



# HEIDENHAIN




Product Information

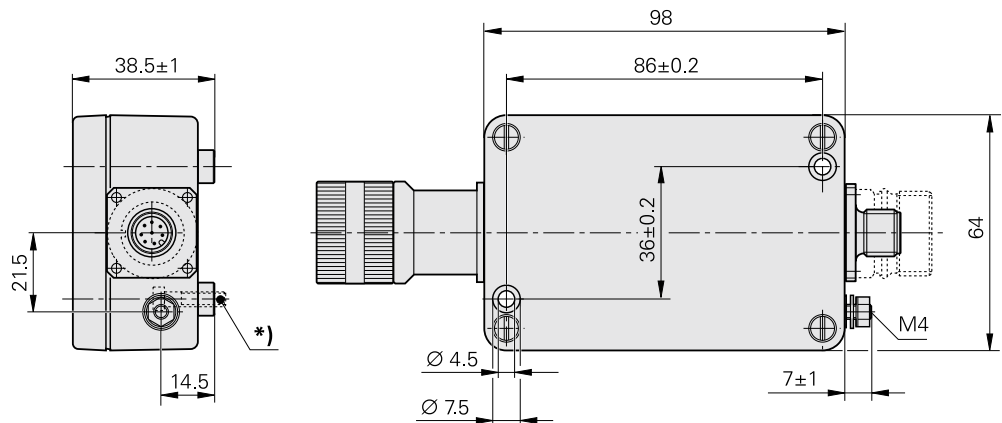
## **EIB 192**

Interface Electronics  
with Automatic Signal  
Adjustment

# EIB 192

- 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

mm  
  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 ≤ 6 mm: ±0.2 mm



\*) 2 mounting screws M4 x 16 DIN 912/ISO 4762




Specifications	EIB 192 ID 749974-xx	EIB 192F ID 807103-xx	EIB 192M ID 824944-xx
<b>Input</b>	For HEIDENHAIN encoders		
Interface	~ 1 V <sub>SS</sub> ; 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		
<b>Output</b>			
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 <sup>1)</sup>	≤ 20 m <sup>2)</sup>	≤ 20 m <sup>2)</sup>
<b>Subdivision</b>	≤ 16384-fold (depending on encoder)		
<b>Supply voltage</b>	DC 3.6 V to 14 V		
Power consumption (max.)	3.6 V: < 2000 mW; 14 V: < 2000 mW (including I <sub>E</sub> max = 150 mA)		
Current consumption (typical, without load)	5 V: 130 mA + 1.5 · I <sub>E</sub> typ		
<b>Operating temperature</b> <b>Storage temperature</b>	0 °C to 70 °C –30 °C to 70 °C		
<b>Vibration</b> 55 Hz to 2000 Hz <b>Shock</b> 11 ms	100 m/s <sup>2</sup> (EN 60068-2-6) 300 m/s <sup>2</sup> (EN 60068-2-27)		
<b>Protection</b> EN 60529	IP65		
<b>Mass</b>	≈ 0.3 kg		

<sup>1)</sup> Supply voltage at the EIB must be maintained





<sup>2)</sup> I<sub>Encoder</sub> ≤ 150 mA; greater cable lengths upon request

# Electrical connection

## Pin layout of EIB input

12-pin M23 flange socket												
	Power supply				Incremental signals						Limit pos. sign.	
	12	2	10	11	5	6	8	1	3	4	7	9
	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	H/L1 <sup>1)</sup>	L/L2 <sup>1)</sup>
	Brown/ Green	Blue	White/ Green	White	Brown	Green	Gray	Pink	Red	Black	Violet	Yellow

## Pin layout of EIB output

8-pin M12 flange socket					17-pin M23 flange socket			
	Power supply				Serial data transfer			
	8	2	5	1	3	4	7	6
EIB 192	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	DATA	DATA	CLOCK	CLOCK
EIB 192F					Serial Data	Serial Data	Request	Request
EIB 192M							Request Frame	Request Frame
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

**Shield** on housing; **U<sub>P</sub>** = Power supply voltage

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

Vacant pins or wires must not be used!

<sup>1)</sup> Only for adjusting; do not use in normal operation

# Configuration of the EIB 192

In order to ensure that the EIB 192 functions correctly together with the encoder, certain encoder parameters must be stored in the EIB 192 (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  $\mu\text{m}$ .

The **encoder ID** indicates the type of encoder that can be connected, e.g.

EnDat 2.2:  
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:

Connection of an ERM 280 (line count: 1024) with an EIB 192 to the EnDat 2.2 interface

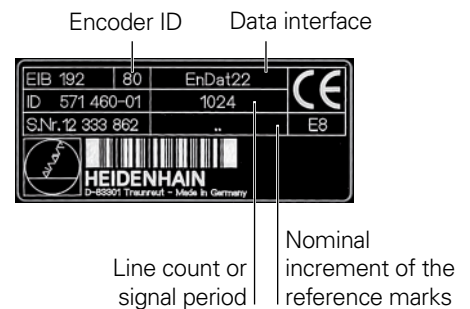
Information on the ID label:

Data interface: EnDat22

Encoder ID: 80

Line count or signal period: 1024

Nominal increment of the ref. marks: –



# Connection information

## Establishing the absolute reference

Because incremental encoders are connected to the EIB 192, immediately after switch-on it provides relative position values that begin with the position upon 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 traversed without changing direction.

## EIB 192: Requirements for the EIB

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 192, 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 192 and interface electronics with DRIVE CLiQ interface (e.g. EIB 2391 S or EIB 3391 S), because these interface electronics accept only absolute encoders.

## EIB 192: Online diagnostics

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

# HEIDENHAIN

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



## Further 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](http://www.heidenhain.de).