EIB 3392 S
Signal converter in cable design with firmware version 15
- Input: HEIDENHAIN encoders with the EnDat22 interface
- Output: DRIVE-CLiQ interface

Encoder requirements
The EIB 3392 S makes it possible to connect encoders with the EnDat22 ordering designation to the DRIVE-CLiQ interface.

Depending on the firmware version of the EIB and the downstream electronics, it may be possible to connect other encoders with an EnDat22 interface. For more information, please contact HEIDENHAIN or the manufacturer of the downstream electronics.

After switch-on, the EIB checks various characteristics of the connected encoder and automatically adapts itself to it. If the encoder does not meet the necessary requirements, an error message is issued via the DRIVE-CLiQ interface.

TIME_MAX_ACTVAL
The calculation time TIME_MAX_ACTVAL specifies the earliest time (relative to the request time) after which data transfer from the encoder to the control can begin. The value depends on the parameters of the connected encoder (calculation time and resolution) and the cable length. There can also be limitations with regard to setting the cycle times. For more information, please refer to the documentation of the downstream electronics (DRIVE-CLiQ).

Online diagnostics
With EnDat 2.2 encoders, valuation numbers can be read cyclically from the encoder in order to evaluate its functionality. These valuation numbers indicate the encoder’s current status and can be used to determine its “function reserves.” These function reserves are also transmitted via the DRIVE-CLiQ interface and can be displayed in the higher-level control. Further information is available from HEIDENHAIN upon request.

Fastening
The EIB 3392 S must be fastened. This is possible, for example, with a 20 mm cable clamp (see also “Dimension drawing”).

Power supply of encoder
The EIB 3392 S provides a voltage of Upp = 8.0 V to the encoder. Please comply with the supply voltage range of the connected encoder. Due to their voltage range, certain encoders with the ordering designation EnDat22 cannot be connected (e.g., the LC 1x3, LC 4x3 and ECN 225).

Specifications EIB 3392 S
- Functional safety Depending on the connected encoder and downstream electronics, suitable for applications with up to:
  - SIL 2 as per EN 61508 (further basis for testing: EN 61800-5-2)
  - Category 3, PL d, in accordance with EN ISO 13849-1:2015
- PFH 26 · 10^-7 (based on an operating elevation of ≤ 1000 m above sea level)
- Safe position Determined by the connected encoder and the downstream electronics (including through the configuration); the EIB has no influence on the safe position

Input
- Interface DRIVE-CLiQ
- Ordering designation EnDat22 (note the Encoder requirements)
- Electrical connection Various connectors (see Versions of the EIB 3392 S)
- Encoder supply voltage (Upp) DC 8.0 V ±0.4 V, max. 1800 mW
- Cable length ≤ 30 m

Output
- Interface DRIVE-CLiQ
- Firmware 01.32.27.15
- SINAMICS, SIMOTION
  - ≥ V4.6 HF3
- SINUMERIK with safety
  - ≥ V4.7 SP1 HF1
- SINUMERIK without safety
  - ≥ V4.5 SP2 HF4
- Calculation time TIME_MAX_ACTVAL Refer to TIME_MAX_ACTVAL on page 2
- Ordering designation DQ01
- Electrical connection Various connectors (see Versions of the EIB 3392 S)
- Cable length ≤ 30 m

Supply voltage (Upp)
DC 24 V (16.0 V to 28.8 V) (up to DC 36.0 V possible without impairing functional safety)

Power consumption
Maximum At 16.0 V: ≤ 2200 mW
At 28.8 V: ≤ 3300 mW
Typical At 24 V: 1000 mW + 1.15 x PMtyp
(with PMtyp = Typical power consumption of the encoder)

Elevation ≤ 1000 m

Operating temperature
0 °C to 60 °C

Storage temperature
-40 °C to 70 °C

Vibration 5 Hz to 2000 Hz
- Shock 11 ms
- Protection rating EN 60529 IP65

Mass ≤ 0.2 kg (with 1 m cable length on both sides)

1) With HEIDENHAIN cable. Comply with the supply voltage at the encoder
2) Information from Siemens as per the document “Certified encoders with DRIVE-CLiQ Dependencies on SIMOTION / SINUMERIK and SINAMICS Hardware and Software versions” (version: 04/2019)
3) Depending on the output cable, the plug connection to the EIB is to be considered a DRIVE-CLiQ coupling.
4) Use the correct connector version
Overview of connection options (the encoders are examples)

<table>
<thead>
<tr>
<th>Encoder Type</th>
<th>Connector</th>
<th>Cable Length (m)</th>
<th>Cable Ø/Ap</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnDat22</td>
<td>M12</td>
<td>1159777-xx</td>
<td>4.5 mm²/2 · 0.16 mm²</td>
</tr>
<tr>
<td>M12</td>
<td>1164824-xx</td>
<td>4.5 mm²/2 · 0.16 mm²</td>
<td></td>
</tr>
<tr>
<td>DQ01</td>
<td>M12</td>
<td>1159777-xx</td>
<td>4.5 mm²/2 · 0.16 mm²</td>
</tr>
<tr>
<td>M12</td>
<td>1164824-xx</td>
<td>4.5 mm²/2 · 0.16 mm²</td>
<td></td>
</tr>
</tbody>
</table>

**Temperatur sensor information**

The EIB 3392 S does not have a temperature sensor input, but it can evaluate the temperature sensor information from connected EnDat encoders and pass it on via the DRIVE-CLiQ interface. Information from up to four temperature sensors can be transmitted. The EIB 3390 S supports transmission from:

- One internal temperature sensor (the value is provided in the DRIVE-CLiQ parameter “Encoder Temperature”)
- Up to three external temperature sensors (the values are provided in the DRIVE-CLiQ parameter “Motor temperature 2-4”); the calculated highest value of the three sensors is output in the parameter “Motor temperature 1”)

The EIB 3392 S can simultaneously process the information of one external and one internal temperature sensor. If more than one external temperature sensor is used, then the value of the internal temperature sensor can no longer be provided.

The evaluation of the connected sensors can be set via the DRIVE-CLiQ interface, depending on the settings of the EnDat encoder. This enables evaluation of KTY 84-130, PT 1000 and PTC temperature sensors. For more information, please contact HEIDENHAIN.

**Designation of the connecting cables**

The connecting cables for input and output have differing colors:

- **Red**: EnDat22
- **Black**: DQ01

For more information about the availability and mapping of the temperature sensor information, please refer to the documentation of the connected EnDat encoder.

**Functional safety**

The EIB can be used in safety-related applications, but only if functional safety is supported by the connected encoder. The characteristics pertaining to functional safety are largely determined by the connected encoder and the downstream electronics (if required), contact the manufacturer; the EIB passes on the main characteristics of the encoder.

The **safe position** is also largely determined by the connected encoder and the downstream electronics. The EIB itself does not influence the safe position. The “safe position” and “safety-related measuring step (SMA)” of the connected EnDat encoder are required in order for the safe position to be calculated. For more information, please contact the manufacturer of the downstream electronics.

The **PFH value** of the overall system (EIB 3392 S + encoder) is the sum of the PFH values of the EIB 3392 S and the connected encoder. For information about the encoder, please refer to its documentation (Product Information and mounting instructions).

**Limitations**

For linear encoders with measuring lengths greater than 50 m, there may be limitations to the output of the commutation angle via the DRIVE-CLiQ interface under certain circumstances. Please contact HEIDENHAIN in such cases. HEIDENHAIN recommends setting the datum shift in the downstream electronics. If the datum shift is used in the EnDat area, then it must be less than 3 m and not result in position values less than zero.

**Please note:**
In order for the EIB 3392 S to be operated in safety-related applications, the software must be designed in conformity with the downstream DRIVE-CLiQ electronics. For more information on availability, please contact the manufacturer.
Interfaces

Pin layout of the EIB input

<table>
<thead>
<tr>
<th>Mating connector</th>
<th>Power supply</th>
<th>Serial data transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-pin M12 coupling</td>
<td>8 2 5 1 3 4 7 6</td>
<td>EnDat U_p2 Sensor U_p2 0 V Sensor 0 V DATA DATA CLOCK CLOCK</td>
</tr>
</tbody>
</table>

Siemens pin layout

<table>
<thead>
<tr>
<th>RJ45 connector</th>
<th>Power supply</th>
<th>Serial data transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-pin M12 coupling</td>
<td>A B 3 6 1 2</td>
<td>Up 1 5 7 6 3 4</td>
</tr>
</tbody>
</table>

Cable shield connected to housing; \( U_p \) = Power supply voltage

DRIVE-CLiQ is a registered trademark of Siemens AG

This Product Information document 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 placed.

More information:

To ensure proper and intended use, comply with the specifications in the following documents:

- Brochure: Interfaces of HEIDENHAIN Encoders 1078628-xx
- Brochure: Cables and Connectors 1206103-xx
- Operating Instructions: EIB 3392S 1380708-xx
- Brochure, Product Information, and Mounting Instructions of the connected encoder