HEIDENHAIN

Preliminary
Product Information

EIB 2391 S
External Interface Box

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External Interface Box
- **Input: HEIDENHAIN encoders with EnDat22 interface**
- **Output: DRIVE-CLiQ interface**

Requirements of the encoder with EnDat22 interface at the input

The EIB supports connection of the following encoders (with or without functional safety) to the DRIVE-CLiQ interface:

- Absolute linear encoders (e.g. LC 183, LC 483, LC 115, LC 415, LC 2xx, LIC 4000)
- Absolute singleturn encoders and angle encoders (e.g. RCN 2xxx, RCN 5xxx, RCN 8xxx, ECN 1325, ROC 425, ROC 1023)
- Absolute multiturn encoders (e.g. EQN 1337, EQN 437, ROQ 437, ROQ 1035, ECN 125)

In principle, it is possible to connect further encoders to the EnDat22 interface depending, however, on the firmware level of the EIB. For more information, please contact HEIDENHAIN.
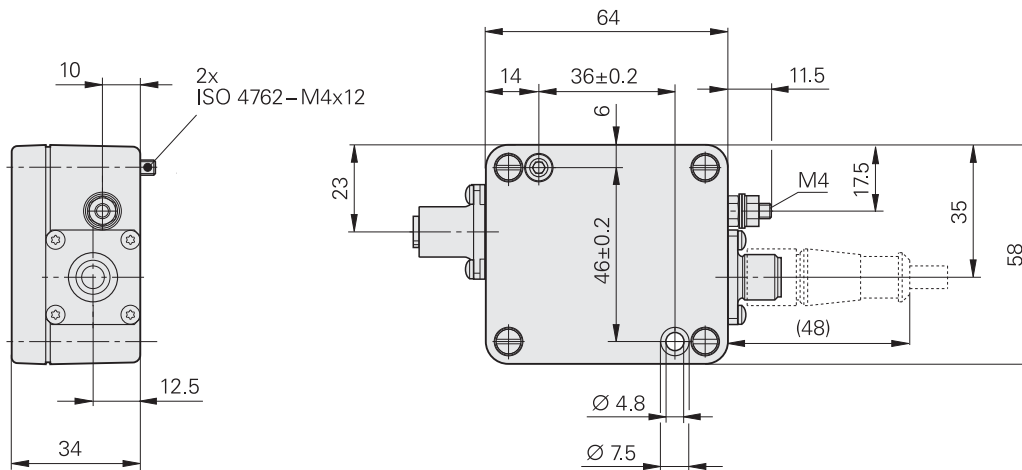
After switch-on, the EIB tests various characteristics of the connected EnDat encoder and automatically adapts to the encoder. If the encoder doesn't fulfill the specific requirements, a corresponding error message is transmitted through the DRIVE-CLiQ interface. The encoder has meet the following requirements:

- EnDat 2.2 mode commands must be supported
- EnDat clock frequency ≥ of 8 MHz
- Must be adjustable to a shortened recovery time of 1.25 to 3.75 μs
- Ascending position value with clockwise rotation of the encoder (viewed from flange side) or traverse to the right on linear encoders (with respect to the ID label).
- Multiturn rotary encoders with binary line count
- Linear encoders with measuring steps in nanometer (nm)

Functional safety

The characteristics regarding functional safety are substantially determined by the connected encoder and the subsequent electronics (if necessary, contact the manufacturer; the EIB essentially passes on the characteristics of the encoder). The EIB can be used in safety-related applications only if the connected encoder supports functional safety.

The Safe Position is primarily determined by the connected encoder. Further deviations of the Safe Position may occur in the subsequent electronics after the position value comparison. Please contact the manufacturer of the subsequent electronics for further information.

DRIVE-CLiQ is a registered trademark of the SIEMENS Corporation.

Specifications	EIB 2391 S
Functional safety[1]	Depending on the connected encoder and subsequent electronics, suited for applications up to • SIL 2 according to EN 61508 (further basis for testing: EN 61800-5-2) • Category 3 PL d according to EN ISO 13849-1:2008
PFH	To be determined
Safe position[2]	t.b.d. (without the connected encoder)
Input	
Interface	EnDat 2.2 interface
Ordering designation	EnDat22
Electrical connection	M12 connector (female), 8-pin
Power supply of encoder	5.1 V DC ± 3%, max. 2000 mW
Cable length	≤ 20 m[3]
Output	
Interface	DRIVE-CLiQ
Ordering designation	DQ01
Electrical connection	M12 connector (male), 8-pin
Cable length	≤ 100 m[4]
Power supply	24 V DC +20 % / –15 %
Power consumption	≤ 1500 mW at 24 V DC (without connected encoder)
Operating temperature	0 °C to 70 °C
Storage temperature	–30 °C to 70 °C
Vibration 55 to 2000 Hz **Shock** 11 ms	100 m/s² (IEC 60068-2-6) 200 m/s² (IEC 60068-2-27)
Protection	IP 65
Weight	Approx. 180 g

[1] Preliminary data
[2] Further deviations may occur in the subsequent electronics after the position value comparison
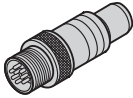(contact the manufacturer of the subsequent electronics)
[3] With HEIDENHAIN cable; $P_{encoder}$ ≤ 1500 mW; greater cable lengths upon request ($U_{encoder}$!)
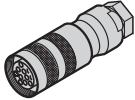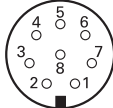[4] Depending on the output cable

The EIB 2391 S is planned to become available beginning in the 2nd quarter of 2012

Interfaces

Pin layout of the EIB input

Mating connector **8-pin coupling** M12							

	Power supply				Absolute position values			
	8	**2**	**5**	**1**	**3**	**4**	**7**	**6**
EnDat	**U**P	**Sensor** UP	**0 V**	**Sensor** 0 V	**DATA**	**$\overline{DATA}$**	**CLOCK**	**$\overline{CLOCK}$**
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

Pin layout of the EIB output

Mating connector **8-pin connector** M12							

	Power supply		Absolute position values				Other data	
	1	**5**	**3**	**4**	**7**	**6**	**2**	**8**
	UP	**0 V**	**RX_P**	**RX_N**	**TX_P**	**TX_N**	/	/

Cable shield connected to housing; **U**P = power supply voltage
Sensor: The sensor line is connected in the encoder with the corresponding power line.
Vacant pins or wires must not be used!

Cables

Cable for encoder connection		ID
Complete with 8-pin M12 connector (female) and 8-pin M12 coupling (male)		368 330-xx
Complete with right-angled 8-pin M12 connector (female) and 8-pin M12 coupling (male)		373 289-xx

The cables for connection to DRIVE-CLiQ are available from the manufacturer of the subsequent electronics

Related documents
- Technical Information: *EnDat*
- Technical Information: *Safety-Related Position Measuring Systems*
- Catalog: *Rotary Encoders*
- Catalog: *Position Encoders for Servo Drives*
- Catalog: *Absolute Angle Encoders with Optimized Scanning*
- Catalog: *Linear Encoders for Numerically Controlled Machine Tools*