



**PWM / ATS- Adjusting and Testing Software**



**Mounting wizard for modular inductive rotary encoders with EnDat22 and direct outputting of the "Mounting clearance" mounting parameter**

***Anbauassistent für ungelagerte, induktive Drehgeber mit EnDat22 und direkter Ausgabe des Anbauparameters "Anbaumaß"***

# HEIDENHAIN

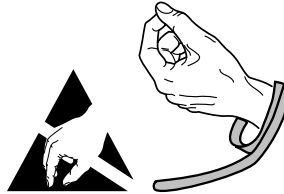
Mounting Instructions  
*Montageanleitung*

**Modular Inductive Rotary Encoders with EnDat22**

***Ungelagerte, induktive Drehgeber mit EnDat22***

07/2024

**Warnings**  
**Warnhinweise**



**Note:** Mounting and commissioning is to be conducted by a qualified specialist under compliance with local safety regulations.

– Do not engage or disengage any connections while under power.

**Achtung:** Die Montage und Inbetriebnahme ist von einer qualifizierten Fachkraft unter Beachtung der örtlichen Sicherheitsvorschriften vorzunehmen.

– Die Steckverbindung darf nur spannungsfrei verbunden oder gelöst werden.

## **General Information**

### ***Allgemeine Hinweise***

The PWM 21 testing device together with the Adjusting and Testing Software (ATS) serves for the diagnosis and adjustment of HEIDENHAIN encoders. It consists of the following components:

- PWM 21
  - ATS – Version **3.8.00 and higher** with integrated local encoder database for automatic encoder identification.
- Also available for downloading free of charge from the software download area on the HEIDENHAIN homepage.

*Das Prüfgerät PWM 21 dient zusammen mit der Adjusting and Testing Software (ATS) zur Diagnose und Justage von HEIDENHAIN-Messgeräten. Es besteht aus folgenden Komponenten:*

- PWM 21
  - ATS – Version **3.8.00 und höher** mit integrierter lokaler Messgeräte-Datenbank zur automatischen Messgeräte-Erkennung.
- Die Software steht zum freien Download auf der HEIDENHAIN-Homepage im Software-Downloadbereich zur Verfügung.*



For more information, refer to the ATS operating instructions  
*Weitere Informationen siehe Betriebsanleitung ATS*



ID 543734



For more information about mounting the encoder, refer to the mounting instructions  
*Weitere Informationen über die Montage des Messgerätes siehe Montageanleitung*

## Adjusting and testing *Justage und Diagnose*

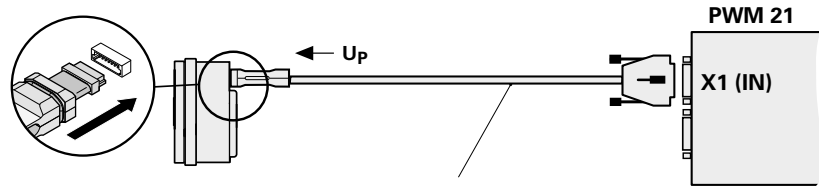
The mounting is to be inspected with evenly distributed temperature of all components in the ambient temperature range of  $23\text{ °C} \pm 10\text{ °C}$ .

*Die Anbau-Überprüfung muss bei einer gleichmäßigen Durchwärmung aller Komponenten im Umgebungstemperaturbereich von  $23\text{ °C} \pm 10\text{ °C}$  durchgeführt werden.*

1.

Connect the encoder

*Messgerät anschließen*



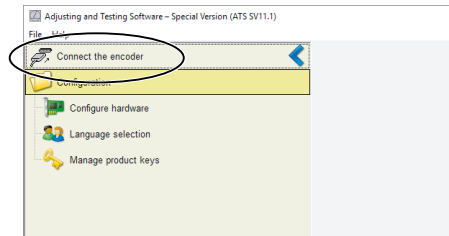
Order test cable with adapter connector separately (e.g. 621742-01)

*Prüfkabel mit Adapterstecker separat bestellen (z.B. 621742-01)*

2.

After installation of the ATS click „Connect the encoder“

*Nach Installation der ATS auf „Verbindung zum Messgerät herstellen“ klicken*



### 3.

Enter the encoder ID number. **If the ID number is accepted, continue with step 7.**


*Eingabe der Geräte-ID-Nummer. **Bei Annahme der ID-Nummer weiter mit Punkt 7.***


### Encoder selection


Using this dialog you can enter an encoder's ID number to specify the data required by the program in order to connect the encoder.


Encoder data	
ID number	<input type="text" value="810662-03"/>
- Encoder designation:	EQI 1331
- Encoder interface:	EnDat 2.1 / EnDat 2.2
- Supply voltage [V]:	5.20

Use power supply from subsequent electronics

 If the encoder is not listed in the encoder database or if you don't know the encoder's ID-number, you can click [Manual Settings](#) here and enter the encoder parameters manually.

 The data refers to the information in the "Interfaces of HEIDENHAIN Encoders" brochure. Pay attention to the documentation of the encoder, since some encoders can have a different definition!

 If the selected encoder does not match the connected encoder, the encoder, interface card, or PC could be become damaged. For your own safety, please observe the warnings and directions in the Mounting Instructions.

 Encoders subject to a laser safety class are correspondingly identified. In this case please note the information on the encoder and all information and warnings in the encoder's mounting instructions.  
**CAUTION:** The laser is active once the 'Connect' button has been pressed!

Click

## 4.

### Manual setting of the encoder parameters *Manuelle Einstellung der Geräteparameter*

Observe the warnings

*Warnhinweise beachten*

#### Encoder selection

Using this dialog you can manually set the data required by the program in order to connect an encoder. Please set the data manually only if the encoder is not listed in the encoder database and you know all the encoder parameters that will be requested.



This program only supports the encoder models from HEIDENHAIN that can be selected on the next page. Encoders from other manufacturers are not supported.



Entry of incorrect data might damage the encoder, the interface card, or the PC. If you do not know the parameters of the encoder, please contact HEIDENHAIN in advance.



Encoders subject to a laser safety class are correspondingly identified. In this case please note the information on the encoder and all information and warnings in the encoder's mounting instructions.

**CAUTION:** The laser is active once the 'Connect' button has been pressed!

< Back

Next >

Cancel

Click

## 5.

Check the 5 V and EnDat 2.1/EnDat 2.2 settings. Do not adjust the voltage over the sensor line.

*Auf Einstellung 5 V und EnDat 2.1/EnDat 2.2 achten. Spannung über Sensorleitung nicht nachregeln.*

### Encoder selection

On this page you must set the supply voltage and the encoder's interface.

#### Encoder supply voltage

5.0 V    8.0 V    10.0 V    12.0 V    24.0 V    Input [V]:

Adjust voltage over sensor lines

#### Encoder interface

Interface

Mounting code

< Back   **Next >**   Cancel

Click



## 6.

Before attaching the encoder, check the encoder data.

- Encoder interface: EnDat 2.1/EnDat 2.2
- Supply voltage [V]: 5.0
- Adjust voltage: No

**Caution:** The entry of incorrect data may damage the encoder, the interface card or the PC.

*Vor Anschluss des Messgerätes,  
Messgerätedaten überprüfen.*

- Messgeräte-Schnittstelle: EnDat 2.1/EnDat 2.2
- Versorgungsspannung [V]: 5.0
- Spannung nachregeln: Nein

**Achtung:** Das Einstellen falscher Daten kann das Messgerät, das Prüfgerät oder den PC beschädigen.

### Encoder selection

All data for connecting the encoder have now been entered. Before connecting the encoder to the interface card and establishing the connection to the encoder via the "Connect" button, check all data shown under "Encoder data."

#### Encoder data

- Encoder interface: EnDat 2.1 / EnDat 2.2
- Supply voltage [V]: 5.0
- Adjust voltage: No



Entry of incorrect data might damage the encoder, the interface card, or the PC.



Encoders subject to a laser safety class are correspondingly identified. In this case please note the information on the encoder and all information and warnings in the encoder's mounting instructions.

**CAUTION:** The laser is active once the 'Connect' button has been pressed!

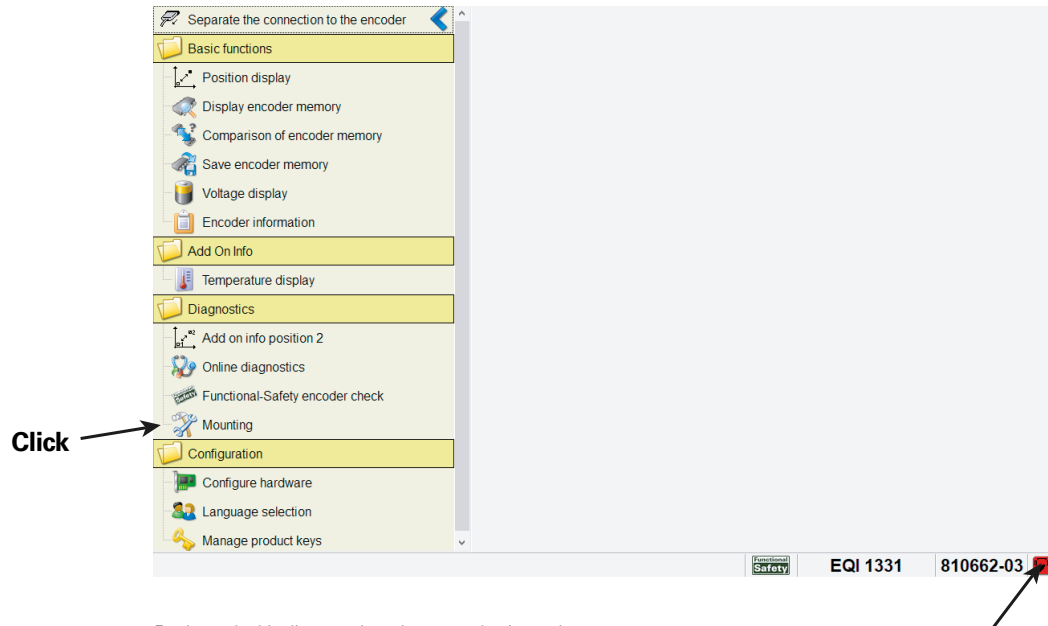
< Back

Connect

Cancel

Click

7.



Red symbol indicates that the encoder is under power

*Rotes Symbol bedeutet: Versorgungsspannung liegt am Messgerät an*

## 8.

Observe the warnings

*Warnhinweise beachten*

### Mounting check



The mounting check will perform a signal adjustment. Signal inconsistencies and other similar phenomena can occur during this adjustment.  
This might result in injury to the operator or damage to the machine.  
Closed-loop operation is not permissible. Do not connect the X2 "OUT" connection.



When checking the mounting, it is recommended that you ensure a sufficient traverse range for the axis concerned.



For information about the permissible value range and the accuracy of the measured values, as well as for evaluating the mounting of the encoder, please refer to the related product documentation.



At present the encoder is not under power.



Click

## 9.


### Start of the mounting inspection *Start der Anbau-Überprüfung*


#### Mounting inspection




Step 1: Connecting the encoder

Connect the cable to the encoder.

Supply voltage to be set: **5.2 V**

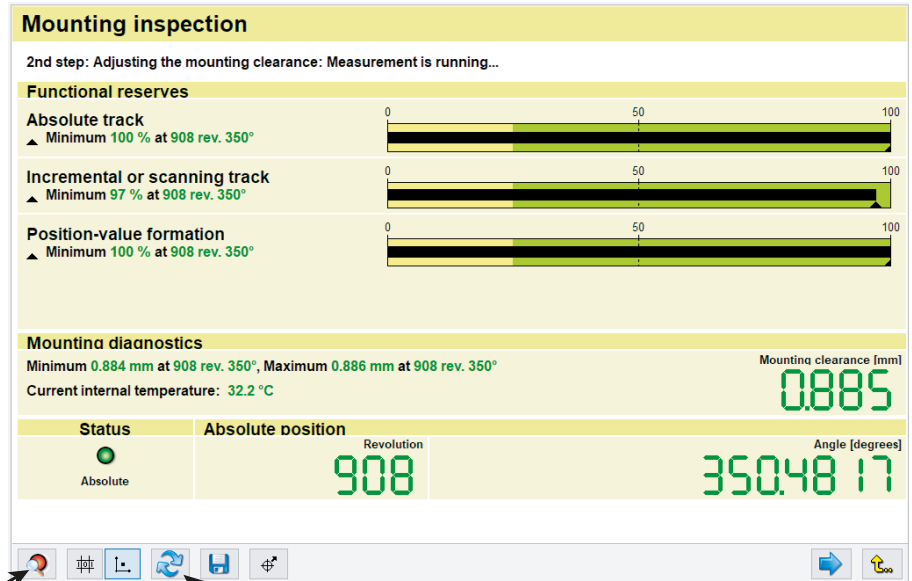
 At present the encoder is not under power.

 **Caution:** If the supply voltage to be set does not match the connected encoder, then the encoder, the interface board, or the PC may be damaged!

Click

10.



Display of status information (optional)  
*Anzeigen von Status Informationen (optional)*

Reset the min.-max. values (optional)  
*Rücksetzen der Min.-Max.-Werte (optional)*

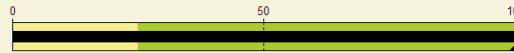
## Mounting inspection

2nd step: Adjusting the mounting clearance: Measurement is running...

### Functional reserves

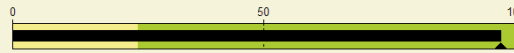
#### Absolute track

▲ Minimum 100 % at 908 rev. 350°



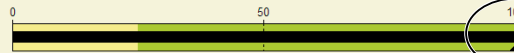
#### Incremental or scanning track

▲ Minimum 97 % at 908 rev. 350°



#### Position-value formation

▲ Minimum 100 % at 908 rev. 350°



### Mounting diagnostics

Minimum 0.884 mm at 908 rev. 350°, Maximum 0.886 mm at 908 rev. 350°

Current internal temperature: 32.2 °C

Mounting clearance [mm]

0.885

Status



Absolute

Absolute position

Revolution

908

Angle [degrees]

350.48 17



Display value of the internal temperature sensor  
*Anzeigewert des internen Temperatursensors*

If the value falls below 100, check the mounting tolerances

*Wenn der Wert von 100 unterschritten wird, Anbautoleranzen überprüfen*

Direct display of the mounting clearance. Nominal value \*) see table; for models that are not listed, see encoder documentation  
*Direkte Anzeige des Anbaumaßes, Sollwert \*) siehe Tabelle; für nicht aufgelistete Geräte siehe Gerätedokumentation*

Exl 11xx	Exl 13xx
*) 2 mm	*) 1 mm

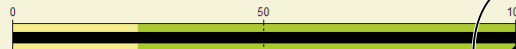
## Mounting inspection

2nd step: Adjusting the mounting clearance: Measurement is running...

### Functional reserves

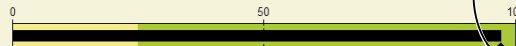
#### Absolute track

▲ Minimum 100 % at 908 rev. 350°



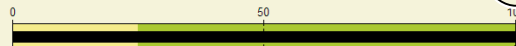
#### Incremental or scanning track

▲ Minimum 97 % at 908 rev. 350°



#### Position-value formation

▲ Minimum 100 % at 908 rev. 350°



### Mounting diagnostics

Minimum 0.884 mm at 908 rev. 350°, Maximum 0.886 mm at 908 rev. 350°

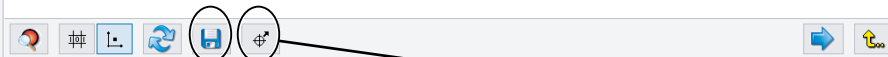
Mounting clearance [mm]

Current internal temperature: 32.2 °C

0.885

Status	Absolute position	Revolution	Angle [degrees]
 Absolute	908	350.48	17

Not relevant for mounting inspection  
*Nicht relevant für Anbau-Überprüfung*



Mounting measured values are written to a file (optional)  
*Speichern von Anbau-Messwerten in eine Datei (optional)*

Setting/canceling the customer-specific datum shift (optional)  
*Setzen/Aufheben der kundenspezifischen Nullpunktverschiebung (optional)*

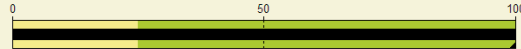
## Mounting inspection

2nd step: Adjusting the mounting clearance: Measurement is running...

### Functional reserves

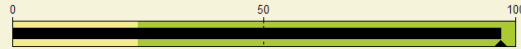
#### Absolute track

▲ Minimum 100 % at 908 rev. 350°



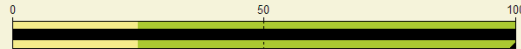
#### Incremental or scanning track

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#### Position-value formation

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### Mounting diagnostics

Minimum 0.884 mm at 908 rev. 350°, Maximum 0.886 mm at 908 rev. 350°

Mounting clearance [mm]

Current internal temperature: 32.2 °C

0.885

Status	Absolute position	
	Revolution	Angle [degrees]
 Absolute	908	350.48 17



End the mounting inspection and return to the main menu ①, or inspect further encoders ②

Anbau-Überprüfung beenden und Rücksprung in das Hauptmenü ①, oder weitere Messgeräte prüfen ②



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