Product Information

EIB 392
Interface Electronics as Cable Version
EIB 392
• Interface electronics in D-sub connector housing
• Integrated 16 384-fold subdivision
• Input: Incremental encoders from HEIDENHAIN
• Output: Absolute position values as per EnDat 2.2, Fanuc Serial Interface or Mitsubishi high speed interface

Specifications

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**Input**
- For HEIDENHAIN encoders
- Incremental signals: \( \sim 1 \text{ V}_{\text{pp}} \) (input frequency \( \leq 400 \text{ kHz} \))
- Reference mark: One or distance-coded
- Electrical connection*: 16-pin, 2-row D-sub connector (female), with locking nuts
- 12-pin M23 connector (female)
- Power supply for encoders: From EIB voltage supply
- Cable length: \( \leq 6 \text{ m} \)

**Output**
- Absolute position values: EnDat 2.2, Fanuc Serial Interface, Mitsubishi High Speed Interface
- Ordering designation: EnDat22, Fanuc02, Mit02-4
- Calculation time \( t_{\text{calc}} \): \( \leq 5 \mu\text{s} \)
- Clock frequency: \( \leq 16 \text{ MHz} \)
- Electrical connection: 15-pin, 2-row connector (male), with locking screws and integrated electronics
- Cable length (with HEIDENHAIN cable): \( \leq 100 \text{ m} \)
- Subdivision: \( \leq 16 384\text{-fold} \)
- Power supply: DC 5 V ±0.25 V
- Power consumption (max.): 1700 mW (including \( I_{\text{E}} = 150 \text{ mA} \))
- Current consumption (typical, without load): 130 mA + \( I_{\text{E}} \)
- Operating temperature: 0 °C to +70 °C
- Storage temperature: -30 °C to +70 °C
- Vibration: 55 Hz to 2000 Hz
- Shock: 11 ms
- Protection: EN 60 529
- Mass: 140 g (EIB without cable, with electronics)

* Please indicate when ordering
1) Only for adjusting; do not use in normal operation
2) \( I_{\text{Encoder}} \leq 150 \text{ mA}; \) greater cable lengths upon request

**Electrical connection**

**Pin layout – EIB**

**Input**
- 15-pin D-sub connector
- 12-pin M23 connector

**Output**
- 15-pin D-sub connector

**Specifications**

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**Shield on housing:**
- **U**p = Power supply
- **Sensor:** The sensor line is connected internally with the corresponding power line.

**Note:** Vacant pins or wires must not be used!
Configuration of the EIB 392

In order for the EIB 392 to function correctly together with the encoder, certain encoder parameters must be stored in the EIB 392 (such as the number of signal periods, nominal increment of the reference marks, encoder ID, etc.). Only HEIDENHAIN can program this information. This information is also printed on the ID label. It can also be read out via the EnDat interface.

Information on the ID label
The data interface designates the type of interface for transmission of the position values at the output of the EIB.

Line count or signal period
For rotatory encoders, the number of signal periods per revolution is indicated. For linear encoders, the signal period is shown in µm.

The encoder ID indicates the type of encoder that can be connected (e.g., EnDat): 00 Incremental linear encoder without distance-coded reference marks 10 Incremental linear encoder with distance-coded reference marks 80 Incremental rotary or angle encoder without distance-coded reference marks 90 Incremental rotary or angle encoder with distance-coded reference marks For the EnDat interface, this value is stored in word 14 of the EnDat 2.1 parameters.

The nominal increment \( N \) of the reference marks is indicated in signal periods if the connected encoder has distance-coded reference marks (EnDat 2.2 encoder ID = 10 or 90).

Example:
Information on the ID label for the connection of an ERM 280 (line count: 1024) to the EnDat 2.2 interface via an EIB 392
Data interface: EnDat22
Encoder ID: 80
Line count or signal period: 1024
Nominal increment of the ref. marks: –
Subdivision: 16384

Line count or signal period
Encoder ID

Nominal increment of the reference marks

Establishing the absolute reference
Because incremental encoders are connected to the EIB 392, immediately after switch-on it provides relative position values that begin with the position at switch-on. The absolute reference is not established until the reference marks are traversed.

For encoders with distance-coded reference marks, two successive reference marks must be crossed without the direction of motion being changed.

EIB 392: Requirements for the control
EnDat 2.2 permanently provides the relative position as Position 1. When absolute reference is established, the RM bit is set in the EnDat additional data, and the absolute position value is transmitted as Position 2. Before you use the EIB 392, please check whether the subsequent electronics support this EnDat 2.2 device profile for incremental encoders.

Please note:
It is not possible to combine the EIB 392 with interface electronics that have a DRIVE-CiQ interface (e.g., EIB 2391 S or EIB 3391 S), because these interface electronics accept only absolute encoders.

EIB 392: Online diagnostics
The EIB 392 supports the online diagnostics of EnDat 2.2 and provides valuation numbers for the incremental track.

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This Product Information supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is made.

For more information:
Comply with the requirements described in the following documents to ensure the correct operation of the encoder:
• Product overview: Interface Electronics 598160-xx
• Brochure: Interfaces of HEIDENHAIN Encoders 1078628-xx
• Brochure: Cables and Connectors 1206103-xx
For brochures and product information documents, visit www.heidenhain.de.