



HEIDENHAIN



Product Information

EIB 392

Interface Electronics as
Cable Version

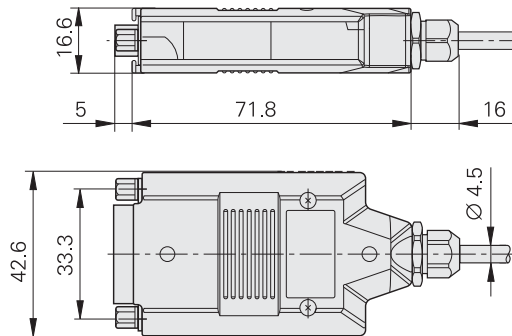
July 2014

EIB 392

- Interpolation and digitizing electronics in D-sub connector housing
- Integrated 16384-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



Specifications	EIB 392	EIB 392 F	EIB 392 M
Input	For HEIDENHAIN encoders		
Incremental signals	~ 1 V _{PP} ; input frequency ≤ 400 kHz		
Reference mark	One or distance-coded		
Electrical connection*	15-pin D-sub connector (female) 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 t _{cal} Clock frequency	≤ 5 μs ≤ 16 MHz	–	–
Electrical connection	15-pin D-sub connector (male)		
Cable length (with HEIDENHAIN cable)	≤ 100 m ¹⁾	≤ 20 m ²⁾	≤ 20 m ²⁾
Subdivision	≤ 16384-fold (depending on encoder)		
Power supply	5 V DC ± 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 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	IP 40		
Weight	140 g (EIB without cable, with electronics)		

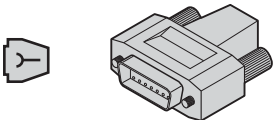
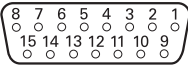
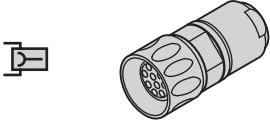
* Please indicate when ordering

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 of EIB input

15-pin D-sub connector					12-pin connector M23								
 					 								
	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	0V	Sensor 0V	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

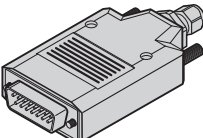
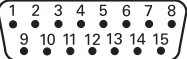
Sensor: The sensor line is connected internally with the corresponding power line

¹⁾ Limit position signals only for LIF 481/LIDA 48x; color assignment applies only to connecting cable

Pin layout of EIB output

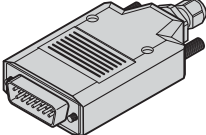
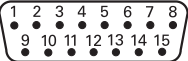
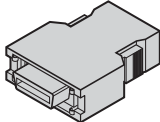
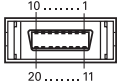
EIB 392

15-pin D-sub connector

	Voltage supply				Incremental signals ¹⁾						Position values			
	4	12	2	10	1	9	3	11	14	7	5	13	8	15
EnDat	U_P	Sensor U _P	0V	Sensor 0V	A+¹⁾	A-¹⁾	B+¹⁾	B-¹⁾	R+¹⁾	R-¹⁾	DATA	DATA	CLOCK	CLOCK
	Brown/ Green	Blue	White/ Green	White	–	–	–	–	–	–	Gray	Pink	Violet	Yellow

EIB 392F

15-pin D-sub connector						20-pin Fanuc connector										
  						  										
	Power supply						Incremental signals ¹⁾						Position values			
	4	12	2	10	—	1	9	3	11	14	7	5	13	8	15	
	9	18/20	12	14	16	—	—	—	—	—	—	1	2	5	6	
	U _P	Sensor U _P	0V	Sensor ± 0 V	Shield	A+ ¹⁾	A [−] 1)	B+ ¹⁾	B [−] 1)	R+ ¹⁾	R [−] 1)	Serial Data	Serial Data	Request	Request	
	Brown/ Green	Blue	White/ Green	White	—	—	—	—	—	—	—	Gray	Pink	Violet	Yellow	

EIB 392M

15-pin D-sub connector					10-pin Mitsubishi connector					20-pin Mitsubishi connector				
Power supply					Incremental signals ¹⁾					Position values				
	4	12	2	10	1	9	3	11	14	7	5	13	8	15
	1	–	2	–	–	–	–	–	–	–	7	8	3	4
	20	19	1	11	–	–	–	–	–	–	6	16	7	17
	U_P	Sensor U _P	0V	Sensor ± 0V	A+¹⁾	A-¹⁾	B+¹⁾	B-¹⁾	R+¹⁾	R-¹⁾	Serial Data	Serial Data	Request Frame	Request Frame
	Brown/ Green	Blue	White/ Green	White	–	–	–	–	–	–	Gray	Pink	Violet	Yellow

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

Cable

			EIB 392
PUR connecting cables		[[4 x 0.14 mm ²) + (4 x 0.34 mm ²)]; A _P = 0.34 mm ²	
Complete With 15-pin D-sub coupling (female) and 8-pin M12 coupling (male)		Ø 6 mm	628186-xx
Complete With 8-pin M12 connector (female) and 15-pin D-sub connector (female) for IK 220		Ø 6 mm	533627-xx
Complete With 8-pin M12 connector (female) and 15-pin D-sub connector (male) for PWM 20/EIB 74x		Ø 6 mm	524599-xx
With one connector With 8-pin M12 connector (female)		Ø 6 mm	634265-xx

A_P: Cross section of power supply lines

Ø: Cable diameter

			EIB 392 F	EIB 392 M
PUR connecting cables		[[4 x 0.14 mm ²) + (4 x 0.5 mm ²)]; A _P = 0.5 mm ²		
Complete With 15-pin D-sub coupling (female) and Fanuc connector (female)		Ø 6 mm	628184-xx	–
Complete With 15-pin D-sub coupling (female) and 10-pin Mitsubishi connector (female)		Ø 6 mm	–	630856-xx
Complete With 15-pin D-sub coupling (female) and 20-pin Mitsubishi connector (male)		Ø 6 mm	–	366419-xx

A_P: Cross section of power supply lines

Ø: Cable diameter

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 22:

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

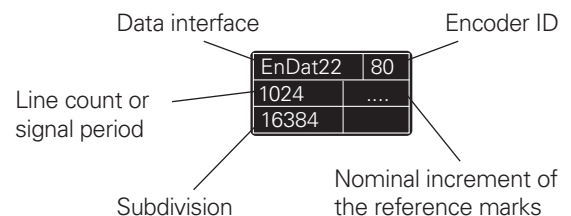
Data interface: EnDat22

Encoder ID: 80

Line count and signal period: 1 024

Nominal increment of the ref. marks: –

Subdivision: 16384



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 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 392: Requirements for the EIB

EnDat 2.2 permanently provides the relative position as Position 1. When the absolute reference is established, the RM bit is set and the absolute position value is transmitted in the EnDat additional data 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 and EIB 2391 S, because the EIB 2391 S accepts 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.

HEIDENHAIN

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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 valid when the contract is made.

Further Information

- Product overview: *Interface Electronics*
- Catalog: *Interfaces of HEIDENHAIN Encoders*