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HEIDENHAIN



Product Information

EIB 741

External Interface Box

EIB 741

The EIB 741 is an external interface box for precise position measurement. It is ideal for inspection stations and multipoint inspection apparatuses as well as for mobile data acquisition, such as in machine inspection and calibration.

A maximum of **four HEIDENHAIN encoders**, either with sinusoidal incremental signals (∿ 1 V_{PP}) or with EnDat interfaces (EnDat 2.1 and EnDat 2.2) can be connected to the EIB 741.

The EIB 741 subdivides the periods of the incremental signals up to 4096-fold for **measured-value generation.** The deviations within one signal period are automatically reduced by adjustment of the sinusoidal incremental signals.

The integrated **measured-value memory** enables the EIB 741 to save up to 250000 measured values per axis. Internal or external triggers can be used for axis-specific storage of the measured values.

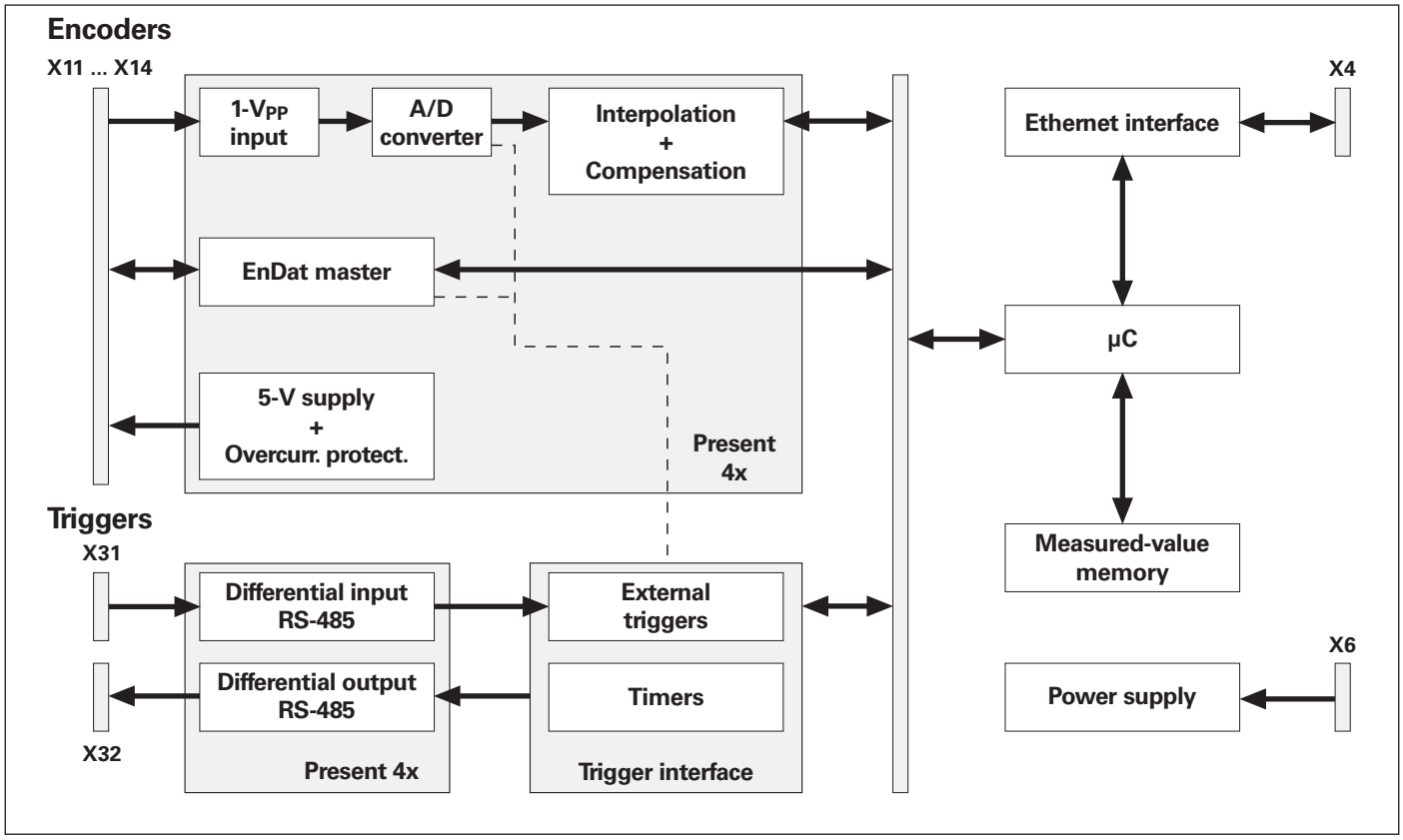
A standard Ethernet interface using TCP/IP or UDP communication is available for **data output.** This permits direct connection to a PC, laptop or industrial PC. The type of measured-value transfer can be selected through the operating mode (transfer of individual values, block transfer, or transfer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

Driver software for Windows, Linux and LabVIEW is included in the items supplied, in order to **process the measured values** on the PC. The driver software facilitates programming of customer applications. It also contains program examples demonstrating the performance range of the EIB 741.

Thanks to the compact **dimensions**, two EIB 741 interface boxes fit next to each other in a 19-inch housing. They occupy one height unit.

The EIB 741 is ideal for applications requiring high-resolution encoder signals and fast data logging. Ethernet transmission also enables you to use switches or hubs for connecting more than one EIB. It is also possible to use WLAN transmission, for example.

Basic Circuit Diagram



Specifications	EIB 741		
Encoder inputs	D-sub connections 15-pin, female (X11 to X14), for four encoders		
Input signals[1] (switchable)	⌒ 1 V_{PP}	EnDat 2.1	EnDat 2.2
Power supply for encoders	5.12 V ± 3%; 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[2]	≤ 150 m	≤ 150 m	≤ 100 m
Data register for measured values	48 bits (only 44 bits are used)		
Measured-value memory	Approx. 250 000 position values per channel		
Measured-value trigger	Synchronous storage of the measured values of all four channels alternatively through external or internal trigger ***External:*** – Signal via trigger input – Software command (via Ethernet) ***Internal:*** – Timer		
Trigger input	D-sub connection 9-pin, male Differential inputs as per RS-485 (terminating resistors can be activated)		
Trigger output	D-sub connection 9-pin, female 4 differential outputs as per RS-485		
Access to measured values	Depends on the selected operating mode (see separate table)		
Driver software and demonstration program	For Windows, Linux, LabVIEW Program examples		
Data interface[3]	Ethernet as per IEEE 802.3 (max. 1 Gbit)		
Network address	Automatic assignment through DHCP (Dynamic Host Configuration Protocol) or manual assignment		
Dimensions	Approx. 213 x 152 x 42 mm		
Operating temperature **Storage temperature**	0 °C to 45 °C 0 °C to 70 °C		
Power connection	100 Vac to 240 Vac (± 10%), 50 Hz to 60 Hz (± 2 Hz), power consumption approx. 30 W		

[1] 11 μA_{PP} upon request
[2] The supply voltage range of the encoder must be maintained; specified cable length applies when HEIDENHAIN cables are used.
[3] The quality of the data cable for connecting the EIB to the PC must match the requested transfer rate and the cable length.

Note:
The features can be extended by updating the firmware.

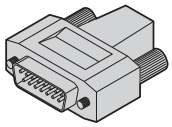
Operating Modes

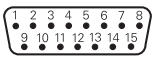
	Soft Realtime Mode	Recording	Streaming	Polling
Properties	Immediate transmission of measured values when the trigger event occurs	Storage of measured values in the EIB's internal measured-value memory	Buffering and block transfer of measured values	Software request from customer application
Selectable trigger sources	All internal and external sources			By software command
Data transfer protocol	UDP	TCP/IP	UDP	TCP/IP
Trigger rate	≤ 10 kHz (Access time to position values < 100 µs)	≤ 50 kHz	≤ 50 kHz max. 1 200 000 bytes/ second	≤ 50 kHz

Electrical Connection

Pin layout EnDat

15-pin
D-sub connector, male



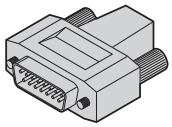


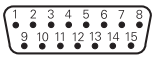


	Power supply					Incremental signals[1]				Absolute position values				Other
	4	**12**	**2**	**10**	**6**	**1**	**9**	**3**	**11**	**5**	**13**	**8**	**15**	**7/14**
	U_P	**Sensor** U_P	**0 V**	**Sensor** 0 V	**Internal shield**	**A+**	**A–**	**B+**	**B–**	**DATA**	**$\overline{DATA}$**	**CLOCK**	**$\overline{CLOCK}$**	**Vacant**

Pin layout ∿ 1 V_{PP}

15-pin
D-sub connector, male







	Power supply				Incremental signals						Other signals			
	4	**12**	**2**	**10**	**1**	**9**	**3**	**11**	**14**	**7**	**13**	**8**	**6**	**5/15**
∿ 1 V_{PP}	**U_P**	**Sensor** 5 V	**0 V**	**Sensor** 0 V	**A+**	**A–**	**B+**	**B–**	**R+**	**R–**	**Vacant**	**$L1^{2)}$** H[3]	**$L2^{2)}$** L[3]	**Vacant**

Cable shield connected to housing; **U_P** = power supply voltage
Sensor: The sensor line is connected internally with the corresponding power line.
Vacant pins or wires must not be used!

[1] Only with ordering designation EnDat 01 and EnDat 02
[2] Only for LIDA 4xx
[3] Only for LIF 481

HEIDENHAIN

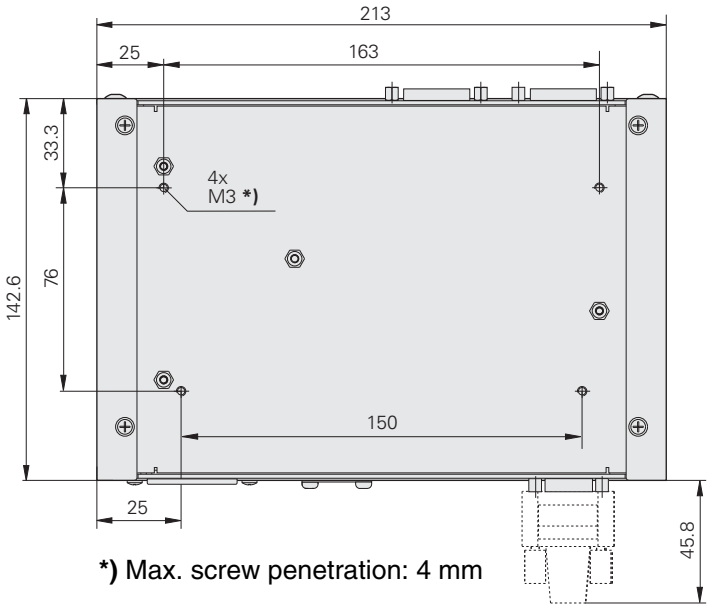
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For more information
- Product overview: *Interface Electronics*

External interface box for precise position measurement with possibility of connecting four encoders with 1 Vpp or EnDat interface. Connection to a PC takes place via the standard Ethernet interface.

Caution:
The pin layout of the encoder inputs on the EIB 741 differs from that of the IK 220.



***)** Max. screw penetration: 4 mm

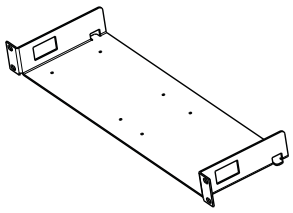
EIB 741

- Four encoder inputs with selectable interface: 1 Vpp or EnDat
- Encoders: 15-pin D-sub (female)
- Max. input frequency for the 1 Vpp interface: 500 kHz
- Measured value memory for approx. 250 000 measured values per channel
- Triggering of the position values: Internally or externally
- Trigger inputs and outputs: 4 channels (D-sub connecting element)
- Trigger rate: max. 50 kHz, depending on operating mode
- Connection to the PC: standard Ethernet connection as per IEEE 802.3
- Integrated power supply unit: 100 … 240 VAC (± 10%), 50 … 60 Hz (± 2 Hz)

	LP				
	50	20	10	5	1
ID 617 574-01	1236.00	1313.25	1390.50	1467.75	1545.00

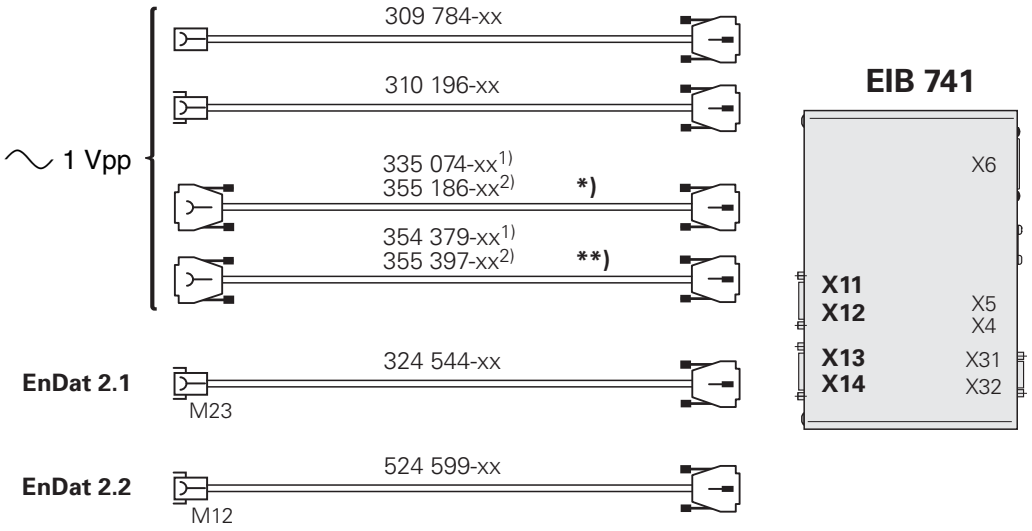
Accessory

Mounting bracket
for installation in 19-inch systems (one height unit)

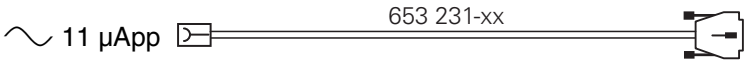


	LP				
	50	20	10	5	1
ID 671 144-01	57.60	61.20	64.80	68.40	72.00

Connecting cables



Upon request



1) ∅ 8 mm
2) ∅ 6 mm, max. cable length: 9 m
***)** without limit or homing signals
****)** with limit or homing signals

For a list of cables sorted by ID, as well as further information,
see the “Cables, Connectors, Accessories” section on page 2-1 ff.

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