



HEIDENHAIN



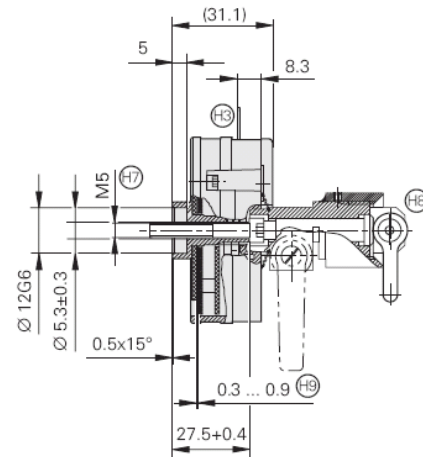
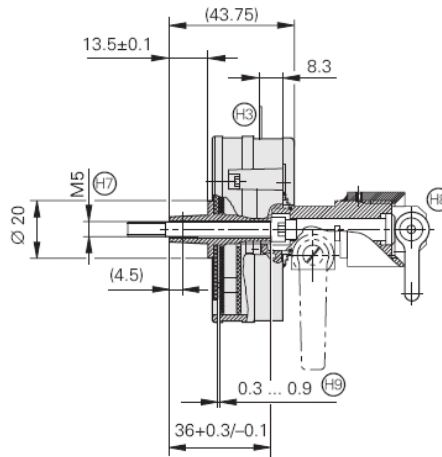
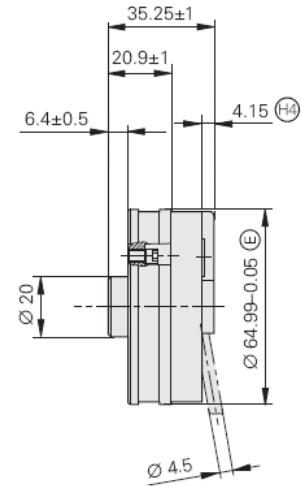
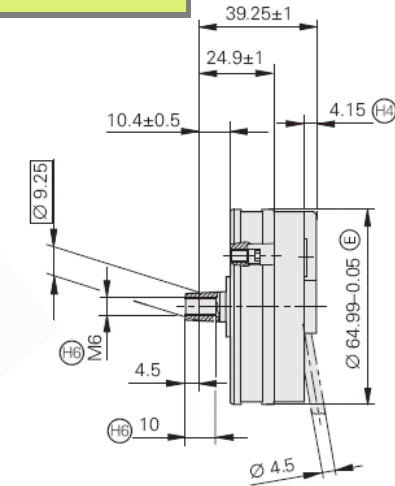
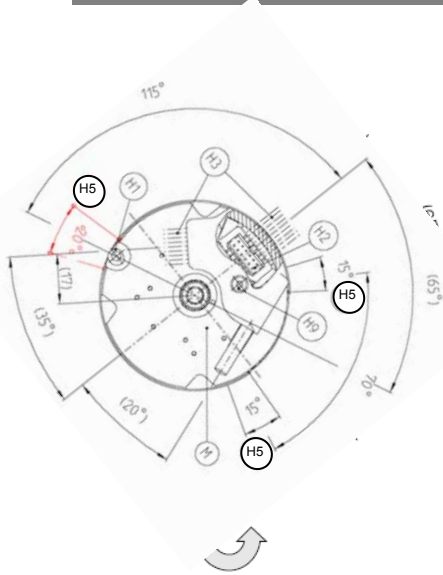
Product Information

ECI 1319
EQI 1331

Absolute Rotary Encoders

September 2007

Dimensions



Dimensions in mm

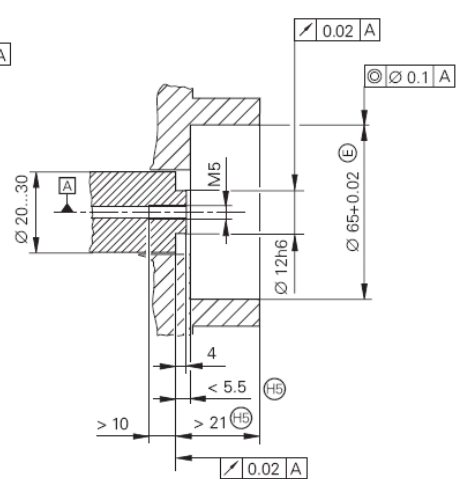
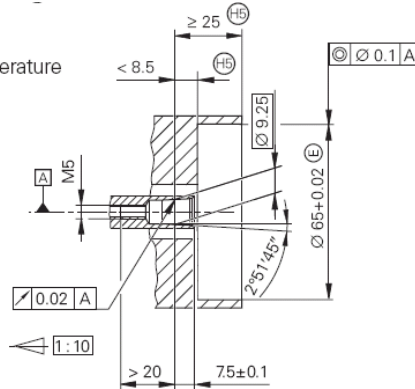


Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

(K)

(K)

- ▣ = Bearing
- ⊙ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- ⊙ = Mounting screw
- ⊙ = Plug connector, 12-pin
- ⊙ = Cable outlet for ribbon cable
- ⊙ = Cable outlet for round cable
- ⊙ = Clamping area
- ⊙ = Back-off thread M6
- ⊙ = Cylinder head screw
ISO 4762 – M5 x 35-A2
for hollow shaft
ISO 4762 – M5 x 50-A2
for taper shaft
Tightening torque 5 Nm
- ⊙ = Setting tool for scanning gap
- ⊙ = Permissible scanning gap range
over all operating conditions
- ↻ Direction of shaft rotation for output signals as per the interface description



(H5) Minimal clamping area (optimal: closed circle)



Specifications

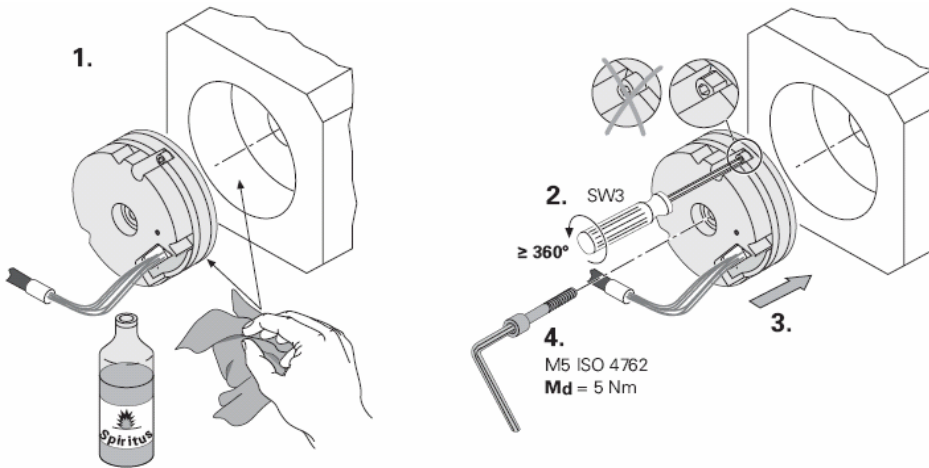
	Absolute	
	ECI 1319	EQI 1331
Incremental signals	1 V _{PP}	
Line count/ System accuracy	32/± 280"	
Cutoff frequency	≥ 6 kHz (typically)	
Absolute position values	EnDat 2.1	
Order designation	EnDat 01	
Position values/rev	524 288 (19 bits)	
Revolutions	–	4 096 (12 bits)
Electrically permissible speed / Deviations ¹⁾	≤ 3 750 min ⁻¹ / ± 128 LSB ≤ 15 000 min ⁻¹ / ± 512 LSB	≤ 3 750 min ⁻¹ / ± 128 LSB ≤ 12 000 min ⁻¹ / ± 512 LSB
Calculation time t _{cal}	≤ 8 μs	
Power supply	5 V ± 5%, or 7 V to 10 V *	
Current consumption without load	≤ 170 mA	
Electrical connection via PCB connector	12-pin	
Magnetic field compatibility	–	≤ 10 mT ²⁾
Shaft */ moment of inertia of rotor	Taper shaft Ø 9.25 mm; taper 1:10 / 1.8 x 10 ⁻⁶ kgm ² Blind hollow shaft Ø 12 mm / 2.25 x 10 ⁻⁶ kgm ²	
Mechanically permissible speed n	≤ 15 000 min ⁻¹	≤ 12 000 min ⁻¹
Starting torque	–	≤ 0.01 Nm (at 20 °C)
Perm. axial motion of measured shaft	–0.2/+0.4mm with 0.5 mm nominal scanning gap	
Vibration 55 to 2000 Hz Shock 6 ms	≤ 100 m/s ² (IEC 60 068-2-6) ≤ 1000 m/s ² (IEC 60 068-2-27)	
Max. operating temperature	115 °C	
Min. operating temperature	–20 °C	
Protection IEC 60 529	IP 20 when mounted	
Weight	Approx. 0.13 kg	

¹⁾ Speed-dependent deviation between absolute and incremental signals.

²⁾ Reference value for encoder mounting area (air). If this value is exceeded, a detail discussion with HEIDENHAIN with the multiturn encoder installed is required.

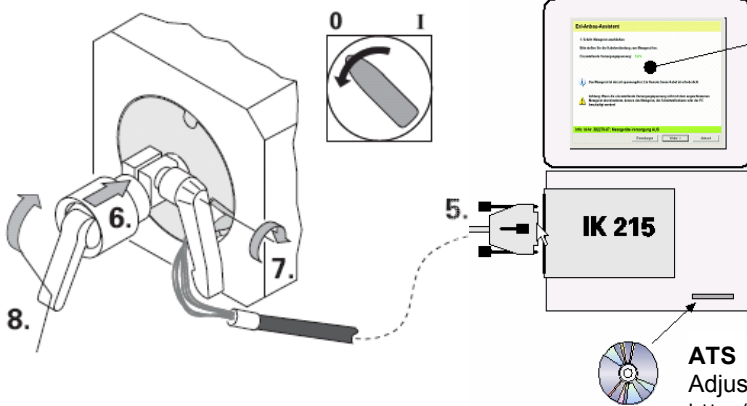
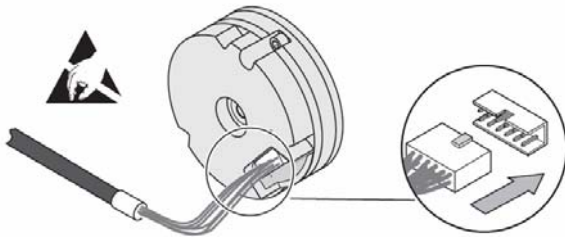
* Please indicate when ordering.

Mounting



Clean before establishing the connection

2: Do not mount more than 5 times !



ATS: ExI installation wizard
1st step: Connect the encoder

i Connect the cable to the encoder. Desired supply voltage:
⚠ 5.0 V or 7 ... 10 V

At present the encoder is not being powered.
5-V encoders require a remote sense cable!

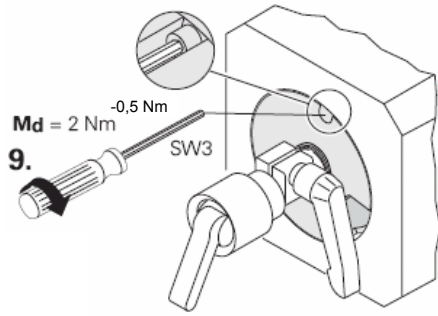
Caution: If the desired supply voltage is not compatible with the connected encoder, it may damage the encoder, the interface card or the PC!

ATS

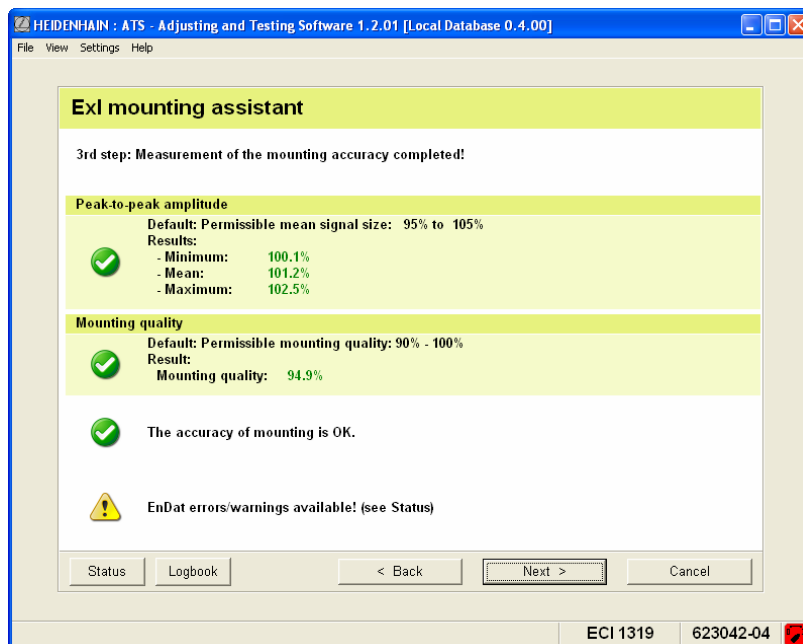
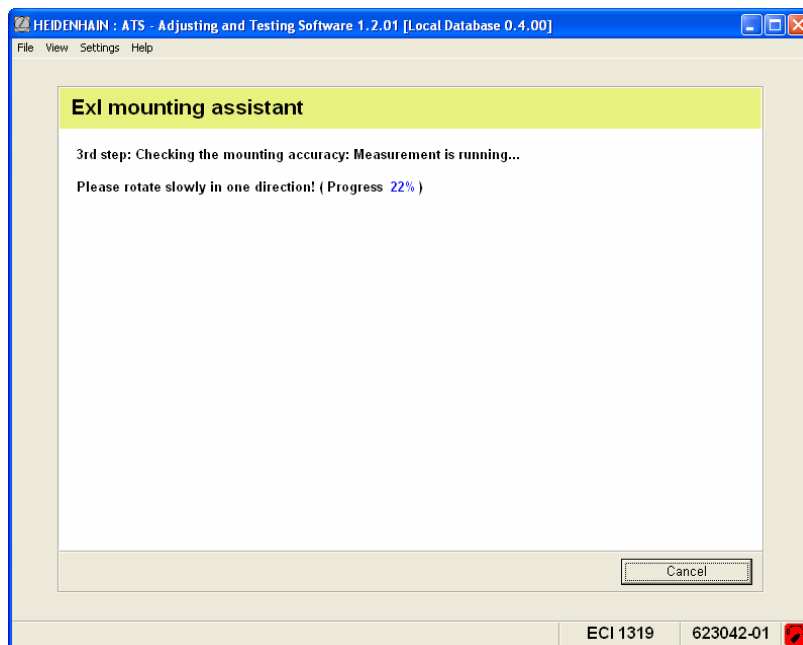
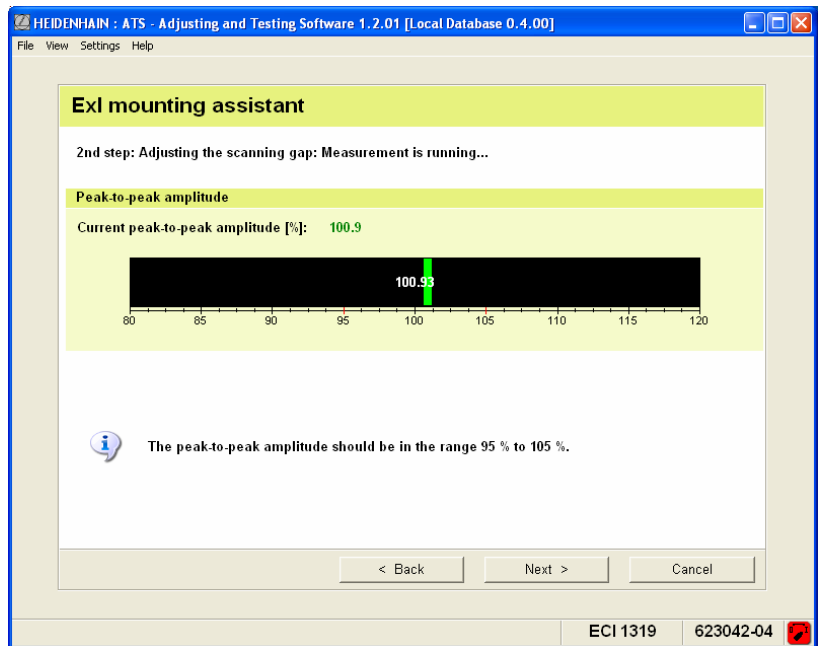
Adjusting and testing software version ≥ 1.4

[http://filebase.heidenhain.de/public/?file_filenote_send_submit=true&file_id\[\]=4650&sid=844550a09fb8eb2235cf21f362df3645](http://filebase.heidenhain.de/public/?file_filenote_send_submit=true&file_id[]=4650&sid=844550a09fb8eb2235cf21f362df3645)

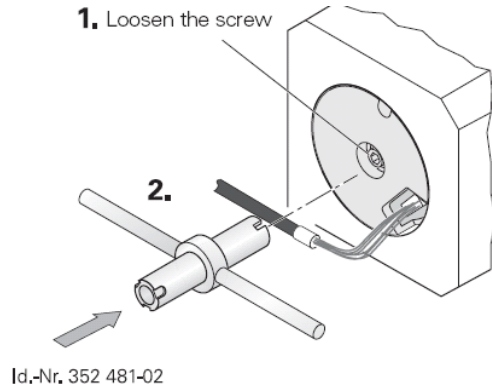




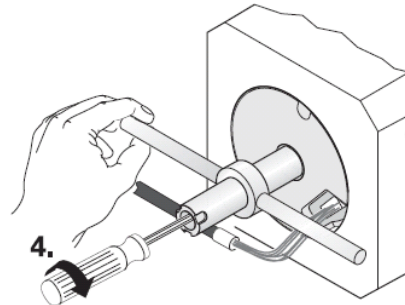
If a gap $\neq 0.5 \text{ mm}$ is necessary according to the results of the "Checklist", HEIDENHAIN will advice, how to proceed!



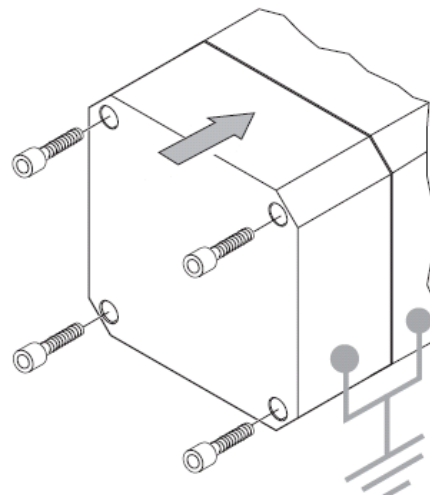
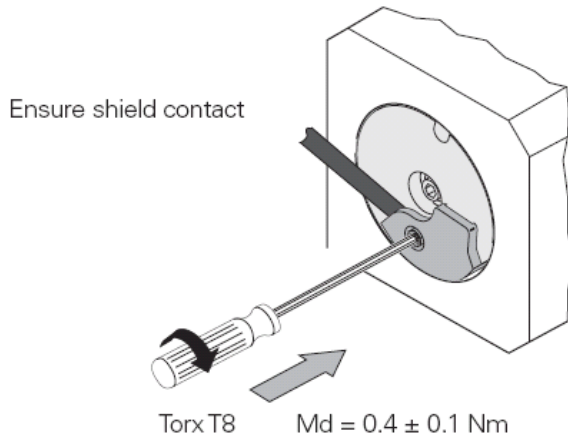
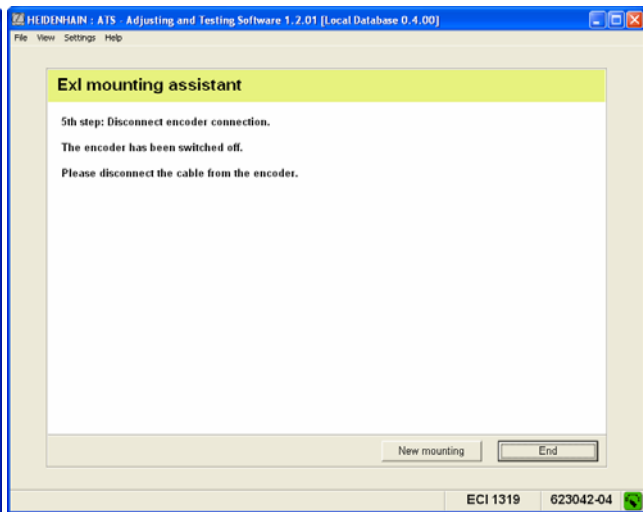
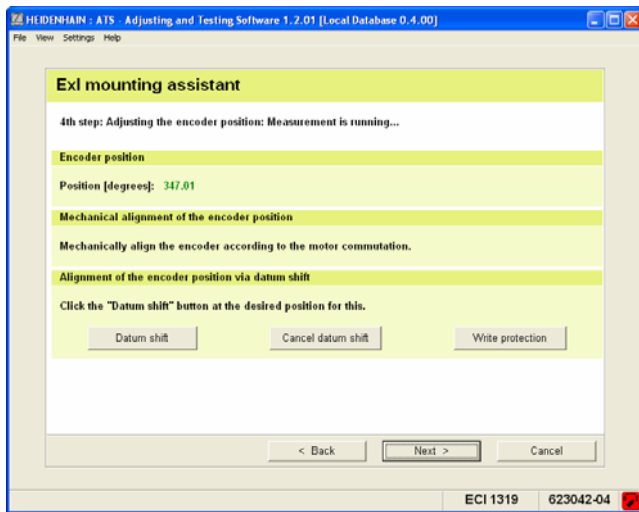
Mounting with respect to 0° (mechanically)



3. Rotate the shaft counterclockwise until the angular value of the encoder is correct for motor commutation



Md = 5 Nm



Mounting Accessories

IK 215 Adapter card for PCs for testing absolute HEIDENHAIN encoders	527367-01
ATS Adjusting- and testing software	539862-xx
Output cable for IK 215 Incl. 3 adapter connectors (FCI Berg 12-pol)	528703-02
Mounting tool for scanning gap	335529-xx
Adjusting tool for rotor position	352481-xx



Electrical Connection

Pin layout
EnDat

Pin layout

17-pin coupling or flange socket M23											12-pin PCB connector			
	Power supply				Incremental signals ¹⁾				Absolute position values					
	7	1	10	4	11	15	16	12	13	14	17	8	9	
	1b	6a	4b	3a	/	2a	5b	4a	3b	6b	1a	2b	5a	
	Up	Sensor ²⁾ Up	0 V	Sensor ²⁾ 0 V	Inside shield	A+	A-	B+	B-	DATA	DATA	CLOCK	CLOCK	
	Brown/ Green	Blue	White/ Green	White	/	Green/ Black	Yellow/ Black	Blue/ Black	Red/ Black	Gray	Pink	Violet	Yellow	

	Other signals	
	5	6
	/	/
	T+ ³⁾	T- ³⁾
	Brown ³⁾	White ³⁾

Cable shield connected to housing; **Up** = power supply voltage; **T** = temperature
Sensor: The sensor line is connected internally with the corresponding power line.
 Vacant pins or wires must not be used!

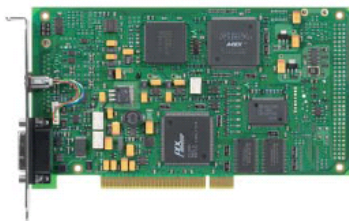
¹⁾ Only with ordering designations 01 and 02

²⁾ Not assigned if a power of 7 to 10 V is supplied via motor-internal adapter cable

³⁾ Only for motor-internal adapter cables

HEIDENHAIN Measuring Equipment
for absolute HEIDENHAIN encoders

The **IK 215** is an adapter card for PCs for inspecting and testing absolute HEIDENHAIN encoders with EnDat or SSI interface. All parameters can be read and written via the EnDat interface.



	IK 215
Encoder input	EnDat (absolute value or incremental signals) or SSI
Interface	PCI bus, Rev. 2.1
Application software	Operating system: Windows 2000/XP Features: Display of position value Counter for incremental signals EnDat functionality Installation software for EXI 1100/1300
Signal subdivision for incremental signals	Up to 65 536-fold
Dimensions	100 mm x 190 mm

HEIDENHAIN

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09/2007 · Änderungen vorbehalten



For more information

Brochure: *Rotary Encoders*