signals up to 4096-fold. Automatic adjustment of the sinusoidal incremental signals reduces the error within one signal period.

The integrated **measured-value memory** enables the EIB 700 series to save typically 250 000 measured values per axis. Based on the axis, these measured values can be saved by means of either an internal or external trigger.

The **interval counter** permits position-dependent triggering in conjunction with an incremental encoder on Axis 1. For this purpose, the signals of Axis 1 are interpolated and forwarded to a position counter. Triggering pulses are generated either at a certain position or equidistantly at configurable intervals. They are continuously generated once a configurable starting position is crossed in either counting direction. The trigger pulses can be used to trigger further internal axes of the EIB or can also be output over a trigger output.

Data interface

A standard Ethernet interface using TCP/IP or UDP communication is available for **data output**, permitting direct connection to a PC, laptop, or industrial PC. The type of measured-value transmission can be selected through the operating mode (single values, as a block, or upon software request).

For **processing the measured values** on a PC, software drivers for Windows, Linux, and LabVIEW are included in delivery, as are example programs and the EIB application software. The software driver makes it easy to program customized applications, and the example programs demonstrate the potential of the EIB 700 series. The EIB application software assists with setting up and demonstrating the capabilities of the EIB 700 series. This software is provided as source code and can serve as a platform for the development of one's own applications.

Operating modes	Soft Real-Time	Recording	Streaming	Polling
Properties	Immediate transmission of the measured value upon occurrence of the triggering event	Storage of measured values in the EIB's internal measured-value memory	Buffering and block transmission of measured values	Software request originating from the customer's application
Selectable trigger sources	All internal and external sources			Via software command
Trigger rate	≤ 10 kHz (access time to position values < 100 µs)	≤ 50 kHz	≤ 50 kHz Up to 1 200 000 bytes/s	Depends on the application
Typical applications	Closed Loop control	Very high recording rate Offline data analysis	High recording rate in combination with high recording depth	Semi-static measured value recording

	EIB 741 EIB 742		
Encoder inputs	15-pin D-sub connections (female, X11 to X14), for four encoders		
Interface (switchable)	$\sim 1 \text{ V}_{\text{pp}}, \sim 11 \mu\text{A}_{\text{pp}}$	EnDat 2.1	EnDat 2.2
Supply voltage for encoders	DC 5.12 V $\pm 0.15 \text{ V}$; max. 450 mA per channel Overcurrent protection (automatic switch-off, resettable) at 550 mA		
Input frequency	≤ 500 kHz	–	–
Subdivision factor	4096-fold	–	–
Signal adjustment	Automatic adjustment of offset, phase, and amplitude	–	–
Cable length ¹⁾	≤ 150 m	≤ 150 m	≤ 100 m
Data register for measured values	48 bits (of which only 44 bits are used)		
Interval counter	Derived from Axis 1 (only 1 V _{pp}) ²⁾ , Configurable interpolation factor from 1-fold to 100-fold Can be used as a trigger source or additional counting axis	–	–
Measured-value memory	Typically 250 000 position values per channel		
Measured-value trigger³⁾	Storage of the measured values of the four axes through an external or internal trigger (selectable). External: • Signal via trigger input • Software command (over Ethernet) Internal: • Timer and interval counter • Reference pulse of the respective axis (from Axis 1 and other axes)		
Trigger input ⁴⁾	9-pin D-sub connection (male); differential inputs as per RS-485 (terminating resistors can be activated)		
Trigger output ⁴⁾	9-pin D-sub connection (female); four differential outputs as per RS-485		
Access to measured values	Depends on the selected operating mode (see separate table)		
Software	• Software drivers for Windows, Linux and LabVIEW • Example programs • EIB application software		
Data interface⁵⁾	Ethernet as per IEEE 802.3 (10/100/1000 Mbit/s)		
Network address	Automatic assignment through Dynamic Host Configuration Protocol (DHCP), or manual assignment		
Dimensions	Approx. 213 mm x 152 mm x 42 mm		
Operating temperature	0 °C to 45 °C (storage temperature: 0 °C to +70 °C)		
Supply voltage	EIB 741: AC 100 V to 240 V ($\pm 10 \%$), 50 Hz to 60 Hz ($\pm 2 \%$); max. power consumption: 30 W EIB 742: DC 24 V ($-15 \%/+20 \%$), max. 2 A		

¹⁾ The supply voltage range of the encoder must be maintained; specified cable length applies when HEIDENHAIN cables are used.

²⁾ Maximum input frequency during referencing: 70 kHz

³⁾ Different trigger sources can be assigned to the individual axes

⁴⁾ Can also be used as logical input or output

⁵⁾ The quality of the data cable between the EIB and PC must be adapted to the transmission rate and cable length

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