HEIDENHAIN

Product Information
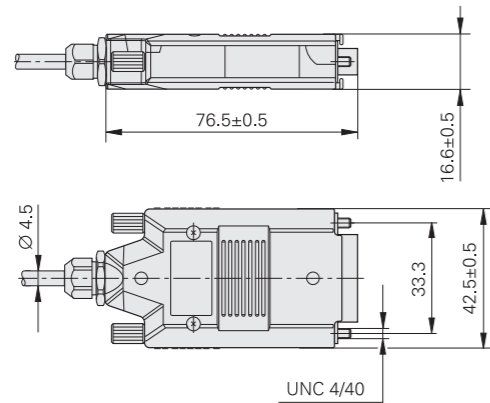
EIB 392
Interface Electronics
as Cable Version

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

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

76.5±0.5
16.6±0.5
33.3
42.5±0.5
Ø 4.5
UNC 4/40

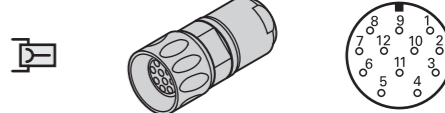| Specifications	EIB 392	EIB 392 F	EIB 392 M
Input	For HEIDENHAIN encoders		
Incremental signals	$\sim$ 1 V_{PP}; (input frequency ≤ 400 kHz)		
Reference mark	One or distance-coded		
Electrical connection*	15-Pin, 2-row D-sub connector (female), with locking nuts 12-pin M23 connector (female)		
Power supply for encoders	From EIB voltage supply		
Cable length	≤ 6 m		
Output			
Absolute position values	EnDat 2.2	Fanuc Serial Interface	Mitsubishi High Speed Interface
Ordering designation	EnDat22	Fanuc02	Mit02-4
Calculation time tcal Clock frequency	≤ 5 µs ≤ 16 MHz	–	–
Electrical connection	15-pin, 2-row connector (male), with locking screws and integrated electronics		
Cable length (with HEIDENHAIN cable)	≤ 100 m[1]	≤ 20 m[2]	≤ 20 m[2]
Subdivision	≤ 16384-fold (depending on the encoder)		
Power supply	DC 5 V ±0.25 V		
Power consumption (max.)	1700 mW (including I_{Emax} = 150 mA)		
Current consumption (typical, without load)	130 mA + I_{Etyp}		
Operating temperature **Storage temperature**	0 °C to +70 °C –30 °C to +70 °C		
Vibration 55 Hz to 2000 Hz **Shock** 11 ms	100 m/s^2 (EN 60068-2-6) 200 m/s^2 (EN 60068-2-27)		
Protection EN 60529	IP40		
Mass	140 g (EIB without cable, with electronics)		

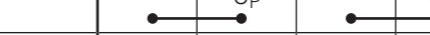***** Please indicate when ordering
[1] 5 V ±0.25 V supply voltage must be maintained at the EIB
[2] $I_{Encoder}$ ≤ 150 mA; greater cable lengths upon request
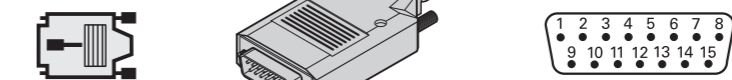
Electrical connection
Pin layout – EIB

Input

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

	Power supply				Incremental signals						Other signals		
	12	2	10	11	5	6	8	1	3	4	/	7	9
	4	12	2	10	1	9	3	11	14	7	5/13/15	8	6
	U_P	Sensor U_P	0 V	Sensor 0 V	A+	A–	B+	B–	R+	R–	Vacant	H/L1[1]	L/L2[1]
	Brown/ Green	Blue	White/ Green	White	Brown	Green	Gray	Pink	Red	Black	/	Violet	Yellow

Shield on housing; U_P = Power supply
Sensor: The sensor line is connected internally with the corresponding power line.
[1] Homing or Limit signals (depending on the encoder)

Output

15-pin D-sub connector

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15

	Power supply				Incremental signals[1]						Serial data transfer			
	4	12	2	10	1	9	3	11	14	7	5	13	8	15
EIB 392	U_P	Sensor U_P	0 V	Sensor 0 V	A+[1]	A–[1]	B+[1]	B–[1]	R+[1]	R–[1]	DATA	$\overline{DATA}$	CLOCK	$\overline{CLOCK}$
EIB 392 F	U_P	Sensor U_P	0 V	Sensor 0 V	A+[1]	A–[1]	B+[1]	B–[1]	R+[1]	R–[1]	Serial Data	$\overline{Serial\ Data}$	Request	$\overline{Request}$
EIB 392 M	U_P	Sensor U_P	0 V	Sensor 0 V	A+[1]	A–[1]	B+[1]	B–[1]	R+[1]	R–[1]	Serial Data	$\overline{Serial\ Data}$	Request Frame	$\overline{Request\ Frame}$

Shield on housing; U_P = Power supply
Sensor: The sensor line is connected internally with the corresponding power line.
Vacant pins or wires must not be used!
[1] Only for adjusting; do not use in normal operation

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 rotary 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
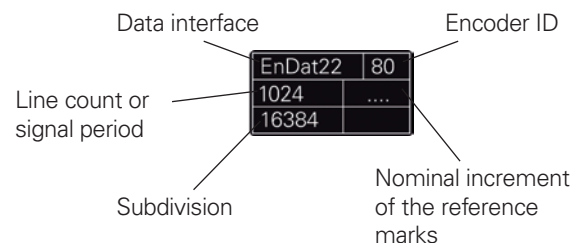For the EnDat interface, this value is stored in word 14 of the EnDat 2.1 parameters.

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

Data interface   Encoder ID
Line count or signal period
Subdivision
Nominal increment of the reference marks

Connection information

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-CliQ 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.

📖 **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.**