Product Information

**EIB 192**

Signal Converters for Incremental HEIDENHAIN Encoders
EIB 192

- Optional: automatic adjustment of encoder signals (offset, phase, amplitude)
- Integrated 16,384-fold subdivision
- Input: incremental encoders from HEIDENHAIN
- Output: position values as per EnDat 2.2, Fanuc Serial Interface, or Mitsubishi high speed interface

Specifications EIB 192 EIB 192 F EIB 192 M

Input

For HEIDENHAIN encoders

Interface

1 Vpp; input frequency ≤ 400 kHz

Reference mark

One or distance-coded

Electrical connection

12-pin M23 flange socket with coupling ring (female)

Voltage supply for encoders

DC 5 V ±0.25 V (generated from voltage supply for EIB); ≤ 150 mA

Cable length

≤ 6 m

Output

Interface

EnDat 2.2 Fanuc Serial Interface Mitsubishi high speed interface

Ordering designation

EnDat22 Fanuc02 Mit02-4

Calculation time \(t_{cal/clock frequency}\)

≤ 5 µs/≤ 16 MHz – –

Electrical connection

8-pin M12 flange socket (male) 17-pin M23 flange socket (male)

Cable length (with HEIDENHAIN cable)

≤ 100 m\(^1\) ≤ 20 m\(^2\) ≤ 20 m\(^2\)

Subdivision

≤ 16,384-fold (depending on encoder)

Supply voltage

DC 3.6 V to 14 V

Power consumption (max.)

3.6 V: < 2000 mW; 14 V: < 2000 mW (including \(I_{\text{Max}} = 150\ mA\))

Current consumption (typical, without load)

5 V: 130 mA + 1.5 · \(I_{\text{Max}}\)

Operating temperature

0 °C to 70 °C

Storage temperature

-30 °C to 70 °C

Vibration

95 Hz to 2000 Hz

Shock

11 ms

Protection

EN 60529 IP65

Mass

≤ 0.3 kg

1) For adjustment purposes only; do not assign in normal operation

Electrical connection

Pin layout of EIB input

12-pin M23 flange socket

<table>
<thead>
<tr>
<th>12</th>
<th>2</th>
<th>10</th>
<th>11</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>1</th>
<th>3</th>
<th>4</th>
<th>7</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>Sensor</td>
<td>0 V</td>
<td>Sensor</td>
<td>A+</td>
<td>A-</td>
<td>B+</td>
<td>B-</td>
<td>Re</td>
<td>Re</td>
<td>H/L1</td>
<td>L/L2</td>
</tr>
</tbody>
</table>

Brown | Green | Blue | Yellow | Blue | White | Green | White | Brown | Green | Gray | Pink | Red | Black | Violet | Yellow

Shield on housing; \(U_{\text{p}}\) = Power supply voltage

Sensor: The sense line is connected internally with the corresponding power line.

Vacant pins or wires must not be used!

Pin layout of EIB output

8-pin M12 flange socket

<table>
<thead>
<tr>
<th>8</th>
<th>2</th>
<th>5</th>
<th>1</th>
<th>3</th>
<th>4</th>
<th>7</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIB 192</td>
<td>Up</td>
<td>Sensor</td>
<td>0 V</td>
<td>Sensor</td>
<td>DATA</td>
<td>DATA</td>
<td>CLOCK</td>
</tr>
<tr>
<td>EIB 192 F</td>
<td>Up</td>
<td>Sensor</td>
<td>0 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIB 192 M</td>
<td>Sensor Frame</td>
<td>Request</td>
<td>Request Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Brown/Green | Blue | White | White/Green | White | Brown | Green | Gray | Pink | Violet | Yellow

Shield on housing; \(U_{\text{p}}\) = Power supply voltage

Sensor: The sense line is connected internally with the corresponding power line.

Vacant pins or wires must not be used!

1) Supply voltage at the EIB must be maintained

2) \(I_{\text{Encoder}}\) ≤ 150 mA; greater cable lengths upon request
Configuration of the EIB 192

In order for the EIB 192 to operate correctly with the encoder, certain encoder parameters must be stored in the EIB 192 (e.g., the number of signal periods, the nominal increment of the reference marks, or the encoder ID). This programming can be done only by HEIDENHAIN.

**Line count or signal period**
Important in the case of rotatory encoders is the number of signal periods per revolution, and in the case of linear encoders, the signal period in micrometers.

If the connected encoder has distance-coded reference marks, then the nominal increment $N$ of the reference marks must be provided in signal periods.

**Connection information**

**Establishing the absolute reference**
After switch-on, the EIB 192 delivers relative position values starting with the switch-on position because the device is connected to incremental encoders. The absolute reference is not established until the reference marks have been traversed.

**Please note:**
For encoders with distance-coded reference marks, two successive reference marks must be traversed without a change in direction.

**Information about the EnDat interface**

**Requirements for the control**
EnDat 2.2 continuously provides the relative position as Position 1. When the absolute reference is found, 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 192, please check whether the downstream electronics support this EnDat 2.2 device profile for incremental encoders.

**Electronic ID label**
With the EnDat interface, the configuration can be read out via the interface.

The encoder ID indicates the type of encoder that can be connected (e.g., EnDat22):
- 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.

**Please note:**
It is not possible to combine the EIB 192 and interface electronics with the DRIVE-CLIQ interface (e.g., EIB 2391 S or EIB 3391 S), because these interface electronics accept only absolute encoders.

**Online diagnostics**
The EIB 192 supports the online diagnostics of EnDat 2.2 and provides valuation numbers for the incremental track.

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
- Brochure: Cables and Connectors
- Product Overview: Signal Converters

For brochures and Product Information documents, visit: www.heidenhain.com